

MAKERERE UNIVERSITY

**AN EXAMINATION OF PROJECT SCOPE CREEP MANAGEMENT IN
MINISTRY OF WATER AND ENVIRONMENT HEADQUARTERS
CONSTRUCTION PROJECT**

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PLAN B

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DECLARATION

I, Marunga Ann Katalihwa, do hereby declare to the best of my knowledge that this research report is out of my own efforts and I declare that it has never been submitted to any university or institution of higher learning for any academic award.

Signed: MAK Date: 16th November 2018

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APPROVAL

This is to certify the research report entitled "*An Examination of Project Scope Creep Management in Ministry of Water and Environment Headquarters Construction Project*" has been under our supervision and is now forwarded for supervision.

Signed:  Date: 15/11/18

ASSOCIATE PROF. BAGIRE VINCENT

Signed:  Date: 16/11/18

MS. ALIMWENDA ANGELA

DEDICATION

I dedicate this research report to my parents Mr. and Mrs. Katalihwa Enoch as well as my sister Kijumba Liz who always believed in me and whose support, prayers and encouragement, gave me hope and impetus to complete this study. I dedicate this scholarly achievement to you for standing up with me in the critical time I needed you most.

I also dedicate this research report to my wonderful friends Eng. Turinawe Milton and Eng. Semugenyi George who dedicated their precious time and busy work schedules to not only providing me with all the support I needed towards this research, but also encouraged me to persevere in pursuing my Academic Career. May God's love embrace you all.

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LIST OF ACRONYMS

CVI	Content Validity Index
MW&EH	Ministry of Water and Environment Health
PMI	Project Management Institute
PPDA	Public Procurement and Disposal Authority
SLAs	Service Level Agreements
SOW	Statement of Work
SPSS	Statistical Package for Social Scientists
UGX	Uganda Shillings
WBS	Work Breakdown Structure

ABSTRACT

In the construction sector, high rates for occurrence of scope creep encountered by construction projects have been an issue of concern from policy makers and academic scholars alike. Global statistics indicate that by the time most projects are completed, the actual cost exceeds the original contract price by about 40% or more. Ugandan construction projects have not been spared either with cases of scope creep occurrence are wide spread especially among public construction projects. This study therefore sought to examine scope creep management within the Ministry of Water and Environment Headquarters' construction project. Specifically, the study intended to analyze causes of scope creep, examine the features of scope creep and suggest ways to manage scope creep in the Ministry of Water and Environment.

The study applied a cross sectional research design with a sample size of 127 respondents and quantitative research approach was employed. Descriptive statistics using mean and standard deviation techniques were obtained with the help of SPSS (v20). Validity and reliability of the data collection instrument were both tested using content validity index and Cronbach's α coefficient ensuring that all variables had α coefficients of 0.70 or more. In addition, expert judgment was obtained and statements that were not clear were modified to minimize ambiguity and inconsistencies.

Findings show that addition of new tasks to a project, alteration of project activities, complexity of the project and inadequate contingency to cater for emergencies were the established factors contributing to scope creep within the Ministry of Water and Environment Headquarters' construction project. Furthermore, the results indicate that raw material stock outs, scope variations, stalled progress for some activities, failure to implement key deliverables and milestones, project activities behind schedule as well as the need for reworks are characteristics of scope creep. In addition, occurrence of time and budget overruns the need for supplementary funding and usage of contingency project funds are also indicators of scope creep. Thus, project managers and contractors need to pay close attention to these factors because they act as warning signs for scope creep occurrence. Moreover, in relation to strategies, it was revealed that planning for requirements, continuous review of project plans and goals, delivering status reports, setting funds for emergency activities, embedding procedures for change management as well as effective monitoring of project progress are core in minimizing scope creep occurrence.

In light of these findings, the study recommended that project managers should develop a clear and concise project scope, develop elaborate procedures for change management, undertake stock taking of construction materials daily and improve on the monitoring mechanism throughout the project lifecycle.

CHAPTER ONE

INTRODUCTION

1.0 Introduction

This chapter provides a background to the concept of scope creep. Specifically, this section presents an overview of the concept in terms of background to the study, statement of the problem, purpose of the study, research objectives, research questions, scope as well as significance of the study.

1.1 Background of the study

Within the project management literature, there has been a wide spread recognition for the concept of project success in the construction industry (Beleiu, Crisan & Nistor, 2016; Aaltonen & Kujala, 2016). This is because project success forms a mechanism upon which project goals and objectives as set out at the planning phase become reality and provides the logical conclusion on whether the resources allocated to different project activities have been utilized in the most economical and efficient way (Dvir, Raz & Shenhar, 2013; Sudhakar, 2016). This has necessitated project managers to analyse and implement different projects but with a clear focus on the triple constraints of time, scope and schedule because failure to manage and control these aspects of the project could be a principal reason why projects fail to achieve their intended objectives.

However, while managers are encouraged to analyze constraints in the course of project implementation, several scholars indicate that many construction projects experience a high level of uncertainty and that project implementation is open to all sorts of external influence on top of fluctuating resource flows thereby creating scope creep (Richardson, 2010; Jun, Qiuzhen & Qingguo, 2011; Holgeid & Thompson, 2016). Similarly, a study by Bryde (2010) showed that only 29% of

construction projects mostly from the United States and Europe were successfully delivered on time, within budget, with required functions and features, while Al-Hajj and Hamani (2016) stated that 43% of the construction activities in Saudi Arabia were experiencing problems in productivity, innovation, slipping schedule, rework, mistakes and disputes, which subsequently increased construction costs leading to unexpected overruns.

In Uganda, most public construction projects have encountered cases of scope creep with delays in completion and cost overruns. Selected cases are; the recent project for extension of Parliament of Uganda chambers phase II whose consultancy fees among other costs increased by over 400% (PPDA report, 2016). This increase significantly impacted on the overall contract price. In a related scenario, an earlier report by Alinaitwe, et al, (2013) indicated that 53% of the projects executed by Civil Aviation Authority had scope creep challenges leading to significant cost overruns. Also, the construction of Mapeera House on Kampala road which was originally scheduled to take 13 months took 43 months. The current church house project under construction was expected to be completed within 18 months from the date of commencement of works in April 2011), but by May 2013 the works had already taken 25 months and was yet to be completed. The Northern by pass in Kampala which was scheduled to take two and a half years to construction and instead took more than 5 years and the cost increased by more than 100% (Ssepuya,2008).

In the same way, the Ministry of Water and Environment has not been spared by scope creep challenges as available evidence indicates that the ministry has faced delays in constructing its headquarters at plot 3-7 Kabalega Crescent, Luzira. A project that had been slated for completion within 196 weeks by 31st December 2016 and at an estimated cost of UGX 35 billion, had not been finished by December 2017 (Project status report, 2017).

Therefore, none of these studies specifically examined scope creep management as a component of project success, a gap intended to be addressed within the context of the Ministry of Water and Environment construction project

1.2 Statement of the problem

The inability to complete projects on time and within budget continues to be a chronic problem in both developed and developing countries (Holgeid & Thompson, 2016). In particular, the Ministry of Water and Environment Headquarters construction project is one that has faced challenges with scope creep management. The project that was slated to be completed in 196 weeks (three years) was not completed within the agreed time. Also, cost overruns increased from UGX35billion to UGX38billion, an increment of 3 billion shillings (37th site meeting minutes, 2016). This could be attributed to failure to manage scope creep which may be attributed to a number of factors such as lack of effective communication, financial indiscipline by the contractor, inadequate contractor's experience and design errors made by designers among others (Muhwezi, Acai & Otim, 2014). If this situation is not checked, the implementation of this project could fail. This study therefore sought to examine project scope creep management in Ministry of Water and Environment Construction Project.

1.3 Purpose of the study

The purpose of this study was to examine project scope creep management in Ministry of Water and Environment Headquarters' construction project.

1.4 Objectives of the study

- i) To analyze the causes of scope creep in the Ministry of Water and Environment Headquarters' construction project.
- ii) To examine the features of scope creep in Ministry of Water and environment Headquarters' construction project.
- iii) To suggest ways to manage scope creep in Ministry of Water and Environment Headquarters' construction project.

1.5 Research questions

- i) What are the causes of scope creep in Ministry of Water and Environment Headquarters' construction project?
- ii) What are the features of scope creep in Ministry of Water and Environment Headquarters' construction project?
- iii) What are the suggestions to manage project scope creep in Ministry of Water and Environment Headquarters' construction project?

1.6 Scope of the study

1.6.1 Conceptual scope

The study was confined to scope creep management within Ministry of Water and Environment Headquarters' construction project. The study aimed at analyzing the causes of scope creep, features associated with scope creep and the suitable strategies that could be taken to manage project scope creep of Ministry of Water and Environment Headquarters' construction project.

1.6.2 Geographical scope

The study was conducted within Ministry of Water and Environment Headquarters' project at Plots 3-7 Kabalega Crescent, Luzira. The rationale for considering Ministry of Water and Environment Headquarters' construction project was because of the variations in project scope which has created cost overruns and large uncertainties of the project schedule.

1.7 Significance of the study

- i) The study may assist Management and stakeholders particularly authorities within the Ministry of Water and Environment to appreciate the benefits of effectively managing scope creep.
- ii) This research may be considered by Scholars as a reference document thereby opening the debate on further research in the field of project scope creep management practice within firms.
- iii) To Policy makers, the findings of the study will provide tailor made recommendations and suggestions to assist improve projects affected by scope creep and how they can improve performance.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter provides a review of the literature in relation to the variables of study. The section presents arguments from different scholars with a view of understanding their common areas of consensus and disagreements, starting with the definition of the common terms used in the study.

2.2 Description of key concepts

2.2.1 Definition of project

A project is a set of interconnected tasks leading to the achievement of an overall objective or milestone or a set of activities that have to be executed in order to achieve the intended objectives (Karl, 2014). Similarly, Harrington and McNellis (2016) define a project as a set of interconnected activities (having start and end times), carried out to create a unique product, service, or result. This means that the project planning team's role is to identify, in broad terms, the principal activities to be undertaken to ensure that action plans are put into action (Venkataraman & Pinto, 2008). This achievement marks the end or completion of the project. A well-developed project definition will help the client; project team members and management have a consistent understanding of what is transpiring. It also serves to build a better-defined project plan as the scope of work is clearly outlined.

2.2.2 Definition of project scope

The Project Management Institute (PMI, 2008) defines project scope as the extent of what a project will produce (product scope) and the work needed to produce it. It is often documented using a scope

statement and a work breakdown structure (WBS), which is approved by the project sponsor (Project Management Institute, 2008, p. 440). Likewise, the International Institute of Business Analysis, (2009) states that project scope includes the work that needs to be accomplished to deliver a product, service, or result with the specified features and functions that scope refers to.

2.2.3 Definition of scope creep

The Project Management Institute (2008) defines scope creep as a tendency where the project managers or project owner add features and functionality without addressing the effects on time, costs and resources or more simply the gradual addition and expansion of project tasks and activities without necessarily expanding the budget or pushing the deadline forward. It can also be defined as the continuous and incremental changes that lead to uncontrolled and unauthorised growth in the projects scope (Moses, 2018). Similarly, Carkenord (2014) defines scope creep as the tendency for a project to extend beyond its initial boundaries with respect to the budgeted resources, time and activities. From these definitions, it is clear that project scope creep directly affects the project's budget, schedule and finally project success (Marchewka, 2012). While managers make precautions during project implementation, it is indicated that change in projects is inevitable, so the possibility for scope creep is also inevitable. Perhaps this is the reason why managing scope creep is so challenging. Hill (2010) argues that when the customer's expectations change so that the previously agreed upon set of deliverables are exceeded in features or functionality, the undeniable reality is experiencing scope creep. Primarily, Woodside (2010) attributed uncontrolled growth in a project's scope to the lack of appropriate project scope creep management as one of the major failure factors resulting into uncertain expansion or change in project scope.

More so, additional studies have also shown that the main causes of scope creep management are ambiguous and incomplete requirements (Larson & Larson, 2015), a view supported by Cox (2013) who indicated that there is continued project scope creep due to additional and poorly executed works. Ghosh (2007) states that this phenomenon can occur when the scope of a project is not properly defined, documented, or controlled. However, scope creep may also happen naturally where either the client may want more features for the same price or where the project manager may just bow down to keep the customer happy and add some activities during the course of the project. On the other hand, the implementation team themselves may add more scope by trying to gold-plate or when they try to make things more visual by prototyping (Farok & Garcia, 2016). It is generally considered a negative occurrence that is to be avoided whenever discovered.

2.2.4 Definition of project scope creep management

According to Kerzner (2013), scope creep management refers to a set of processes and activities required to effectively manage project tasks from start to finish. This includes activities to define project scope and relevant parameters, service level agreements (SLAs) in managing scope, planning scope management, controlling project scope elements defined on a daily basis, managing changes in material requirements and routine reporting on project scope. It also involves an analysis of key milestones, deadlines and project deliverables, tasks to be performed, resources required and the relevant project costs (Larson & Larson, 2015). Scope creep management is important because it helps project managers to allocate the correct amount of work and resources required to complete a project successfully. In the same way, managing scope is one of the most important responsibilities of a project manager since it acts as a mitigating measure in minimizing overruns during the course of project implementation. The knowledge and capability of managing project scope are thus important elements of a project manager's day to day tasks.

2.3 Analysis of causes for scope creep

Within the project management literature, scope creep is a phrase used to describe a situation in which project goals are altered or expanded so often that the assignment no longer resembles the original project commitment (Groff & Jones, 2013). It occurs due to changes and continuous or uncontrolled growth in a project's scope at any point after initiation of the project. More broadly, as noted by Gurlen (2013), there are many different possibilities for why scope creep can occur. For example, scope creep can be viewed as the pressure to deliver more than what was agreed to originally. In the same way, scope creep can also occur when the business requirements were not well defined upfront, and thus the scope changes over the course of the project as requirements are absorbed in the due course. Requirements are not well defined up front if the correct people were not involved in the definition of requirements needed in the project.

Melton and Iles-Smith (2009) observed that while the causes of scope creep may not readily be identified at the initiation of the project, it may be linked to internal and external variables within which a project is being implemented. Internally, attributes such as poorly formulated goals and objectives, improper scope definition, poor risk management, scope drift, communication dilemmas and having too many stakeholders are the most cited factors responsible for scope creep among construction projects. While externally, related factors include; uncertainty and complexity of projects, limited stakeholder involvement, unfavorable weather conditions as well as regulatory environment in form of approvals for infrastructural designs before undertaking a construction project may pose challenges to implementers leading to scope creep (Melton & Iles-Smith, 2009).

In relation to scope definition, Alinaitwe *et al.*, (2013), observed that many projects start with good ideas, huge investments and great efforts. However, most of them do not achieve much success and

a major contribution to their unsuccessfulness is the lack of understanding or defining project and product scope at the start of the project. It is indicated that a properly defined and managed scope leads to delivering a quality project, in agreed cost and within specified schedules to the stakeholders. However, whilst there is a clear understanding of the need to achieve project success, surprisingly little is published on significance of scope on project success and the end result is the occurrence of scope creep. More closely, another project management challenge is where project managers experience improperly defined goals and scope changes (Low & Ong, 2014). It is essential that a manager understands and knows how to explain the goals of the project. Without clearly defined goals and objectives, the project is doomed to fail. Besides, Namiyingo *et al.*, (2016), also complemented that scope creep is caused by misinterpretation of what is contained in the project scope, contract, or statement of work (SOW). This misinterpretation may be caused by mixing tasks, specifications and special instructions. In the same way, using imprecise language, lack of adequate structure or chronological order, wide variation in task size and work description are all contributing factors to scope creep.

Meanwhile, Hanna and Gunduz (2014) revealed in their study that one of the factors that lead to scope creep is a lack of a defined and disciplined procedure for change management. Without documented and enforced change management procedures, an environment can be created in which no one is really sure of what the deliverables (statement of work) are to include. Individuals on the project may also be working from a completely disparate set of assumptions as to what is to be produced at the conclusion of the project. Without a documented, approved and enforced change management process that is supported by senior management, customers and the project team; features may be added to the project or system without using any coordinated approach. This makes the scope very difficult to control and can very easily lead to scope creep.

Furthermore, Kerzner (2013) noted that inadequate risk management in construction projects presents one area where scope creep may develop. He argues that risk management is one of the project management issues that project managers need to deal with to efficiently handle scope creep. This is because oftentimes, projects do not go exactly as planned. Therefore, an effective manager who knows how to collect information about risky scenarios, develop trust and anticipate which parts of the project are most likely to fail will have higher chances of managing scope creep. Impliedly, scope creep is a poor understanding of the original project, changing market conditions and competing forces within a company and is a management risk in most projects. Most megaprojects usually fall victim to scope creep which often results in cost overrun and behind schedule. In other words, where the project may have no formal risk analysis and planning process, forms a breeding ground for scope creep (Amoatey & Anson, 2017). In particular, not identifying risks and their associated impacts on a project may have a very detrimental effect on the budget and/or schedule. For example, if a key supplier's facility is suddenly destroyed by fire, and no analysis has taken place prior to project plan development to identify the risk and plan for a contingency, the project could be in serious trouble. Its scope may creep to include the cost and time of bringing a new supplier and/or facility on board. The project activities may be delayed, consuming valuable resources. Nonetheless, Farok and Garcia (2016) noted that risks in projects are difficult to counteract even among the most experienced project managers.

On the other hand, working with the team members with limited skills could also pose challenges for project managers. Karl (2014) states that a challenging construction project may need some additional skills that nobody in the team possesses. It is up to the project manager to decide whether a member will need to be trained or to add someone who already has the required skills to do the job. Other project management problems associated with working in teams are lack of accountability on

the part of the members, finger pointing and blaming each other. These are all unproductive and can bring the project into a complete halt (Carkenord, 2014). Equally important, the level of communication among project stakeholders could explain variations in scope creep. In line with this argument, Lucas (2009) observed that poor communication is one of the project management challenges that project managers encounter in addressing scope creep which always get in the way when it comes to managing people. An effective project manager needs to know how to deliver instructions so that they are clearly understood by the members. Mochal (2014) states that there is also a need to emphasize collaboration among project members to ensure that everybody is privy to the recent project developments.

Within the same context, Chung, Nicholas, Johnson and Mark (2015) also supported the view that scope creep may be caused due to lack of a formal communication plan. This is because if a communication plan has not been developed or is not being followed, individuals may not have key information on which to base while making project decisions. For example, a major milestone may be in danger, and if the proper individuals are not aware of the problem, inappropriate decisions may be made which will adversely impact the project budget. For example, a supplier may decide to substitute a key component at the last minute leading to significant differences in project dimensions. If the new substituted part is a sub-component of a larger part, and there are no tolerances for the changed part, the project budget and/or schedule may creep to accommodate the change hence leading to scope creep.

From the external point of view, external forces as well as uncertainty during project implementation provide avenues through which scope creep can arise (El-Dash *et al.*, 2017). For example, Hanna, Russell, Nordheim and Bruggink (2009) stated that as managers proceed with project

implementation, they become more knowledgeable about several aspects of a project than they were previously before implementation. This may prompt a change in previously defined requirements or direction and this could result into scope creep. Moreover, it is vital to observe that changes such as legislation, political interference and market conditions all affect scope creep among construction projects. For projects that require physical installation of plant and equipment, it is often difficult for users to visualize how they would use a new system until they see it. When this happens, changes may be needed arising from recommendations suggested by other stakeholders.

2.4 Features of scope creep

Scope creep involves a project stretching far beyond its original vision and presents one of the biggest causes of failure among construction projects. As Tharkuta (2013) indicates, all projects (ideally) have a scope of work which outlines all aspects of the work that's being done, including expectations, tasks and activities, deliverables, deadlines and costs. While it's not uncommon for a project scope to be adjusted with time, owners may ask for changes that take the project significantly away from its initial intent. This is considered scope creep and, along with costing contractors' money, it can have legal ramifications. A study by Moneke and Echeme (2016) revealed that among construction projects, existence of scope creep can be observed using several indicators. These include; continuous stock outs for raw materials, little stakeholder involvement, stalled progress for some project phases, unclear scope management plans, unstreamlined decision making structures, inadequate resource allocations to critical activities, key deliverables are not being met consistently, project activities behind schedule, having trouble in controlling the budget, gold plating, absence of a work breakdown structure, broken communication between client and project managers, among others.

With regard to communication, it is indicated that without exchanging information by project managers in the early stages and throughout a project, can make it difficult to create a shared vision of aims and objectives of a project (Rossi, 2015). This will lead to a scenario where stakeholders do not fully understand the value that the project will deliver and therefore will not show maximum commitment towards achieving the mission and vision. Therefore, communication should be a priority since team members must be provided with regular opportunities to deliver updates and also raise any concerns; if this is not currently happening then it could one way indicating major problems to the project, with scope creep one of them. Additionally, other signs such as the project experiencing little infrastructure progress, continuous expansion of the project as well as identifying issues at an early stage are indicators for a project affected by scope creep (Madhuri, Rao & Suma, 2014). One of the benefits of a shared understanding of a project's vision is that it facilitates the creation of a unified and optimized technical infrastructure that effectively underpins its progress. Therefore, evidence of non-progress for the infrastructure could lead to disparate and even conflicting processes and tactics being employed, potentially increasing the possibility of scope creep. On the other hand, another critical measure of a successful project is the quality of any outputs (Love & Edwards, 2014). Thus, finding issues at an early stage may indicate that some aspects were not factored into the initial plans and may negatively affect the stability, performance and extensibility of the structure in future when finished. If these issues are spotted early, it is necessary to review the specification documents and rectify the project's direction to ensure it meets the true requirements.

Furthermore, Moneke (2015) argued that whereas there are many features of scope creep in projects, the most critical one is related to the undefined project requirements. Every project must have clearly defined activities and goals to be implemented during the project life cycle. Therefore, where

scenarios indicate existence of undefined project goals and requirements, present the ultimate red flag of scope creep. Undefined goals leave a project susceptible to endless changes and expansion in the name of meeting the company's goals thereby leading to significant overruns in the project resources. More so, project managers cannot properly plan and allocate resources if they do not have a specific set of deliverables ready during the planning phase.

Within the same context, Collins (2016) also noted that non-reporting structures, conflicts arising from failure to pay project contractors, as well as actual work taking much longer than planned are all potential indicators for scope creep in construction projects. For instance, in relation to conflicts, funding forms a crucial aspect in any project implementation since it is through proper funding that wages for project managers and payments for raw materials and all project activities are catered for. Thus, conflicts due to non-payment is a clear indicator for scope creep. Likewise, a gradual increase in project costs without a corresponding progress in completion of project tasks is a manifestation for scope creep occurrence among construction projects (Pretorius, Steyn & Jordaan, 2012). Similarly, projects that are implemented but with no reliable reporting structures signify a material uncertainty that could yield scope creep.

Relatedly, a study by Bondale (2015) revealed that contingency usage is a leading indicator for scope creep in construction projects. Depending on the project funding policies of as agreed between the implementing company and project sponsor, project managers may have the ability to directly authorize contingency drawdowns as they are a component of the approved cost and schedule baselines. However, just because a project manager has the authority to utilize contingency without seeking additional approvals doesn't mean that it shouldn't be tracked and reported separately. Therefore, while contingency is supposed to be used to reduce impacts from realized risks, it can

also be used to mask scope creep or to avoid going through project change management (Bondale, 2015). Preventing contingency misuse is a good reason to track and report on its usage, but a more valuable one is that contingency usage complements earned value practices by providing a leading indicator of future variances. Another good practice is to tie contingency amounts to risk events associated with specific work packages or achievement of key milestones that will both reduce the opportunity cost (and greater chance of misuse) of contingency held long past its need and will also provide an early warning sign for those work packages.

2.5 Suggestions for managing scope creep among construction project

Globally, the concept of scope creep undermines the overall effectiveness and productivity of the project management team as it can result in added costs and pressures to both the project team and client. As a result, project managers and practitioners must identify strategies for managing project scope creep early to avoid its dire consequences. Notably, a study by Karl (2014) suggested that the number one strategy relies on effective communication between implementers and client as well as other stakeholders with a vested interest in the project. This is because having good levels of communication promotes good coordination to prevent problems occurring in the first place (Prabhakar, 2008). With effective communication, it becomes easier for managers to spot deviations and when the project might be going off course thus helping to reduce the likelihood of it becoming unmanageable as well as minimise the risk of wasting investment on the wrong tasks. Moreover, effective communication also promotes feedback from different stakeholder groups. Alongside this strategy, Venkataraman and Pinto (2008) suggested that ensuring effective planning and review of a detailed plan are key to any successful project and controlling scope creep among construction projects. By reviewing project plans, stakeholders can easily identify activities that need additional funding and other warning signs for scope creep. Similarly, continuous project reviews also help in

aligning stakeholder expectations with project goals and objectives. Farok and Garcia (2016) also complemented by noting that project managers need to have a clear detailed plan with estimated realistic goals and deliverables of how they will manage scope creep.

Additionally, Moneke (2015) noted that defining the scope statement before initiation of a project is a strategy for controlling scope creep. During the planning stage, there must be a statement that spells out the project components and packages with the entire project scope. All stakeholders should sign off the scope statement to ensure that beneficiaries are aware of the scope and expectations of the project. The project manager should routinely follow the agreed scope and use it as a basis for judging whether the project is on track or not. This will identify variances and early indicators for scope creep so that appropriate remedial action is taken. Equally important is the involvement and consultation of all stakeholders during the lifecycle of the project (Njau, 2012). Njau (2012) argues that it's very imperative to consult project stakeholders for their views from the beginning of the project, encouraging them to take part in the requirements and design phases to the final execution of the project activities. By involving stakeholders, it is also important to obtain their suggestions and ideas such that the agreed position is signed off by concerned parties as a basis for modifications on some project activities. This can be achieved by documenting how the stakeholders will want the outlook of the final project outcomes and also agreeing on specifications in the design of the project activities before and during execution of the project activities.

Similarly, Nicholas and Steyn (2012) noted that setting up a contingency plan with a specific budget attached to it can reduce scope creep occurrences. Indeed, setting up a contingency plan is one of the imperatives for success of construction projects especially in managing overruns related to budget allocations. Construction projects need to have a degree of contingency built into them, otherwise

scope creep will always be a dilemma. Therefore, by including some budget slack in the project plan allows managers to counteract the effect of unforeseen issues and events that may affect project implementation negatively. This may necessitate increasing the budget to account for extra resources that may be needed in case certain tasks were not adequately catered for. Similarly, project implementers need to establish a change control program that can regulate future changes to the project (Harrington & McNellis, 2016). Such a procedure should be communicated to customer and the project team. A formally written change request allows one to assess the business benefit of any change, and gain approval before considering it as an addition to the project scope. Similarly, Clark (2014) further added that project managers need to attach a cost and time to each change so that a customer is aware about its impact. This is because asking the customer to go through a formal process helps ensure there is a clear business value for any changes.

Meanwhile, Kendrick (2015) proposed a set of strategies to minimize scope creep among construction projects. These include among others; clearly defining roles and responsibilities for managers, change management and ensuring usage of progress project reports. Nabeel, Pourzolfagharb and Shahnazari (2013), say that establishing ground rules for each project member, including customer involvement, will reduce risk and misunderstandings during the project. Kerzner (2013) adds that it is critical to precisely define what the customer can influence and to what extent. More so, clearly defined roles and responsibilities form the first step in establishing an effective change management policy. In relation to progress reporting, Ogunlana, Promkuntong and Jearkjirm (2016) opined that projects are hard to fund and take a long time to deliver. This necessitates consistent reporting to ensure that all intended activities and goals are on track. In addition, when managers stick to timely reporting for the progress of the project tasks, it helps in proper monitoring and reduction of variances. As Curlee and Gordon (2011) emphasized, reporting procedures should

contain three resource parameters of time, cost and scope performance because the same three aspects are the benchmarks upon which successful projects are measured. Likewise, Chileshe and Kikwasi (2014) posited that an effective system monitors and analyzes all three factors (schedule, performance, and costs) as a group by setting budgets, measuring expenditures against budgets and identifying variances. This ensures that the expenditures are proper and taking corrective action when required which aids in delivering a high level of quality in both resource allocation and project implementation.

Buser, Massis and Pollack (2014) argued that since everyone enjoys giving and receiving progress of project implementation, it is important to keep the customers and all stakeholders informed about the key deliverables executed. If a project manager attempts to manage negative portions of a project by keeping them a secret, he or she not only runs the risk of damaging the project, but also degrading the level of trust and credibility that has been fostered. Thus, it is always better for project managers to be open and honest, be truthful and admit errors wherever possible (Banda & Pretorius, 2016). Such a strategy will promote transparency and accountability for the project resources. In particular, with the help of tools such as work breakdown structure, network diagrams and charts could be simple tools that can visually clarify the status for each project milestone and scope execution. For project managers to become more effective in their jobs, there is also need to attend project management training programs that can help them solve the most common project management challenges.

It is also a recommended practice for managers to create a change management plan a means of controlling scope creep (Fageha & Aibinu, 2016). The change management plan defines how managers record, track and act on change requests. Without it, project implementers risk losing track

of changes and stretching the project beyond scope the initial scope agreed upon. To be effective, an effective change management plan must have: a centralized and easily accessible center where all requests are channeled; a mechanism to evaluate the priority of each change request based on its business/project impact; a process to evaluate how the change will affect the project's outcome, dependent tasks, and existing schedules and budgets; a procedure to track actions taken in response to change request and a process to communicate any issues related to the change request.

On his part, Brunner (2014) indicated that whereas firms use different approaches to handle challenges of scope creep, the use of effective monitoring in the course of project implementation is equally crucial. According to this view, monitoring involves a regular collection and systematic analysis of information to track the progress of project implementation against pre-set targets and objectives with a view of ascertaining whether the different tasks and project objectives have been achieved or not. Therefore, monitoring clarifies project objectives, links activities and their resources to objectives, translates objectives into performance indicators and sets targets, routinely collects data on finished tasks and compares actual budget results with targets (Idoro, 2012). Likewise, monitoring project activities provides an early warning for deviations and occurrence of overruns and alerts project managers to take corrective action (Kimweli & Bwisa, 2013). Similarly, managers also use project monitoring to exercise control, implement decisions and facilitate continuous improvement, which brings about efficiency in the use of scarce project resources.

CHAPTER THREE

METHODOLOGY

3.1 Introduction

This section presents the methods that were used in the study. These include; research design, study population, sample size, sampling technique, sources of data and data collection techniques. The section also explained the reliability and validity of the questionnaire and data analysis method.

3.2 Research design

The study adopted a cross sectional and quantitative survey design which and was descriptive in nature in examining scope creep management within the Ministry of Water and Environment Headquarters' construction project. In particular, this study used a cross-sectional design because this research design is used to gather data from a sample of a population at a particular point in time. Secondly, the study applied a quantitative approach because it aims at obtaining data expressed in numerical terms (Amin, 2005). This design also helped in collecting pertinent data from all respondents once and for all to reduce on time and costs (Creswell, 2008).

3.3 Study population

The study focused on Ministry of Water and Environment Headquarters' construction project. The study population comprised of 190 project employees directly involved with the construction project of Ministry of Water and Environment in one way or the other. This number was derived from the human resource records that indicated that there were 190 project employees responsible for implementing this project by close of 2016 (Project status report, 2016).

3.4 Sampling

The researcher obtained the sample size of 127 respondents from the study population of 190 employees of Ministry of Water and Environment Ministry Headquarters. The procedure for determining the sample size was based on Krejcie and Morgan (1970) table for selecting a sample size from a known population. The researcher applied stratified sampling technique in arriving at the right number of respondents. The justification for using this approach is that it is ideal given the nature of people who are being referred to and their availability. Similarly, a stratified technique divides the population into smaller groups from whom data can be collected more conveniently (Murphy, 2018). The study is targeting ministry employees who are concerned with implementation for the construction of Ministry of Water and Environment Headquarters' project, which is one stratum among employees within the ministry. Therefore, stratified sampling technique is the most ideal technique.

3.5 Sources of data

The study used only primary sources of data. This type of data was preferred because it is first hand data and was only be used to answer the specific research objectives.

3.6 Data collection

The researcher used a self-administered questionnaire to collect primary data on the research variables of 127 respondents from the study population of 190 employees of Ministry of Water and Environment Ministry Headquarters. The data gathered from the questionnaire helped the researcher in compiling the finding of the study.

3.7 Measurement of variables

To determine the extent of project creep management, the study adopted the conceptualizations and measurements of Larson and Larson (2015) and El-Dash *et al.*, (2017), who indicated that project creep management can be assessed by determining causes for variance, deviations in change management plan, scope management variations as well as changes in the requirements management plan. The researcher modeled scales to fit the case study context and the measurement were based on Likert scale.

3.8 Validity and reliability of research instrument

3.8.1 Validity

According to Saunders, Lewis and Thornhill (2012), validity refers to the extent to which the data collection instrument is relevant in measuring what it is supposed to measure. In this study, validity of the instrument was determined using both expert judgment and computing the content validity index (CVI). This method involved designing questions with five responses of “strongly agree, agree, not sure, disagree and strongly disagree” for experts to highlight whether the dimensions and concepts used in the study are appropriate to give genuine responses. The views obtained from this exercise were used to rephrase some questions until the final version of the instrument was got. In addition, the content validity index was obtained by giving the questionnaire to project experts to check whether each question presented under each of the constructs measured the item under which it is presented. The obtained results were computed using the CVI formula (K/N , where K =Number of items considered relevant and N = Number of items considered in the instruments). Amin (2005) indicates that the questionnaire is only regarded valid if the computed CVI is at least 0.7.

3.8.2 Reliability

Reliability is a measure that indicates the stability and consistency with which the data collection instrument captures the variables under study (Salmond, 2008). In this study, reliability was determined by pretesting the questionnaire and comparing the results with Cronbach Alpha Coefficient. This enabled the researcher to check the consistence and make adjustments to the questionnaire. As a general rule, a Cronbach Alpha of 0.7 or more should be obtained to consider the responses as consistent and reliable (Nunnally, 1978). The findings revealed that all variables returned the minimum validity and reliability threshold of 0.70, which signify high consistence. The results are indicated in Table 3.1 hereunder.

Table 3.1: Validity and reliability statistics

Study variables	No of items	Cronbach's Alpha coefficient	Content validity index
Causes of scope creep	11	0.702	0.818
Features of scope creep	11	0.769	0.818
Suggestions to manage	12	0.763	0.833
Scope creep			
Total/Average	34	0.745	0.823

Source: Primary data

From Table 3.1 above, the results show that all the sub dimensions including causes of scope creep, features of scope creep and strategies for managing scope creep exceeded the minimum acceptable threshold Cronbach alpha of 0.7 as presented above, which is evidence of a high internal consistency and validity of the questions. Therefore, consistent with Nunnally (1978), the results generated from this study are valid, reliable and therefore fit to be based on to make objective conclusions and recommendations. In the same way, the content validity index also portrays that each construct

fulfills the threshold coefficient of at least 0.7 as suggested by Amin (2005). Thus, the results were consistent, valid and reliable for generalization.

3.9 Data processing and analysis

The researcher used Statistical Package for Social Scientist (SPSS) version 20 to analyze quantitative data that was collected using the questionnaires. Descriptive statistics was used to analyze data relating to background information using mean, percentages, frequencies and tables. In addition, the study also relied on descriptive techniques of mean and standard deviation to examine how the respondents agreed or disagreed with the various statements in the questionnaire. This enabled the researcher to understand the perception of respondents about scope creep analysis, features of scope creep and possible strategies to manage scope creep within the Ministry of Water and Environment headquarters' construction project.

3.10 Ethical consideration

The researcher met all the relevant authorities in Ministry of Water and Environment Headquarters Construction Project to make appointments, seek their permission and consent to carry out the research about the project. This was vital in planning for the meeting with the respondents. Important issues were agreed on such as the date, time and venue of the meetings. Similarly, the researcher ensured that information that was obtained regarding the project was kept confidential to avoid its exposure to unauthorized audience and was strictly used for academic research purposes. The researcher also ensured that all materials used in this study were been credited appropriately.

CHAPTER FOUR

PRESENTATION, ANALYSIS AND INTERPRETATION

4.1 Introduction

This chapter presents the findings of the study in line with the research objectives. These were: to analyze the causes of scope creep, to examine the features of scope creep and to suggest strategies for managing scope creep in the Ministry of Water and Environment Headquarters' construction project. However, the chapter starts with the response rate of the respondents as indicated in table 4.2 here under.

4.2 Response rate

Out of the targeted 127 potential respondents, only 121 successfully filled and returned the questionnaires distributed to them, giving a response rate of 95.3% against the 4.7% that never responded. This implies that the findings in this study are based on the 95.3% response rate. In line with Amin's (2005) argument, the study results are fit for generalization since a response rate of 70% or more has been realized.

4.3 Background characteristics for respondents

The study also examined the demographic characteristics of respondents. These were; gender, age bracket, education qualification and duration of service employees had spent within the Ministry of Water and Environment. The distribution of respondents in respect to these characteristics is summarized in Table 4.2 on the following page.

Table 4.2: Distribution of respondents by their demographic characteristics

Respondent Characteristic	Frequency (N=121)	Percent
Gender		
Male	94	77.7
Female	27	22.3
Age bracket		
20 years & below	10	8.3
21 – 30 years	34	28.1
31 - 40 years	42	34.7
41 - 50 years	28	23.1
Above 50 years	7	5.8
Education level		
Certificate	5	4.1
Diploma	5	4.1
Degree	72	59.5
Postgraduate	39	32.3
Duration of service		
5 years or less	20	16.5
6 – 10 years	32	26.4
11 – 15 years	43	35.5
16 years & above	26	21.5

Source: Primary data

From Table 4.2 above, the descriptive statistics for the various demographic characteristics of respondents were obtained. In relation to gender, results indicate that males dominated the study with 77.7% in comparison to their female counterparts at 22.3%. The results imply that whereas the Ministry of Water and Environment is gender sensitive when distributing positions to potential applicants, the responsibility of handling project related tasks is entrusted with males than females. The dominance of males in this study could be explained by their level of aggressiveness in handling project related tasks. Most importantly however, the findings indicated that the study was gender balanced since it solicited views from both sexes.

With regard to age, the results further revealed that the majority of respondents were those in the age bracket of 31-40 years with 34.7% while the least proportion were those in the age bracket of 20 years and below with a contribution of 8.3%. This shows a fair distribution of age bracket across the different categories of respondents with a mixture of young, old and experienced employees. Most significantly though, the implication of this finding is that Ministry of Water and Environment gives priority to the youth more compared to old employees while offering job vacancies. This finding is not surprising considering the fact that the youths constitute Uganda's population statistics.

Furthermore, the education qualification of respondents was also examined. The findings revealed that an aggregate of 59.5% were degree holders while the lowest category were those with certificate and diploma qualification at 4.1% each. The results imply that potential job seekers must have attained a minimum of a certificate to qualify for a job offer within the Ministry of Water and Environment. Similarly, the results imply that most employers perceive degree qualification as the most appropriate requirement for attaining a job vacancy since the majority of employees have this qualification.

The other aspect examined was the duration that employees had spent within the ministry. Under this category, the majority of respondents constituting 35.5% has stayed for a period of 11-15 years with the lowest number of 16.5% having stayed for only five years and below. These findings indicate a high level of experience and a low turnover for employees within the ministry since majority of employees had stayed in the ministry for at least 11 years.

4.4 Descriptive statistics

In order to fulfill the research objectives outlined above, the study employed descriptive techniques of mean and standard deviation. In applying these techniques, a mean value of 3 and above with a

low standard deviation signified that the majority of respondents agreed while a mean value of less than 3 with a high standard deviation implied that the majority of respondents disagreed to the statement.

4.4.1 Analysis for causes of scope creep

Under this objective, respondents were asked to provide their views in relation to occurrence of scope creep within the Ministry of Water and Environment Headquarters' construction project. The responses in relation to this objective are summarized in Table 4.3 hereunder.

Table 4.3: Causes of scope creep within the Ministry of W&EH Construction Project

Statement	Min	Max	Mean	S/Dv
Materials planned for implementing this project were adequate throughout the entire project.	1	5	3.33	1.036
It is a policy to involve all stakeholders during the course of project implementation within the Ministry of Water and Environment.	1	5	3.54	0.975
All necessary approvals are complied with before initiation of any project within the ministry.	1	5	3.56	0.893
All projects implemented within this ministry had a resource contingency plan.	2	5	3.61	0.952
The nature of this project is categorized as big considering the technicality needed to implement it.	1	5	3.74	0.89
This project construction for the ministry headquarters was within the projected time as agreed between the parties.	2	5	3.75	1.011
In this project, additional tasks were included after initiation of the project.	1	5	3.83	0.86
Some of the project activities were altered to match the current demand for office space.	1	5	3.83	0.83
Project managers routinely make changes to most tasks implemented in this project.	2	5	4	0.816
In implementing the project for construction of ministry headquarters, cost overruns have ever been reported.	2	5	4.05	0.865
There is clear communication network between project managers and implementers for similar projects within the ministry.	2	5	4.06	0.778
Total/Average	1	5	3.75	0.814

Source: Primary data

Results from Table 4.2 returned a grand mean and standard deviation of (3.75; 0.814), which signify that most of the respondents agreed to majority of the statements. In addition, the findings revealed that the materials planned for implementing the project are inadequate throughout the entire project (Mean= 3.33; SD = 1.036) which explains occurrence of scope creep. However, majority of the respondents agreed that there is a resource contingency plan implemented within the Ministry (Mean = 3.61; SD = 0.952). This explains the reason to why the inadequacy of materials is not a major cause of project scope creep because a solution has been put in place.

The results from the table also reveal that least respondents agree with the fact that all necessary approvals are complied with before initiation of any project within the ministry (Mean = 3.56; SD = 0.893). This is evidenced by the results that reveal that majority of the respondents agree that some of the project activities were altered to match the current demand for office space (Mean 3.83, SD = 0.83). If project compilation and approved and later altered to suit the office space, there will be scope creep because there will be need for change of the plan and timelines as well.

In the same way, least respondents agreed that additional tasks were included after initiation of the project (mean=3.86; SD=0.86) which could perhaps have led to scope creep. However, majority of respondents highly agreed that there is clear communication network between project managers and implementers for similar projects within the ministry (mean= 4.06; SD 0.778). In as much as additional tasks were included after initiation of the project, there is still communication network between project managers and implementers. Although, communication between the project managers and implementers does not necessarily mean that the implementers will automatically fix the added tasks in such a way that will not cause the scope creep.

From the above findings, the key causes of scope creep are; cost overruns being reported by project managers, routine changes made to most tasks within this Project, addition of tasks after initiation of the project; not involving all stakeholders during the course of project implementation, lack of adequate materials during project materials.

4.4.2 Features of scope creep

The study also sought to examine the features of scope creep within the project and findings under this objective are summarized in Table 4.4 hereunder.

Table 4.4: Features of scope creep within Ministry of W&EH Construction Project

Statement	Min	Max	Mean	S/Dv
Some activities and tasks for this project are behind schedule.	1	5	3.53	0.867
Key project deliverables and milestones were executed as agreed.	1	5	3.62	0.977
There has been no major conflict between the different parties since initiation of this project.	1	5	3.66	0.822
The ministry has on several occasions requested for a supplementary budget to facilitate the project activities.	2	5	3.68	0.839
All the requirements in this project were agreed upon between the funder and project implementers.	1	5	3.72	0.994
The need for reworks on some tasks were common in this project.	2	5	3.75	0.924
This construction project has had significant time and budget overruns	1	5	3.77	0.793
In this project, we have ever experienced raw material stock outs.	2	5	3.81	0.897
The project has ever experienced stalled progress for some activities.	1	5	3.85	0.872
We face variations in scope for most projects implemented in the Ministry of Water and Environment.	1	5	3.88	0.852
In this project, managers have ever utilized the contingency reserve funds to cater for some activities.	1	5	3.93	0.868
Total/Average	1	5	3.75	0.882

Source: Primary data

From Table 4.3, an average mean of 3.75 and a grand standard deviation of 0.882 were obtained.

This implies that the majority of respondents agreed to the various statements for features of scope

creep. Additionally, with regard to the features of scope creep, least respondents agree that some activities and tasks for this project are behind schedule (mean= 3.53; SD= 0.867). This is countered by the statement that the need for reworks on some tasks was common in the Project as revealed by most respondents (mean=3.75; SD=0.924). Whenever a task is done in a manner that is unsatisfactory to the project managers, the implementer may be requested to dismantle and re-do a task to meet the key performance indicators. This may result to scope creep as the tasks that come after the redone tasks may be delayed.

Results from the table also revealed that least respondents agreed that key project deliverables and milestones were executed as agreed (mean= 3.62; SD= 0.977). However, majority of the respondents agreed that the need for reworks on some tasks was common in this project (mean=3.75; SD=0.924). Since the set tasks were not done to fulfill the project's expectations, there was need to redo the tasks which makes the latter a considerable feature for scope creep.

The findings from the above table also revealed that the least respondents agreed that they have ever experienced raw material stock outs (mean=3.81; SD=0.897). Much as the majority of the respondents agreed that the project has ever experienced stalled progress for some activities (mean=3.85; SD=0.872), the two statements could be related since the variations between their means is small. Stalled progress could be as a result of the project experiencing raw material stock outs.

Despite these mixed and modest findings, it can be observed that failure to deliver key project deliverables, variations in project requirements and need for reworks are clear indicators for scope creep. More so, addition of some tasks that were not part of the original plan led to project expansion and the resultant impact was project scope creep.

From the above findings, the key features of scope creep are; utilization of contingency reserve funds by to cater for some activities, variations in scope for most projects implemented in the Ministry of Water and Environment are faced, stalled progress for some activities and raw material stock outs.

4.4.3 Suggestions for managing scope creep

This study also sought views from respondents on what could be suitable strategies for managing scope creep among construction projects. Table 4.5 hereunder provides a summary of the responses in respect to the respondents' views on the various statements.

Table 4.5: Suggestions to manage scope creep in the Ministry of W&EH Construction Project

Statement	Min	Max	Mean	S/Dv
There should be a plan for requirements before initiation of any project.	1	5	2.83	0.879
All stakeholders for projects need to have defined roles and responsibilities.	1	5	3.46	0.817
There should be a change management plan as part of every project implemented within this ministry.	1	5	3.49	0.914
There should be continuous review of project plans and goals during implementation of projects within the ministry.	1	5	3.51	0.896
There should be progress reporting for proper project implementation within the ministry.	1	5	3.52	0.958
There should be provisions for unforeseen events and costs.	1	5	3.57	0.825
Project managers need to set aside some reserve funds to cater for emergency activities and tasks.	1	5	3.6	0.88
Embedding procedures for change before initiation of particular projects.	1	5	3.6	0.861
There should be effective communication among projects.	1	5	3.75	0.969
There should be proper monitoring of project progress in controlling scope creep.	1	5	3.81	0.789
Project implementers should deliver status reports as a mechanism for measuring progress	1	5	3.88	0.858
There should be consultation of all stakeholders for their views throughout the project lifecycle.	1	5	3.93	0.883
Total/Average	1	5	3.58	0.877

Source: Primary data

From Table 4.5 above, a grand mean and standard deviation of (3.58; 0.877) were obtained. This implies that the majority of respondents agreed to most of the strategies for scope creep management. In addition, Table 4.5 above indicates that much as least respondents agreed that stakeholders for projects have defined roles and responsibilities (Mean = 3.46; SD = 0.187), majority of the respondents agreed that consultation of all stakeholders for their views throughout the project lifecycle (Mean = 3.96; SD = 0.883). Some stakeholders may not have the time to directly be involved in project implementation but as long as consultation is made for their views throughout the project lifecycle, scope creep is managed.

The table also revealed that least respondents agreed that there should be continuous review of project plans and goals during implementation of projects within the ministry (mean=3.51; SD=0.896). This statement is however countered by respondents who highly agreed that Project implementers should deliver status reports as a mechanism for measuring progress (mean=3.88; SD=0.858). Although there is need for project managers need to make constant review of project plans and goals, the need to have status reports is key as a tool for constant monitoring

The table above revealed that least respondents agreed on the fact that there is a plan for requirements before initiation of the project (Mean = 2.83; SD =0.879). Majority of the respondents agreed that there are provisions for unforeseen events and costs (mean=3.57; SD=0.825) .Although requirements of the project may not be planned for before initiation, scope creep is managed through having provisions for unforeseen circumstances.

In these suggestions, some respondents were indifferent as some of them agreed while others disagreed to the statement. This means that these suggestions cannot work in isolation to improve scope creep management among construction projects.

From the above findings, the key suggestions to manage scope creep are; consultation of all stakeholders for their views throughout the project lifecycle, Project implementers should deliver status reports as a mechanism for measuring progress, proper monitoring of project progress in controlling scope creep.

CHAPTER FIVE

DISCUSSION, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

This chapter presents the discussion, conclusion and recommendation of the study findings based on the study objectives. These were: analyzing the causes of scope creep, examining the features of scope creep and to suggest strategies for managing scope creep in the Ministry of Water and Environment Headquarters' construction project.

5.2 Discussion of findings

Findings of this study were compared and contrasted with available literature to indicate the knowledge created herein in. The discussion is presented in line with the research objectives as earlier set in chapter one.

5.2.1 Causes of scope creep in Ministry of Water and Environment headquarters Project

Under this objective, the study found out that additional tasks included after initiation of the project, alteration of project activities to match the current demand for space, complexity of the project, overruns in terms of cost and time, and inadequate contingency reserve funds were the established factors that caused scope creep in the project. These findings are in agreement with various scholarly works. For instance, a study by Melton and Iles-Smith (2009) noted that while the causes of scope creep may not readily be identified at the initiation of the project, scope creep may be linked to internal and external variables within which a project is being implemented. According to them, internal attributes such as poorly formulated goals and objectives, improper scope definition, scope drift and communication dilemmas are the most cited factors responsible for scope creep among construction projects. Additionally, Low and Ong (2014), Groff and Jones (2013) also noted that

external related factors such as uncertainty and complexity of projects, limited stakeholder involvement as well as regulatory environment in form of approvals for infrastructural designs are predictors for scope creep occurrence. Such factors cause delays in execution of project tasks leading to significant overruns in time and financial resources.

Likewise, Alinaitwe *et al.*, (2013), support these findings by observing that many projects start with good ideas and great efforts but failure for project managers to understand and define project scope. In effect, they end up spending resources on undesirable and unplanned tasks which greatly undermine the proper utilization of project funds. Thus, without clearly defined goals and objectives, the project is doomed to experience scope creep. Yet, it is indicated that a properly defined and managed scope leads to delivering a quality project, in agreed cost and within specified schedules in line with the initial project plans. In the same way, Namiyingo *et al.*, (2016), also complemented that scope creep is caused by misinterpretation of what is contained in the project scope, contract, or statement of work (SOW).

In support of external factors identified in this study, El-Dash *et al.*, (2017), pointed out that the level of project complexity and uncertainty experienced by managers during project implementation provide avenues through which scope creep can arise. More so, Hanna *et al.*, (2009), had earlier stated that as managers proceed with project implementation, they become more knowledgeable about several aspects of a project than they were previously before implementation. This may prompt a change in previously defined requirements or direction and this could result into scope drift. On the other hand, Amoatey and Anson (2017) noted that failure to reserve adequate contingencies throughout the lifecycle of the project presents risks that may cause scope creep. For example, failure to plan for raw material increases due to inflation or supplier disruptions during the course of project

implementation have a very detrimental effect on the budget and/or schedule. Therefore, if not well catered for this may cause delays in executing project tasks, hence leading to scope creep.

5.2.2 Features of scope creep

The study has revealed that stock outs for raw materials, variations in scope, stalled progress for some activities, failure to implement key deliverables and milestones, indications for project activities behind schedule as well as the need for reworks are characteristics of scope creep among construction projects. In addition, as per the study, occurrence of time and budget overruns, the need for supplementary funding and usage of contingency (reserve) project funds are also indicators of scope creep within construction projects. In agreement with these findings, various scholars have also articulated these factors as causes for scope creep. In particular, Tharkuta (2013) indicated that all projects have a scope of work which outlines all aspects of the work being implemented including expectations, tasks and activities, deliverables, deadlines and costs. Therefore, failure to fulfill these benchmarks signify occurrence of scope creep within the project. Further support of these findings is presented by Moneke and Echeme's (2016) study in which it was revealed that among construction projects, existence of scope creep can be assessed using several indicators such as continuous stock outs for raw materials, little stakeholder involvement, stalled progress for some project phases, unclear scope management plans, unstreamlined decision making structures and inadequate resource allocations to critical activities.

In addition, Madhuri, Rao and Suma (2014) added that a situation where issues are identified during project implementation such as for example, where key deliverables are not being met consistently, project activities behind schedule and having trouble in controlling the budget, among others, could be signals for occurrence of scope creep within a project. In the view of Love and Edwards (2014),

one of the critical measures of a successful project is the quality of its deliverables (output). Thus, if a project experiences issues at an early stage during the course of implementation, may indicate that some aspects were not factored into the initial plans and may negatively affect the stability, performance and extensibility of the project in future when finished. These are the attributes that will cause scope creep because of the mitigatory measures that management may propose in rectifying these issues. Moneke's (2015) study also support these findings by arguing that whereas there are many features of scope creep in projects, the most critical one is related to the variations in scope which suggest undefined project requirements. In his observation, every project must have clearly defined activities and goals to be implemented during the project life cycle. Therefore, where scenarios show existence of undefined project goals and requirements, present the ultimate red flag of scope creep. Such inadequate clarity in scope leave a project susceptible to endless changes and expansion in the name of meeting the company's goals thereby leading to significant overruns in the project resources.

More recently, a study by Collins (2016) also noted that delay in executing planned activities, poor reporting as well as conflicts arising during the course of the project are potential indicators for scope creep. Likewise, a similar study by Pretorius, Steyn and Jordaan (2012) also revealed that a gradual increase in project costs without a corresponding progress in completion of project tasks is a manifestation for scope creep occurrence among construction projects and so are those projects implemented but without reliable reporting structures. Relatedly, Bondale (2015) noted that contingency usage is a leading indicator for scope creep in construction projects. He argued that while project managers may have the ability to directly authorize contingency drawdowns as they are a component of the approved cost and schedule baselines, its occurrence signify material uncertainty with regard to project funds and a clear indicator for scope creep.

5.2.3 Suggestions to manage scope creep

The study affirmed that planning for requirements before project initiation, continuous review of project plans and goals, delivering status reports, consulting all stakeholders for their views throughout the project lifecycle are strategies identified as critical in managing scope creep among construction projects. In addition, as per the study, setting reserve funds to cater for emergency activities and tasks and embedding procedures for change management in project tasks are also vital approaches for managing scope creep within construction projects. Moreover, the study also revealed that effective project monitoring of different tasks, ensuring defined roles and responsibilities for all stakeholders and making provisions for unforeseen events and costs are essential in controlling project scope within construction projects. In support of these findings, Venkataraman and Pinto (2008) suggested that ensuring effective planning and review of the detailed project plan are core to any successful project and controlling scope creep among construction projects. This is because by reviewing project plans, stakeholders can easily identify activities that need additional funding and other warning signs for scope creep. Besides, continuous project reviews also help in aligning stakeholder expectations with project goals and objectives. Additionally, Farok and Garcia (2016) also complemented by noting that project managers need to have a clear detailed plan with realistic goals and deliverables of how they will manage scope creep.

Similarly, Njau (2012) also supports these findings by noting that stakeholder consultation and involvement are vital strategies applied by managers to control scope creep throughout the lifecycle of the project. He noted that it is very imperative to consult project stakeholders for their views from the beginning of the project, encouraging them to take part in the project design phase to the final execution of the project activities. This is because by consulting stakeholders, it generates their suggestions and ideas to minimise deviations from the projected quantities. Therefore, consultation

and effective stakeholder involvement dovetail to yield positive gains that could reduce scope creep occurrence among construction projects. Similar other strategies were reported by Nicholas and Steyn (2012) who noted that setting up a contingency plan with a specific budget attached to it can reduce scope creep occurrences. Thus, construction projects need to have a degree of contingency set into them; otherwise, scope creep will always be a dilemma. By setting a contingency, project managers are able to counteract the effect of unforeseen events that may affect project implementation negatively.

Other strategies emphasized by scholars and are in consonance with findings in this study include establishing a change control program that can regulate future changes needed in the project (Harrington & McNellis, 2016), clearly defining roles and responsibilities for managers, proper change management and delivering progress project reports (Kendrick, 2015). For example, in relation to progress reports, Ogunlana, Promkuntong and Jearkjirm (2016) stated that projects are hard to fund and take a long time to deliver, something that necessitates consistent reporting to ensure that all intended activities and goals are on track as planned.

In addition, when managers stick to timely reporting for the progress of the project tasks, it helps in effective monitoring thereby reducing occurrence of scope creep. The same view was shared by Brunner (2014), Idoro (2012) as well as Kimweli and Bwisa (2013) who also articulated effective monitoring as a strategy for scope creep control by noting that project monitoring clarifies project objectives, links activities and their resources to objectives, translates objectives into performance indicators, provides data on finished tasks and compares actual budget with targets. In this way, effective monitoring of project activities provides an early warning for deviations and occurrence of overruns and alerts managers to take corrective action.

5.3 Conclusion

This study has identified several factors that can cause scope creep within a construction project. Notably, the study revealed that the Ministry of Water and Environment Headquarters' Project was affected by addition of new tasks to a project after initiation, alteration of project activities, overruns in terms of cost and time, complexity of the project, and inadequate contingencies. The study also revealed that delays are inevitable; however, they can be avoided or minimized when their causes are effectively identified and analyzed. Project managers need to understand clearly who the key stakeholders are and their expectations, as well as defining how strategic goals are agreed and the approach for achieving them. From the Ministry of water and Environment Project, it is important that when communication and operational failures in projects as scope is changed without consideration of key stakeholders and managers, it critically impacts completion of the Project. In line with these findings, it is imperative for project managers and constructors to take account of these factors especially at the planning phase of the project because these strategies will help in mitigating project overruns and occurrence of scope creep.

5.4 Recommendations of the study

- (i) Managers should clearly have defined roles and responsibilities. When stakeholders are involved in project implementation, decisions are made centrally and all projects tasks are agreed upon once and planned for accordingly.
- (ii) Managers should have clearly defined plans to accomplish the project within the established deadline which allows anticipating possible difficulties and creating solutions.

- (iii) There should be an established change management plan needs to be established in Projects. That is documented and communicated properly to all project stakeholders with a justification of why they should be included in the project.
- (iv) There should be a Contingency plan for Projected. By establishing a contingency reserve fund for construction materials, this will not only help avoid stock outs, but also address emergency activities without extending project timelines.

5.5 Limitations of the study

- i. The researcher faced bureaucracy from project staff especially during data collection exercise. This necessitated making numerous follow ups and time was wasted in the process. However, once the required data was obtained, the researcher ensured optimal allocation of time to handle the remaining research activities to avoid time overruns.
- ii. The respondents were also wary of releasing information related to project scope creep for fear of being implicated in case the information was used for other motives other than research. This made them become hesitant in releasing the needed information. However, the researcher presented to management an introduction letter from the university indicating the reason for which the study was to be conducted. This helped in minimizing any suspicion that potential respondents had towards the researcher's motive.

5.6 Areas for further study

- (i) The current study was based on a case study. Therefore, future researchers should undertake an industry wide study on the factors contributing to scope creep among construction projects.
- (ii) Future researchers should also explore the relationship between material planning, budget slack and scope creep occurrence among construction projects.

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Questionnaire form

Dear respondent,

You have been selected to participate in the survey about “*Examination of Project Scope Creep Management in Ministry of Water and Environment Headquarters Construction Project*” as part of the requirements for the award of Master’s degree of Business Administration of Makerere University. I kindly request you to contribute to this study by completing this questionnaire. Your response to the questions are purely for academic purpose and will be treated with the utmost confidentiality.

SECTION A: Background characteristics of respondents

1. What is your gender? a) Male b) Female
2. Indicate your age bracket: a) 20 years & below b) 21-30 years?
- c) 31-40 years d) 41-50 years e) above 50 years
3. Indicate your highest academic qualification you have attained
- a) Certificate b) Diploma c) Degree d) Post graduate
4. For how long have you been employed by Ministry of Water and Environment?
- a) 5 years & less b) 6-10 years c) 11-15 years d) 16 years & above

SECTION B: Analysis of scope creep, features of scope creep and strategies

This section aims at obtaining your opinions about the causes of scope creep management, challenges associated with the scope creep management and strategies to manage scope creep in Ministry of Water and Environment headquarters’ construction project. You are required to fill the questions presented to you following the key provided. Key: 1-Strongly Disagree (**S D**), 2- Disagree (**D**), 3- Not Sure (**N S**), 4-Agree (**A**) and 5-Strongly Agree (**S A**).

	SCOPE CREEP MANAGEMENT	SD	D	NS	A	SA
CS0	SCOPE CREEP ANALYSIS					
CS1	In this project, additional tasks were included after initiation of the project	1	2	3	4	5
CS2	Some of the project activities were altered to match the current demand for office space	1	2	3	4	5
CS3	The materials planned for implementing this project were adequate throughout the entire project	1	2	3	4	5
CS4	The nature of this project is categorised as big considering the technicality needed to implement it	1	2	3	4	5
CS5	It is a policy to involve all stakeholders during the course of project	1	2	3	4	5

	implementation within the Ministry of Water and Environment					
CS6	There is a clear communication network between project managers and implementers for similar projects within the ministry	1	2	3	4	5
CS7	All necessary approvals are complied with before initiation of any project within the ministry	1	2	3	4	5
CS8	Project managers routinely make changes to most projects implemented within the ministry	1	2	3	4	5
CS9	In implementing the project for construction of ministry headquarters, cost overruns have ever been reported	1	2	3	4	5
CS10	This project for construction for the ministry headquarters was within the projected time as agreed between the parties	1	2	3	4	5
CS11	All projects implemented within this ministry had a resource contingency plan	1	2	3	4	5
CM0	FEATURES OF SCOPE CREEP					
CM1	In this project, we have ever experienced raw material stock outs	1	2	3	4	5
CM2	We face variations in scope for most projects implemented in the Ministry of Water and Environment	1	2	3	4	5
CM3	The project has ever experienced stalled progress for some project activities	1	2	3	4	5
CM4	Key project deliverables and milestones have been executed as agreed	1	2	3	4	5
CM5	Some activities and tasks for this project are behind schedule	1	2	3	4	5
CM6	The need for reworks on some tasks have been widespread throughout this project	1	2	3	4	5
CM7	All the requirements in this project were agreed upon between the funder and project implementers	1	2	3	4	5
CM8	This construction project has had significant overruns on time and budget	1	2	3	4	5
CM9	There has been no major conflict between the different parties since initiation of this project	1	2	3	4	5
CM10	The ministry has on several occasions requested for a supplementary budget to facilitate the project activities	1	2	3	4	5
CM11	In this project, managers have ever utilized the contingency reserve funds to cater for some activities	1	2	3	4	5
SM0	SUGGESTIONS FOR SCOPE CREEP MANAGEMENT					
SM1	There should be a plan for requirements before initiation of any project.	1	2	3	4	5
SM2	There should be effective communication can improve scope creep management among projects	1	2	3	4	5
SM3	There should be continuous review of project plans and goals during implementation of projects within the ministry	1	2	3	4	5

SM4	There should be progress reporting for proper project implementation within the ministry.	T	2	3	4	5
SM5	Project implementers should deliver status reports for measuring progress	1	2	3	4	5
SM6	All stakeholders for their views throughout the project lifecycle	1	2	3	4	5
SM7	Project managers set aside some reserve funds to cater for emergency activities and tasks.	1	2	3	4	5
SM8	Project managers should embed procedures for change in project tasks before initiation of particular projects	1	2	3	4	5
SM9	There should be a change management plan as part of every project implemented within this ministry	1	2	3	4	5
SM10	There should be proper monitoring of project progress in controlling scope creep.	1	2	3	4	5
SM11	All stakeholders for projects should have defined roles and responsibilities	1	2	3	4	5
SM12	There should be provisions for unforeseen events and costs	1	2	3	4	5

Thanks a lot for your participation!