



**ADDIS ABABA UNIVERSITY
SCHOOL OF COMMERCE**

**THE ROLE OF PROJECT LIFE CYCLE
MANAGEMENT ON PROJECT SUCCESS –
THE CASE OF TOTAL ETHIOPIA S.C.**

By Mikiyas Feyissa

**Research project submitted to Addis Ababa University,
School of Commerce in partial fulfillment of the
requirements for the award of Master of Arts Degree in
Project Management**

Advisor: Mengistu Bogale (PhD)

June 2018, Addis Ababa

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APPROVED BY BOARD OF EXAMINERS

Advisor

Internal Examiner

External Examiner

DECLARATION

This research project report is my original work and has not been presented for the award of any degree. All sources of material used for the thesis have been duly acknowledged.

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This research project report has been submitted for examination with my approval as the university supervisor.

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ABSTRACT

This research embarked upon evaluating the contribution of project life cycle management practices on the overall success of projects. The research analyzed project success from the perspective of cost, time, and quality performance, as traditionally known as the Iron Tringle; and added another project success criteria, key stakeholder's satisfaction to advance the success measurement model. The research categorized these project success measures into two groups; the first three performance measure criteria, cost, time and quality, were treated as project management success while the stakeholder's satisfaction performance was treated as project's product success. The researcher surveyed 20 projects that have been completed over the past 10 years to understand project management practices that have significantly impact on the success of projects and to investigate strategies that were adopted by Total Ethiopia S.C, the case company. The research used inferential analysis to identify significant correlation between project life cycle management stages (project initiation, planning, execution and closure) with the aforementioned project success measures. The research survey data was analyzed using IBM's SPSS 24 software where the internal validity of the questionnaire was tested using Cronbach's alpha to determine the reliability of data instruments. The researcher used ANOVA, Pearson's Correlation Coefficient and regression analysis to test the relationship between variables and to suggest alternative hypothesis. The researcher, during the course of the research had gained an understanding on the need to deepen the level of details in each of the project life cycle phases and to thoroughly understand success factors arising from the project management practices. The research concluded the project report by providing valuable recommendations to the case company and for future researchers.

Key words: project life cycle, planning, initiation, execution, closure, project product success, and project management success.

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ACRONYMS

ANOVA	Analysis of Variance
APM	Association of Project Management
BoK	Body of Knowledge
EPC	Engineering, Procurement and Construction
IT	Information Technology
KII	Key Informants Interview
PC	Project Closure
PE	Project Execution
PI	Project Initiation
PP	Project Planning
PPS	Project's Product Success
PS	Project Success
PSS	Project Stakeholder's Satisfaction
PM	Project Management
PMBOK	Project Management Body of Knowledge
PLCM	Project Life Cycle Management
PMI	Project Management Institute
PMS	Project Management Success
PPS	Project's Product Success
PRM	Project Risk Management
PTK	Project Tool Kit
RICS	Royal Institution of Chartered Surveyors
ROC	Rapid Oil Change
SC	Share Company
SPSS	Statistical Package for Social Science
UK	United Kingdom

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CHAPTER ONE: INTRODUCTION

1.1. Background of the Study

Ethiopia, being a landlocked country, relies at present, on refined fuel imports from Djibouti and Sudan by road. There is a plan to use the recently completed rail network (Ethio-Djibouti Rail) for fuel transportation to the country. The Ethiopian oil industry currently comprises of two international companies, Total Ethiopia and Libya Oil Ethiopia, and number of domestic companies involved in supply and distribution of petroleum products. Hence, the industry has become the area characterized by stiff competition especially in the lubricants wide product line (Oils and greases) through time. Moreover, the magnitude of the outlying competition in the sector is resulting to be fierce, majorly due to the difference in import sources of lubricants of each company with which certain companies possess cost leadership as one of the generic strategies. (Total Ethiopia, 2017)

Total Ethiopia Share Company is a local affiliate of Total International Group, a global company involved in exploration, refining, storing, distribution and marketing of hydrocarbons fuel products all over the world. Total Ethiopia SC has been carrying out business in Ethiopia for the past 60 years and it owns more than 200 stations in Ethiopia. Total Ethiopia SC has huge market share of lubricant products and bitumen market in addition to fuel products market. Total Ethiopia is the market leader in oil products, which owns the major share in non-fuel oil products. (Total Ethiopia, 2017)

Aside from the notable depot construction project at Dukem, Total has number of projects that helped it to improve its market share in Ethiopia. Projects include automation of its internal system, lubricant Kiosk construction and projects that focus on the improvement of existing gas stations to qualify them provide additional services to customers.

Staying relevant and owning high market share requires becoming competitive and delivering projects within time, cost and scope by adopting generally accepted project management practices. In the past half century, it is evident that formalized project management is receiving a great deal of acceptance in leading and contributing to organizational success. As a result, project

management has been developed and disseminated across the world, according to Bredillet, Tywoniak & Dwivedula (Bredillet, 2014)

According to PMBOK 4th Edition, the increasing acceptance of project management indicates that the application of appropriate knowledge, processes, skills, tools and techniques has significant impact on project success, hereby the success of the whole organization. The effective implementation of project management plays a core role in avoiding bad project [resource] use and waste of funds caused by poor asset management planning and design errors or equipment selection errors; meanwhile, it can effectively improve the operational efficiency of enterprise assets, lower operating costs and save resources (Yongqin Yan, 2016)

Project management research and knowledge creation is at its nascent stage in Ethiopia, so is the successful implementation of projects successfully. A detailed literature on the management practices of projects in Ethiopia is difficult to find. As a result research works in such an industry is difficult or mystified (Jekale, 2004).

Project Life Cycle Management (PLCM) is an important function of project management and can assist the management to learn from past experiences, improve decision making and streamline communication between various departments. PLCM is a management method to achieve more effective and efficient communication within departments, with stakeholders, beneficiaries, financiers and sponsors, with information feeding backwards and forwards at every project stage. The application of PLCM is dependent upon the relative size, complexity and urgency of projects. (RPRLGSP, 2009)

While the sequential and overlapping models are common to most projects, the spiral model is widely used by Snyder and Fox, (Snyder, 1985); (Belanger, 1997). Even though there are many project life cycle models with various phase names and numbers of phases, the most common life cycle is the one with four distinct phases: initiation (identification), planning, execution and closure (Gray, 2008); (PMI, 2008). Since it is widely used and listed in PMBOK (PMI, 2000; PMI, 2005; PMI, 2008), the researcher utilized this life cycle model in this study. The researcher believes that the PLCM model will assist the company to achieve project success and meet its business objectives in the short and long run.

It is, therefore, important to investigate and understand the local applicability of project life cycle management (PLCM) and its contribution to the success of projects in light of the local context. This research investigated the applicability of the PLCM stages at Total Ethiopia S.C and their contribution to project success.

1.2. Problem Statement

According to Yongqin Liu and Yan Haohan (Yongqin Yan, 2016), the effective project management plays a core role in avoiding wastage of projects funds, caused by asset management planning and design errors; meanwhile, it can effectively improve the operational efficiency of projects and businesses. (Liu, 2016). Successful projects require continued care and management to ensure that the project follows the plans correctly and, as a result, leads to the desired results. (Portny, 2007).

Many projects are not planned, executed and monitored according to the generally accepted (international) guidelines of such practices in modern management. There are various reasons for this including a lack of trained personnel, non-appreciation of the importance of proper planning and monitoring schemes to improve performance – primarily driven by the impetus to dwell on actual physical works and the lack of appropriate guidelines in the management of the various processes (Desta, 2015). One of the causes of the inefficiencies is the lack of a consistent system that identifies the major processes and presented ‘better practice’ on how they are effected (Wubishet, 2004).

It is inevitable that projects face number of challenges during the execution period that diverts them from meeting their objectives. Almost all projects are initiated to increase organizational efficiency, to meet new demands, to realize new opportunities or to overcome challenges faced by the company due to the ever-changing operating environment. According to Tadesse Ayalew, (Tadesse, 2016) the level of project management practice in terms of adapting general project management procedures, project management functions, tools & techniques is unsatisfactory in Ethiopia. Particularly the level of practice in terms of safety, risk and time management was found to be very low.

Implementation delay, overestimation of project return and poor labor quality of projects were found to be statistically significant causing project failures, [which boils to unsatisfactory project planning and implementation]. In addition, there are number of researches conducted on assessing how project practices have contributed to the success of projects. However, little has been researched on how the project practices such as life cycle management of projects contributed to improving the overall success of projects. According to Aubry and Hobbs (Aubry, 2011) performance is often identified as the ultimate dependent variable in the literature of organizations.

The current focus on the topic seems to be driven by the belief that organizations adopt project management only if it can be shown to generate benefits to the company. After more than a half-century of history in the management of projects, its contribution to performance is still not acknowledged outside the group of professionals who believe in project management. The community of professionals and academics within project management associations are mostly preaching to the converted. However, outside of this community, the value of project management is not generally recognized, particularly at senior levels (Thomas J. L., 2002)

Businesses invest huge resources to implement projects that contribute to the improvement of their market share and enhance their profitability. However, little has been investigated on the correlation between the project life cycle management and their contribution to the success of projects. Project Life Cycle Management (PLCM) has not yet had enough attention compared with other approaches, although it now increases its presence. Few studies have been done to explain the social contexts behind project planning and evaluation methods. (Finsterbusch K. a., 1987), (Finsterbusch, 1988)

It is to the understanding of the researchers that all companies want to witness the contribution of business management practices in their organization and try their best to accomplish projects within cost time and quality. However, it is as important to think beyond the success of projects and learn what the drivers of project success are – the lesson learnt will assist the businesses to make sure that projects implemented in the future are successful.

This research embarked upon evaluating the contribution of project life cycle management practices to the overall project success of a project which was reviewed from the perspective of

cost, time, quality and stakeholder's satisfaction. These success factors are categorized to project management success and project's product success.

1.3. Research Questions

In order to realize these objectives, the following research questions were answered:

- i. To what extent is it important to link the project life cycle management to the success of the project?
- ii. Which project life cycle management (PLCM) practices highly impact the successful completion projects at Total SC?
- iii. What impact does project planning has on project success?
- iv. Which stage of project life cycle management practice highly contribute to the satisfaction of stakeholders (clients)?

1.4. Objective of the Research

This paper empirically analyses the correlation and the relationship between successful project implementation with the time, cost and quality dimension dimensions, taking into consideration the end-user satisfaction; and recommends on best practices to be adopted by the implementing business.

The objectives of this research are:

- i. To assess the level of importance of linking various project life cycle management practices and efforts made to ensure successful project completion in order to realize organizational benefits.
- ii. To understand how PLCM can contribute to the success of projects.
- iii. To inform project managers and stakeholders on project management practices that can ensure the success of projects and to analyze lessons learned.

1.5. Significance of the Study

Project management is an area with a growing body of knowledge; this research can contribute to adding some concept to the existing body of knowledge with a particular emphasis on the oil and gas industry and their project management experience.

Project Management has been long challenged by senior executive management of businesses for its importance and contribution to the performance of corporates. In reverse, the implication has been devastating for the success of number of projects due to senior management buy-in, which was vital for their success. (Project Management Institute, 2013)

This research, though, conducted on a single case company, will be a great input for many businesses and corporates to demonstrate the contribution of project life cycle management to project success hereby the business gain – the greatest attraction for business leaders.

In many businesses people who do not have project life cycle management education and experience are assigned to manage projects that contributed to fatality of many projects. The output of this research will inform business leaders about important skills of project managers to manage projects successfully.

This study is inclined to be operational with a slight theoretical justification, as it tests some hypothetical perspectives. In addition, the study may become useful for further study to those who want to undertake more research in this area.

1.6. Scope of the study

There are number of factors that can contribute to the successful implementation of projects other than the project life cycle management processes. The project success measure, in this research, is reviewed from the perspective of time, cost and scope, and partly from stakeholder's (client) satisfaction. This paper fails to consider other emerging project success criteria. In addition, the researcher had limited the study on single multinational company and the conclusions may not fully speak of the project success of all businesses in the country. However, the conclusions and recommendations of this research will contribute to the understanding of other businesses in the country.

With the aim of assessing the overall situations of the business, there shall be a full picture of relationship between project life cycle management and success of projects.

In its wider effect, the study was conducted assessing the success and contribution of project practices in the case company and do not contrast with the success or failures of businesses. Thus,

the finding of the study is limited to determinants discussed above and any conclusion and recommendation in the study was related to the same.

The final output of this research is limited by the data availability at the project office due to the contract termination of international project team members involved in the management of phased out projects at the time of data collection.

1.7. Definition of Key Terms

Project: temporary organization that is needed to produce a unique and predefined outcome or result at a pre-specified time using predetermined resources. PMBOK Guide 2008 describes project as a temporary endeavor undertaken to create a unique product, service or result.

Project management: the Project Management Institute (PMI) formally defines project management as follows: “The application of knowledge, skills, tools and techniques to project activities to meet the project requirements.” (Project Management Institute, 2013). The UK Association of Project Management (APM) have produced a UK Body of Knowledge UK (BoK) which also provides a definition for project management as: ‘The planning, organization, monitoring and control of all aspects of a project and the motivation of all involved to achieve the project objectives safely and within agreed time, cost and performance criteria.’

Project Life Cycle Management: the systematic process of initiating, planning, implementing, managing and evaluating projects or programmes is known as ‘project life cycle management’, PLCM; it is also defined as an approach in project management used to guide management activities and decision-making procedures during the life-cycle of a project, from the first idea until the last ex-post (afterwards) evaluation. (RPRLGSP, 2009)

Project Initiation: the first phase in the project life cycle management, as it involves starting up a new project. Steps include defining project objectives, scope, purpose and deliverables, hiring project team, setting up of the Project Office, reviewing of the project, and gaining approval to begin the next phase. (Method123, 2018)

Project Planning: the second phase in the project life cycle. It involves creating set of plans to help guide project team through the execution and closure phases of the project. (Method123, 2018)

Project Execution: the third phase in the project life cycle. In this phase, the manager builds the physical project deliverables and presents them to the customer for signoff. The Project Execution phase is usually the longest phase in the project life cycle and it typically consumes the most energy and the most resources. (Method123, 2018)

Project Closing: the fourth and last phase in the project life cycle. In this phase, the manager will formally close the project and then report its overall level of success to the project sponsor. (Method123, 2018)

Quality: the degree to which a project's quality objective is attained which is subjectively measured on a ranking scale.

Cost: the degree to which project's cost objective is achieved measured as the unit cost.

Time: the degree to which a project's time objective is achieved, measured on the basis of a before-and after effect

Project success: the totality of time, cost and quality performance, and stakeholder satisfaction of a given project. (Operational definition)

Project Management Success: concentration on management processes and achievement of project goals is inherent to management success that signifies just three goals – time, budget and quality. (Bronius Neverauskas, 2013)

Project Product Success: producing of successful product expressed by the satisfaction of project stakeholders, mainly the sponsor. (Bronius Neverauskas, 2013)

1.8. Organization of the report

The entire project contains five chapters organized as follows. Chapter One presents an overview of the research, covering topics such as background of the research, the research problem, objectives, the significance of the study; and the scope and limitations of the study. Chapter Two covers the discussion and empirical review of literatures that are related to the problem under review. The last part of the second chapter includes the conceptual development and hypothesis design. Chapter Three discusses in detail the methodology that was employed in conducting the

research and how they were analyzed. Chapter Four presents analysis of the data collected through the survey and discussion of relevant issues. The last chapter, Chapter Five, summarizes the conclusions and the recommendations of the research.

CHAPTER TWO: LITERATURE REVIEW

2.1. Theories and Concepts

This section covers theoretical information and references from different researches and books on project management, project life cycle management and project success criteria used in this project research.

2.1.1. Project Management (PM)

The discipline of PM has been evolving and maturing constantly over the last few decades. Despite this growth, the true value of PM has always been questioned due to a lack of empirical evidence – Thomas & Mullaly, (Thomas J. &, 2007); and Williams & Parr, (Williams, 2008). Several organizations have invested in people, tools, methodologies, standards and structures with an expectation to see a quick return on these investments. Literature is fraught with evidence of unsuccessful projects and unsatisfactory business benefits to the organization according to Thomas & Fernández, (Thomas G. &, 2008), Labuschagne, Marnewick & Jakovljevic (Labuschagne L. M., 2008), Hobbs & Aubry (Hobbs, 2008), Bennington & Baccarini, (Bennington, 2004); and Christenson & Walker, (Christenson, 2008).

Only recently has quantitative evidence emerged of the organizational value of Project Management (PM). According to Thomas and Mullaly, organizations do, in fact, get value out of PM and can therefore be considered to have a strategic delivery capability. Sixty-one per cent of the organizations that participated in this research expressed satisfaction with the way projects are managed and 68% confirmed that projects are aligned with the organizational vision. (Thomas J. &, 2007), (Thomas J. &, 2008).

Despite all the efforts, in 2013 the Project Management Institute presented its periodical Pulse of the Profession TM research (Project Management Institute, 2013) which, even according to other studies (Grant K.P, 2006), showed that less than two-thirds of projects meet their goals and business intent (success rates have been falling since 2008, from 72 percent in 2008 to 62 percent in 2012) and about 17 percent fail outright.

According to the PMI (Project Management Institute, 2013) the actual risk for organizations is estimated to amount to losses of an average of \$135 million dollars for every \$1 billion invested in a project. Data and studies show clearly that much work remains to be done in the area of PM and that we are now only at the first stage: the imperative to improve project management for competitive advantage is clear, but barriers to an effective implementation still exist.

Organizations must ensure that they have the project delivery capability to deliver any chosen projects, programs and portfolios according to Crawford et al., (Crawford L. H., 2006).

2.1.2. Project Life Cycle Management Model

The European Commission adopted (as the principal body in charge of the implementation of the cohesion policy and management of nations' funds) the term Project Life Cycle Management in 1992 as a primary set of tools for project development and management, based on a logical framework approach. The generic project cycle consists of four phases: Identification (initiation), Formulation (Planning), Implementation and Evaluation/Closure (European Commission, 2003). Feedback from the Evaluation Phase corrects the data in the Project Identification Phase. This represents one of the crucial difficulties due to late impact into early project phases.

Project Life Cycle Management (PLCM) has been developed as a business approach for managing the total life cycle of products and services (Garetti, 2004); and (Kovacs, 2006)

Other authors emphasize that projects' success depends on different project life cycle stages. Islam, et al. (Islam, 2011) state that in project initiation stage, it is important that project is instituted to take an opportunity not to solve a problem. Also they discovered that feasibility study should be done by external organization.

The effective implementation of the project management plays a core roll in avoiding bad project use effect and waste of funds, caused by asset management planning and design errors or equipment selection errors; meanwhile, it can effectively improve the operational efficiency of enterprise assets, lower operating costs and save resources. In June 1974, Gordon A. published a paper "3L Economics Concept" as the starting point, on the "Building and Quantity Surveying", which is organized by the Royal Institution of Chartered Surveyors. In this paper, a review of domestic and foreign research, from 1974 to 2015, on the total life cycle management progress

and concluded that building the whole life cycle planning index system in line with the characteristics of oil and gas development project is very necessary. (Gordon, 1974)

Zwikael and Globerson (Globerson, 2006) examined that in project planning stage, definition of tasks, development of schedule, organizational planning, recruitment, communication planning and project plan development are influential to project success. Pinto and Slevin (Pinto J. K., 1988) in their research study provided the effective usage of strategic and tactic decision matrix. They disclosed that in project implementation stage, it is better to use tactic decision while strategic solutions should be admitted in initiating and planning phases. Other scholars (Patanakul, et al., (Shenhar P. P., 2011) suggested the list of tools and techniques which should be used in different project lifecycle stages to influence project success due to its every lifecycle.

This division of the cycle in four stages provides minimum conditions for effective project preparation, implementation and evaluation/closure. The project cycle starts with initiation (identification) of the idea and its development into a work plan that can be implemented and its effectiveness evaluated. The project cycle should ensure that all stakeholders are consulted, thus making relevant information available. (Method123, 2018)

2.1.3. Stages of Project Life Cycle Management (PLCM)

A project generally consists of four chronological phases: 1. Initiation – The conditions are analyzed and the project's objective is specified. 2. Planning – Plans and methods for the execution are developed. 3. Execution – The main work towards completion are done. 4. Closing – The project is evaluated and closed down. (Tonnquist, 2007)

The **Project Initiation** phase is the first phase in the project life cycle management, as it involves starting up a new project. During this phase a business problem or opportunity is identified and a business case providing various solution options is defined. Next, a feasibility study is conducted to investigate whether each option addresses the business problem and a final recommended solution is then put forward. Once the recommended solution is approved, a project is initiated to deliver the approved solution. Terms of reference are completed outlining the objectives, scope and structure of the new project, and a project manager is appointed. The project manager begins

recruiting a project team and establishes a project office environment. Approval is then sought to move into the detailed planning phase (Westland, 2007)

The **Project Planning** phase is the second phase in the project life cycle. It involves creating of a set of plans to help guide project team through the execution and closure phases of the project. The plans created during this phase will help to manage time, cost, quality, change, risk and issues. They will also help manage team and external suppliers, to ensure that the manager delivers the project on time and within budget. The activities under planning phase includes defining project objectives, scope, purpose and deliverables. This stage requires the assignment and identification of project team, setting-up of the Project Office, and gaining approval to begin the next phase. (Method123, 2018). At this point the project will have been planned in some detail and is ready to be executed. (Westland, 2007)

The **Project Execution** phase is the third phase in the project life cycle. In this phase, the manager builds the physical project deliverables and presents them to the customer for signoff. The Project Execution Phase is usually the longest phase in the project life cycle and it typically consumes the most energy and the most resources. It is required that the manager monitors and controls the project by implementing a range of management processes. These processes help the manager and his team to manage time, cost, quality, change, risks and issues. The management of procurement, customer acceptance and communications are well managed at this phase. (PMI, 2008)

The **Project Closure** phase is the fourth and last phase in the project life cycle. The traditional Project Close-out phase encompasses the Closing Process Group that "...consists of those processes performed to finalize all activities across all Process Management Groups to formally complete the project, phase, or contractual obligations." (PMI 2008) The aim of project closure is to assess how successful the project and its end product is. There may be a separate external evaluation from a quality assurance group (Kerzner H. , 2002)

2.1.4. Project success

Project success is among the few most frequently discussed project management concerns, yet it is the least agreed upon. Nonetheless, during early times, studies about project success have been generally quantitative, measured against an objective set of criteria. Project success was measured

on the basis of time, cost and quality, which Atkinson, (1999) called the 'Iron Triangle' (Atkinson, 1999). The initial idea of the triple constraint was a framework for project managers to monitor and evaluate project, and balance these competing demands. Overtime the 'Iron Triangle' also become a default method to define and measure project success.

While the triple constraint is necessary, it is not enough (Turner J. &, 2005); (Atkinson, 1999); Pinto and Slevin, (Pinto J. K., 1988). This is because, it is not easy to say that every projects that are delivered on time, within budget and meet scope specification may not necessarily be perceived to be successful by key stakeholders because, the project product does not solve a problem it was meant to (Eskerod Pernille and Jepsen, 2013).So, in the 1980s and 1990s the attention shifted to basing success on examining the customers' viewpoint instead of just the technical aspects as measurement of project success performance (Freeman, 1984) (Pinto J. K., 1988); (Andersen, 2002). Thus, researches today, acknowledging the complexity of the term "project success" describes it as multidimensional, uncertain and reliant on stakeholders. Such studies as (Pinto J. K., 1988); (Andersen, 2002) and Turner (Turner J. , 2008) show that project success is clearly tied to satisfying stakeholders as "the success of the project depends very much on fulfilling their needs and expectations" (Nguyen et al., (Nguyen, 2009).

Thus, the current thinking is that ultimately, project success is best judged by the stakeholders, especially the primary sponsor. Supporting the above claim, Baker, et al (Baker, 1988) strongly confirmed the importance of including client satisfaction within any measure of project success: "If the project meets the technical performance specifications and or mission to be performed and if there is a high level of satisfaction concerning the project outcome among the people in the client organization and key users or clients of the project effort, the project is considered on the overall successful.

Therefore, this study chose project time, cost, quality, and customer satisfaction as the criteria for project evaluation. There is a significant interest in the ability to deliver projects. Project management (PM) has been recognized as a strategic delivery capability that can assist organizations in achieving their strategic objectives (Crawford L. , June 2004.); (Besner C. &., 2006); Crawford, Hobbs & Turner, (Crawford L. H., 2006); Blichfeldt & Eskerod, (Blichfeldt, 2008). With the advent of corporate governance (Turner J. , 2008); Thiry & Deguire, (Thiry, 2007),

a global economy that is going through a recession and a severe skills shortage worldwide (Morello, 2008), developing better strategic delivery capability and getting value out of all investments have become imperative. Most organizations are faced with increased competition, shortened product development life cycles and an increasing emphasis on time to market (Hobbs, Aubry & Thuillier, (Hobbs, 2008). This has resulted in organizations developing new and more flexible organizational forms, with the ability to manage projects becoming more strategically important (Marnewick & Labuschagne, (Marnewick, 2008). In order to develop and improve such ability, it is necessary to understand the organizational context of what is required.

Until recently, the value of PM has often been questioned (Besner & Hobbs, (Besner C. &., 2006); Morris, Crawford, Hodgson, Shepherd & Thomas, (Morris, 2006). Several organizations have implemented formal PM infrastructures, methodologies, tools and techniques without realizing any tangible or quantifiable benefits, while many others have been able to capitalize on their investment. (Labuschagne M. C., 2010)

According to Tadesse, et. al, (Tadesse, 2016) the successful implementation of projects require to apply modern project management, to ensure stakeholders' collaboration, and to modify regulations set by the government and allocate sufficient time for design and planning. Those results are in line with the research done in the context of developing countries. (G. Lizarraldea, 2013)

There is no general description of how to identify if project achieved any success. Collins and Baccarini (Collins A. &., 2004) suggest that success parameters should be project's management success and project's product success. Meanwhile Khang and Moe (Khang, 2008) recommend to define project success as realization of effectiveness, endeavor of projects' quality and stakeholders' requirement satisfaction. But despite all discussions, Iron triangle (time, budget and quality) is still relevant nowadays (Ika, 2009); Collins, Baccarini, (Collins A. &., 2004), Dvir, Sadeh, Malach – Pines, 2006; Kendra, Taplin, (Dvir, 2006), etc.

In terms of success factors, scholars give various lists of elements which might lead to project success. One of the first discussing about project success factors were Pinto and Slevin (Pinto, 2004). They had presented ten key project success factors. Furthermome authors (Mishra P., 2011); Nethathe, et al., (Nethathe, 2011) tried to reveal that project success depends on communication

between manager and team, others focused on relationship with stakeholders. Ika (Ika, 2009) analyzed project success conception and categorized the results by the historical context. According to the author, the main idea was that Iron triangle is still topical but it is supplemented by new element – stakeholders and the end – user impact and importance.

2.1.4.1. Time Performance

Time performance refers to the duration for completing a project and often, projects experience delays. In Royal Institution of Chartered Surveyors (RICS) research paper (Morledge et al., (Morledge, 1996) in which data was collected on 215 completed projects of commercial and industrial nature, it was found out that 63 percent were delivered late. It was contended that the lateness was mainly due to unrealistic expectation of clients about the project duration during the preconstruction stage. Ward et al. (Ward SC, 1991) also identified that client time expectations are frequently based upon either their own experience of similar works or on advice from ‘specialist advisors’.

In an investigation into time performance of construction projects in Australia, Walker (Walker, 1995) identified the following broad factors affecting time performance: effectiveness of client’s representative team, effectiveness of management team and the scope of works. This gives rise to the need to highlight certain characteristics of the project management team members; their competence, experience, knowledge and skills.

2.1.4.2. Cost Performance

Bubashit and Almohawis defined cost performance as the degree to which the general conditions promote the completion of a project within the estimated budget (Bubashit AA and Almohawis, 1994). It covers overall costs incurred from project inception to completion. This highlights the importance that has to be attached to every project management activity carried out through every stage of the project development up to completion. Chan and Chan (Chan, 2004) also argues that cost is not only confined to the tender sum and that it is the overall cost that a project incurs from inception to completion, which includes any cost arising from variations, modifications during construction period. These cost variables give indication of certain additional practices that when

engaged during the project management process would have both direct and indirect implications for the project cost performance.

2.1.4.3. Quality Performance

Quality performance is defined as “the totality of the features required to satisfy a given need; fitness for purpose (Elwakil E, 2009). The extent to which projects are monitored, the experience of project consultants, quality and past performance record of contractors (Kashiwagi, 2004) and the number of variation orders issued all have effect on quality. How all these factors can be competently coordinated would be relevant to achieving satisfactory quality performance.

The project management team leader has the responsibility to ensure that these factors combine well to yield good quality performance. Quality performance has been considered as a function of the procedures adopted during the project process (Serpell A, 1998). Those procedures comprise the concept of procurement form and the method of tendering to the final close-out stage that will bring the project to a successful conclusion. The emphasis is on process and procedures having influence on quality of a project. The subsequent issue that arises is how often project managers, having a sense of the uniqueness of every project, tailor certain project management practices to correspond with the uniqueness of a project in order to yield good quality performance.

2.1.4.4. Stakeholder satisfaction

James P. Lewis (James, 2001) in *Project Planning scheduling & Control: a hands-on guide to bringing projects in on time and on budget* states that “the only truly successful project is the one that delivers what is supposed to, gets results, and meets stakeholder expectations.” In this definition of project success he underlined the phrase “stakeholder expectations”.

Verzuh (Verzuh, 2004) realizes that delivering a project on time, on budget and with high quality does not mean that it will necessarily be successful. The reason according to the writer is the different views and perceptions of success from the project stakeholders. He then refers to stakeholders’ satisfaction but without suggesting the use of a new criterion or ways to measure the rate of that satisfaction as well as the need of that type of information. He clearly states: “successful projects have to meet all stakeholders’ expectations” and finally proposes agreement among the project team, customer and management on the project goals as a factor for project success

2.2. Project Management Experience of Total

Total works alongside its stakeholders to ensure that its operations consistently deliver economic, social and environmental benefits. It launches number of project to improve efficiency and increase business performance in Ethiopia.

Total undertakes rigorous development using clear and detailed methodologies, derived from proven technical knowledge and using a range of high-performance in-house managerial tools. Its ability to ensure low technical costs by controlled planning in developing small or large fields is well known, and supported by a long list of successful projects.

Project Risk Management (PRM) is employed on all development projects at Total. This ensures enhanced accuracy of cost and scheduling estimates and optimum resource allocation to the project team. This is achieved via an explicit risk register with controlled inputs and cost contingencies (using Monte Carlo simulations).

The use of recognized project management tools means its customers are able to easily identify and track project progress using universally accepted protocols. Total uses number of project management authorized tools to manage and monitor its ongoing projects. These include, but not limited to, Project Tool Kit (PTK) that improves project organization by promoting good working practices and developing a common approach for the management of all of our projects; U-cost, an in house software package, used across our projects ensures consistency, good cost control from the onset plus an excellent longer-term budget overview. On larger projects, the surface and sub-surface teams are integrated working side by side.

Development is one of Total's core strengths, and its teams use state-of-the-art patented tools fully integrated within an interpretational platform for analysis and strategy optimization. This platform enables them to reduce modeling uncertainty and improve reliability, as well as offering considerable performance gains verse Sismage®, its proprietary suite of seismic interpretation software tools, developed by Total.

Total has Management Process for Capital Expenditure Projects Definition and principles for conducting Marketing & Services capital expenditure projects, a Project Manager is formally appointed by the project's customer entity for any project with an investment amount greater than

€4 million. For projects with an investment amount below this threshold, the formal appointment of a project manager is strongly recommended.

The Project Manager is responsible for coordinating all actions required for the proper execution of the project. Moreover, he or she is tasked with organizing all validation meetings inherent in the project's progress, in particular the validation gates between each step, the steering committees and the Project Reviews.

2.3. Empirical Review

As stated in the problem statement section of this research few studies have been done to explain the social contexts behind project planning and evaluation methods. Some literature (e.g., (Finsterbusch, 1987) and (Finsterbusch, 1988) focuses on technical arguments on methods which are either intentionally or unintentionally closer to a positivistic approach, trying to be apart from value. The following sections tried to summarize the very few researches conducted in this area with critical issues in the area of project life cycle management and those that the researcher could access.

According to Jari & Pankaj (Jari, 2013) project success factors are the elements of a project that can be influenced to increase the likelihood of success; these are independent variable that makes success more likely. Project success criteria are the measures by which we judge the successful outcome of a project; these are dependent variables which measure project success. Primal success criteria have been an integrated part of project management theory given that early definitions of project management included the so called 'Iron Triangle' success criteria - cost, time and quality. Success factors are those inputs to the management system that lead directly or indirectly to the success of the project or business. Project success factors are not universal for all projects since different projects and different people prioritize different sets of success factors.

Project success criteria also vary from project to project and what is acceptable in one project without impact on perceived success is deemed an abject failure in another. For instance, taking a week delay in an IT project to ensure the objectives are achieved may have a minor impact for this project in terms of success. However, this delay might be a disaster in building a function center, which is supposed to be undertaken before its opening day.

In a research work into the factors that influence quality performance of projects, Chan (Chan, 2004), using factor analysis and stepwise regression analysis, identified project management practices by the project team as the most powerful predictor of client's satisfaction with quality. He recommends giving emphasis therefore needs to be given to the project management practices that are usually adopted by members of the project management team for the quality management of projects.

2.3.1. Project initiation and project success

Initiation is the first knowledge area and is designed to start the project off on the right foot PMBOK Guide (PMI, 2008). First, it uses a project charter definition to formally authorize the defined initiative; this action links to subsequent management steps in the project. In this initial step a link is established between the project and strategic and tactical objectives of the organization. In this step, a formal leader is also identified and provisions made for acquisition of team members. One subtle point about project initiation is that the process also applies to multiple stages within the project life cycle. This point is described in the PMBOK Guide, (PMI, 2008) which states that there should be key evaluation points at which status is reviewed and official management approval granted before the project moves forward to the next step. In other words, projects that have begun do not have a lifetime contract and should be cancelled if the projected cost-benefit proposition goes awry during development.

Shariful Islam, Nazim Uddin Bhuiyan and Mahfuzul Hoque in 2011 empirically examined the association between the different phases of project initiation process and the project success in the environment of Bangladesh. The study samples 50 companies, local and foreign, operating in real estate, garments, and electronics sector in Bangladesh. The result of the study indicates that most of the factors in the project initiation process have significant positive relationship to the project success other than project taken based on opportunity and feasibility study done by specialized firms. The study is important to managers, policymakers, and academics as it demonstrates which factors of project initiation process contribute significantly to the successful completion of a project. There is no research on the association between the different phases of project initiation process and the project success in Bangladesh. This study extends the literature by demonstrating

the impact of different phases of project initiation process on project success (Shariful Islam, 2011).

The importance of the initiation phase stands out relative to other phases in the project life cycle (King WR, 1988), (Utterback, 1995). Dvir et al. (Dvir, 2006) in a recent study of development projects in Israel indicate that the origination and initiation phase, in which major decisions are made, such as deciding the project's objectives and planning the project's execution, has the most influence on the project's success. They also found that although the preparation of formal design and planning documents has a strong positive effect on meeting the project's time and budget objectives, it also contributes significantly to the customer's benefits from the end-product

2.3.2. Project planning and project success

Dvira (Dov Dvira, 2003) had conducted a research to analyze the relationship between project planning and project success. His study was based on data from more than a hundred defense research and development projects (aimed at the development of weapon systems and support equipment) performed in Israel and includes an analysis of the statistical correlation between the two sets of variables. The findings suggest that project success is insensitive to the level of implementation of management processes and procedures, which are readily supported by modern computerized tools and project management training. On the other hand, project success is positively correlated with the investment in requirements' definition and development of technical specification. He concluded that planning is considered a central element of modern project management. Commonly accepted professional standards, such as the PMI Guide to the Project Management Body of Knowledge, emphasize heavily the need to invest in project management processes and procedures to support planning. The assumption behind this position is that planning reduces uncertainty and increases the likelihood of project success. Furthermore, the PMBOK encourages project managers to believe that although planning does not guarantee project success, lack of planning will probably guarantee failure. (Dov Dvira, 2003)

2.3.3. Project execution and project success

Conceptually, the determination of project management success disregards product success, e.g., a project has been managed efficiently but eventually does not meet customer or organizational expectations by Shenhar, Levy & Dvir (Shenhar A. L., 1997). The focus of project managers on project management success is highlighted by research on IT projects by Wateridge (Wateridge, 1995); (Wateridge, 1998), whereby project managers interpreted a failed project as one not meeting budget and schedule, i.e., project management success; while users placed greater emphasis on the meeting of requirements such as response times and reliability, i.e., product success. This indicates that “project managers are focusing on the short-term criteria relating to the project ‘process’ and concentrating on meeting time and budget constraints as opposed to the longer-term criteria relating to the ‘product,’ such as delivering a system with which the users are happy” (Wateridge, 1998).

According to Shamil Naoum and Daniel Fong, (Fong, 2000) those projects who implemented the project management system properly by phasing and costing the construction work packaged accurately have achieved an outstanding results.

2.3.4. Project closure and project success

Although a lot has been written about starting and executing the project successfully closing the project doesn't find a lot of presence in the project management literature (Hormozi, McMinn & Nzeogwu, (Hormozi, 2000); Havila, Medlin & Salmi, (Havila, 2013). Havila et al. (2013) point out that fewer than 5% pages in a typical literature artifact discuss project closure.

According to Young and William, project closure is an important process of project cycle management and it was one of the missing elements in their study of analyzing the project cycle management of organization's and their project management level. They recommend that following the project closing process ensures formalizing acceptance of the project or phase and brings it to an orderly end. It includes contract close out, the lessons learned documentation, and administrative closure. (Young, 2002)

2.3.5. Project Product Success (Key Stakeholder's Satisfaction Criteria) to measure project success

The researcher has added the key stakeholder satisfaction performance management criteria based on the Guide to the Project Management Body of Knowledge (PMBOK® Guide) (PMI , 1996) that defines project management as “the application of knowledge, skills, tools and techniques to project activities in order to meet or exceed stakeholder needs and expectations from a project.” Project stakeholders are individuals and organizations who are actively involved in the project, or whose interests may be positively or negatively affected as a result of project execution or successful project completion. Both project success components— project product's success and project management success—must meet stakeholders' satisfaction where their interests link with these components. The PMBOK® Guide (PMI , 1996) links stakeholders with project success— “The project management team must identify the stakeholders, determine what their needs and expectations are, and then manage and influence those expectations to ensure a successful project.” So stakeholder satisfaction is a crucial part of project success.

Tuman (Tuman, 1986) observes that “the days when we could define success in terms of cost, schedule and technical objectives are gone. We must address a much wider range of needs, concerns and issues which are presented to us by a diverse mix of project stakeholders.”

Anastasios K. Boukano conducted a research basing on the theory of the triple constraint (cost, time, quality) for measuring project success and its inability to explain all cases of success/fail projects. In order to present and apply a new and extended model incorporating the extra parameter of the key stakeholders' satisfaction, research was conducted using both theoretical analysis and qualitative data taken from a specific working environment. In his conclusion he said that, it is commonly agreed that successful project implementation is no longer subjected to the traditional “Golden Triangle”, based solely on the criteria of time, cost and quality. Although many attempts have been made to create a more complete and balanced set of criteria by various researchers, there is no consensus until today (Anastasios, 2007).

2.4. Empirical Evidence for Modeling

This section describes the empirical evidences to measure the main variables in this paper, the first part provides background information on how the researcher measured the project life cycle management stages while the next part describes how project success factors are measured. The narration will be a base for the standards used to measure the model variables.

2.4.1. Measuring the implementation of project life cycle management

The researcher used an exhaustive list of measurement factors to assess the application of project life-cycle management of projects at Total. The summary formed a clear model and hypothesis that was tested to show which stage most affect the success of the projects in light of project initiation, planning, execution and closing.

Different literatures give different list of PLCM stages that range from four to eight. The list of stages treated in this research will be limited to the four main stages of PLCM, namely, Initiation, Planning, Execution and Closing. (Methood123, 2018) Other stages, however, are incorporated as extension of these four stages. For instance project monitoring is incorporated in project execution stage and project evaluation cycle is treated under the closing stage of this paper. (Tonnquist, 2007)

The below table shows the desired project life cycle management tools and techniques. This tools and techniques will be investigated while detailing the research questions.

Initiation	Planning	Execution	Closure
Plain describes goals and tasks; Project manager should be responsible, able to manage according to circumstances;	Clearly defined scope; Reality reflected schedule; Definition of tasks; Development of	Project manager should effectively manage resources; Team members should cooperate with each other;	Project Evaluation was conducted to assess that the project finished in time; Project does not exceed budget;

Project team should not afraid to be responsible; Attention should be focused on clients' knowledge, experience, size/ type and legal environment; Project should be formed to take an opportunity; Feasibility study should be done by external organization; Strategic decisions should be used; Tools and techniques: Analogues estimate, Checklist, Communication plan.	schedule; Organizational planning; Recruitment; Communication plan; Strategic decisions should be used; Project plan development. Tools and techniques: Analogues estimate, Contingency plan, Cost baseline, Critical path method, Hierarchical schedule.	Tactic decisions should be used. Tools and techniques: Checklist, Communication plan, Contingency plan, Cost baseline, Hierarchical schedule, Milestone analysis.	Project meets all quality requirements; Stakeholders' needs were satisfied. Tools and techniques: Cost baseline, Lessons learned, Work breakdown structure
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Source: Contemporary Approach to the Possibility of Project's Success Increase by Bronius, et al. (Bronius Neverauskas, 2013)

2.4.2. Measuring project success:

According to Nethathe, Waveren and Chan (Nethathe, 2011), project success is constituted of project success itself and project management success. The first component means that project reaches all set goals; the second principle signifies just three goals – time, budget and quality.

With this point of view, it is appealed that traditional Iron triangle does not give a perspective of stakeholders and end – user’s needs. This impact is influential nowadays because of the quality management importance. Meanwhile Van der Westhuizen and Fitzgerald (Westhuizen, 2005) also describe project success as a system of two components, but they argue that success is based on project management success and project’s product success. Concentration on management processes and achievement of project goals is inherent to project management success. Producing of successful product is typical to product success. To sum up, it is elementary obvious that project success is the sum of the above referred components:

$$\text{Project success (PS)} = \text{project management success (PMS)} + \text{project's product success (PPS)}.$$

On the basis of this formula, Van der Westhuizen and Fitzgerald (Westhuizen, 2005) propose to append two elements to traditional standpoint of project success. Traditional approach to project success includes only three elements – time, cost and quality, but the authors (Westhuizen, 2005) argue that this view should be expanded by new elements – quality of project management process and satisfaction of stakeholders’ needs with particular attention to management process and its issues.

Yet there is the new element – stakeholders’ satisfaction. It cannot be completely covered by quality element and therefore there was formed a separate project management knowledge area. The success of the project issues is highlighted in the new Guide to the Project Management Body of Knowledge (PMI, 2008). According to Kerzner (Kerzner H. , 2010) to achieve project excellence, success factors becomes a priority decisive determinant. This provision also supports Burke (Burke, 2013).

The below table shows how these success factors are measured.

Table 2.4.2. Project Success Measurement Formulae (PMS and PPS)

Dimension	Success Type	Performance Metrics	Definition
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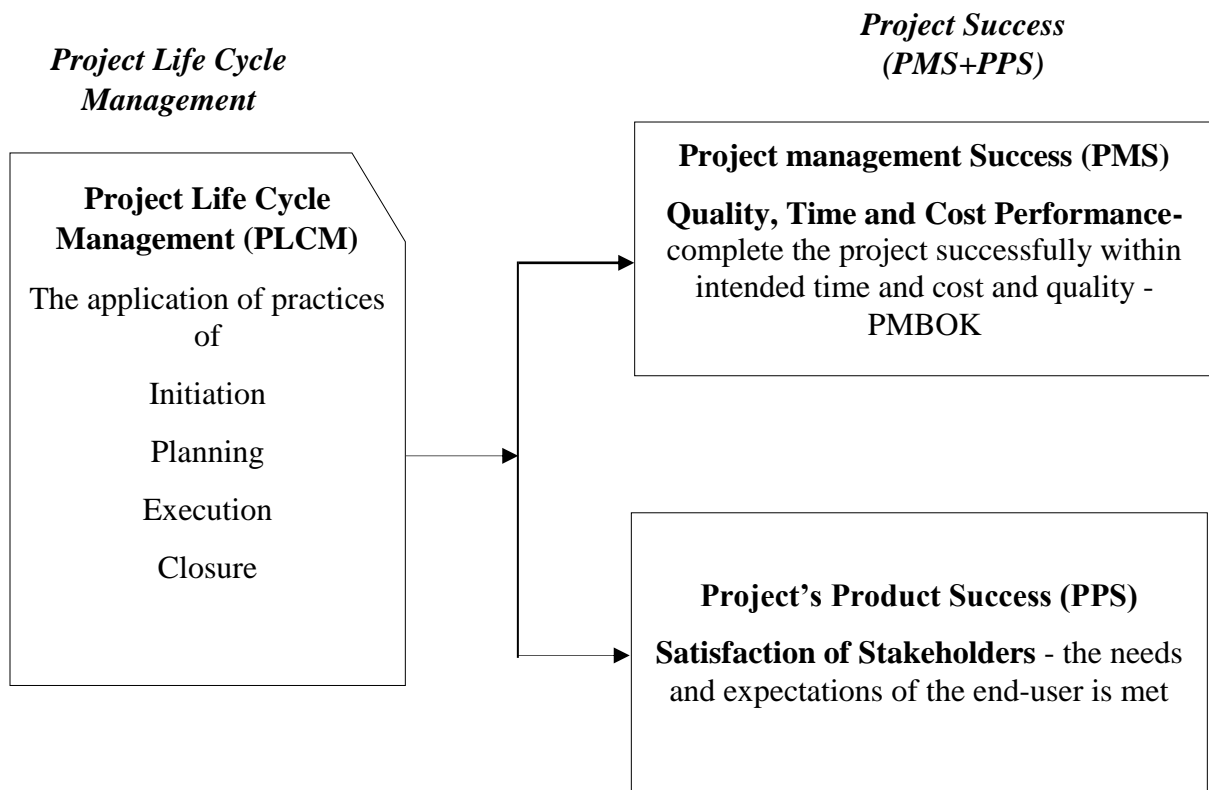
Time	Project management Success (PMS)	Time Performance Index	(Planned Contract Period) / (Actual Contract Period)
Cost	Project Management Success (PMS)	Cost Performance Index	(Initial Project Cost) / (Final Project Cost)
Quality	Project Management Success (PMS)	System and/or Structural quality	Performance of elements and interior space measured by ranking (150%=exceed quality expectation; 50%=not satisfactory)
Stakeholders Satisfaction (others)	Project's Product Success (PPS)	Owner's Satisfaction	Measured by ranking (150%=exceed owner's expectation; 50%=not satisfactory)

Source: Adopted from Ling et al. (Ling, 2002)

2.5. Conceptual Framework

This framework focuses on how project life cycle management stages contribute to project success as independent variable. The conceptual framework developed in this research paper adopts the project-success measurement model developed by Van der Westhuizen & Fitzgerald, (Westhuizen, 2005) which was later confirmed by Bronius, Laura and Evelina (Bronius Neverauskas, 2013) to measure project success.

Diagram 2.5. Conceptual framework to show the relationship between project life cycle management and project success



Developed by the researcher (2018)

2.6. Variables

From the literature reviewed and consecutive conceptual framework, this study identified the following independent and dependent variables. To measure the identified independent variables, a five point Likert scale was developed whereas 11 point scale is used to measure the dependent variables.

2.6.1. Independent variable

The independent variables are adapted from Yang *et al.*, (H Yang, 2009) and El-Sawalhi & Hammad, (NI El-Sawalhi, 2015). The following will be independent variables as described in the conceptual framework,

- Project Initiation
- Project Planning
- Project Execution
- Project Closure

2.6.2. Dependent variables:

The dependent variables as per the conceptual model developed by the researcher are:

- Project time performance
- Project cost performance
- Project quality performance
- Project stakeholder (end user) satisfaction

2.7. Hypothesis Design

Taking the objectives of the study into consideration, the researcher developed the following hypotheses in line with other studies and empirical justifications clearly discussed in this document.

Null Hypothesis One: There is no positive relationship between project initiation and time performance of projects

Null Hypothesis Two: Project initiation does not influence cost performance of projects

Null Hypothesis Three: There is no correlation between project initiation and quality performance of projects

Null Hypothesis Four: Project initiation does not have any impact on the satisfaction of stakeholders

Null Hypothesis Five: There is no positive relationship between project planning and completion of the project within time

Null Hypothesis Six: There is no significant relationship between project planning and cost performance of projects

Null Hypothesis Seven: There is no notable relationship between project planning and quality performance of projects

Null Hypothesis Eight: Project planning does not impact the satisfaction of stakeholders

Null Hypothesis Nine: There is no significant relationship between project execution and time performance of projects

Null Hypothesis Ten: There is no notable relationship between project execution and cost performance of projects

Null Hypothesis Eleven: Project execution does not influence quality performance of projects

Null Hypothesis Twelve: Project execution does not have any impact on the satisfaction of stakeholders

Null Hypothesis Thirteen: There is no positive relationship between project closure and time performance of projects

Null Hypothesis Fourteen: There is no correlation between project closure and cost performance of projects

Null Hypothesis Fifteen: There is no notable relationship between project closure and quality performance of projects

Null Hypothesis Sixteen: Project closure does not have any impact on the satisfaction of stakeholders

Testing the above hypothesis will help to establish and understand relationships between project life cycle management and project success.

2.8. Model development

The following model was developed to check the correlation between variables and their effect on the overall hypothesis testing objectives.

Model: the role of project life cycle management practices on project success

Project Life Cycle Management (PLCM) is a function of Project Initiation (PI); Project Planning (PP); Project Execution (PE) and Project Closure (PC); represented as:

$$PLCM = f(PI, PP, PE, PC)$$

Project Success (PS) is a function of Project Management Success (PMS) and Project's Product Success (PPS); represented as:

$$PS = f(PMS, PPS)$$

Project Management Success (PMS) is a function of Project Time Performance (T), Project Cost Performance (C), and Project Quality Performance (Q) represented as:

$$PMS = f(T, C, Q)$$

Project's Product Success (PPS) is a function of Project Stakeholder Satisfaction (PSS) represented as:

$$PPS = f(PSS)$$

CHAPTER THREE: RESEARCH METHODOLOGY

3.1. Research Type and Source

In general, the research is conducted based on generally acceptable techniques and methods. The research engaged both quantitative and qualitative methods and tools. I believe that the sample size is robust, significant and representative of the quantitative study.

3.2. Research Design

Research design represents the major methodology driving the study, being distinctive and specific research approaches which are best suited to answer the research question (Catherine, 2007). The purpose of the research design, as stated by Sekaran & Roger (Sekaran, 2009) is to achieve greater control of the study in examining the research problem. In this research quantitative research design is used to employ quantifiable schemes to obtain more assurance than a reasonable guess would do. (Mugenda & Mugenda, 2003) Exploratory research is employed for background formation, problem identification, instrument development and hypotheses formation.

Descriptive statistics were used to interpret data in general. Descriptive research aims to depict the state of affairs as it exists and to describe some aspect of a phenomenon, i.e., the status of a given phenomenon. Thus, mean, range, standard deviation, frequency distributions, tabular presentations, graphs and charts are used to present the descriptive statistics of this paper.

Inferential method was used for testing hypothesis and investigating research objectives. The research is concerned with determining the frequency with which something occurs or the relationship between variables. (Mugenda & Mugenda, 2003), (Kothari, 2004). Specifically, regression analysis was used to test all the sixteen hypotheses.

3.3. Research approach

Zikmund (Zikmund, 2003) presents two approaches, inductive and deductive methods. Inductive approach is initialized by specific observations in a data material from which generalizations are made without conducting literature reviews. Thus, it is creating new theory from observation, pattern identification and hypothesis. A deductive approach is the opposite, initiating by

reviewing and gather theory from where collection and conclusions are based upon. Accordingly, the researcher employed a combination of deductive and inductive research strategy for this study.

3.3.1. Population

According to Gay & Diehi (Gay, 1992), number of respondents acceptable for a study depends on type of research involved: descriptive, correlational or experimental or others. The target population for this study are projects that were completed in the past 10 years which are 25 in number. The decision was made to make sure that the respondents have fresh memory of the projects. In addition the availability of project managers beyond ten years is a concern for the researcher. This forced the researcher to target population based on the purpose of the study – which primarily is the knowledge of the target population on the subject matter.

3.3.2. Sampling

The researcher used purposive sampling to conduct the research. According to Ashley Crossman (Crossman, 2017), purposive sampling is where the researcher chooses a sample based on their knowledge of the population and the study itself. The researcher has taken all the projects that were completed over the past ten years as a sample – that were 25 in number. The researcher purposefully selected all these projects to be included in the survey. Accordingly survey questionnaire was distributed to 25 project managers or project team members who had directly managed these projects. Table 3.5. below shows the number of sample size taken.

Table 3.3.2. Sample Size Determination

Project Description	Total Number of Projects completed in the past 10 years and sample taken
Rapid Oil Change (ROC) Construction Projects	10
Link Gas Station Expansion Project	11
Harmony (Sap implementation Project) - IT Project	1
Dukem Depot Construction Project	1
Abyssinia Card System Development and Implementation - IT Project	1

OBC Track Tracing System Development and Implementation - IT Project	1
Total	25

Source: Researcher's own analysis

3.4. Data Source

The research involved general information collection, including both first-hand and second-hand data, in order to identify major themes from the literature and practitioners. Structured questionnaires and interviews were used as primary data to generate all the necessary information from different personnel. Similarly, published materials including archived documents were examined to get a better understanding of the area under investigation.

Document Review: An organized and systematic ways of document review was conducted starting from the initial stages of the research and throughout the research exercise. Internal documents related to the projects implemented at Total were reviewed and analyzed in detail. Available documents like project planning document, project evaluation report and, similar studies and assessments conducted in the area were reviewed and analyzed. In addition, purposeful assessment of documents, literatures, internet and consultation of knowledgeable persons and experts were made to include all relevant external documents in the list.

Questionnaire: Structured questionnaire was designed and distributed for 25 project managers at Total to facilitate data collection followed by electronic data entry and analysis with pre-coded responses. As much as possible close ended questions were utilized to simplify data collection.

Key informant interview: project managers were selected for the interview. The employees of Total were directly involved in managing the project activities (PMI, 2004). These employees were primarily concerned with the planning and implementation phases of the project life cycle, as defined by Gido & Clements, (Clements, 2006); Phillips, (McGraw-Hill, 2009); and (PMI, 2004). Accordingly, the researcher has interviewed four project managers to gain deeper understanding on the practices of projects.

In general, the KII discussions assessed and collected information on the area of project success factors and relationship with the sharpness of project life cycle management practices. In addition,

knowledge and capacity as well as gaps of the different actors on project execution was analyzed. Furthermore, partnership and coordination in place, project management application skills, and lessons and challenges were reviewed.

3.5. Research Instrument

As part of the data management and analysis process, data collection procedures were carefully considered in planning and the operations of a research to improve the quality of interview and data collection.

The quantitative data are processed using Statistical Package for Social Science (SPSS) Version 24 and are presented in bi-variant tables, frequency distribution, rates and ratios.

The document review results were grouped, categorized and analyzed based on their similarities and reinforcement of each other. Therefore, facts, figures and similar experiences and lessons were collected from different source documents. The findings were grouped and assembled according to similarities and did serve as facts and evidences for triangulation of the qualitative information.

The qualitative information collected through the different qualitative discussions are transcribed, coded, reduced and summarized. The qualitative data was analyzed by drawing inferences from the views expressed during the KII Interviews. To substantiate points, direct quotes are provided as much as possible.

Synergy among the different methods and processes used to collect the information were ensured by crosschecking information across all methods. Key points were identified and organized into topical areas with commonly occurring topics. These key points were built up as part of the assessment process. Codes describing separate categories of similar responses were developed with description (labels) for each of them. The coding helps in making comparisons between groups and variables during analysis.

Analysis was undertaken to search for patterns and relationships in raw data and also to identify explanations for those patterns and relationships. Professional explanations and reasons related to the responses were included to maintain the quality of the descriptive report. This process ensures that the raw data was rich enough to reflect the wider picture of the situation. Such descriptive

analysis presents descriptions of issues discussed during the interview which were made to reinforce each other. The data and information obtained from document review helped to enhance eminently and quality of the final report.

3.6. Data Analysis Techniques

For the descriptive data presentation, arithmetic and aggregate mean, median, maximum, minimum and standard deviation methods are applied in data analysis.

Pearson correlation was performed to establish the correlation existed between the independent and dependent variables and to understand the relationships between project life cycles stages and project success factors.

A multiple regression model was used to test the hypotheses of the combined effect of the four independent variables (Project Identification, Planning, Execution and Closure) on the dependent variables of (project scope, time, cost and stakeholder's satisfaction performance measures). The regression output were obtained using Statistical Package for Social Sciences (SPSS 24).

T – test and Analysis of variance (ANOVA) was used to test for the significance of each predictor variables in the model. The null hypothesis (i.e. the model lacking explanatory power) were rejected when the significance value t – statistic is less than 0.05 (significance level).

3.7. Reliability and Validity

Reliability analysis is done to assess the reliability, internal consistency and validity of instruments used in the survey. Reliability analysis are explained by Cronbach's reliability coefficient. The study made use of Likert scale hence suitability for reliability analysis. Likert scale enabled easier analysis as it removed doubt on the type of response given. The researches has used IBM's SPSS 24 software to calculate the Cronbach's alpha in order to determine how reliable the data instrument was over the study that was conducted. Cronbach's alpha (α) > 0.7 indicates satisfactory internal consistency reliability (commonly accepted level) (Nunnally & Berstein, (Nunnally, 1994). However the value of Cronbach alpha may vary for different studies, for instance, in exploratory research a Cronbach alpha value of 0.60 is acceptable according to Hair et al., (Hair 1998); and Maizura et al., (Maizura, 2009). Other studies have recommended that reliability

coefficient of 0.60 was sufficient for exploratory studies by Davis and Cosenza (Duane Davis, 1988). Notable researchers like Mugenda, and Mugenda (Mugenda 2003) argue that coefficient of 0.6-0.7 is still accepted rule of thumb.

Table 4.4. Reliability Result of the Construct Variables

Variables	No. of Items	Scale	Cronbach's Alpha
Project Initiation	5	1-5	0.86
Project Planning	7	1-5	0.57
Project Execution	4	1-5	0.71
Project Closure	5	1-5	0.84
Cronbach's Alpha for (All 4 PLCM indicators)			0.71
Variables	No. of Items	Scale	Cronbach's Alpha
Time Performance	4	0.5-1.5	0.7*
Cost Performance	4	0.5-1.5	0.7*
Quality Performance	4	0.5-1.5	0.7*
Stakeholder satisfaction index	4	0.5-1.5	0.7*
Cronbach's Alpha (All 4 project Success indicators)			0.7*

*0.686 rounded to 0.7

The above table showed that overall Cronbach's Alpha coefficient is about and beyond 0.7. The result proves that most of constructs are good. The alpha values for project initiation was higher than the rest of PLCM practices rating at 0.86 followed by project closure, 0.84. The cumulative alpha for all project life cycles is 0.71 which is good to conduct such research.

Similarly, the Cronbach's value for each project success indices: time, cost and quality performance; and stakeholder satisfaction performance was 0.7, therefore, internal consistency of the items to the concept is acceptable. On the basis of reliability test, it is generally noted that the scales used in this study are reliable to capture the constructs.

However, the project planning load of seven items resulted in Cronbach alpha of 0.574, which is an unacceptable level to proceed with the analysis. For the same reason the researcher had identified three of the seven items that had dragged the alpha value. These items were (Q15) ‘Assignments were planned ahead of project’, (Q16) ‘Realistic project schedule is created within project assumptions and constraints’ and (Q17) ‘Detailed project budget was developed’. The researcher has removed these items from the analysis part of this project research and has got a new Cronbach alpha value of 0.71 with the remaining 4 items included as can be seen from table 4.5. Wille (Wille, 1996) proposed an item selection strategy which may be used to maximize, first, the internal consistency and, next, the convergent and discriminant validity of items in multi-dimensional Likert-type questionnaires or scales. The same approach was used by Raubenheimer (Raubenheimer, 2004).

Table 4.5. Reliability Result for adjusted Construct Variable of project planning

Reliability Statistics		
Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.712	.724	4

Therefore, it was concluded that response and common method variance biases did not pose any significant problems to the validity of the results. Furthermore, the item selection method did not pose significant effect on the results of the analysis as the remaining items can adequately answer the questions.

Validity check: data validity and consistency checks were employed as part of the data cleaning exercises before starting the analytical work. In other words, validity is the degree to which results obtained from the analysis of the data actually represents the phenomena under the study. The study used content validity as a measure of the degree to which data obtained from the research instruments meaningfully and accurately reflected the theoretical concept. Data screening, outlier identification and description of differences among sub-populations (groups of cases) was conducted as part of the data cleaning exercise.

3.8. Ethical Consideration

The researcher was ethical in dealings with all the research stages from the proposal writing through the final research paper. In conducting any research, where this evaluation is not an exception in any way, protecting participants from any harm is not only essential but also an obligation. In fact, due care was taken during the data collection and at all steps of the research.

Accordingly, ethical principles and guidelines were addressed using informed consent, allowing the participants to withdraw any time from the study and by approaching and treating the respondents in a culturally appropriate manner. To manage the cultural difference of the respondents the researcher had had managed the interview process.

CHAPTER FOUR: RESULTS AND DISCUSSIONS

4.1. Introduction

The results of the research were examined in this chapter, focusing on the problem of this research, which was to determine the impact of project life cycle management on the success of a projects implemented by Total.

The results were presented by focusing on the following four areas which corresponded to the way in which the research questions were constructed: First, to assess the importance of linking the project life cycle management stages with project success; second, to test specific project life cycle management processes that significantly impact project success measures; third, to determine the effects of time, cost, quality and stakeholder satisfaction on project success; and fourth, to assess the best practice of Total to gain understanding and lessons for future projects.

Tables and percentiles were used to present the findings; whereas descriptive and inferential statistics were used to illustrate and interpret these findings. The following sections cover two main areas of the study. The first one describes the response rate of survey questionnaire and covers the descriptive analysis of the research whereas the second section covers inferential analysis and hypothesis testing.

4.2. Response Rate

The researcher has distributed 25 questionnaire for the purpose of the study where 20 were filled and returned for analysis; hence 80 percent response rate was achieved.

Table 4.1: Composition of Respondents

SN	Project Description	Number of Sample	Number of Responses	Response Percentage
1	Rapid Oil Change (ROC) Construction Projects	10	7	70%
2	Link Gas Station Expansion Project	11	9	81%
3	Harmony (SAP Implementation) - IT Project	1	1	100%
4	Dukem Depot Construction Project	1	1	100%

5	Abyssinia Card System Development and Implementation - IT Project	1	1	100%
6	OBC Track Tracing System Development and Implementation - IT Project	1	1	100%
Total		25	20	80%

The composition of the respondents to the questionnaire shows that there is quite good mix of respondents with clear understanding of project processes and of the ultimate results achieved from the implementation of these projects.

The researcher has found out that two of the twenty projects are IT projects while the remaining eighteen are construction and infrastructure projects. The researcher did not find it worth to conduct separate analysis of these two type of projects due to the fact that 1) the number of IT projects in the study is insignificant, 2) the consistency among responses of the two sectors is quite similar, and 3) the objective of this project research is limited to analyzing the steps taken to manage projects and the relationship with their success.

4.3. Descriptive Analysis

4.3.1. Knowledge Base and Demography of Respondents

The table below summarizes the experience and the role of the respondents in managing projects.

Table 4.3.1: Cross-Tabulation of Experience and Role

		5. Years of experience in PM				Total
		0-5	6-10	10-20	More than 20yrs	
1. Which of the following best describe your role at the Company	Project manager	8	4	1	2	15
	Senior project manager/leadership	2	0	0	1	3
	Finance team/HR	0	0	2	0	2
Total		10	4	3	3	20

As shown on the above table more than 50% of the respondents have been working in project management of the oil and gas industry for more than five years and have ample exposure to relate their experience with the topic under study. Though 50% of respondents have been working in project management for less than five years, the researcher has not seen any major challenges in understanding the concepts of the research by the respondents during the data collection and interview process, which validates the findings.

As can be easily seen from Table 4.3.1 above, 75% of the respondents consider themselves as project managers and have ample experience of managing projects with adequate knowledge in project management concepts. The remaining participants hold another primary role in the company but have been managing projects.

4.3.2. Importance of Linking Project Life Cycle Management with Project Success

The participants were asked to rate the extent to which it is important to link the project life cycle management and their contribution to project success. The following table summarizes the response of the respondents.

Table 4.3.2. Importance of Linking Project Life Cycle Management and Project Success

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Important	9	45.0	45.0	45.0
	Very Important	11	55.0	55.0	100.0
	Total	20	100.0	100.0	
	Mean	4.55			
	Mode	5.00			
	Std. Deviation	.510			

The mean value of responses on the importance of linking project life cycle management with success measures is 4.55 that shows strong agreement with the statement. This is evident from number of researches that claim that there is notable relationship between these two factors. PMBOK 2008, defines project management as ‘the application of knowledge, skills, tools and

techniques to project activities, to meet specific scope, time, cost and quality goals of projects’. (PMBOK, 2008) The application of PLCM as an approach to project management has the potential to address one of the main challenges facing projects; ‘a lack of a systematic and formalized approach to project management leading to persistent project failure’. (RPRLGSP, 2009). It is, therefore important to analyze project success from the perspective of project life cycle management and its stages.

4.3.3. Project Initiation Stage rating

The project initiation activities include but not limited to the application of project feasibility study, project stakeholders identification and involvement, clarification of project objectives and scope, and resource and task identification that was assessed in this research.

Table 4.3.3. Practices in the Project Initiation Stage

		7. Did your project passed through a project Initiation Process	8. Feasibility study or assessment was made to determine the real problem that will be solved by the project	9. Project stakeholders that will influence and be influenced by the project were identified on the outset	10. Project objectives were clearly defined	11. Scope, resources, and major tasks were determined
N	Valid	20	20	20	20	20
	Missing	0	0	0	0	0
Mean		4.30	4.25	4.15	4.60	4.40
Median		4.00	4.00	4.00	5.00	4.00
Mode		4	4	4	5	4
Std. Deviation		.571	.444	.366	.503	.503
Skewness		-.038	1.251	2.123	-.442	.442
Std. Error of Skewness		.512	.512	.512	.512	.512

Aggregate Mean	4.34
Initiation Stage (Refer table 4.3.6.)	

In general the project identification exercise at Total is quite satisfactory. The mean response value for feasibility study, project stakeholder identification and involvement, clarification of project objectives and scope, resource and task identification is 4.3, 4.25, 4.15, 4.6, and 4.4 respectively which is quite consistent to the aggregate mean of 4.34. The average standard deviation for these tasks was 0.5 that shows that most of projects pass through project identification stages.

According to interview results those projects that did not go through proper identification and feasibility study exercises were challenged during the implementation stage. According to Ato. Tizazzu, one of the project managers at Total, the feasibility of the project must always be valid and carefully executed in the identification stage. He states, “a project which is successfully completed means one that was completed within budget, time and resources and that met the set objectives. So, as long as the feasibility results are positive, it would definitely have positive impact not only on the project but also on the success of the organization – by helping the business to grow in terms of customer satisfaction, profitability, safety and environmental protection, technological development, and team’s skill development.”

4.3.4. Project Planning Stage Rating

Project planning is a function of activities such as proper assembling of project team before the project starts, informing team members about their specific roles, designing of project schedule and budget and launching the project.

Table 4.3.4. Project Planning activities that projects implemented

	N	Sum	Mean	Std. Deviation
12. Proper project was planning conducted?	20	77	3.85	.875
13. Team members were assembled before the project was starts	20	78	3.90	.718

14. Project team members are informed about their specific role in the project	20	79	3.95	.686
18. Kickoff meeting was organized to launch the project and acquaint stakeholders on the deliverables of the project	20	84	4.20	.834
Aggregate Mean Planning Stage (Refer table 4.3.6.)	3.97			

The aggregate mean for project planning items is close to four and the result shows that Total has an admirable practice in planning of activities. These projects were formulated with the involvement of stakeholders from different disciplines. The management aspect includes organizing, planning, control and monitoring at each and every steps of the project. In fact, the projects had required high skilled manpower and modern technological inputs. In addition, leadership determination of project planning was quite important to achieve the objectives identified planned.

According to the interview results, one of the failures during the planning of few of construction projects was assumptions related to foreign currency, capacity of local contractors and challenges of electrical power. For example one construction project failed to analyze and install mitigation plan for the low capacity of local contractor to execute EPC type contracts (Engineering, Procurement & Construction) which was actually envisaged wrongly during the planning process of the project. Oil and Gas station construction and expansion projects are unique and local experts do not have track record of implementing such projects. For example, an international consultant has originally designed the structure with the hope that local consultants that win the bid will complete the detailed design of the construction which was in fact practically impossible. As a result, Total had to outsource the detailed planning process to a foreign company – this has affected the project in terms of cost and time. The project was planned for two years, regardless functionally it was completed after four years. This is a good example that project planning should consider such factors as early as possible to mitigate time and cost overrun.

4.3.5. Project Execution Stage Rating

The project execution stage focuses on the implementation of standard project management practices following structured monitoring and budget controlling system during the course of project period, generating and sharing project report to stakeholders and conducting regular update meeting among the project team and beyond.

Table 4.3.5. Project Execution practices at Total

	N	Sum	Mean	Std. Deviation
19. The project implementation follows standard practices of project management?	20	73	3.65	.745
20. Structured monitoring and budget control system is developed and followed during the course of project implementation period	20	72	3.60	.681
21. Project progress reports were developed and shared with key stakeholders	20	82	4.10	.641
22. Weekly/monthly team meetings were held to manage problems and challenges faced during the project implementation period	20	79	3.95	.759
Aggregate Mean Execution Stage (Refer table 4.3.6.)			3.82	

As can be seen from Table 4.3.5. projects implemented by Total developed progress reports and shared it to key stakeholders, with response mean rate of 4.1 and 0.641 standard deviation. The project managers conducted weekly or monthly team meetings to manage problems and challenges faced during the implementation period with response mean average of 3.95 and 0.759 standard deviation.

On the other hand, practices of structured monitoring and budget control system was not implemented satisfactorily with mean average response of 3.60, which is lower than the aggregate mean (3.82) of the responses showing weak budget control implemented at Total.

4.3.6. Project Closure Stage Rating

Project closure activities include, but not limited to operational and financial closure of projects to make sure that the project activities are concluded and lessons are generated to be an input for future endeavors of the implementing company.

Table 4.3.6. Project Closure practices at Total

		23. Was the project closed?	24. Project evaluation is conducted to assess the success of the outputs	25. Debrief was made with the team on the result of the project evaluation	26. The project is operationally closed	27. The project is financially closed
N	Valid	20	20	20	20	20
	Missing	0	0	0	0	0
Mean		3.60	3.65	3.95	3.35	3.45
Median		4.00	4.00	4.00	4.00	4.00
Mode		4	4	4	4	4
Std. Deviation		.995	.813	.605	1.182	1.191
Sum		72	73	79	67	69
Percentiles	25	3.00	3.00	4.00	2.00	2.25
	50	4.00	4.00	4.00	4.00	4.00
	75	4.00	4.00	4.00	4.00	4.00
Aggregate Mean Closure Stage (Refer table 4.3.6.)		3.60				

Project closure is one of the challenges at Total so is for any other projects implemented by other businesses. The mean score of the two basic features of project closure, operational and financial

closure, is 3.35 and 3.45 respectively. This is quite low and Total should give stress for the closure of project just like any other phases of the project life cycle management. According to notable researchers like Peerasit (Patanakul, 2010) project closure significantly contribute to project success measures in terms of cost, specification requirements and overall project wellbeing. The use of lessons learned from project closure facilitates the learning and knowledge dissemination. The records of what went right, what went wrong and the analysis of responses will benefits future projects. It is therefore sensible to say that the authors found the contribution of project closure and lesson learned to the financial benefits to the organization.

Few project managers claimed that there are number of challenges to conclude an operational closure of projects. The project closure stage was lost in the crack due to busy schedules of project managers and because they assume the responsibility of handling new projects when one is completed. In some instances, the project managers are caught-up by their functional responsibilities to follow-up and conclude projects operationally. This has impacted the company's knowledge management practices on learning from the execution of projects and correcting it to future projects. However, it was learnt that the company implements best practice of lesson learning practices to improve future undertakings in Ethiopia and other parts of the world.

Table 4.3.6. Grand Mean of PLCM stages

		Grand Mean Initiation	Grand Mean Planning	Grand Mean Execution	Grand Mean Closure
N	Valid	20	20	20	20
	Missing	0	0	0	0
Mean		4.34	3.97	3.82	3.60
Median		4.3000	3.7500	3.7500	3.6000
Mode		4.00	3.75	3.50 ^a	4.00
Std. Deviation		.38443	.57297	.51999	.76502

a. Multiple modes exist. The smallest value showed

4.3.7. Time Performance of Project

Time performance of the projects demonstrates the amount of time the project has consumed compared to the original project timeline. The time performance index is calculated by dividing Planned Contract Period and Actual Contract Period. Higher rate is provided to projects completed ahead of their schedule.

Table 4.3.7. Time Performance of Projects

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0.6	1	5.0	5.0	5.0
	0.9	5	25.0	25.0	30.0
	1	5	25.0	25.0	55.0
	1.1	6	30.0	30.0	85.0
	1.2	3	15.0	15.0	100.0
	Total	20	100.0	100.0	

Table 4.3.7 shows that the time performance of the projects under the study are more or less satisfactory and 70% of the projects are completed ahead of their schedule, consuming only 80-90% of the planned timeframe.

4.3.8. Cost Performance of Project

Cost performance of the projects show the total budget which the project has consumed compared to the original project budget. The cost performance index is calculated as the Initial Project Cost divided by Final Project Cost. Higher rate donates that the project consumed lower cost compared to its original budget.

Table 4.3.8. Cost Performance of Projects

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0.6	1	5.0	5.0	5.0

0.7	1	5.0	5.0	10.0
0.8	2	10.0	10.0	20.0
0.9	5	25.0	25.0	45.0
1	3	15.0	15.0	60.0
1.1	1	5.0	5.0	65.0
1.2	5	25.0	25.0	90.0
1.3	1	5.0	5.0	95.0
1.5	1	5.0	5.0	100.0
Total	20	100.0	100.0	

The cost performance of the projects under the study are quite dispersed across the measure and 15% of the projects consumed 100% of their budget while 40% of the projects have consumed less budget than planned which ranged from 90%-50% of their original budget.

4.3.9. Quality Performance of Project

The quality performance margin was calculated according to the estimation of the respondents. It measures the extent to which the quality of the project deviated from what was expected; or the extent to which it had met its planned scope.

Table 4.3.9. Quality Performance of Projects

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0.8	1	5.0	5.0	5.0
	0.9	5	25.0	25.0	30.0
	1	8	40.0	40.0	70.0
	1.1	2	10.0	10.0	80.0
	1.2	2	10.0	10.0	90.0
	1.3	2	10.0	10.0	100.0
	Total	20	100.0	100.0	

In general 75% of the projects have met their quality expectation at 90% to 110% compared with their planned quality output. Out of these 40% of the projects have just met their intended quality (scope).

4.3.10. Stakeholder’s Satisfaction Rating (Project’s Product Success)

The rating for the stakeholder’s satisfaction (project’s product success) measures the satisfaction of the client (key stakeholder) in regards to the achievement of project deliverable compared to their original expectation.

Table 4.3.10. Stakeholder’s Satisfaction Rate

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0.9	1	5.0	5.0	5.0
	1	12	60.0	60.0	65.0
	1.2	6	30.0	30.0	95.0
	1.3	1	5.0	5.0	100.0
	Total	20	100.0	100.0	

Almost all of these projects have met the expectation of their stakeholders or their sponsors where, 60% of the projects met 100% of the original expectation of their sponsors.

4.4. Inferential Analysis and Hypothesis Testing

The researcher has used Pearson’s correlation coefficient to determine the relationship that existed between variables. A positive correlation coefficient gives an indication that there is a relationship between the variables and negative one shows an inverse relationship between variables. Variables are said to be highly correlated if they have a coefficient that falls between 0.5 and 1.

The researcher further conducted multiple regression analysis to analyze the project life cycle management practices adopted by Total. Multiple regression is a statistical technique that lets us predict a score of one variable on the basis of their scores on several other variables. The main purpose of multiple regressions is to learn more about the relationship between several independent or predictor variables and a dependent or criterion variable. The researcher applied the statistical

package for social sciences (SPSS) to code, enter and compute the measurements of the multiple regressions for the study. The main purpose of using the regression analysis in this research is to identify which components of the PLCM stages affects project success significantly.

The discussion of relationships between PLCM practices and project success factors tested by model of regression is presented below.

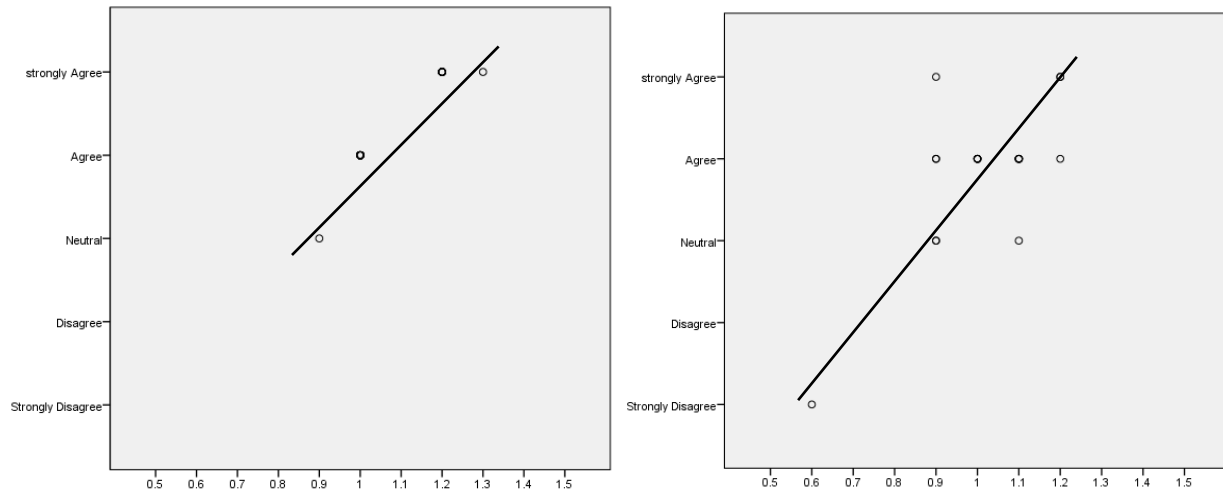
4.4.1. Correlation of variables and regression analysis

Before conducting the regression and correlation analysis the researcher has tested its assumptions to decide if the data are good. The following are few of the assumptions that were tested.

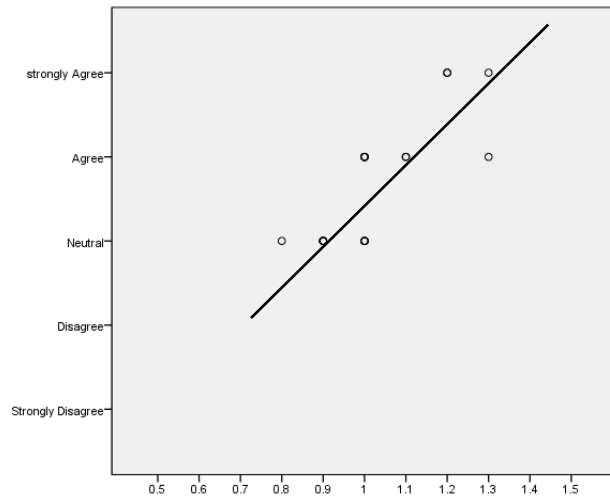
Assumption 1: The first assumption was the relationship between the PLCM stages and the project success factors is linear. As can be seen from the below charts, the relationship between these variables could be modelled by a straight line, suggesting that there is linear correlation between key variables, that made the data instrument good.

Graph 4.4.1: Linear Regression

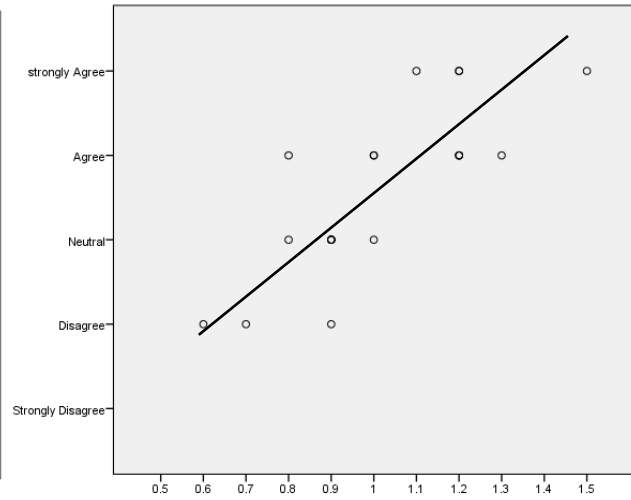
Project Initiation (Y) and Stakeholder’s Satisfaction (X) Project Planning (Y) and Time Performance (X)



Project Execution (Y) and Quality Performance(X)



Project Closure (Y) and Cost Performance (X)



Assumption 2: The researcher used the Durbin-Watson statistics to test the assumption that its residuals are independent (or uncorrelated). For the assumption to be met, it is required that the values are close to 2. Values below 1 and above 3 are cause for concern and may render the analysis invalid. According to Grande (Grande, 2018) it is ideal if the Dublin-Watson value is between 1.5 and 2.5. Accordingly the Dublin-Watson test of the relationship between the independent variables (initiation, planning, execution and closing) on dependent variables of time performance is 2.197; of cost performance is 1.657; of quality performance 1.863 and of stakeholder's satisfaction rate is 2.443. These are acceptable values.

Assumption 3: The variance of the residuals is constant. This tests the assumption of homoscedasticity, which is the assumption that the variation in the residuals (or amount of error in the model) is similar at each point of the model. The researcher populated graphs for each of the dependent variables of scattered plots where the standardized values of the model would predict, against the standardized residuals obtained. All the values for the independent variables in respect to the dependent variables have fallen between -3 and 3 in the scattered plot and in a rectangular shape and the research assumptions are good to proceed with the analysis.

In the following part of this section, the researcher has summarized the results of Pearson's correlation and multiple regression analysis to show relationships with variables and to test the null hypothesis. The discussions refer the two tables namely, Table 4.4.1. Pearson's correlation between project life cycle management processes and project success performance measures and

Table 4.4.2. Regression between project life cycle management processes and project management success and project product success.

Table 4.4.1. Pearson's Correlation between Project Life Cycle Management Processes and Project Success performance measures

		Project Initiation	Project planning	Project Execution	Project Closure	Time Perfor man ce	Cost Perfor mance	Quality Perform ance of Project	Stakeh older Satisfa ction Rate
Project Initiation	Pearson Correlation	1							
	Sig. (2- tailed)								
	N	20							
Project planning	Pearson Correlation	.411	1						
	Sig. (2- tailed)	.072							
Project Execution	Pearson Correlation	.631**	.319	1					
	Sig. (2- tailed)	.003	.171						
Project Closure	Pearson Correlation	.408	.411	.298	1				
	Sig. (2- tailed)	.074	.072	.202					
Time Performan	Pearson Correlation	.006	.695**	.002	.490*	1			

ce of Project	Sig. (2-tailed)	.978	.001	.992	.028				
Cost Performance	Pearson Correlation	.338	.476*	.098	.796**	.444*	1		
ce of Project	Sig. (2-tailed)	.145	.034	.682	.000	.050			
Quality Performance	Pearson Correlation	.705**	.471*	.811**	.540*	.061	.474*	1	
ce of Project	Sig. (2-tailed)	.001	.036	.000	.014	.800	.035		
Stakeholder Satisfaction Rate	Pearson Correlation	.963**	.485*	.682**	.497*	.095	.420	.765**	1
	Sig. (2-tailed)	.000	.030	.001	.026	.691	.065	.000	

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

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

As can be seen from table 4.4.1. it is concluded that result stages of PLCM namely initiation, planning, execution and closing do correlate with project successes factors.

The correlation between PLCM stages and time performance of projects remain positive, where actually it is expected to be negative for the reason that when project management practices improve the time taken to manage projects will decrease, hereby inverse correlation. However, the questionnaire is developed in such a way that higher rates are awarded to projects that end before their planned end dates meaning good time performance. When projects are completed ahead of the planned schedule it shows positive correlation in the data analysis. The same logic applies to cost performance of projects – the lower budget consumed compared to the project budget the higher the rating of their performance which shows positive correlation of the independent variables with cost performance item. (Please check Part C of Annex A on page V).

The following section explains the correlations that are of interest to the researcher and those that score significant beta coefficient.

a. Impacts of project initiation on quality performance of project

Initiation stage of the project life cycle management scored strong correlation with the quality performance of the projects denoted by Pearson's Correlation of 0.705 which shows strong correlation between the variables. However, the t-test were not adequate enough to reject the null hypothesis which is greater than 0.05, see table 4.4.2 below.

b. Impacts of project initiation on stakeholder satisfaction

The correlation table expresses the relationship between project initiation (independent variable) and stakeholder satisfaction or project product success (dependent variables). There is a very strong positive relationship between the two variables as donated by Pearson's coefficient of 0.963. as can be seen in the table 4.4.2 below.

In addition, the relationships between these variables were analyzed by the multiple linear regression analysis that is presented in Table 4.4.2. The result indicates a positive relationship (positive coefficient) between project initiation activities with cost performance, and project quality performance. The analysis was resulted in negative relationship between project initiation and project time performance. There is stronger relationship between project initiation and project stakeholder management (project product success). This connotes that the better the project initiation activities are, the better the satisfaction of stakeholders.

This agrees with Mohammed K (Aibinu Mohammed, 2013) who developed procedure that should help project managers effectively manage stakeholders' involvement when defining project scope at pre-planning stage

c. Impacts of project planning on time performance of project

The below table 4.5.1. expresses the relationship between project planning (independent variable) and timely completion of the project (dependent variables). There is a strong positive relationship between these two variables with Pearson's correlation of 0.695.

Table 4.5.5. shows that there is result of regression relationships between project planning indices and project management success measures (time, cost and quality performance) and project product success (project stakeholder management). The results show that there is positive

relationships with all the indices. Especially there is strong correlation between the project planning and timely completion of projects. The data shows that the completion time of the project is affected by activities of project planning; i.e, proper planning of assembling staff before the project starts, informing team members about their specific roles, and organizing of project launching workshop.

d. Impacts of project execution practices on quality performance

The relationship between project execution management processes (independent variable) and quality performance (dependent variables) has shown a very strong correlation that was signified by coefficient of 0.811. When the project implementation processes follow standard practices of project management, the quality performance of the project improves.

As can be seen in Table 4.4.2. project execution practices has been tested by multiple linear regression analysis to understand the relationships with the project management and product success measure areas. The result indicates a positive relationship between project execution practices such as standardized project implementation processes and quality of the project. Coefficient of determination explains the extent to which changes in the dependent variable can be explained by the change in the independent variables or the percentage of variation in the dependent variable (project quality performance) that is explained by all the four independent variables (project execution practices such as project management practices; structured monitoring and budget controlling system, generating and sharing project report to stakeholders and conducting regular update meeting among the project team and beyond).

e. Impacts of project execution practices on stakeholder satisfaction

Taking the necessary steps during the implementation of the project execution does have a contribution to the satisfaction of stakeholders with significant Pearson's correlation of 0.682. Regardless, we do not have adequate reason to reject the null hypothesis that counter relate project execution and stakeholder's satisfaction.

f. Impacts of project execution stage practices and project cost performance.

One of the findings of the correlation analysis is that there is strong positive relationship between conducting project closure activities and cost performance of project as can be seen from the below table by Pearson's coefficient of 0.796.

According to the result shown in the table below, the project closure activities such as operational closure, financial closure and terminal evolution have notable contribution to completion of projects within budget. Project closure has positive but not notable relationship with completing projects within time and quality.

g. Impacts of project closure stage practices and project quality performance

Pearson's correlation of 0.540, a little higher than the cut point of low correlation between project closure stage practices and quality performance of project is registered. However, as can be seen from table 4.4.2 the researcher does not have enough ground to reject the null hypothesis that counter relate these two variables.

Table 4.4.2. Regression between Project Life Cycle Management Processes and Project Management Success and Project Product Success

	Project Initiation	Project Planning	Project Execution	Project Closure	df	Adjusted R Square
Time Performance	- 0.383(0.073)	0.729(0.001)	- 0.101(.0596)	0.377(0.038)	19	0.605
Cost Performance	0.117(0.555)	0.206(0.222)	-0.263(.169)	0.742(0.000)	19	0.623
Quality Performance	0.196(0.246)	0.105(.450)	0.581 (0.002)	0.243(0.092)	19	0.735
Stakeholder Satisfaction Rate	0.825 (0.000)	0.71 (0.291)	0.110 (0.149)	0.099 (0.144)	19	0.940

Where 0.729(0.001) = 0.729 is β Coefficient, and 0.073 is p value or t-test

The above table summarizes results of different multiple regression analysis computed for the project research. The different tests such as Analysis of Variance and t-tests were computed for the regression analysis prior to summarizing the above table 4.4.2. For more information please

review Annex D, Regression Analysis, ANOVA and T-test of key variables presented from page XI to XVI.

As a rule of thumb β Coefficient denotes that a unit increase in the independent variable results in the designated amount of percentage change in the dependent variable. As the purpose of this research is not to show numerical changes in the variables, the researcher does not dwell on β Coefficient beyond showing their relationship between the variables. Regardless, the above table shows that 73% of the change in the project time performance is explained by project planning practices. 58% of changes resulted on quality performance of projects in the research is explained by project execution stage practices. Close to 73% of changes resulted on project time performance is explained by practices of project planning. On the other hand 82% of the changes on the stakeholder's satisfaction rate is attributed to project initiation stage practices.

P-value, or T-test in the regression analysis shows the significance of the contribution of the variables under discussion. As a rule of thumb p value less than 0.05 is considered significant and lead to rejecting the null hypothesis which shows significant relationship between the variables.

As clearly explained above, the results for cost and time regression results have been positive due to the explanation of the measurement scale of the instrument. (See section D of Annex A on page V)

4.5. Hypotheses Test Results

Based on the analysis presented under section 4.5 and the corresponding discussion, we can generate the following hypothesis test results.

H₀-1: There is no positive relationship between project initiation and time performance of projects

Beta=-0.383(0.073); p>0.05

Ho: Accepted

H₀-2: Project initiation does not influence cost performance of projects

Beta=0.117(0.555); p>0.05

Ho: Accepted

H₀-3: There is no correlation between project initiation and quality performance of projects

Beta=0.196(0.246); $p>0.05$

Ho: Accepted

H₀-4: Project initiation does not have any impact on the satisfaction of stakeholders

Beta=0.825 (0.000); $p<0.05$

Ho: Rejected.

A₁: Project initiation has significant impact on the satisfaction of stakeholders

H₀-5: There is no positive relationship between project planning and completion of the project within time

Beta=0.729(0.001); $p<0.05$

Ho: Rejected.

A₁: There is strong relationship between project planning and completing the project within the planned timeframe.

H₀-6: There is no significant relationship between project planning and cost performance of projects

Beta= 0.206(0.222); $p>0.05$

Ho: Accepted

H₀-7: There is no notable relationship between project planning and quality performance of projects

Beta=0.105(.450); $p>0.05$

Ho: Accepted

H₀-8: Project planning does not impact the satisfaction of stakeholders

Beta=0.71 (0.291); $p > 0.05$

Ho: Accepted

H₀-9: There is no significant relationship between project execution and time performance of projects

Beta=-0.101(.0596); $p > 0.05$

Ho: Accepted

H₀-10: There is no notable relationship between project execution and cost performance of projects

Beta= -0.263(.169); $p > 0.05$

Ho: Accepted

H₀-11: Project execution does not influence quality performance of projects

Beta=0.581 (0.002); $p < 0.05$

Ho: Rejected.

A₁: Project execution does influence quality performance of projects

H₀-12: Project execution does not have any impact on the satisfaction of stakeholders

Beta=0.110 (0.149); $p > 0.05$

Ho: Accepted

H₀-13: There is no positive relationship between project closure and time performance of projects

Beta=0.377(0.038); $p > 0.05$

Ho: Accepted

H₀-14: There is no correlation between project closure and cost performance of projects

Beta=0.742(0.000); $p < 0.05$

Ho: Rejected.

A₁: There is correlation between project closure and cost performance of projects

H₀-15: There is no notable relationship between project closure and quality performance of projects

Beta=0.243(0.092); $p > 0.05$

Ho: Accepted

H₀-16: Project closure does not have any impact on the satisfaction of stakeholders

Beta=0.099 (0.144); $p > 0.05$

Ho: Accepted

CHAPTER FIVE: SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1. Introduction

The main purpose of this research is to show the relationship between project life cycle management and their contribution to the success of projects. It is evident that the projects managed by Total have mixes of successful and projects that were troubled to meet their success criteria. This chapter highlights the key findings of this research and includes recommendations and suggestions on areas for improvement on the management of future projects followed by recommendations set forth for future research.

5.2. Summary of Findings

Project life cycle management is useful tool to ensure project success: confirmed by the survey results, number of project managers have an understanding about project life cycle management and have led their projects to pass through stages of contemporary project management processes. It has been found out that more than 80% of the survey participants strongly agree that project life cycle management contributes to the success of the project as the researcher could conclude by undertaking this research.

Project management skills is important for success of projects: very few project managers have not taken most of the required steps to manage their projects, as they are new to these concepts. This is expected since the primary responsibility of some of project team members was not project management; but are managing projects because of their experience and exposure to the subject matter – a good example is SAP project that was managed by the finance team.

Project identification (initiation) is key for satisfying stakeholders: one of the findings of the research was that project initiation stage is vital for the project's product success. According to Chan (Chan, 2004) project initiation phase is the most crucial phase in the project life cycle management, and could rescue the project from failure by informing the managers and sponsors on the feasibility of the project. Few projects have identified key project stakeholders that influence and be influenced by the project before starting the project. It is worth to witness that majority of the projects have gone through feasibility analysis of some kind before launching the project.

The most critical factor that contributes to project success is project planning: The beta coefficient of project planning on time, cost, quality and stakeholder's satisfaction is 0.729, 0.206, 0.105, and 0.71 respectively, higher cumulative rate compared to other stages of PLCM. This is qualified by number of researches. David, (David Laird, 2016) found a significant correlation between the overall levels of planning applied to a project and the level of project effectiveness.

Scheduling and activity resourcing are critical planning tools: This study found out that the use of several individual planning tools had a positive correlation with project effectiveness. Use of project schedules, especially when start and end dates were specified, and activity based resourcing were the most effective tools in supporting project success.

Project execution and its components in driving project success: the correlation analysis has proven that there is a very strong correlation between project execution and quality performance that was signified by beta coefficient of 0.811. When the project implementation processes follow standard practices of project management, the quality performance of the project improves.

Project closure has been the most unrecognized: project closure refers to the set of activities that are required to formally end the project (Sanghera, 2006). It is quite unfortunate to see that 25% of the projects were not gone through a project closure stage though have been completed on average of 2-3 years of time according to research findings.

Better understanding of project requirement leading to motivated staff: the researches has found an interesting result that majority of survey participants rated 'better understanding of project requirement leading to motivated staff' as leading result of PLCM followed by customer advantage arising from meeting customer expectations and reduction of project delivery costs.

Assumption and risk analysis is not strong at Total: some construction projects were completed late due to foreign currency challenges and unavailability of EPC type contractors in Ethiopia for construction of the depot – a factor that was not considered during the feasibility study and planning stage of these projects.

5.3. Conclusion

The purpose of this research was to establish the impact of project life cycle management practices on the project success. Project success is measured by Project Management Success (time, cost quality performances) and Product Success (satisfaction of stakeholders) of projects implemented at Total.

Accordingly, the researcher analyzed the following research questions and reached to the corresponding conclusions. The first research question asked “to what extent is it important to link the Project Life Cycle Management to the success of the project?” The key finding from the research in this aspect are:

- It is important to link the various project management practices to realize successful completion of projects.
- Based on the hypothesis testing results is it fair to conclude that there are significant positive relationship between project life cycle management and project management success and project’s product success that can be summarized by the term, project success.
- According to correlation analysis results most success criteria positively correlated to project planning and initiation stages which ultimately drives project performance.
- Project planning was highly correlated to time performance of projects.
- There is notable relationship between project execution and quality performance that had high correlation coefficient of 0.81.

The second research question asks “which project life cycle management (PLCM) practices highly impact the successful completion projects at Total SC?”

- All project life cycle management practices were found to be significant to realize better project management success and product success,
- Project initiation followed by project planning were the most significant.

The third research question posed was “What impact does project planning has on project success?” The findings show that:

- Project planning and time performance trends were generally as expected and very important in realizing improved organizational performance.
- Majority of the respondents agreed that PLCM practices accrued benefits and the most significant benefit was that it led to reduced project delivery costs leading to increased stakeholder satisfaction.

The fourth research question posed was “which stage of project life cycle management practice highly contribute to the satisfaction of stakeholders (clients)?”

- Project initiation (identification) highly affects the success of project product compared to other cycles with 0.963 Pearson’s correlation coefficient.

In addition, based on the hypothesis test results, we can firmly conclude that:

- Project initiation has significant impact on the satisfaction of stakeholders
- There is strong relationship between project planning and completing the project within the planned timeframe.
- Project execution does influence quality performance of projects
- There is correlation between project closure and cost performance of projects

5.4. Recommendations

Based on the research findings the following recommendations are proposed:

- It is ideal if projects have separate feasibility studies since challenges and factors affecting project success and organizational profitability is identified as early as possible.
- It is still very important to operationally and financially close projects for compliance and audit reasons. Havila et al. (Virpi Havila, 2013) suggest that there is a need for project ending competence.
- To improve the project success Total must provide project management methodology and skills training to project managers, especially those who have been assigned to manage projects from functional positions

- Structured monitoring and budget control system was not implemented satisfactorily at Total and Total should give due consideration to standardize project monitoring and budget control system to enhance project execution.
- The researcher understood that there is a need to standardize the practices of all project life cycle management methodologies by Total Ethiopia to ensure more consistent project success results.
- Risk and assumption analysis should be undertaken with the involvement of key stakeholders to ensure that projects do not face unforeseen circumstances during the implementation phase of the project.
- Companies, to improve the success of their projects, should give due consideration to project initiation practices such as feasibility study and stakeholder involvement to improve the project's product successes. In addition, to improve project management successes of projects, meaning time, quality and cost performances, companies should focus on project planning, execution and closure practices respectively.
- To show project benefits it is important to conduct similar studies on the contribution of business success on the overall organizational performance from perspectives of economic gain, customer satisfaction and stakeholder value.
- Further research is needed to explore the concept of project life cycle management and practices in multiple companies to get higher level conclusion and to provide sectoral and industry level recommendations.

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APPENDICES

APPENDIX A: QUESTIONNAIRE

Part A: General Information (GI)	
Please respond by ticking the appropriate box (☒)	
GI1. Which of the following best describes your role at the company?	<input type="checkbox"/> Project manager/team <input type="checkbox"/> senior management/ leadership <input type="checkbox"/> finance team/HR <input type="checkbox"/> Other
GI2. Sex	<input type="checkbox"/> Male <input type="checkbox"/> Female
GI3. Age	<input type="checkbox"/> 20-30 <input type="checkbox"/> 31-40 <input type="checkbox"/> 41-50 <input type="checkbox"/> >51
GI4. Educational background	<input type="checkbox"/> Diploma <input type="checkbox"/> BA/BSC <input type="checkbox"/> MA/MSc <input type="checkbox"/> PHD
GI5. Years of experience in project management	<input type="checkbox"/> 0-5 <input type="checkbox"/> 6-10 <input type="checkbox"/> 10-20 <input type="checkbox"/> More than 20
GI6. To what extent is it important to link Project Life Cycle Management and project success?	(1) = Not important <input type="checkbox"/> (2) = Slightly important <input type="checkbox"/> (3) = Average importance <input type="checkbox"/> (4) = Important <input type="checkbox"/> (5) = Very Important <input type="checkbox"/>

Part B. Project Life Cycle Management (PLCM)

	Questions	Rating	(1) = Strongly Disagree	(2) = Disagree	(3) = Neutral	(4) = Agree	(5) = Strongly Agree
PLCM7	<i>Did your project passed through a project Initiation Process</i>		1	2	3	4	5
PLCM8	Feasibility study or assessment was made to determine the real problem that will be solved by the project		1	2	3	4	5
PLCM9	Project stakeholders that will influence and be influenced by the project were identified on the outset		1	2	3	4	5
PLCM10	Project objectives were clearly defined		1	2	3	4	5
PLCM11	Scope, resources, and major tasks were determined		1	2	3	4	5
PLCM12	<i>Proper project planning was conducted?</i>		1	2	3	4	5
PLCM13	Team members were assembled before the project was starts		1	2	3	4	5
PLCM14	Project team members are informed about their specific role in the project		1	2	3	4	5
PLCM15	Assignments were planned ahead of project execution		1	2	3	4	5
PLCM16	Realistic project schedule is created within project assumptions and constraints		1	2	3	4	5
PLCM17	Detailed project budget was developed		1	2	3	4	5

PLCM1 8	Kickoff meeting was organized to launch the project and acquaint stakeholders on the deliverables of the project	1	2	3	4	5
PLCM1 9	<i>The project execution follows standard practices of project management?</i>	1	2	3	4	5
PLCM2 0	Structured monitoring and budget control system is developed and followed during the course of project implementation period	1	2	3	4	5
PLCM2 1	Project progress reports were developed and shared with key stakeholders	1	2	3	4	5
PLCM2 2	Weekly/monthly team meetings were held to manage problems and challenges faced during the project implementation period	1	2	3	4	5
PLCM2 3	<i>Was the project closed?</i>	1	2	3	4	5
PLCM2 4	Project evaluation is conducted to assess the success of the outputs	1	2	3	4	5
PLCM2 5	Debrief was made with the team on the result of the project evaluation	1	2	3	4	5
PLCM2 6	The project is operationally closed	1	2	3	4	5
PLCM2 7	The project is financially closed	1	2	3	4	5

Adapted from HBR Guide to Project Management; content originally published in Pocket Mentor: Managing Projects, Harvard Business Review Press, 2006. (Harvard Business Review Press, 2006)

Part C. Project Management Success (PMS)

PMS28. Time Performance

In the table below, please indicate the time performance of the selected project by ticking its corresponding time performance index obtained.

$$\text{Time Performance Index} = (\text{Planned Contract Period}) / (\text{Actual Contract Period})$$

Project completion and status achieved	Completion behind schedule					Completed on schedule	Completed ahead of schedule				
	0.5 and below	0.6	0.7	0.8	0.9		1.0	1.1	1.2	1.3	1.5
Index	0.5 and below	0.6	0.7	0.8	0.9	1.0	1.1	1.2	1.3	1.5	1.5 and above
Please Tick											

PMS29. Cost Performance

In the table below, please indicate the cost performance of the selected project by ticking its corresponding cost performance index obtained.

$$\text{Cost Performance Index} = (\text{Initial Project Cost}) / (\text{Final Project Cost})$$

Project cost status achieved	Completion above initial estimated cost					Completed as estimated	Completed below initial estimated cost				
	0.5 and below	0.6	0.7	0.8	0.9		1.0	1.1	1.2	1.3	1.5
Index	0.5 and below	0.6	0.7	0.8	0.9	1.0	1.1	1.2	1.3	1.5	1.5 and above
Please Tick											

PMS30. Quality Performance

In the table below, please indicate the quality performance of the selected project by ticking its corresponding quality performance margin obtained. Please note that quality performance margin is, in your own estimation, extent to which the quality of the project deviated from what was expected.

Project quality status achieved	Below expectation by					As expected	Above expectation by about				
	50% and below	40%	30%	20%	10%		10%	20%	30%	40%	50% and above
Index	50% and below	40%	30%	20%	10%	1.0	10%	20%	30%	40%	50% and above
Please Tick											

PMS31. Stakeholder's Satisfaction

In the table below, please indicate the overall satisfaction of the company and of the key stakeholders if it was met after the completion of the project by ticking its corresponding satisfaction performance margin. Please note that this is the extent to which the client (the company) and key stakeholders have found the project satisfactory compared to their original expectation.

Project quality status achieved	Below expectation by					As expected	Above expectation by about				
	50% and below	40%	30%	20%	10%		10%	20%	30%	40%	50% and above
Index	50% and below	40%	30%	20%	10%	1.0	10%	20%	30%	40%	50% and above

Please Tick											
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Developed by Researcher and Adopted from Millicent Ollows (Ollows, 2012) and Walker (Walker, 1995)

Part D. General

	Questions	Rating	(1) = Strongly Disagree	(2) = Disagree	(3) = Neutral	(4) = Agree	(5) = Strongly Agree
	Please rate the following benefits arising from Project Life Cycle Management. Circle Applicable number?						
G32.	Reduce project delivery costs		1	2	3	4	5
G33.	Produce quality deliverable		1	2	3	4	5
G34.	Provide customer advantage arising from meeting customer expectations		1	2	3	4	5
G35.	Better understanding of project requirement leading to motivated staff		1	2	3	4	5
	Questions	Rating	(1) = Not important	(2) = Slightly important	(3) = Average importance	(4) = Important	(5) = Very Important
	Please rank importance of the following Project Life Cycle Management stages on project success.						
G36.	Project Identification		1	2	3	4	5
G37.	Project Planning		1	2	3	4	5
G38.	Project Execution and Monitoring		1	2	3	4	5

G39.	Project Evaluation and Closing	1	2	3	4	5
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Addition comment:

APPENDIX B: INTERVIEW QUESTIONS

1.	What are the project management practices implemented at Total?
2.	How do you manage and follow-up projects?
3.	What methods used to ensure that project are implemented successfully? Please give concrete examples?
4.	Do you believe that your project is successful? If so how do you describe it?
5.	What challenges have you faced during the planning and the implementation stages of your project?
6.	What remedial actions were taken and what was the result?
7.	What factors/challenges beyond the capacity of Total has affected the project?
8.	Do you think that there are factors beyond the capacities of project team that made stakeholders not to enjoy the full benefits of the project outputs?
9.	What future benefits do you anticipate from completed and upcoming projects?

APPENDIX C - PERFORMANCE POINTS FORPROJECT LIFE CYCLE MANAGEMENT
AND PROJECT SUCCESS-

Project By Project Analysis for Correlation Analysis

PROJECTS SAMPLED AT TOTAL ETHIOPIA SC

Projects	INDEPENDENT				DEPENDENT			
	Initiation	Planning	Execution	Closure	Time index	Cost index	Quality index	Staekeholder index
1	4	4	4	3	1.1	0.9	1	1
2	4	4	4	3	1	1	1	1
3	4	4	3	4	1.2	1.2	1	1
4	5	5	5	5	1.2	1.2	1.2	1.3
5	4	3	3	4	0.9	1	0.9	1
6	4	4	3	2	1	0.9	0.8	1
7	4	4	3	3	1	0.9	0.9	1
8	4	4	3	2	1.1	0.6	0.9	1
9	5	5	5	5	1.2	1.1	1.2	1.2
10	4	4	3	4	1.1	1.2	1	1
11	3	4	3	4	1.1	1.2	1	0.9
12	5	4	5	5	1	1.2	1.3	1.2
13	5	4	3	5	1.1	1.5	1	1.2
14	5	5	4	4	0.9	1.3	1.3	1.2
15	5	4	4	3	0.9	0.9	1.1	1.2
16	4	1	4	2	0.6	0.7	1	1
17	4	3	3	4	0.9	0.8	0.9	1
18	4	4	3	4	1.1	1	0.9	1
19	5	4	4	3	0.9	0.9	1.1	1.2
20	4	4	4	3	1	0.8	1	1

ANNEX D: REGRESSION ANALYSIS AND ANOVA AND T-TESTS OF KEY VARIABLES

I. Dependent Variable: 28. Time Performance of Project

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.830 ^a	.688	.605	.895

a. Predictors: (Constant), Project Closure, Project Execution, Project Planning, and Project Initiation

ANOVA^a

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	26.536	4	6.634	8.283	.001 ^b
	Residual	12.014	15	.801		
	Total	38.550	19			

a. Dependent Variable: 28. Time Performance of Project

b. a. Predictors: (Constant), Project Closure, Project Execution, Project Planning, and Project Initiation

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	4.448	1.587		2.803	.013
	7. Did your project passed through a project Initiation Process	-.954	.495	-.383	-1.928	.073

12. Proper project was planning conducted?	1.187	.270	.729	4.399	.001
19.The project implementation follows standard practices of project management?	-.193	.357	-.101	-.541	.596
23. Was the project closed?	.539	.237	.377	2.280	.038

II. Dependent Variable: 29. Cost Performance of Project

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.838 ^a	.702	.623	1.355

a. Predictors: (Constant), a. Predictors: (Constant), Project Closure, Project Execution, Project Planning, and Project Initiation

ANOVA^a

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	65.016	4	16.254	8.855	.001 ^b
	Residual	27.534	15	1.836		
	Total	92.550	19			

a. Dependent Variable: 29. Cost Performance of Project

b. Predictors: (Constant), a. Predictors: (Constant), Project Closure, Project Execution, Project Planning, and Project Initiation

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-.878	2.402		-.366	.720
	7. Did your project passed through a project Initiation Process	.452	.750	.117	.603	.555

12. Proper project was planning conducted?	.520	.408	.206	1.274	.222
19.The project implementation follows standard practices of project management?	-.780	.540	-.263	-1.445	.169
23. Was the project closed?	1.646	.358	.742	4.597	.000

a. Dependent Variable: 29. Cost Performance of Project

III. Dependent Variable: 30. Quality Performance of Project

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.889 ^a	.791	.735	.706

a. Predictors: (Constant), a. Predictors: (Constant), Project Closure, Project Execution, Project Planning, and Project Initiation

ANOVA^a

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	28.271	4	7.068	14.175	.000 ^b
	Residual	7.479	15	.499		
	Total	35.750	19			

a. Dependent Variable: 30. Quality Performance of Project

b. Predictors: (Constant), a. Predictors: (Constant), Project Closure, Project Execution, Project Planning, and Project Initiation

		Coefficients ^a				
		Unstandardized Coefficients		Standardized Coefficients		
Model		B	Std. Error	Beta	t	Sig.
1	(Constant)	-1.526	1.252		-1.219	.242
	7. Did your project passed through a project Initiation Process	.472	.391	.196	1.208	.246
	12. Proper project was planning conducted?	.165	.213	.105	.776	.450
	19.The project implementation follows standard practices of project management?	1.069	.281	.581	3.802	.002
	23. Was the project closed?	.336	.187	.243	1.798	.092

a. Dependent Variable: 30. Quality Performance of Project

IV. Dependent Variable: 31. Stakeholder Satisfaction Rate

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.976 ^a	.953	.940	.276

a. Predictors: (Constant), a. Predictors: (Constant), Project Closure, Project Execution, Project Planning, and Project Initiation

ANOVA^a

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	23.060	4	5.765	75.859	.000 ^b
	Residual	1.140	15	.076		
	Total	24.200	19			

a. Dependent Variable: 31. Stakeholder Satisfaction Rate

b. Predictors: (Constant), a. Predictors: (Constant), Project Closure, Project Execution, Project Planning, and Project Initiation

Model		Coefficients ^a				Sig.
		Unstandardized Coefficients		Standardized Coefficients	t	
		B	Std. Error	Beta		
1	(Constant)	-1.669	.489		-3.414	.004
	7. Did your project passed through a project Initiation Process	1.629	.153	.825	10.680	.000
	12. Proper project was planning conducted?	.091	.083	.071	1.095	.291
	19. The project implementation follows standard practices of project management?	.167	.110	.110	1.520	.149
	23. Was the project closed?	.112	.073	.099	1.543	.144

a. Dependent Variable: 31. Stakeholder Satisfaction Rate