

**INFLUENCE OF TRIPLE CONSTRAINT MANAGEMENT ON
COMPLETION OF NON-GOVERNMENTAL ORGANIZATIONS
WATER SANITATION AND HYGIENE (WASH) PROJECTS IN
NAKURU COUNTY, KENYA.**

BY

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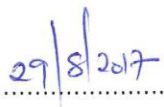
**A RESEARCH PROJECT REPORT SUBMITTED IN PARTIAL
FULFILLMENT FOR THE AWARD OF DEGREE OF MASTERS IN
PROJECT PLANNING AND MANAGEMENT, OF UNIVERSITY OF
NAIROBI.**

2017

DECLARATION


This research project report is my original work and has not been presented to any other institution. No part of this research should be reproduced without the author's consent or that of The University of Nairobi.

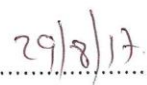
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DEDICATION

I wish to dedicate this work to my Spouse Violet, my Children Nadiah and Niciah, and my Parents Elly and Rose for their tireless effort, financial, spiritual and moral assistance which has enabled me to go through this course.

ACKNOWLEDGEMENT

My deepest gratitude goes to my supervisor, Dr. Peter Mwaura Njuguna for his excellent guidance, wisdom, patience and providing me with a good atmosphere for doing this research.

I would also like to thank my Spouse, Violet for her overwhelming support and continuous encouragement through this journey of pursuing my Education, My Firstborn daughter Nadiah can also not go unappreciated for the humble time she offered me during my studies and also the last born Niciah whose co-existence motivated my desire to further my studies.

I would also like to thank my parents, brothers and my sister who always supported me and were always by my side supporting me and encouraging me with their best wishes.

Finally, I would like to thank the Management of various NGOs in Nakuru County where I carried out my research for allowing me to subject their organizations to achieve my research.

May all the participants be blessed.

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LIST OF ACRONYMS AND ABBREVIATIONS

- APM-** Association for Project Management.
- ASAL-** Arid and Semi-Arid Lands.
- NACOSTI -** National Commission for Science, Technology & Innovation permit
- NGO'S -** Non-Governmental Organizations.
- PLC-** Project Life Cycle.
- PMBOK-** Project Management Body of Knowledge.
- SPSS -** Statistical Package for Social Sciences.
- TOC-** Theory of Constraints.
- WBS-** Work Breakdown Structure.

ABSTRACT

The provision of Water, Sanitation and Hygiene (WASH) projects has been a major concern globally. An estimate of 565 Million persons in Sub-Saharan Africa lack access to sanitation, and a population of about 330 million people lack access to safe water. There is a well proven link between poverty and sanitation, water and hygiene. Solving these issues leads to better livelihoods and increased productivity. (UNICEF/WHO JMP report 2010). The implementation of the WASH projects, however, has not matched the concerns, which have affected programme effectiveness and stakeholders' satisfaction. Completion of projects is significantly impacted by the environment under which a project operates. This research focuses on influence of triple constraints on completion of projects implemented by Non-Governmental Organizations operating within Nakuru County in Kenya. Triple constraint is a blend of three core elements in any project: scope, schedule and cost. The Triple constraint is the what, when, and how of any project. The Triple Constraint measures effectiveness of the Project Management model. The constraints compete against each other in that an alteration of one causes an effect on the other or both of the other constraints. All the three constraints must be balanced off harmoniously to achieve a productive project completion. There has been a phenomenal increase in demand for successful completion of projects across the globe. Despite the growth in terms of conventional schools of thought and education on matters relating to the professional management of projects, still evidence indicates that projects miss being achieved within the stipulated scope, approved cost and within the agreed upon timeframe during the conception of every project. The general objective of this study was to examine influence of triple constraints based on project scope management on completion of projects, project schedule management on completion of projects and also project cost management on completion of projects. The study adopted the descriptive survey design involving quantitative research methodology. A sample size of 78 was obtained from a population comprising of 365 representing all project practitioners, managers, and supervisors of various NGO projects in Nakuru County, Kenya through simple random sampling technique. The research instrument used was the questionnaire, data was analyzed using the SPSS version 20 software package, and reliability of research instrument was established using the Cronbach's alpha test. The relationship between project scope management, project schedule management and project cost management on completion of projects was established using Pearson's correlation coefficient. The study established that there is a significant relationship between the three predictor variables, Project scope management, Project schedule management and Project cost management all on completion of NGO projects in Nakuru County, Kenya. The study suggests that further studies should explore the effects of management practices on the triple constraint as a determining factor for projects' completion, another suggestion is to research on the influence of Monitoring and Evaluation of triple constraint activities on improving performance of projects within the whole country. The study will serve as a theoretical model for achieving desired projects completion in future projects.

CHAPTER ONE

INTRODUCTION

1.1 Background of the study

Project performance criteria are a set of principles or standards by which project success can be judged. These are the conditions on which assessment with regards to a project's performance can be made. Apart from the prerequisite of client's satisfaction, a project's achievement is controlled by scope, cost, and time normally referred to as "Triple Constraint". The triple constraint considerations for projects are crucial in decision making. The simple criteria of cost, time and scope, also known as the "Iron Triangle" or the "Golden Triangle", have been customarily utilized as venture achievement criteria. Failure to interpret and understand this criterion properly may doom a project even if the rest of project management activities are carried out correctly.

Lists of aspects believed to contribute to project management accomplishment or failure have been provided by research studies seeking to determine reasons why projects fail to attain the intended objectives (Atkinson, 1999). Furthermore, some standards against which development interventions can be measured are available, for example cost, quality and time jointly known to as Iron Triangle. In spite of wide knowledge in management practices, projects continue failing. Why should this be so if both the factors and the criteria for achievement are known?

Morris (2008) suggests that there is one puzzling statistics which presently shadows management of projects: industry records indicate that between 60 and 82 percent of projects fail. Organizations struggle in finding strategies to prevent this from taking place in their respective organizations yet the solution has been out all along. The answer is suitable project management through establishment of change initiatives, limitations of project scope and crystal clear communication.

A project is considered complete when it has passed through the whole life cycle of a project which comprises of: initiation, planning, execution and completion. Kerzner (2013) indicates that contractual closure and administrative closure are the two forms of

closures appropriate to gate review meetings, with contractual termination preceding and administrative closure. Contractual closure entails verification and signoff indicating that all the deliverables required for a stage have been accomplished and all action items have been satisfied. It is the obligation of both the project manager and the contract administrator to do so.

Administrative closure entails updating of all relevant records necessary for both the customer and contractor. Customers are mainly interested in documentation of any as-built or as-installed alterations or deviations from initial specifications. Also vital is an archived trail of all scope alterations agreed to throughout the life of the project.

Fear of employees to be attached to the projects at closure is mentioned by Kerzner (2013) as one of the reasons for the projects not reaching the closure phase. It is in the closure phase that lessons are learnt and best practices adopted. What was done well and what was done poorly form the basis of lessons learnt and best practices. Employees may not want documentation indicating that the best practices were adopted from their mistakes.

Project scope management comprises of the processes necessary in ensuring that a project includes all the tasks which are required, and only the work required to finalize a project successfully. It is basically concerned with outlining and controlling what is or what is not included in the project (PMI, 2000). The Scope defines all of the work to be completed during the project.

According to Dumont et al, (1997), it is extensively recognized that poor definition of scope is a leading aspect for failure of a project in construction industry of U.S. Many proprietor and contractor firms comprehend this, however, they argue that spending money or time required to effectively define the scope of work early in a project's life cycle is not economically feasible. In other cases project stakeholders lack awareness of the necessities for an effectively defined scope of work.

The second element of triple constraint is time. Project time management comprises of the processes necessary to ensure completion of project on time (PMI, 2000).

Cost is the third element of triple constraint. Project cost management entails the required processes in ensuring that projects are completed within the authorized budget. (PMI, 2000).

The evolution of project management over the past decades is attributed to identification of project success and failure factors by researchers and practitioners. There has been universal development of standards that codify observations in researches and practices (Cicmil and Hodgson, 2006). The spread and application of these standards exhibits evidence of global increase in awareness and acceptance of the need for formal project management methods.

According to Papke et al (2010), such standards have been developed and disseminated by project management associations such as the International Project Management Association (IPMA), the Project Management Institute (PMI), the Association for Project Management (APM), and the Australian Institute of Project Management (AIPM).

NGOs play a progressively crucial role in development. They have been hugely praised for their innovativeness and strength in addressing the inadequacies of states across the developing nations in meeting the needs of their citizens. The NGOs are characterized as grassroots driven organizations with the ability to enhance participatory and people-focused development (Banks and Hulme, 2012).

There are 365 duly registered and active NGOs in Nakuru County (NGO Coordination Board, 2017). Some of these NGOs got their headquarters there while others have set up their branch offices in Nakuru for suitable access to the Western parts of Kenya. Logistically, Nakuru County is convenient in reaching the western and the mostly arid and semi-arid northern areas in Kenya.

Project management is increasingly crucial in the progress of every nation. NGOs employ various project management techniques as a way of ensuring the success of projects implemented. Despite the progressive awareness of project management by organizations, projects still fail. This research intended to address and enhance factors that may lead to and reduced failures in NGO projects in Nakuru County, with a special focus on WASH projects.

1.2 Statement of the problem

Projects are time bound endeavors that are supposed to be realized within the stipulated time, covering predetermined scope and within budget. As was argued from a business approach by Baratta (2006) that, a project is a time-limited initiative with a goal of taking an organization to a graduated level of measured performance from one level of measured performance. In order to evaluate if project objectives have been achieved, good methods of measurement are needed. If wrong things are measured, there is diversion of focus and attention away from the important. Dobson (2004) also enlightened that, priorities should be set choices made and project managers to get the job done.

Triple constraint elements form the core of most vital decisions about any development intervention. The elements are of concern to all project managers, whether a novice or the most experienced. Even if other activities are done to high standards of excellence, failure to understand and correctly interpret the triple constraint issues is enough doom for a project.

In spite of the growing knowledge base relating to the application of project management skills and emphasis on the triple constraint as a measure for projects success, projects have increasingly not met their objectives and the definition of project success is unclear. Aid to Kenya has been in steady increase, Ababa (2013) highlighted that development aid to Kenya has been rising steadily since 2002 and stood at \$770M in the year 2005. The aid supports numerous projects in various sectors, all look forward to attaining development. Although some of these projects have been successful, but still there is slight evidence on how NGO projects have significantly impacted livelihoods of poor people in Kenya.

One of the most serious concerns for externally funded projects is the degree to which the projects are able to continue with operations despite exit of donors, while the ventures continue to be of benefit to the community who value their participation and ownership of the projects. Little evidence suggests that sustainability leads to the difference between success and failure of community-centered projects. Globally, with a special focus on Africa, a number of NGO projects continue to fall below their targets. A lot of funds

invested in the NGO projects have not yielded proportionate outcomes or results. In Kenya, a number of NGO projects have hit futility and become defunct in relation to their intended objectives. Some NGOs have wrapped up their operations without having any significant impact in regards to the objectives they were pursuing. The failure to achieve the intended targets has disappointed stakeholders and casts doubt on the sustainability of such NGOs.

Globally, public health is profoundly affected by unsafe or inadequate access to water, sanitation and hygiene. Diarrhea kills nearly 2 million people each year, 75% of them children. About 90% of diarrhea causes is due to unsafe drinking water, poor hygiene and inadequate sanitation. WASH-related diseases are the primary cause of hospitalization and mortality for children under five years. In Kenya, more than 50% of all hospital visits are as a result of illnesses related to water, sanitation and hygiene (USAID, 2016). The statistics show how the success of WASH projects is of greater concern.

According to UNICEF Kenya (2017) The National Drought Management Authorities of Kenya (NDMA) early cautioning notice for June, 2017 demonstrated that while the long rains are gone, numerous parts of the Arid and Semi-Arid Lands (ASALs) are persistently encountering span of distances between dwelling places and water facilities, abnormally high foodstuff costs, and increase in malnutrition. Being the third incidence of below normal rainfall season, uncertain regaining conditions in some portions of ASALs are probably short-lived. Hence, the impending dry period (June to September) was to be a tough period for the ASALs in relation to hunger, accessibility to food and water, mostly for countryside communities. Deadly infections persists in certain parts of the country laboring Kenya to make a drastic response to five ailment outbreaks, five counties were reported to be among those suffering from cholera outbreak they include; (Nakuru , Nairobi, Muranga, Turkana and Garissa,) documenting 581 ascertained cases and more than seven losses of lives (CFR 1.2 per cent).

This research sought to determine the influence of triple constraint management on completion of Non-Governmental Organizations WASH projects in Nakuru County, Kenya.

1.3 Purpose of the study

The purpose of the study was to explore the influence of triple constraint management on completion of Non-Governmental Organizations WASH projects in Nakuru County, Kenya.

1.4 Objectives of the study.

This study examines the influence of triple constraints on performance of Non-Governmental Organizations WASH projects in Nakuru County and is based on the following objectives;

1. To examine influence of Project Scope Management on completion of Non-Governmental Organizations WASH projects in Nakuru County, Kenya.
2. To investigate influence of Project Schedule Management on the completion of Non-Governmental Organizations WASH projects in Nakuru County, Kenya.
3. To establish influence of Project Cost Management on completion of projects among Non-Governmental Organizations WASH projects in Nakuru County, Kenya.

1.5 Research Questions

This research study explores influence of triple constraint management on performance of projects and guided by the following research questions;

1. How does Project Scope Management influence completion of Non-Governmental Organizations WASH projects in Nakuru County, Kenya?
2. To what extent does Project Schedule Management influence completion of Non-Governmental Organizations WASH projects in Nakuru County, Kenya?
3. How does Project Cost Management influence completion of Non-Governmental Organizations WASH projects in Nakuru County, Kenya?

1.6 Research Assumptions

The study assumes that there is a linear relationship between the dependent variable (project completion) and predictor variables (project scope management, project schedule management and project cost management) this can be simplified as project completion is a function of project scope management, project schedule management and project cost management.

1.7 Significance of the study

The findings of this research study will be important to donor-based organizations whose accountability and declaration of funds given to them is paramount, it will highlight the critical aspects of the triple constraints which require careful tradeoff to balance and achieve equilibrium so that projects performance and successful completion can be improved. Project managers, the Government through the NGOs Coordination Board of Kenya will also benefit from this study as it will depict the structures, frameworks or the aspects from which monitoring and evaluation of such projects will be based upon. The communities who benefit from such WASH projects will also benefit from this study since it highlights how efficiency and effectiveness of the projects can be enhanced.

1.8 Limitations of the study

This research focused on the NGO projects in Nakuru County, Kenya which is a vast and populous County, to this regard, a representative sample size was made to represent the entire target population. Also, information relating to projects is a very sensitive area of which some target population was not willing to disclose thematic issues. To counteract this challenge, sufficient interpretations and explanations had to be given. The respondents were also assured of the confidentiality of their information.

1.9 Delimitation of the study

This research study sought to find out how trading off between project scope, project cost, and project schedule influences completion of WASH NGO projects operating within Nakuru County. The research was scheduled to be carried out through the months of March to July 2017. The target population for this research was project managers,

project practitioners, and project supervisors who are directly involved in various NGOs undertaking intervention projects within Nakuru County.

The study was delimited to NGOs operating within Nakuru County Government boundary. Being that Nakuru is the centrally located Town which attracts so many Non-Governmental organizations due to the ease of operations and their movements to areas of their interests.

1.10 Definitions of Key Terms Used in the Study

Triple constraint: a triangle representing cost, time, and performance that confines the universe within which every project must be accomplished. (Dobson, M. 2004). According to the study, triple constraints will refer to the tradeoffs of the constraints which must be balanced to bring about the completion of a project.

WASH: Water, Sanitation and Hygiene

Project Scope: (PMBOK). Defines project Scope as sum of the products, services, and outcomes to be delivered as a project.

Project scope Management-refers to the processes which ensure project scope is mapped and defined appropriately.

Project Schedule Management: Association for Project Management (APM) defines project schedule management as the process of developing, maintaining and making communications on schedules for period and resource.

Project Cost Management: Project cost management is the process concerned with controlling and planning of budget of any given initiative, four processes involved in project cost management include; estimating costs, planning cost management, determining costs and lastly controlling costs.

Project Management: is the application of processes, methods, knowledge, skills, and experience to achieve the project objectives (APM).

Completion - The accomplishment of an aim or purpose. According to this study projects completion refers to attainments or achievements which represents the actualization of a venture.

1.11 Organization of the study

This project is organized into five chapters as discussed hereby. Chapter one comprises of the introduction, the general background of the study, statement of the problem, purpose of the study, general objectives, specific objectives, and the research questions, the significance of the study, scope of the study, limitations and delimitations of the study, and operational definitions of key terms used in the study.

Chapter two is comprised of a comprehensive literature review relating to the study, theoretical and conceptual frameworks on which the study is hinged on, and specifically, it concentrates on four key areas which are based on the research objectives, it also gives a summary of the literature reviewed.

Chapter three represents the research methodology; which includes the introduction, the research design, the target population, sample size and sampling procedures, the validity and reliability of research instruments, data collection procedures, data analysis techniques and the operational definitions of variables.

Chapter four consists of data analysis according to the objectives, discussions and presentation.

Chapter five comprises of summary, conclusions and recommendations for further studies.

CHAPTER TWO

LITERATURE REVIEW

2.1 Theoretical Literature review

Numerous theories have been advanced in attempts to clarify the triple constraints paradigm and its influence on completion of projects. This research study was guided by triple constraints and constraints theories. Triple constraints propositions stipulates the environment which any project exists in which comprises of the scope of projects, the schedule of the project and finally the cost of a project. While the theory of constraints advanced by Goldratt (1990) enables managers to choose on change, transformation and cause of the modification.

2.1.1 The Triple Constraints Management theory.

P M I (1987) defined project management as an application of skills, knowledge, tools and techniques to project tasks in order to attain or surpass stakeholder expectations and needs from the initiative. Exceeding or meeting stakeholder requirements involve corresponding the competing project demands specifically on project or program scope, timing, costing, and quality attributes. Project Management Triangle is a concept which shows the inter-relationship between project scope, time and cost. The three mentioned are the triangle angles which are balanced and proportional.

Van Wyngaard (2011) clarified on project management body of knowledge (PMBOK) as an embodiment where each programme or project is represented by the triple constraint, which mirrors a structure for assessing competing demands. This concept emerges from the theory of triple constraint which states that there are three variables of a project to be managed for its successful completion; Scope (work to be delivered), Time (time required for the delivery) and Money (money required to execute what is there in the Scope in the given Time)".The triple constraint in project management highlights the interdependence of the three indispensable goals of project management which includes the Project Scope, Time and Cost Management. A project has a distinct scope, schedule, and budget, and the triple constraint of project management portrays the marvel that, an

adjustment in one of the three, will influence the other two components. For example variance in cost of work will affect the scope and time or change in scope will affect the other two factors.

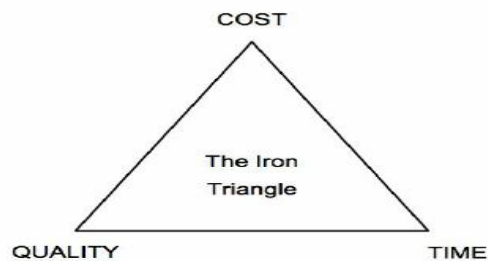


Figure 1 Triple Constraint Triangle (Atkinson,1999)

Scope, time and cost management are emphasized by existing literature to be the most important areas in project management. Out of the several terms referred to in project management, the most common terms are core project process, enabling project process and core project functions. All of these terms are indicating the noteworthy part of scope, time and cost management inside the project based management. Wideman,(1996) argued that, there are four fundamental project functions of: scope, quality, time as well as cost. Quality in this case is part of project scope requirements which is intended to acquire for the satisfaction of the project stakeholders. Hence, the remaining three of: the scope, time and cost are the fundamental concerns of project management.

The Triple Constraint is described as an “Enabling Process” by the Project Management for Development Organizations (PM4DO). Enabling processes comprise of management of scope, management of cost, management of time and management of quality. These fore mentioned are enabling processes since they prompt particular goals of the project and basis to define the project success on time, budget and the partners' prerequisites.

The triple constraint in project management is a concept indicating the interdependency of the project scope, time and cost. According to Egal (2012), Project quality is influenced by adjusting project scope, time and cost.

There is an agreement that the triple constraints are the three pillars of project management whose balancing remains the key success of projects. Choudhuria et al. (2006) for instance, explained the core processes as planning that also encompass unambiguous dependencies that are required to be executed in basically a similar order on most projects. For instance, activities should be distinctively prescribed before they are listed and budgeted for. Such are core project management processes namely; project scope, time and cost, and must be performed in the same order throughout the project process groups.

Process groups are logical grouping project processes arrangements. According to PMBOK, five process groups in project management include; initiation, planning, execution, monitoring, controlling and closing group processes. They interact and overlap from each to the other. The planning process groups for example, provide the specifications of activities that should be finished to take the project planning stage to successful conclusion, as well as some descriptions of the tasks to be undertaken within the later process groups. The progressive specifying of the planned project is called the Rolling wave process of planning. Project plan or process is a set of successive tasks done to achieve specific project objectives. Project can be defined as a set of tasks that must be executed to attain the project goals of Scope, Time and Cost. It is a combination of tasks consisting of input, tools, and techniques to produce an output. Some processes are more influential than the others as their output became the input of almost all project management processes.

1 Project Scope Management Processes

As was explained by Egal (2012) Scope relates with the limit of project work boundaries. Project scope defines the unique product, service and results that a project will produce and those products that it will uncover. Egal said that scope encompasses an overview that all the stakeholders have for a project; the scope defines the limits of the project. Management of project scope is therefore a process that guarantees that the project incorporates all necessary activities for the achievement of certain objectives.

Scope relates to the confines of project work boundaries. Project scope defines the distinct product, service, and results that a project will deliver. Scope forms an overview of stakeholders' requirements concerning a project. Project scope management means the procedure of ensuring that a project comprises all of the necessary activities for the achievement of certain objectives. Project scope enlists structure of a project and base of other related factors especially cost and time. Project success relates to effectiveness cum effort given to its scope management; if the project boundaries are undefined than its objectives are not clear. PMI (2004) postulates that scope management in projects includes ascertaining that the project has all tasks and activities necessary for the project or program to be completed successfully.

One potential project failure reason is to increase its scope (work) without extra budget and time. Uncontrolled variations in a project's scope (scope creep) represents propensity of a programme or project to incorporate a larger number of duties or tasks as compared to the ones initially specified, this frequently leads to higher than arranged project costs and addition of the project duration. Conceptually, scope creep is adding to project scope without considering the time and cost.

Management of project scope involves a sequence of activities cum phases for managing of the deliverables of the project. It consists of five processes namely: requirements

collection, definition of scope, Work Breakdown Structure (WBS) definition, verification of scope and scope controlling. Each of these processes has its input, tools and technique and output. These processes interact with each other; the output of one of the five processes becomes the input of another process. Scope management has the strongest interaction with other knowledge areas as it relates to the translation of the project objectives into intervention results.

Defining the project scope involves developing a detailed project and product. According to PMI (2004), the major inputs of this process are the project agreement, project requirement and assets, expert opinion, analysis of product, alternative development and workshops that are facilitated. The statement of project scope and update of project documents are the major yields from the process.

The defined scope and WBS will need the commitment of project stakeholder satisfaction, Verification of project scope entails official acceptance of the project deliverables by the various participants. According to PMBOK (2008), the major inputs of the process of scope verification are; project management plan, traceability matrix requirements, documentation requirements and deliverables that are validated. Inspection is the major technique used for the scope verification. The acceptance of deliverables, change request and update of the project document are the output of the scope verification process.

A well-suited scope must be used to control tracking of the project activities. The scope controlling process involves monitoring of product and project scope status. It entails the controlling of the project scope baseline. According to PMBOK (2008), the process inputs include; project management plan, documentation requirement, traceability matrix requirement, information on performance of work and process organizational group. Variance is one of the tools and technique used in this process. The outputs of the scope

controlling process include change request, updates on project management plan, document updates on projects, asset updates on organizational process and work performance updates.

2. Project Schedule Management Processes

According to Egal (2012), project time management is the procedure to manage the time to accomplish the project activities cum tasks and produce intended unique programme and or project deliverables. Project scheduling consists of the tightly linked process of defining project activities and tasks, sequencing activities and tasks, estimating activity duration, estimating activity resources and developing project scheduling.

Project calendar management involves defining the project activities, sequencing the activities and allocating time or duration for each of these activities. In short it means, the definition of processes to be used in order to finish the project on time.

Association for the Project Management (APM) defines project schedule management as the process of developing, maintaining and collaborating schedules for resources and time. In project management, Project schedule is defined as a roll of project benchmarks, milestones, activities and output with clearly defined commencement and finalization dates. The process of schedule development must be complete - representing all work planned to be done, Realistic-putting into consideration available and participation of stakeholders, lastly accepted- all the team members must be in agreement. This process involves the following activities.

According to Egal (2012), defining the project activities is the process to identify the task and sub-tasks that would produce the project deliverables. He further expounds on Activity Sequencing as, the process to describe the relationship in-between the identified project activities, arranging them into a logical sequence. Egal (2012) says that “Every activity except with the first and last activities are connected to at least one predecessor and one successor” drawing a visual diagram of the logical sequencing of the activities and the activity float and slake, and critical path are calculated. Critical Path is the lengthiest path of activity sequencing from project start to completion that have no float.

According to Egal (2012), estimating the activity duration is the process of calculating the approximate period of time to acquire the completion of a project activity with predetermined resources. Estimating activity duration; is also explained as, the process of estimating how much time is needed for every activity. The following are the prerequisites for estimating the activity duration; resource requirements for activities, organizational historical data, activity duration's lessons learnt, resource calendars, calendars of past projects, defined planning and scheduling approach, enterprise environmental factors, culture of the company as well as existing organizational systems amongst others. Time success is operationalized in relation of attaining the plan (McCov,1986; Pinto & Slevin, 1988; Turner, 1993). The benchmark of time success is operationalized in terms of time under or over run as the percentage of the earlier program as highlighted in Might and Fisher (1985).

3. Project Cost Management Processes

Cost management of projects is the procedure of estimation prediction, budgeting and controlling the cost of resource intended to complete the project in specified period of time. Quantities prediction for required resources informed by scope of investment assets option, activities, or project is an estimate that address the risks and uncertainties around a project (Egal, 2012).

According to PMBOK (2008), the estimating cost, developing budget and controlling the budget are the three processes within the management of project costs. The process of project cost management is concerned with planning and controlling of the financial plan of any given project. The four processes that are involved in management of project cost include; planning cost management, determining costs, estimating costs and finally controlling costs. The technique used in management of project cost is Earned Value Management (EVM). Project cost management falls among ten knowledge areas that are described and presented in PMBOK Guide. A lot of literature document that several projects have a similar characteristic when measuring their success, such characteristics include cost overruns, delays and even shortfall in demand. Costs are generally underestimated and ultimate benefits overestimated, this eventually contribute to

economic inefficiencies consequently decrease in stakeholders faith and confidence in the projects thereby resulting to a failure of the projects. The elements of cost management are discussed below;

Planning cost management; this is done at the initial phase of any project, it is the procedure of defining all the required resources to finish a project. A project practitioner may use the work breakdown structure (WBS) or historical records of a comparable project to define the physical resources required. This may involve time required, labor and equipment. Once these resources are defined, their associated costs can be determined.

Estimating the cost is to handle a project activities is the manner of approximating the monetary value of the resource required for completing the project activities under a set of quality standards at given period of time(Egal, 2012).

Cost budgeting; Developing budget is the process of summing up all of the predicted of individual activities or tasks that are authorized as cost baseline (Egal, 2012).

It was further explained by Egal (2012) that, a sound project budget controlling is crucial for the project efficiency. Budget controlling involves monitoring project progress condition and updating budget baseline.

2.1.2 Theory of Constraints

This research study was based on the theory of Constraints (TOC) which is a collection of administration ideas created by Goldratt in the 1990s. TOC efficiently center endeavors, vitality and consideration on the system bottleneck which limits yield of the overall or whole system but in the interim addresses the essential use position towards its enhancement. On the basic, TOC requires recognition of constraints, oversight on them as well as managing them to elucidate: On time and in full (OTIF) delivery to the organizational customers, effective supply chain for elimination of stock outs, effective

processes control and minimized firefighting, reduction in cycle time frames and subsequently records, rapid reaction culture and less chronic conflicts among members of the team, revealing additional volumes of production without any additional investments and finally, higher net profit, ROCE and Free Cash Flow (FCF). To attain this feat, TOC changes management focus from optimization of isolated assets, functions and resources to growing movement of throughput generated by the whole system. TOC's procedures and processes focuses on removing barriers that deter each part from functioning together as an integrated system.

Just as the weakest connection in a system or chain, each system must have a constraint or bottleneck which administers its results and output. Constraints limit output whether recognized or not. At the point when legitimately recognized and managed, constraints provide a speedy route to decisive change and profile the bedrock for nonstop expansion. Whenever disregarded, a constraint may lie sit out of gear, misusing a lot of competence. An out of control limitation may likewise wreak destruction on the conveyance calendars and causes the unusual delays. It is therefore subsequently vital for any manager to benefit as much as possible from their constraint and manage it well. Theory of Constraints implementation has produced outstanding results for corporations and organizations around the globe.

2.2 Empirical Literature Review

2.2.1. Project Scope Management

Nibyiza (2015). Researched and indicated in her findings the Relationship showing the changing of project and activities diary, quality and cost. Outcomes indicated existence a variation in the projects tasks significantly as affected by project time or schedule. The results further indicate that changes in project activities are greatly and significantly affected by project costs. The study results show that project activities change significantly affect project quality outcome. This vividly confirms the interdependencies which exists between the three variables which includes; scope, schedule, and cost.

According to Ling et al. (2009) who studied project management practices and how they affect project execution. The findings show that important practices are essentially correlated with project performance and identifies with scope management. The findings suggest for weight be assigned to scope management with a view to attain exemplary performance of projects. Zou and Lee (2008) applied the one - way ANOVA and a multiple linear regression to examine viability of progress management techniques components in minimizing project change costs. The study established that utilization of change management practices is useful in bringing down extent of change cost in project real cost.

Research conducted by Rugenyi and Bwisa (2016) investigated on how management of projects in Nairobi are affected by triple constraints: in the perspective view of project managers. In their study, they found out and concluded that the triple constraints had no statistically significant effect on the management of projects in Nairobi when measured in terms of project context. The relatively small sample size and the wide range of responses may have contributed to the results.

It was established by Rugenyi and Bwisa (2016) that, the triple constraint elements are too small a component to have a significant effect on the project manager's capability to manage projects in various contexts. They further analyzed each constraint and found out that there was no significant effect of the project scope constraint on the management of projects in Nairobi ($p = .940$). Their findings concur with Catanio et al. (2013) who found that professional project management certification and/or experience of project manager is not adequate to guarantee constructive management of project scope constraint.

The criteria of project success was studied by Boukanos (2013) he reasoned that defining project attainment and the basis of an arrangement of success standards or measures is of utmost importance for each project-situated organization. If at all an organization does not know at the initial phase of a project how they will compute its business attainment, they are likely to encounter unpleasant circumstances. Their literature review and

empirical study outcomes presumed that the application of the Golden Triangle for project valuation is indispensable but also incomplete. One of their primary discoveries was that in the greater portion of project accomplishment definitions there was the element of the human factor. There is an understanding that venture accomplishment should be seen from a couple of perspectives.

Gar (2015) Examined Critical Accomplishment Aspects of Project Management for Dam Construction Projects implemented in Myanmar. The research study measured the quality of project management practices by defining the factors regarding with the well-known success factors and project knowledge areas management that facilitate project success in the dam construction project in Myanmar. The study also showed that attention need to be paid to the ten common critical success factors of five dam construction projects to obtain the project success for further dam construction projects in Myanmar. These common critical success factors were: Estimation of project cost, Determine the required budget, Quality checklists, Control cost, Collect requirement ,Estimate activity resources ,Develop schedule, Budget performance, Identify risks, Well-defined stakeholder management plan. This study established that scope management is a vital constituent which influences the accomplishment of any project.

Ondari and Gekara (2013) surveyed the aspects which influences successful accomplishment of road projects in Kenya. And they explained that not very many outline alterations are tried on construction of The International Trunk roads generally supported by benefactors. This is presumably because of the uncompromising contracts of agreements and bulky procedure required in starting the alterations. Benefactor financed roads after endorsement are relied upon to be finished inside a defined plan structure and contractors therefore are required to sign duty towards devotion which are closely observed and regulated. At times road plans are exceedingly presented to changes because of community responses to ownership of land issues and existing human patterns of settlement difficulties. Settlement of such disputes commonly prompts construction interruptions. This research therefore indicates evidence of lack of the observation of the

triple constraints which is a dominant factor in determining the success of the projects more especially in time management, lack of supervisory skills in engineering fields, and design changes whose causes being the lack of proper scope management.

In the NGOs fraternity, the concern for humanitarian aid and assistance for improving the welfare of human kind has been predominant, the main project control purpose is ensuring that the projects are finished within schedule, on budget and attaining the desired project objectives. Kerzner (2003) confirms that, it is a challenging responsibility carried out by practicing project managers, it involves constant measure of progress; taking corrective actions when required and evaluating plans; There has been a paradigm shift in the concern for proper management of projects across the globe, numerous project control methods have been invented and adopted which includes, the critical path method (CPM), Gantt Bar Chart, and program evaluation and review technique (PERT) which have been famously used in various projects. Olawale and Sun (2010) expounds that, an assortment of software packages have emerged to be easily reached in helping the application of the project control measures. Irrespective of the wide application of the techniques and software packages, numerous development projects still endure time overruns and cost overruns. This trend is evident and cuts across all nature of projects across the globe. This literature is reviewed according to the management of the triple constraints which include project scope, the project schedule, and the project cost which is presumed to significantly influence the environment under which projects exist.

Reasons behind the delay in accomplishing the construction of the Effat University Engineering Building, and how these delay progress has vastly affected the performance of the Effat University Students and the faculty at large was examined by Baymout (2015) Qualitative and Quantitative research were used in the research Methodology. Interview and survey were created in order to collect the primary data while the World Wide Web used as tool to collect the secondary data. The study identified the angle from which the Project Management Triangle was neglected and that also formed part of the delays and how such kinds of incompetence and less productivity affect the Effat

building construction-affiliated performance, it also identified various factors that affected the constraint, which in the end led to delay in submitting the building. This study clearly proves that without conforming to the requirements of balancing the triple constraint in projects the results may be undesired.

2.2.2. Project Schedule Management

Chanand and Kumaraswamy (1997) did a comparative study on what causes overrun of time among construction projects in Hong Kong and they described five major time overruns causes as perceived among contractors, clients, and consultants in Hong Kong construction projects. A questionnaire was outlined including 83 delay causes crosswise over eight classes and dispersed to 400 firms operating locally and engaged in construction projects. In view of 37% responses, five significant causes of delays were, poor management of site and supervision, unanticipated conditions on ground, low speed in basic leadership, customer initiated variations, and change in design. Their study still depicts evidence of time overruns as one of the major causes of projects not being completed as scheduled.

conducted a survey was conducted by Mansfield et al (1994) amongst 50 consultants, contractors, and client organizations within Nigeria, their study established that the vital variables responsible for delays on construction and cost overruns are meagre contract management, financing and payment of finished activities, alterations due to conditions on site, lack of materials, imported materials and plant items, alteration of designs, subcontractors and designated suppliers. While the topmost variables causing overruns on cost were exposed as fluctuation of price, erroneous estimates, and interruptions. And in order to advance schedule performance, Kog et al (1999). Examined the main causes for construction schedule performance and revealed amongst other variables, that having a programme which is constructive is a major determinant to construction schedule performance.

Contrary to the assumption of this study, that project time management influences performance. Rugenyi and Bwisa (2016) researched on project time constraint and found out that no significant influence of the project time constraint on management of projects undertaken in Nairobi ($p = -.719$). Again, their findings concur with Catanio et al. (2013) who established that professional intervention management certification and/or experience of the project manager is not adequate to guarantee effective management of project time constraint.

An examination was done by Kiarie and Wanyoike (2016) on determinants for effective execution of Projects Funded by Government of Kenya: the Case Study of Integrated Financial Management Information System. Results revealed the projects such as IFMIS have a many political interference in regards to definition of scope and alterations. Subsequently, their study recommended that project managers supervising projects funded by the Government be firm in their management exercises, particularly on management of scope. It is imperative that they follow the precise project management practices irrespective of the degree of political interference.

Bowen et al. (2012) Examined Perceptions of cost, time, and quality management on building development interventions. Their paper revealed the findings of a South African national questionnaire survey on the views of project team participants perceive about the relationship between cost, time, and quality management and achievement of customer objectives, that contractors' Customers', and consultants' views with respect to customers' expectations of cost, time, and quality at the starting stage of the project are not uniform. Customers believe their cost, time, and quality expectations to be realistic, while consultants and contractors did not believe that this is generally so. Customers gauge the quality of projects as more necessary than project time performance, while consultants and contractors perceived that customers hold a converse opinion.

Factors impacting fruitful completion of roads in Kenya was analyzed by Ondari and Gekara (2013) their discoveries demonstrated that there was a significant influence of the

four predictor variables on timely completion of projects. Amongst the variables supervision capacity emerged as having the most significant influence on completing projects on time. The discoveries on supervision limit additionally upheld early investigations which express that monetary challenges are the significant reason for suspension of works in development ventures prompting delay in the convenient completion of project activities.

2.2.3. Project Cost Management

According to Baloi and Price (2003) project cost estimation involves prediction of expenditure and the achievement basically depends on integration of project information, funds and control over project execution. Components which affects performance of cost in view of early estimates have been published broadly and fundamentally concern complexity of projects, requirements of technology, scope ambiguity, and project group necessities (Mansfield et al. 1994; Akintoye 2000; Frimpong et al. 2003; Love et al. 2005). This vividly indicates that project scope management is one of the critical parameters vital for the delivery and completion of projects.

Rugenyi and Bwisa (2016) researched on project cost constraint and found out that there is no significant effect of the project cost constraint on the management of projects in Nairobi ($p = .381$). Again, their findings concur with Catanio and Tucker (2013) who found that certification on professional project management or experience of the project practitioner is not adequate to warrant fruitful management of project cost as a constraint.

Cost overruns as well as failure in project management was examined by Doloi (2012), the researcher highlighted that, estimation of an intervention costs at an early phase of the design processes and capacity to deal with such expenses all through development stage is vital to general achievement of a project. Research conducted in the past indicates that cost overruns on construction and the following meager performance on cost are the characteristics of absence of understanding between all participating teams within construction industry (Akintoye 2000; Frimpong et al. 2003).

Trostand Oberlender (2003) conducted a research study, Forecasting accuracy of initial estimates of costs and applied factor analysis and multivariate regression. The objective was attempting to establish a predictive model for initial estimation of cost, they gathered quantitative information crosswise over 45 probable drivers on 67 finished construction projects worldwide. In view of factor analysis and regression modeling, essential site requirements and procedure plan were concluded as the most critical features that effects accurate estimation. In spite of the fact that this finding is a critical initial phase in that it uncovers criticalness of initial cost estimation, elimination of building and infrastructure part in the information gathering process rendered exploration constructive with regards to cost performance across construction projects.

Reviewing case study data on completed projects in Ghana, Frimpong et al. (2003) recognized five major aspects that impact cost performance of projects. The factors include material procurement, monthly payment problems from agencies, poor management of contractors, poor procedural performance, and rise of prices related to materials.

On review of an examination of the transport infrastructure cutting across 258 rail, bridge, tunnels, and road construction projects in Denmark. Flyvbjerg et al. (2004) emphasized that three key influences causing cost overruns include, longer execution phase of projects, bigger scope of projects, and public ownership issues are extremely vulnerable to overruns on cost among projects.

Doloi (2012) concluded on their research that, centering on three noteworthy trade groups (clients, consultants, and contractors), his exploration investigated basic aspects which influence performance of cost crosswise over pre-construction and construction periods of project life. Viewing descriptive analysis, 48 chose traits related to cost performance of projects and they were positioned by the relative performance index as observed by consultants, clients, and contractors of construction projects in Australia. By performing confirmatory factor analysis, 36 characteristics of the 48 chosen characteristics were

additionally condensed to eight critical aspects for an investigation of their quantitative influence on cost performance of a venture. The eight prominent factors influence on cost performance was additionally approved regression analysis. Viewing multivariate regression analysis, five of eight important components were additionally stressed as very huge. The five noteworthy components included precise project planning and monitoring, successful management of site, contractor's effectiveness, outline proficiency, and communication.

Research study was conducted by Ali and Kamaruzzaman (2010) on performance of cost for building constructions in Klang valley, their findings confirmed that performance of cost in construction projects is an elementary subject in Malaysia. Discoveries were made that majority of construction projects in Malaysia are influenced by overrun of costs. Deduction of the research validates that industry of construction suffered specifically on issues of overruns on cost among projects. Primary aspects which also contributed to overrun on cost in Malaysian construction projects were poor approximation of project costs and underestimation of cost of construction by quantity surveyors.

Kaming et al, (1997) also examined aspects influencing time of construction and overruns on costs among high-rise building projects in Indonesia, they administered questionnaire to 31 project managers. A sum of 11 variables (design variations, inadequate planning, insufficient labour productivity, inaccurate material estimate, shortages of materials, and lack of skilled labour were recognized as causes for overrun on time and seven (materials cost increased by inflation, inadequate experience of project location, inaccurate take-off quantity, lack of experience of type of project etc) for cost overrun.

Success on cost management can be evaluated in terms of meeting the budget (McCov, 1986; Morris & Hough; Pinto & Slevin,1988;Turner,1993) Cost success standard could be evaluated in terms of cost overrun or under run as a percentage of the initial budget (Might& Fisher,1985)

Overrun on projects cost and management of risks was examined by Jackson (2002) he recognized that too frequently construction projects forms nationwide headlines for being economic tragedies – rather than important achievements of engineering that donate to the enhancement of our built environment. In the mid-1990s a government enquiry exposed that above one-quarter of construction structures got completed over estimated capital cost limit (HM Treasury, 1995). Additionally, a survey of construction business customers established that nearly one-third complained that projects routinely overran budget (Barrick, 1995). The problem continued over the last part of the period with the Construction Clients Forum (1997) broadcasting that sixty percent of customers confirmed that objectives on cost were being unmet. At the beginning of that new period just forty-five per cent of interventions were being completed on budget (DETR, 2000a). Jackson concluded that construction industry has attained a poor reputation for delivering services over budget.

2.2.4. Critique of existing literature relevant to the study

Ebbesen and Hope (2013) researched on re-visualization iron triangle: inserting sustainability into constraints of projects. The results indicated that whilst sustainability is normally observed by managers as a major aspect to be incorporated in planning of projects and execution, there is divergence on position of the issue in relation to traditional time, cost, and quality constraints and manner which sustainability principles are to be unified into projects. Contributors approved that there is a good consideration of the concept of Iron Triangle among project supervisors, but questions persisted on its relevance. That said the agreement appeared to be that as an idea of the triple constraint is treasured and required some adjustments in meeting the challenges of managing contemporary projects.

It was further expounded by Ebbesen and Hope (2013) that, with regards to sustainability, comprehension of idea among members is unclear; in any case, the popular observes the notion as the future device in order to remain in business. However, it is not exactly clear if members are thinking in regards to sustainability when working on projects, which should be looked into. There are various suggestions that rose from the

examination introduced. To begin with, project management profession requires to embrace meaning of sustainability so as to empower and extend managers to completely comprehend sustainability aspects. Also, dependence on triple imperative model of the Iron Triangle needs to be addressed and refreshed in light of 21st century management encounters, whereby sustainability is among them.

2.3 Conceptual Framework

This study assumes that project scope management, project cost management and project time management constructs (independent variables) influence projects completion (dependent variable). This study's conceptual framework is based on the premise that projects completion is a function of the triple constraint management i.e. Project scope management, project time management, and project cost management. (see figure 2). This study assumes that there's a direct linear relationship between the predictor variables and dependent variables. The attempt to test this relationship, the variables are to be operationalized into cardinal scales as expounded below.

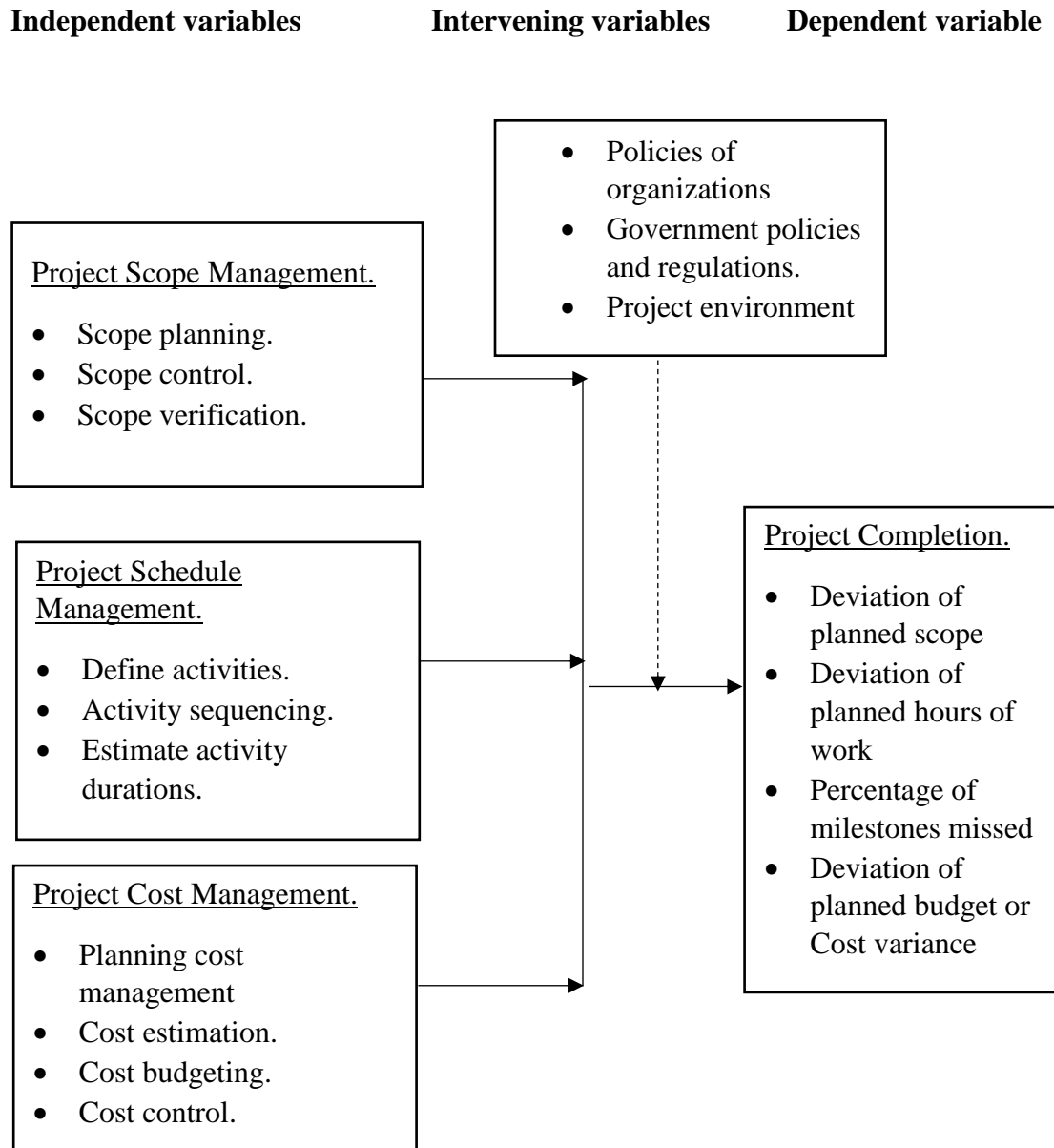


Figure 2; Conceptual framework

The Project scope management entailed indicators which include the project scope planning, project scope control and the project scope verification. These indicators were

utilized as a guide for measuring their influence in the completion of the nongovernmental organization projects in Nakuru County, Kenya.

Project scope management as a construct had the following indicators; definition of activities, activity sequencing and also estimation of activity durations. These items were operationalized and their influence were measured against the completion of the Non-Governmental Organization Projects in Nakuru County, Kenya.

Project cost management as a construct had the following indicators; Cost management plan, estimation of cost, budgeting of cost and controlling costs as the key indicators. They were operationalized and used to measure their influence on the completion of the Non-Governmental Organization Projects in Nakuru County, Kenya.

Project completion as a construct had the following indicators; deviation of planned scope, deviation of planned hours of work, percentage milestones missed and deviation of the planned budget or cost variations. These indicators were used to measure the level of completion of projects.

2.4 Research gaps

The concept of triple constraint as a measure for projects completion has been in existence since time immemorial unfortunately very few studies have been done relating to this area, factors leading to mass incompleteness of NGO projects in Nakuru County has not been fully unveiled by both the researchers and scholars, Again previous research on triple constraints based on perspective of project managers was done by Rugenyi and Bwisa (2016) in Kenya and only assessed effects of triple constraints on management of projects in Nairobi. Previously conducted studies document limited examination of the triple constraint management as a determinant for the completion of projects in the County, therefore, creating a need for in-depth research study on this topic.

2.5 Summary of Literature review

This study was based on influence of triple constraint management on completion of Non-Governmental Organizations WASH projects within Nakuru County, Kenya. Triple constraints stipulates three factors which determine the performance of a project which includes project scope management, project schedule management and project cost management, all these forms the focal interest for this study and also previous studies based on the triple constraints. Among other relevant theories on determining the performance of projects, the triple constraints were deemed appropriate for this study bearing its wide application in both the developed and developing countries, from its contributions and past empirical studies the conceptual framework got its generation to guide this study. The conceptual framework section shows the relationship between Independent and dependent variables being investigated. Also, it entails constructs and scales to be used in measuring variables for examination and statistical tests. Since little studies on triple constraints have been done in Kenya, the literature was reviewed on and extended to other similar studies in both developing and developed countries. The review capitalizes analysis of studies in areas relating to project scope management, project schedule management, and project cost management. The review analyzed critically the existing studies and unveiling the research gaps which this sought to address.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Research design

The researcher adopted the descriptive research design in seeking to understand the relationship amongst the independent and the dependent variables.

Descriptive research consists of collecting data that describes events and then organizing, depicting, tabulating and giving description of the collected data. (Glass and Hopkins, 1984). This design shows the effect that one variable has on another. The independent variables were project scope management, time management, and finally project cost management while the dependent variable was the completion of NGO WASH projects in Nakuru County.

3.2 Target Population

The target population included 365 Non-Governmental Organizations undertaking Water Sanitation and Hygiene (WASH) projects within Nakuru County Boundary. Source of information is the NGO Coordination Board of Kenya, Project Managers and project practitioners responsible for various projects implementation are targeted for this study since they are likely to give credible information relating to their in-depth understanding of projects performances and performance.

Table 3.1 illustrates the categories of NGOs that operate in Nakuru County.

Table 3.1: Target population

Category by type of orientation	Number of NGOs Operating in Nakuru
Charitable orientation	101
Service orientation	67
Participatory orientation	78
Empowering orientation	119
Total target population	365

Source: (NGO Coordination Board of Kenya, 2017).

3.3 Sampling Procedure

The sampling technique is the method of making a selection of a specific number of objects from the respondents of the study Ngulube (2003).

For this study, data collection was done from the secondary and primary sources, the questionnaires were administered in order to obtain data from the primary sources while secondary data was obtained from relevant works of literature, documents, and reports. The researcher adopted probability-Sampling methods, which include the Simple Random Sampling and stratified sampling techniques; this is mainly because there is a listing of the population targeted and equal chance for each unit within the population is to be given an equal opportunity of being selected, and the second technique was stratified sampling technique. The Sampling units were the project managers, practitioners or supervisors of the Non-Governmental Organizations operating within the County Government of Nakuru, the profile data for the organizations were obtained from the NGOs Coordination Board of Kenya.

3.4 Sample size

A sample which represents the whole population with confidence and risk levels was selected grounded on the work of Yamane (1967). The formula used by Yamane is illustrated below:

$$n = \frac{N}{1 + N(e)^2}$$

$$n = \frac{365}{1 + 365(0.1)^2} = 78$$

Where n is the sample size,

Where n = sample (required responses)

e = error limit, 10% in this case.

N = Population size

The confidence level is 95%.

From the formula the sample size obtained was 78 respondents.

3.5 Research Instruments

The researcher adopted a questionnaire as the research instrument; it was divided into five parts. Part one consisted of structured questions relating to demographic data, part two consisted of eight statements on project scope management constraints in which the responses were measured on a five-point Likert scales ranging from 5-strongly agree to 1-strongly disagree. The third part consisted of 8 statements on project schedule management where responses were measured on a five-point Likert scales which range from 5-strongly agree to 1- strongly disagree. Part four consisted of 8 statements relating to project cost management which was measured on a five-point Likert scales ranging from 5-strongly agree to 1- strongly disagree and lastly part five consisted of 8 statements on project performance management where responses were measured on a five-point Likert scales ranging from 5-strongly agree to 1- strongly disagree. Malhotra (1996) suggested that small intervals in the Likert scale are suitable in a developing country for measuring attitudes or opinions more accurately. This provides weight in reasons why this research adopts the measurement of Likert scales.

3.6 Validity of the research instruments

Validity of a research establishes whether the research really measures what it envisioned to measure or how truthful the research results are (Joppe, 2000 as cited in Golafshani, 2003, p.p. 597).

To establish content validity, the researcher ensured that the research instrument was appraised by the supervisor and the comments were adhered to. To establish the instruments validity a sample of 10 respondents were selected randomly to fill questionnaires for a pilot study. These respondents did not form part in the main study. This helped reducing the extraneous influence which could have risen from the research findings due to prior knowledge of the information required by the instruments. It was also assumed that the rate of homogeneity among the respondents for the pilot study was high.

3.7 Reliability of the research instruments

Reliability refers to the consistency of the results of a study over time and an accurate representation of the total population. To be considered reliable, the results of a study should be reproduced under a similar methodology (Joppe, 2000 ; Golafshani, 2003).

In order to achieve quality then this criterion is key in quantitative research, on the other hand for qualitative research, reliability is more in terms of consistency, credibility and applicability as criteria for quality (Lincoln and Guba, 1985; Golafshani, 2003).

Four items were computed in SPSS to establish internal consistency as represented on the table 3.2.

Table 3.2 Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.841	.841	4

Cronbach's alpha have a range of $r=0$ to 1, with $r=0.7$ or higher is considered as adequately reliable. Therefore, the alpha coefficient for the four items is .841; this gives a suggestion that the items in the instrument have a relatively higher internal consistency.

According to Santos (1999), Cronbach's Alpha .70 is the cutoff value for being acceptable.

3.8 Data collection procedure

This study employed quantitative approach where primary data was collected through administration of questionnaires. Permission or authority to collect data was sought from the NGOs' respondents. Participation was voluntary, individual involvement was discussed to seek the participants' consent and participation in the research study. The main objectives of the research study were disclosed to the respondents. Confidentiality and anonymity were observed.

3.9 Data Analysis Techniques

Data analysis involved a critical examination of coded data and making inferences. According to Kombo and Tromp, (2006), statistical analysis splits the methods of analyzing data into exploratory methods and confirmatory approaches. Exploratory methods or approaches are used to discover what the data appears to be saying using basic arithmetic and easy to draw pictures to summarize the data. It is mainly used in quantitative research. Confirmatory approaches use ideas from probability theory in the attempt to answer precise questions. These methods are widely used in quantitative research. Once the data gathering for this research study was complete, the quantitative data were analyzed using Statistical Package for Social Sciences (SPSS) version 20. According to Green and Salkind (2008), SPSS computer package is a suitable technique for analyzing and understanding research data.

The results were presented through frequency counts, measures of central tendency, percentages, and standard deviations. The quantitative data was coded and analyzed statistically. The Responses from the key informants were analyzed and this information presented in form of tables. And inferential data analysis involved the use of Pearsons correlation and Linear regression analyses. In this regard, data interpretation was done based on the objectives of this study.

Regression model which explains the largest variance in the independent variable was formulated for this study. Based on the perceived relationships that exist between the predictor variables and the dependent variable, the following linear regression model was constructed;

$$PC=f(SC, SCH, CST)$$

From the above function, the following linear regression model was specified;

$$PC= \beta_0+ \beta_1SC+ \beta_2SCH+ \beta_3 CST+ e$$

Where;

PC=Project Completion

SC=Project scope

SCH=Project schedule

CST=Project cost

e =error term

3.10 Ethical issues

Approval to conduct this research study was sought from the University of Nairobi, NACOSTI and the NGOs. Voluntary participation from the respondents was encouraged and their consent was sought orally. During the oral consenting, the objectives of the study were clearly explained to them. The respondents were assured that the information was for academic purposes only.

3.11 Operational definition of variables

Mugenda and Mugenda, (2003) expressed that operationalizing or operationally defining an idea to make it measurable is done by observing at the behavioral scopes, indicators, and properties represented by the concept to make it measurable and visible. The measures make it possible to construct a meaningful data collection instrument. The variables are seen as operational as they fall in the range of intervals and ratios scales. Operationalization is the process whereby specific definitions of variables are given in measurable factors. Fuzzy concepts are defined hence allowing them to be measured empirically and quantitatively. Operationalization also describes the exact measuring

method used and consents other scientists to follow precisely the same methodology (Shuttleworth, 2008).

According to Babbie and Mouton (2001), the operationalization of the variables is building of actual, concrete measurement methods; creation of operations that consequently result in the anticipated measurements. It involves the improvement of choice of precise research procedures (operations) that consequently result in representing the concepts of interest.

Table 3.3: Operationalization of variables

variable	Type of variable	Indicators	measure	Scale of measurement	Tools for data collection	Types of analysis
Project completion	Dependent	Projects acceptability Projects viability Projects performance Customer satisfaction		Interval	Questionnaire	Percentage Frequencies Mode mean Pearson's correlation coefficient Regression analysis
Project scope	Independent	Scope planning. Scope control. Scope verification	Projects completed on scope	Interval	Questionnaire	Percentage Frequencies Mode mean Pearson's correlation coefficient Regression analysis
Project schedule	Independent	Define activities. Activity sequencing Estimate activity durations.	Projects completed on schedule	Interval	Questionnaire	Percentage Frequencies Mode mean Pearson's correlation coefficient Regression analysis
Project cost	Independent	Cost management plan. Estimation of cost. Budgeting cost. Controlling cost.	Projects completed on cost	Interval	Questionnaire	Percentage Frequencies Mode mean Pearson's correlation coefficient Regression analysis

CHAPTER FOUR

DATA ANALYSIS, PRESENTATION AND INTERPRETATION

4.1 Response Rate

This study targeted a sum total of 78 respondents, data collection was carried out during the working hours from 9.00 am to 5.00 pm during the week. The respondents were selected randomly using simple random sampling technique, respondents who returned their questionnaires were 71. This signifies that the response rate was 91 %.

Table 4.1 Response rate

	Percentage
Target sample	78
Successful Responses	71
Missed Responses	7
Response rate	91%

4.2 Respondents gender categories

The Target population for this study was the Project Managers, Project Supervisors and Project Practitioners responsible for the delivery of different NGO WASH projects within Nakuru County, Kenya. The gender response was 46(64.8%) male and 25(35.2%) female as illustrated in Table 4.1. From this finding, it implies that it is a male-dominated position across all the NGOs operating in Nakuru County. Kenya.

Table 4.2 Gender of respondents

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid	male	46	64.8	64.8
	female	25	35.2	100.0
	Total	71	100.0	100.0

4.3 Respondents' position/ authority.

The majority (35.2%) of the respondents were project supervisors, (23.9%) were project managers, (22.5%) of the respondents were others and lastly followed by the project practitioners at (18.3%). As shown on table 4.2.

Table 4.3 Respondents' position

	Frequency	Percent	Valid Percent	Cumulative Percent
project manager	17	23.9	23.9	23.9
project practitioner	13	18.3	18.3	42.3
Valid project supervisor	25	35.2	35.2	77.5
others	16	22.5	22.5	100.0
Total	71	100.0	100.0	

4.4 Respondent's age group

Each age group was represented by the respondents in this study, Table 4.3 indicates that the age group 41-50 formed the majority of the respondents which was (38%) while 32.4% of respondents were between the age group of 31-40 and 16.9% formed the category of 21-30 while age category of above 50 years was 12.7% being the minority, this confirms vividly that all the age categories were represented.

Table 4.4 Respondents age category

	Frequency	Percent	Valid Percent	Cumulative Percent
21-30	12	16.9	16.9	16.9
31-40	23	32.4	32.4	49.3
Valid 41-50	27	38.0	38.0	87.3
Above 50 years	9	12.7	12.7	100.0
Total	71	100.0	100.0	

4.5 Respondents working experience

The table 4.4 represents the working experience of the various respondents. The findings indicate clearly that respondents who have worked for 1-3 years take the lead at 39.4% followed by those that have worked for 3-5 years at 28.2%, respondents who have over 5 years' experience formed 21.1% while the ones whose work experience was between 1 month and 1 year was 11.3%. This reflects that the majority of the respondents have wide experience working for the NGO projects.

Table 4.5 Respondents working experience with NGO/Projects

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Between 1 month - 1 year	8	11.3	11.3
	Between 1-3 years	28	39.4	50.7
	Between 3-5 years	20	28.2	78.9
	Above 5 years	15	21.1	100.0
	Total	71	100.0	100.0

4.6 Respondents level of education

Every four groups for the level of academic achievements were represented, the majority were staff holding Bachelor's degree at 63.4% followed by diploma holders at 23.9%, the respondents holding Masters Degrees formed 8.5% while the minority were those with Ph.D. at 4.2%. this is as represented on table 4.5.

Table 4.6 Highest level of education

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Diploma	17	23.9	23.9
	Bachelor's degree	45	63.4	87.3
	Master's Degree	6	8.5	95.8
	Ph.D.	3	4.2	100.0
	Total	71	100.0	100.0

4.7 Descriptive statistics.

The study aimed at administering questionnaires to 78 respondents, 71 questionnaires were filled and received back indicating a response rate of 91%. This response rate was satisfactory enough to make the conclusions for this study. The high rate of response was achieved due to the approach used in the administration of the questionnaires, their distribution, and aggressive follow-ups.

4.8 Descriptive statistics for project scope management.

The first objective of this research study sought to investigate the influence of project scope management on completion of Non-Governmental Organizations WASH projects in Nakuru County, Kenya.

Respondents were asked to rate their agreements or disagreements relating to activities of project scope management on a Likert scale of 1-5. Where 5 suggested strongly agree 4 agree 3 was neutral 2 was disagree and 1 was strongly disagree. For purposes of interpretation a mean response of >4.5 implies strongly agree, while a mean response of 3.5-4.5 means agree, a mean response of 2.5-3.5 implies neither agree nor disagree (neutral) a mean response of 1.5-2.5 implies disagree, finally a mean response of <1.5 means strongly disagree. The standard deviations and mean responses on the project scope management variable are presented in ascending order in Table 4.6.

Table 4.7 Descriptive Statistics for project scope management

	Mean	Std. Deviation	N
Project scope	2.1496	.71640	71
Completion of projects	1.9014	.70518	71

The respondents generally showed their opinions on the following statements, planning for scope before projects are initiated, Scope Control being one of the key factors considered before implementation of any project, Scope verification is normally conducted during the implementation of every project, Scope verification is normally conducted during the implementation of every project, organizations validated deliverables are compared against scope baseline to ascertain whether the team has

produced what was in plan and documented, a clear Work Breakdown Structure is normally used in planning of the project activities, clear scope definition normally guides all the inputs in the projects conducted by their organizations, all projects delivered by their organizations are normally within the stipulated scope, and lastly collection of project requirements is mandatory before initiation of any project. All these items summarizes activities for project scope management, therefore it can be inferred from the findings as shown in the table above that a mean response of 2.1496 and a standard deviation of .71640 indicates clearly that a most of the respondents presented their agreement that these activities are never performed by their organizations as required hence becoming a contributor to projects being uncompleted in on scope.

4.9 Descriptive statistics for project schedule management.

The second objective investigated the influence of project schedule management on completion of Non-Governmental Organizations WASH projects in Nakuru County, Kenya.

Respondents were asked to give their views on agreements or disagreements relating to activities of project schedule management on a Likert scale of 1-5. Where 5 meant strongly agree 4 agree 3 was neutral 2 was disagree and 1 was strongly disagree. For purposes of interpretation a mean response of >4.5 implies strongly agree, while a mean response of 3.5-4.5 means agree, a mean response of 2.5-3.5 implies neither agree nor disagree (neutral) a mean response of 1.5-2.5 implies disagree, finally a mean response of <1.5 means strongly disagree. The standard deviations and mean responses on the project scope management variable are tabulated as shown in table 4.7.

Table 4.8 Descriptive Statistics for project schedule management

	Mean	Std. Deviation	N
Project schedule	1.9648	.68829	71
Completion of projects	1.9014	.70518	71

The following items describe the activities for project schedule management, definition of activities before any project takes off, Sequencing of activities, estimation of activity duration during planning process, planning for schedule management as a very crucial item, Estimation being usually a key item in schedule management of project activities, Schedule is normally developed prior to any project activity in organizations, Controlling schedule being considered a key activity to ascertain whether there are variations between planned versus actual in terms of time management, and lastly Projects done by organizations are normally delivered within the desired timeframe. From the findings, a mean response for project schedule management of 1.9648 which represents a strong disagreement on the respondent's opinions with a standard deviation of .68829 clearly indicated a negative influence on projects completion resulting to a response mean on projects completion of 1.9014 and a standard deviation of .70518.

4.10 Descriptive statistics for project cost management.

The third objective established the influence of project cost management on completion of projects among Non-Governmental Organizations WASH projects in Nakuru County, Kenya.

Respondents were asked to rate their agreements or disagreements relating to activities of project cost management on a Likert scale of 1-5. Where 5 suggested strongly agree 4 agree 3 was neutral 2 was disagree and 1 was strongly disagree. For purposes of interpretation a mean response of >4.5 implies strongly agree, while a mean response of 3.5-4.5 means agree, a mean response of 2.5-3.5 implies neither agree nor disagree (neutral) a mean response of 1.5-2.5 implies disagree, finally a mean response of <1.5 means strongly disagree. Standard deviations and mean responses on project scope management variables are tabulated as follows in table 4.8.

Table 4.9 Descriptive Statistics for project cost management

	Mean	Std. Deviation	N
Project cost	1.9349	.80314	71
Completion of projects	1.9014	.70518	71

The following items related to project cost management activities; definition of cost plan before every project begins, estimation of project cost is normally being done to establish the cost of the entire project, determination of the required budget being considered mandatory, a department set aside to ensure that project costs are controlled, funding sources are normally established at initial planning phase of every project intervention, a detailed expenditure being normally established at the planning phase of every project, financing of projects normally secured before the beginning of every project, projects normally completed within the approved budget in respective organizations. The majority of the respondents disagreed with these statements proven from the table 4.8 above that response mean for project cost was 1.9349 representing strongly disagree and standard deviation of .80314 this negatively impacted in the project completion represented by a response mean of 1.9014 and a standard deviation of .70518.

4.11 Correlation analysis.

The researcher adopted Pearson's correlation coefficient to establish the relationship between the three independent variables which were; scope management, project schedule management and project cost management with dependent variable which was projects completion. Table 4.0 summarizes their relationships.

Table 4.10: Correlations

		Project scope	Project schedule	Project cost	Completion of projects
Project scope	Pearson Correlation	1	.880**	.825**	.638**
	Sig. (2-tailed)		.000	.000	.000
	N	71	71	71	71
Project schedule	Pearson Correlation	.880**	1	.829**	.690**
	Sig. (2-tailed)	.000		.000	.000
	N	71	71	71	71
Project cost	Pearson Correlation	.825**	.829**	1	.595**
	Sig. (2-tailed)	.000	.000		.000
	N	71	71	71	71
Completion of projects	Pearson Correlation	.638**	.690**	.595**	1
	Sig. (2-tailed)	.000	.000	.000	
	N	71	71	71	71

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

4.12 Correlation analysis between project scope management and completion of Non-Governmental Organization WASH projects in Nakuru, Kenya.

The first objective was to examine influence of project scope management on completion of Non-Governmental Organizations WASH projects in Nakuru County, Analysis showing the relationship between the two variables are shown in Table 4.10.

Response means for project scope management variable and project completion variable were correlated as presented in table 4.10. The Pearson correlation coefficient $r = .638$ was obtained at a significant level of 0.00 which is less than 0.01. This signifies that existed a strong positive correlation between project scope management and projects completion. To summarize this, data analysis showed that the project scope management had a significant influence on the completion of Non-Governmental Organization WASH projects In Nakuru, Kenya.

4.13 Correlation analysis between project schedule management and completion of Non-Governmental Organization WASH projects in Nakuru, Kenya.

The second objective investigated influence of project schedule management on completion of Non-Governmental Organizations WASH projects in Nakuru County, Kenya. Analysis showing the relationship between the two variables are shown in table 4.10.

Response means for project schedule management variable and project completion variable were correlated as presented on the table 4.10. The Pearson's correlation coefficient $r = .690$ was obtained at a significant level of 0.00 which is less than 0.01. This implies that there existed a strong positive correlation between project schedule management and projects completion. Therefore, it can be summarized that project schedule management had a significant influence on completion of the Non-Governmental Organization WASH projects In Nakuru, Kenya.

4.14 Correlation analysis between project cost management and completion of Non-Governmental Organization WASH projects in Nakuru, Kenya.

The third objective investigated influence of project cost management on completion of Non-Governmental Organizations WASH projects in Nakuru County, Kenya. Analysis showing the relationship between these two variables is shown in table 4.10.

The Response means for project cost management variable and project completion variable were finally correlated to establish their relationship as presented in table 4.10. Pearson correlation coefficient $r = .595$ was obtained at a significant level of 0.00 which is less than 0.01 level (2-tailed). This signifies that there exists a strong positive correlation between project cost management and projects completion. In summary, this data indicated that the project cost management had a significant influence on the completion of Non-Governmental Organization WASH projects In Nakuru, Kenya.

4.15 Regression analysis.

Regression analysis was computed to establish the degree of the influence which each of the predictor variable has on the dependent variable. The results is as shown in table 4.11.

Table 4.11 Regression Analysis Results

Model	Coefficients ^a			t	Sig.
	Unstandardized		Standardized		
	B	Std. Error	Beta		
(Constant)	.468	.199		2.351	.022
project scope	.121	.195	.123	.620	.538
project schedule	.566	.205	.553	2.759	.007
project cost	.031	.148	.036	.212	.833

a. Dependent Variable: completion of projects

From the linear regression results in the table 4.10, the following linear regression model was applied;

$$PC = \beta_0 + \beta_1 SC + \beta_2 SCH + \beta_3 CST + e$$

Where;

PC=Project Completion

SC=Project scope

SCH=Project schedule

CST=Project cost

$$\text{Project Completion} = 0.468 + 0.123 SC + 0.553 SCH + 0.036 CST$$

Referring to Table 4.11, relative predictive influence for each independent variable on the dependent variable was analyzed. Project scope management was found to have a positive influence on projects completion among Non-Governmental Organizations WASH projects in Nakuru County as the Beta Coefficient was positive. The Beta value for project scope management was $\beta=0.123$. This result indicates that it contributed to 12.3% towards project completion among the Non-Governmental Organizations WASH projects in Nakuru County, Kenya.

Project schedule management also had a positive influence on projects completion among Non-Governmental Organizations WASH projects in Nakuru County, Kenya since the Beta value was $\beta=0.553$, this indicated that it contributed towards the completion of Non-Governmental Organizations WASH projects in Nakuru County, Kenya at 55.3% . Beta value for Project cost management was $\beta= 0.036$, showing that it contributed 3.6% towards the completion of Non-Governmental Organizations WASH projects in Nakuru County, Kenya. Finally, a comparison of the Beta values for each of the independent variable was done and the results discovered that project schedule management had the uppermost predictive power ($\beta=0.553$), second was Project scope management ($\beta=0.123$) and the least was project cost management with ($\beta=0.036$).

CHAPTER FIVE

SUMMARY OF FINDINGS, DISCUSSIONS, CONCLUSIONS AND RECOMMENDATIONS.

5.1 Summary of findings

The first objective examined influence of project scope management on completion of Non-Governmental Organizations WASH projects in Nakuru County, Kenya. The study established that scope management had a significant influence on completion of projects as most of the respondents agreed that scope management is a vital ingredient in the completion of projects. This contradicts the findings of Rugenyi and Bwisa (2016) who investigated the effects of triple constraints on the management of projects in Nairobi: the project managers' perspective and found out that there is no significant effect of the project scope constraint on the management of projects in Nairobi ($p = .940$). His findings concurred with Catanio, Armstrong, and Tucker, (2013) who established that professional project management certification and/or experience of the project manager is not sufficient to guarantee successful management of the project scope constraint.

The second objective investigated the influence of project schedule management on the completion of Non-Governmental Organizations WASH projects in Nakuru County, Kenya. The study vividly presented that project schedule management had a significant influence of completion of projects among Non-Governmental WASH projects in Nakuru, Kenya. This disagrees with Rugenyi and Bwisa (2016) who researched further on project time constraint and found out that no significant influence of the project time constraint on the management of projects in Nairobi ($p = -.719$). Once more, the findings concured with Catanio, Armstrong, and Tucker, (2013) who found that professional project management certification and or experience of the project manager is not adequate to guarantee effective management of project time constraint.

The third objective established the influence of project cost management on completion of projects among Non-Governmental Organizations WASH projects in Nakuru County, Kenya. As presented in table 4.12. Chapter 4 clearly display that, project cost management has a significant influence on completion of Non-Governmental WASH

projects in Nakuru, Kenya. This contradicts findings of Rugenyi and Bwisa (2016) who researched on project cost constraint and found out that there existed no significant effect of the project cost constraint on the management of projects in Nairobi ($p = .381$). Again, the findings concur with Catanio, Armstrong, and Tucker, (2013) who established that professional project management certification or experience of a project manager is not adequate to guarantee effective management of the project cost constraint.

5.2 Discussions

The data was obtained through administration of questionnaires to 78 respondents, there was 91% response rate which was arrived at due to, the way questionnaires were administered, keen and consistency in follow-ups of the responses. Only 7 respondents did not return their questionnaires, the respondents for this study included the Project managers responsible for delivery of various NGO WASH projects, the Project supervisors, and Project practitioners. The research analysis was done using the SPSS version 20 software to compute and obtain data informs of percentages and frequency tables. The findings of the research revealed the following; on project scope management, there was evidence of lack of project scope planning, scope control and scope verification whose combination contributes to a majority of projects lagging in performance or uncompleted. This agrees with findings of Nibyiza (2015) whose research results indicated that changes in project activities are greatly and significantly affected by project costs. The study results show that project activities change significantly affect project quality outcome and thus confirms the interdependencies which exists between the three variables which includes; scope, schedule, and cost.

Project schedule management comprised of the definition of project activities, sequencing the project activities and also estimating activity durations, from the findings it is evident that these activities are not properly addressed by various WASH projects in Nakuru, county, therefore, this contributes to projects being uncompleted on time. The findings conforms to findings of Ondari and Gekara (2013) on factors impacting fruitful completion of roads in Kenya whose discoveries demonstrated that there was a significant influence of the four predictor variables on timely completion of projects.

Project cost management comprises of, planning of the costs, estimation of the costs, budgeting and controlling costs as the major activities. From the findings of the study, it is evident that there was the lack of proper consideration of these elements which also jointly results to WASH projects done by NGOs in Nakuru, Kenya not being delivered on cost. Contrary to the assumption for this study that project cost management influences completion of the projects, Rugenyi and Bwisa (2016) researched on project cost constraint and found out that there is no significant effect of the project cost constraint on the management of projects in Nairobi ($p = .381$). Again, their findings concur with Catanio and Tucker (2013) who found that certification on professional project management or experience of the project practitioner is not adequate to warrant fruitful management of project cost as a constraint.

5.3 Conclusions

The study has established that completion rate of WASH projects in Nakuru, County is hampered by several factors which include lack of appropriate project scope management, project schedule management and finally project cost management.

In conclusion for the influence of project scope management on completion of WASH projects in Nakuru County, Kenya. A majority of the organizations lack conducting scope planning, scope control as well as scope verification before the implementation of every project. These are critical aspects of scope management which negatively influences the completion of projects on scope.

Conclusion for the influence of project schedule management on completion of WASH projects in Nakuru County, Kenya is that, critical aspects such as the definition of project activities, sequencing of project activities as well as estimation of the duration of all the activities to be carried out in general negatively influence the completion of projects on schedule.

Conclusion for the influence of project cost management on completion of WASH projects in Nakuru County, Kenya is that such activities involved in cost management

such as planning of costs, estimation of project costs, budgeting as well as controlling project costs are not properly taken into serious consideration by most organizations, therefore, these factors negatively influence the completion of projects on cost.

5.4 Recommendations of the study

Referring to the findings and conclusions, the following recommendations were arrived at; To drastically reduce the projects incompleteness rate, all NGOs operating in Kenya should be subjected to proper Monitoring and evaluation policies, standards and rules so as to improve and find out areas that happen to create discrepancies in projects performance earlier enough through conception to completion of the projects, this definitely enhance tracking of the project progress hence improving their completion rates.

The second recommendation is that, the government should influence an initiative through the NGO coordination board that all projects must be compelled to audit and oversight, this will definitely ensure that there is improvement in service delivery.

Thirdly, sensitization and competency-based programs need to be initiated to the NGOs since most of them appeared to lack proper personnel in conducting the specialized activities in ensuring that projects are delivered within the desired scope, within the required time frame, and within the planned budget.

5.5 Areas for further research.

The study suggests that further studies should explore the effects of management practices on the triple constraint as a determinant for projects' completion. This is because it is assumed that proper management makes a keen observation to the performance of any endeavor.

An additional suggestion is to research on the influence of Monitoring and Evaluation of the triple constraint activities on improving the performance of projects within the whole country.

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APPENDICES

APPENDIX I: LETTER OF TRANSMITTAL

ELLY FRED OMONDI

P.O Box 104-20100, Nakuru.

Email: ellybake@gmail.com

Cellphone: 0708 625 532

Dear Sir/Madam,

RE: INFLUENCE OF TRIPLE CONSTRAINT MANAGEMENT ON COMPLETION OF NON-GOVERNMENTAL ORGANIZATIONS (WASH) PROJECTS IN NAKURU COUNTY, KENYA.

I am a Masters student at the University of Nairobi -Extra Mural Centre-Nakuru. As part of the requirements for Master's Degree award in Project Planning and Management, I am conducting a research project topic highlighted on the subject above. I am pleased to inform you that your Organization has been selected as one of my study sites. I hereby request for your support and permission to carry out data collection.

Thank you in advance.

Yours faithfully,

Elly Fred Omondi.

University of Nairobi. Nakuru Learning Centre.

APPENDIX II: RESEARCH QUESTIONNAIRE

Part 1. Demographic information.

1. Gender of the respondent

Male () Female()

2. Respondents' position

Project manager () Project Practitioner ()

Project Supervisors () Others ()

3. Indicate your age category.

21-30 () 31-40 () 41-50 () Above 50 years ()

4. How long have you been working for this NGO/Project?

Between a month - 1 year () between 1-3 years

() Between 3-5 years () above 5 years ()

5. What is your highest level of education?

Diploma () Bachelor's degree () Master's Degree () PhD ()

Part 2. Project scope management.

The statements below relate to project scope as one of the components of triple constraints responsible for the performance of a project. Please indicate by placing a tick (√) in the column that best describes your knowledge of project scope management practices in your organization.

Where SA= Strongly agree, A=Agree, N=Neutral, D=Disagree, SD=Strongly disagree

Statement		SD	D	N	A	SA
		1	2	3	4	5
1	My organization normally Plan for scope before the project is initiated.					
2	Scope Control is one of the key factors considered before implementation of any project.					
3	Scope verification is normally conducted during the implementation of every project in my organization.					
4	A clear Work Breakdown Structure is normally used in the planning of the project activities.					
5	In my organization validated deliverables are compared against scope baseline to ascertain whether the team has produced what was in the plan and documented.					
6	A collection of project requirements is mandatory before initiation of any project in my organization.					
7	Clear scope definition normally guides all the inputs in the projects conducted by my organization.					
8	All projects delivered by my organization are normally within the stipulated scope.					

Part 3 Project schedule management

The statements below relate to project schedule management activities, kindly indicate your opinion by placing a tick (√) in the column that best expresses your opinion about how your organization practices them.

Where SA= Strongly agree, A=Agree, N=Neutral, D=Disagree, SD=Strongly disagree

Statement		SD	D	N	D	SA
		1	2	3	4	5
1	My organization observes Definition of activities before any project takes off.					
2	Sequencing of activities is normally conducted for all the projects and activities so that they are performed in an order of priority.					
3	Activity duration is normally estimated during the planning process to ascertain time required for every task.					
4	Planning for schedule management is very crucial to my organization.					
5	Activity Resources Estimation is usually a key item in schedule management of project activities.					
6	The schedule is normally developed prior to any project activity in my organization.					
7	Controlling schedule is considered a key activity to ascertain whether there are variations between planned versus actual in terms of time management.					
8	Projects' done by my organization are normally delivered within the desired timeframe.					

Part 4 Project cost management.

The statement below relates to project cost management activities, please indicate by placing a tick (√) in the columns where appropriate to demonstrate your opinion on how your organization observes them.

Where SA= Strongly agree, A=Agree, N=Neutral, D=Disagree, SD=Strongly disagree

Statement		SD	D	N	A	SA
		1	2	3	4	5
1	My organization defines cost plan before every project begins.					
2	Estimation of the project cost is normally done to establish the cost of the entire project before the commencement of every project.					
3	Determination of the required budget is considered mandatory before any project is initiated in my organization.					
4	There is a department set aside to ensure that project costs are controlled.					
5	Funding sources are normally established at the planning stage of every project in my organization.					
6	Detailed expenditure is normally established at the planning stage of every project in my organization.					
7	Financing of projects is normally secured before the beginning of every project in my organization.					
8	Projects are normally completed within the approved budget in my organization.					

Part 5 Project completion.

The statements below relate to project performance as realized by the project organizations, in your opinion please place a tick in the appropriate column to indicate your opinion regarding your organization's achievement.

Where 5. Strongly agree 4. Agree 3. Neutral 2. Disagree 1. Strongly disagree

Statement		SD	D	N	A	SA
		1	2	3	4	5
1	Projects implemented by my organization are normally done within the planned scope.					
2	All projects delivered by my organization keep the stipulated hours of work					
3	There is always a higher percentage in achieving the project milestones					
4	Projects delivered normally satisfy our clients/customers.					
5	Projects done by my organization are always aligned with stated business requirements.					
6	There is minimal deviation of planned budget and cost variances for projects undertaken by my organization.					
7	My organizations always deliver prioritized projects.					
8	Before the beginning of any project, all stakeholders must agree on the inputs and outputs of the projects'.					

Thank you.

APPENDIX III: NACOSTI RESEARCH AUTHRISATION



NATIONAL COMMISSION FOR SCIENCE, TECHNOLOGY AND INNOVATION

Telephone: +254-20-2213471,
2241349, 3310571, 2219420
Fax: +254-20-318245, 318249
Email: dg@nacosti.go.ke
Website: www.nacosti.go.ke
When replying please quote

9th Floor, Utalii House
Uhuru Highway
P.O. Box 30623-00100
NAIROBI-KENYA

Ref. No. **NACOSTI/P/17/90959/17878**

Date: **18th July, 2017**

Elly Fred Omondi
University of Nairobi
P.O. Box 30197-00100
NAIROBI.

RE: RESEARCH AUTHORIZATION

Following your application for authority to carry out research on *“Influence of triple constraint management on completion of Non-Governmental Organizations wash projects in Nakuru County, Kenya,”* I am pleased to inform you that you have been authorized to undertake research in **Nakuru County** for the period ending **18th July, 2018**.

You are advised to report to **the County Commissioner and the County Director of Education, Nakuru County** before embarking on the research project.

Kindly note that, as an applicant who has been licensed under the Science, Technology and Innovation Act, 2013 to conduct research in Kenya, you shall deposit **a copy** of the final research report to the Commission within **one year** of completion. The soft copy of the same should be submitted through the Online Research Information System.


GODFREY P. KALERWA MSc., MBA, MKIM
FOR: DIRECTOR-GENERAL/CEO

Copy to:

The County Commissioner
Nakuru County.

The County Director of Education
Nakuru County.

National Commission for Science, Technology and Innovation is ISO9001:2008 Certified

APPENDIX V: UNIVERSITY AUTHORIZATION LETTER



UNIVERSITY OF NAIROBI
Open, Distance & e-Learning Campus
SCHOOL OF OPEN AND DISTANCE LEARNING
DEPARTMENT OF OPEN AND DISTANCE LEARNING
NAKURU LEARNING CENTRE

Tel 051 – 2210863
Our Ref: UpN/ODeL/NKRLC/1/12

P. O Box 1120, Nakuru
13th June 2017

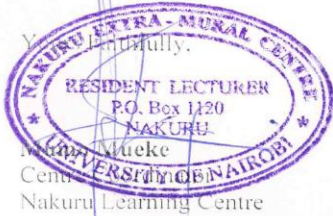
To whom it may concern:

RE: ELLY FRED OMONDI -L50/84851/2016

The above named is a student of the University of Nairobi at Nakuru Extra-Mural Centre Pursuing Masters degree in Project Planning and Management.

Part of the course requirement is that students must undertake a research project during their course of study. He has now been released to undertake the same and has identified your institution for the purpose of data collection on “Influence of Triple Constraint Management on Completion of Non- Governmental Organizations Wash Projects in Nakuru County, Kenya”.

For that reason, I am writing this, requesting you to assist him.



APPENDIX VI: TURN IT IN REPORT

Project

by Fred Elly

FILE	FRED_MASTER_PROJECT_FINAL_-_MERGED_AT_19-1.DOCX (166.73K)		
TIME SUBMITTED	24-JUL-2017 04:14PM	WORD COUNT	14479
SUBMISSION ID	832801371	CHARACTER COUNT	85072

APPENDIX VI: TURN IT IN REPORT

Dr. P. Mhaura *29/8/17*

Project

ORIGINALITY REPORT

14%

SIMILARITY INDEX

9%

INTERNET SOURCES

3%

PUBLICATIONS

10%

STUDENT PAPERS

PRIMARY SOURCES

1	Submitted to Institute of Accountancy Arusha Student Paper	1%
2	www.researchgate.net Internet Source	1%
3	erepository.uonbi.ac.ke Internet Source	1%
4	Submitted to Deakin University Student Paper	1%
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7	Submitted to University of Greenwich Student Paper	<1%
8	Submitted to Kwame Nkrumah University of Science and Technology Student Paper	<1%
9	Yakubu Adisa Olawale. "Cost and time control	