PROJECT MANAGER LEADERSHIP STYLE, TEAMWORK, PROJECT CHARACTERISTICS AND PERFORMANCE OF WATER PROJECTS IN KENYA

BY

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DECLARATION

This PhD thesis is my original work and has not previously, in part or in its entirety, been presented to any other university towards the award of any degree.

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DEDICATION

This doctoral thesis is dedicated first to my wife Dr. Ruguru Thuo and our children Mercy and Grace for their love, encouragement and support. Secondly, to my mum Loise Wanjiru and my late dad Joseph Kariuki for their love, investing in my education and instilling in me the virtue of hard work.

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ABBREVIATIONS AND ACRONYMS

AfDB	Africa Development Bank
AFD	French Development Agency
AWSB	Athi Water Services Board
C	Communication
CAACs	Catchment Area Advisory Committees
CH	Cohesion
CO	Collaboration
CPI	Cost Performance Index
CR	Contingency Reward
CSF	Critical Success Factor
CWSB	Coast Water Services Board
ERP	Enterprise Resource Planning
FS	Funding Source
IC	Individualized Consideration
IDA	International Development Association
II	Idealized Influence
IM	Inspirational Motivation
IS	Intellectual Stimulation
ISC	Initial Site Condition
JICA	Japan International Cooperation Agency
KIDDP	Kenya–Italy Debt for Development Program
KOICA	Korea International Cooperation Agency
KNBS	Kenya National Bureau of Statistics
KShs	Kenya Shillings
LVNWSB	Lake Victoria North Water Services Board
LVSWSB	Lake Victoria South Water Services Board
MBEA	Management by Exception - Active
MBEP	Management by Exception - Passive
MEWNR	Ministry of Environment, Water and Natural Resource
MLQ	Multifactor Leadership Questionnaire

NACOSTI	National Commission for Science, Technology and Innovation
NWSB	Northern Water Services Board
OPI	Overall Performance Index
PC	Project Complexity
PL	Project Location
PMBOK	Project Management Body of Knowledge
PMI	Project Management Institute
PML	Project Manager Leadership
RBV	Resource Based View
RVWSB	Rift Valley Water Services Board
SEM	Structural Equation Modeling
TAWSB	Tanathi Water Services Board
TPI	Time Performance Index
TWSB	Tana Water Services Board
UK	United Kingdom
USA	United States of America
VIF	Variance Inflation Factor
WAB	Water Appeal Board
WARMA	Water Resources Management Authority
WASREB	Water Services Regulatory Board
WRUAs	Water Resource User Associations
WSB	Water Services Board
WSP	Water Services Provider
WSTF	Water Services Trust Fund

ABSTRACT

The overall objective of this study was to determine the relationship between project manager's leadership style, teamwork, project characteristics and their impact on project performance in water sector projects in Kenya. To achieve the objective, six hypothesis were formulated namely there is no significant relationship between project manager's leadership style and project performance; there is no significant relationship between project manager's leadership style and teamwork; there is no significant relationship between teamwork and project performance; the relationship between project manager's leadership style and project performance is not intervened by teamwork; the relationship between project manager's leadership style and project performance is not moderated by project characteristics; and the joint effect of project manager's leadership style, project characteristics and teamwork on project performance is not significant. Through the use of positivist research paradigm and descriptive cross-sectional research design, primary data was collected from project managers and project team members involved in water projects in the country while secondary data was collected from project files. Project performance was evaluated in terms of Time Performance Index (TPI) and Cost Performance Index (CPI). In terms of project performance, the study found that 82 percent of the projects had experienced time over-run, with the average time over-run being 100 percent. On the other hand, 49 percent of the projects had experienced cost over-run with the average cost over-run being approximately 20 percent. The study findings are that there is statistically significant relationship between project manager's leadership style and project time performance; there is a statistically significant positive relationship between project manager's leadership style and teamwork; there is a statistically significant relationship between teamwork and project time performance; the relationship between project manager's leadership style and project time performance is mediated by teamwork; and moderated by project complexity; and there is a statistically significant combined effect on the relationship between project manager's leadership style, teamwork, project characteristics and project time performance. However, no statistically significant relationship was found between project manager's leadership style and project cost performance. Although the study findings confirm existence of a statistically significant relationship between project manager's leadership style and project time performance, the findings indicate that the relationship was not direct as it was mediated by teamwork. In addition, the study has shown the moderating role of project characteristics in the relationship between project manager's leadership style and project time performance. The study findings have also identified the importance of transformational leadership style and teamwork in enhancing performance of water projects in Kenya. This implies that clients should consider leadership style and team building capabilities of project managers before allocating them projects. Further, with leadership being critical, there is need for curricular review as a way of ensuring that graduates have the right mix of technical and leadership skills necessary for successful project execution.

CHAPTER ONE

INTRODUCTION

1.1 Background to the Study

Globally, there has been a significant increase in the number of project activities (Winter & Szczepanek, 2008). The British Standard (BS 6079:2000) defines a project as a unique set of co-ordinated activities, with definite starting and finishing point, undertaken by an individual or organization to meet specific performance objectives within defined schedule, cost and performance parameters. On the other hand, the Project Management Institute ((PMI), 2004) notes that a project is a temporary endeavour undertaken to create a unique product, service or results. Due to increased emphasis on projects and the fact that the utility of a project depends upon successful project completion, project management field of study has emerged as a distinct discipline from general management (Cleland & Ireland, 2002). Chase, et al., (2001) defines project management as the process of planning, directing, and controlling resources in order to ensure high level of project performance which is normally expressed in terms of time, cost, quality and stakeholder satisfaction perspectives. With the objective of enhancing project performance, the PMI has a Project Management Body of Knowledge (PMBOK) guide which documents processes, knowledge areas and best practices applicable in most projects. In the current PMBOK, five basic process groups and ten knowledge areas are documented with issues related to two of the areas namely time and cost management being the subject of this study (PMI, 2013).

Despite the importance and emphasis on projects, the end results for most projects have not been exciting with majority of projects across different countries, industries and sectors registering poor performance. Indeed, a review of extant literature shows that time and cost over-runs have become the norm rather than an exception (Jugdev & Muller 2005; Kibuchi, 2012). Consequently, there has been increased number of litigations, wastage of resources, negative reputation of clients and professionals involved in unsuccessful projects as well as lack of envisioned product, service or change (Aibinu & Jagboro, 2002; Jugdev & Muller, 2005).

Within project management, project manager's role is recognised as a key determinant of project performance (Pinto & Slevin, 1988). Several studies (Keller, 1992; Keegan & Den Hartog, 2004; Higgs & Dulewicz, 2004; Sunindijo, et al., 2007) have theorised and tested the link between project manager's leadership style and project performance. For example, Keller (1992) found a link between project manager's transformational leadership style and project performance while Higgs and Dulewicz (2004) established a preference for transactional leadership style for simple projects and transformational leadership style for complex project. However, there are inconsistencies in the available literature on the choice of an appropriate leadership style that would result in high level of project performance. For instance, although Keegan and Den Hartog (2004) had predicted transformational leadership style to be appropriate for project managers, they found no significant relationship.

Based on various studies (Dulewicz & Higgs, 2005; Zaccaro, et al., 2001) in general management that have shown a positive relationship between leadership style and organization performance, a key concern in project management is whether project manager's leadership style can help to resolve the issue of poor project performance (Love, et al., 2011). Consequently, one stream of research that is gaining prominence is on the impact of project manager's leadership style on project performance (Kendra & Taplan, 2004; Turner & Muller, 2005; Yang, et al., 2011).

Extant literature, however shows that unlike in formal organizations, leadership in projects is complicated due to involvement of different experts from organizations with diverse philosophies and practices, limited and predefined duration, individual project characteristics, conflict of interest and existence of temporary management structures that are formed to facilitate project execution (Clarke, 2012; Tyssen, et al., 2013). For instance, limited and predefined project duration hinders development of social relations such as teamwork which is critical in enhancing team cohesion. On the other hand, existence of heterogeneous work teams results in role ambiguity and this hinder achievement of project objectives due to lack of appropriate communication and

coordination mechanism. In addition, there is the issue of adversarial relationship between project teams and clients in that each have their own interest which at times might conflict with each other. Further, for construction projects, which were subject of this study, there are additional complexities due to individual projects being tailor-made according to the needs of the client, non-transportable and assembled at the place of use (Fellows, et al., 2002).

Thus, given the importance of various projects in the social-economic development of the country, the amounts of money being invested in these projects and the increased cases of poor project performance in Kenya informed the design of this study. Based on the aforementioned literature and due to lack of consensus on the impact of project manager's leadership style on project performance, the study investigated the relationship between project manager's leadership style, teamwork, project characteristics and project performance.

1.1.1 Leadership Styles

The literature on leadership is vast and this has resulted in several definitions. Cole (1996) defines leadership as a dynamic process in which one individual influences others to contribute to achievement of the group goals. Thus, leadership is a social influencing process in which the leader seeks active participation of the followers in the attainment of set goals. Within a project set up, it is recognized that the project manager must provide leadership in order to ensure effective planning, co-ordination and control of project activities through application of appropriate project management knowledge and systems. However, existing literature acknowledges that an effective project manager must not only be technically qualified but must also possess the requisite soft skills such as leadership and people management which are essential in their roles (Muzio, et al., 2007).

As noted by Muzio, et al., (2007), 90-95 percent of project issues require soft skills such as leadership, management, teamwork, and communication. Similar sentiments have also been echoed by Hebert (2002) who found that only 10 percent of project manager's role

entails application of technical knowledge while 90 percent involves soft skill issues such as leadership and management. Extant literature also recognizes that during their interaction with followers, leaders exhibit a combination of traits, skills and behaviours which results in different leadership styles.

Hersey and Blanchard (1982) define leadership style as a consistent pattern of behaviour that a leader uses when working with and through people. Over the past decades, there have been six schools of leadership theories namely the trait, behavioural, contingency, visionary, emotional and competency school. Within the visionary school, there are transformational and transactional leadership styles which were first articulated by Burns (1978) and later developed further by Bass (1985, 1990). Pieterse, et al., (2010) defines transformational leadership as an approach to leading that changes followers, making them to look beyond self-interest in favour of the group's objectives by modifying their morale, ideas and values. Thus, in transformational leadership style, leaders define and articulate need for change, create new vision, mobilise commitment and inspire followers to deliver extraordinary results. Transactional leadership style, on the other hand, is based on rewarding followers for meeting performance targets and punishing them when they fail (Bass, 1990).

While leadership and leadership styles have been identified as critical factors in organisation performance, no consensus has been reached in the area of project performance (Kissi, et al., 2012; Muller & Turner, 2012; Yang, et al., 2011). In addition, a literature search by Turner and Muller (2005) found inadequate coverage of the relationship between project manager's leadership style, teamwork, project characteristics and project performance.

1.1.2 Teamwork in Projects

Teamwork refers to the ability for project members to work efficiently as a team. Thus, teamwork represents a set of values that encourages listening, responding constructively to views expressed by others, providing support and recognizing the achievement of others (Wang, et al., 2005). In projects, teamwork is regarded as a key contributor to

performance as it provides the means through which organisations are able to integrate a multitude of expertise required for successful completion of a project (Mendelsohn, 1998). In addition, a review of the literature shows that project performance is influenced by teamwork (Chan, et al., 2001; Wang, et al., 2005; Mishra, et al., 2011; Muller & Turner, 2012). Thus, teamwork is critical in the attainment of project objectives in that the responsibility of implementing various activities rests with project team members.

In most projects, project participants are drawn from different organizations and also from disparate areas of specialization. In addition, project team members usually undertake non-repetitive tasks to produce the expected output through application of specific skills, knowledge and expertise. In order to achieve high level of project performance, project team members must be fully integrated and focused on project objectives which call for high level of teamwork (Chervier, 2003; Kumaraswamy, et al., 2004; Cheng, et al., 2006). Through leadership, project managers are able to articulate project vision, integrate and coordinate project team members, build team commitment and also enhance team cohesion (Bucia, et al., 2010). However, for some projects, formation of a cohesive team is complicated in that project team members might be simultaneously involved in several projects with different leadership and management styles. Thus, for successful project execution, project managers should endeavour to understand their project teams and adapt their leadership style accordingly.

Hoegl and Gemuenden (2001) posit that the behaviour of a project team can be conceptualised in terms of activities (observable actions), interactions (connectedness of members) and sentiments (member's emotions, motivations or attitudes). Extant literature also indicates that leadership is positively related to teamwork in terms of team communication, collaboration and cohesiveness (Bass, 1990; Zaccaro, et al., 2001; Wang, et al., 2005). Several studies (Bass & Avolio, 1994; Yammarino, et al., 1998) posit that leadership style adopted can enhance team communication. In addition, extant literature has shown that team collaboration is impacted on by leadership style. Further, Dionne, et al., (2004) also suggests that leadership may increase team cohesiveness. Thus, for a

project to be successful, the project manager must adopt a leadership styles that facilitate teamwork.

1.1.3 Project Characteristics

In project management, it is recognized that projects have different characteristics. Project characteristic can be considered as project demographics such as size, complexity, industrial sector, application area and contract type (Crawford, et al., 2005). Based on the characteristics, several studies (Youker, 1999; Crawford, et al., 2005) have developed project categorization systems. For instance, Youker (1999) used product or deliverable of the project in their classification system while Crawford, et al., (2005) identified 14 attributes out of which application area, nature of work, client/customer, complexity, cost, size, strategic importance, risk level, organizational benefit and deliverables were ranked as the most important project categorization attributes.

Despite projects having different characteristics, an assumption in some project management literature is that all projects are fundamentally similar and hence can be governed and managed in the same way (Shenhar, 2001). However, this is in contradiction to emerging literature which recognizes the need to adopt different project leadership and management styles based on project characteristics, technology in use and operating environment (Turner & Cochrane, 1993; Shenhar, 2001; Shenhar & Dvir, 1996; Crawford, et al., 2005, 2006; Muller & Turner, 2007, 2010; Yang, et al., 2011). For instance, Yang, et al., (2011) found leadership style affect performance of different types of projects differently while Crawford, et al., (2005) found that different leadership styles are appropriate for projects in different application areas. However, Muller and Turner (2010) found no significant difference in project manager's competencies for projects in different application areas.

Apart from leadership, contradictions also exist on the relationship between project characteristics and cost over-runs. For instance, although there is a belief among practitioners that large projects tends to have higher percentage cost over-runs, Odek, (2004) found an increase in percentage cost over-run with decreasing project size. In

addition, Flyvbjerg, et al., (2003) found no significant relationship between project size and percentage cost over-run while Sauer, et al., (2009) found an increase in the proportion of cost over-run with increased project size. Given the inconsistences in the literature, this study was designed to determine the impact of project characteristics on the relationship between project manager's leadership style and project performance.

1.1.4 Project Performance

One of the key issues in project management is on what needs to be done to improve project performance (Love, et. al., 2011). However, as noted by several researchers, there is no consensus on project performance criteria that can be used across various projects (Zhang & Fan, 2013; Khan, et al., 2014). This is partly due to the fact that different stakeholders view project performance differently and a project that seem successful to the client may be unsuccessful venture for contractors or end users (Toor & Ogunlana, 2010; Jugdev & Muller, 2005; Cookie-Davies, 2002).

A review of extant literature shows a number of project performance evaluation models are in use with one of the most commonly used models being the "Iron Triangle" or "Golden Triangle" in which project performance is evaluated based on completion of the project within time, cost and quality (Atkinson, 1999). However, various researchers (Wateridge, 1995; Lim & Mohamed, 1999; Shenhar, 2001; Yu, et al., 2005) have criticised the use of iron triangle criteria due to its simplicity in evaluating project performance and have proposed inclusion of other aspects such as key stakeholders' satisfaction, future potential to the organisation and customer's benefits.

In addressing weakness of the "Iron Triangle", Hwang, et al., (2013) posits that project performance can be assessed in both qualitative and quantitative terms by considering outcomes such as cost, time, safety, quality and rework. In addition, Zhang and Fan (2013) developed a model for evaluation of project performance in the construction projects with model parameters being meeting project's overall performance (time, cost and quality); meeting owner's requirements; meeting project's multiple goals (health and

safety, risk management, claim management and absence of conflict) and stakeholders' satisfaction (owner, project team, end-user, suppliers and other stakeholder satisfaction). Further, Gowan and Mathieu (2005) contend that project performance can be assessed through time, cost, quality, satisfaction and business value parameters.

Although a number of models exist to evaluate project performance, the conventional measures of time and cost, which were used in this study, dominate performance measurement in the construction industry due to their objectivity (Pinto & Slevin, 1988; Cookie-Davies, 2002). In addition, some of the parameters such as absence of conflict, end-user satisfaction, risk management that have been proposed in other models require passage of time between project completion and evaluation of project performance. Based on time and cost evaluation criteria, projects may experience delays and cost over-runs. Assaf and Al-Hejji (2006) define project delay as the time over-run either beyond completion date specified in the contract or beyond the date that the parties agreed upon for the delivery of a project. On the other hand, Kaliba, et al., (2009) define cost over-run/escalation as the increase in the amount of money required to complete a project over and above the original budgeted amount. Thus, within this project, project performance was based on time performance and cost performance.

1.1.5 Water Projects in Kenya

Kenya is a water scarce country with renewable fresh water per capital being 647 cubic metres (m^3) against the United Nations recommended minimum of 1,000 m^3 (Vision, 2030). To attain the recommended minimum and also economic, social and political aspirations as documented in Vision 2030, the Government of Kenya has prioritised provision of quality, affordable and sustainable water and sanitation services. To achieve this, the Government has implemented reforms in the water sector under the framework of the Water Act, 2002. The Act, which became operational in March, 2003 and which is currently under review (Water Bill, 2014) provides the legal and institutional framework for the management and development of Kenya's water resources as well as for the provision of water and sanitation services. Institutions provided for in the Act are

classified into three namely national, regional and local level institutions (Appendix I). Key institutions at regional level are Water Services Boards (WSBs) which are responsible for provision of water and sewerage services in their area of jurisdiction. However, direct provision of water and sanitation services is undertaken by Water Service Providers (WSPs) who are licenced by WSBs. Currently, there are eight WSBs and 102 WSPs across the country (Appendix II).

The WSBs are responsible for major development, rehabilitation and maintenance of water and sanitation infrastructure and are guided by service provision agreements between WSBs and WSPs. Financing of water infrastructure projects has mainly been through grants from the government as well as grants and loans from development partners such as Africa Development Bank (AfDB), French Development Agency (AfFD), Arab Development Bank (BADEA), International Development Association (IDA), Japan International Cooperation Agency (JICA), Kenya–Italy Debt for Development Program (KIDDP), Korea International Cooperation Agency (KOICA). In addition, WSPs also initiate and fund infrastructure development, rehabilitation and maintenance projects through internally generated resources.

Development of water and sanitation projects passes through three phases namely conception, design and construction. In the conception phase, identification of infrastructure development/upgrading needs and feasibility analysis activities are undertaken. If the concept is viable, the design phase translates the concept into a technical design that satisfies the requirements in an optimum and economic manner. The third phase, which was the subject of this study is concerned with construction of water and sanitation infrastructure as per the design specifications.

In construction phase, the client (that is, the WSB or WSP as the case may be) appoints one of its engineers as a project manager to oversee project implementation. In addition, the client appoints a consultant and contractor for the project. The consulting firm appoints a resident engineer who is in-charge of project supervision. Further, there is a WSP representative (s) within the project team. To monitor project progress, site

meetings are held between the project manager, consultants/resident engineer, site agent/contractor and WSP representative (s). In addition, during the construction process, periodic inspections are undertaken and these trigger payments to the contractor. Once the project is completed, a final inspection is undertaken and the project is handled over to the client. Within the defects liability period (usually one year), the contractor is expected to rectify defects noted on the project. In Kenya, procurement of consultants, contractors and other professionals is undertaken in accordance with the Public Procurement and Disposal Act, 2005; the Public Procurement and Disposal Regulations, 2006; and development partner requirements.

With the recognition of water and sanitation services as a human right in the Constitution 2010 and also devolution of provision of water services to the counties, there is need to ensure investments and financing plans are aligned towards progressive realization of this right. However, major challenges towards this include lack of clarity on the roles of water sector institutions in the devolved government and the dilapidated water infrastructure across the country which calls for proper management of water and sanitation infrastructure projects. Over the last 10 years, WSBs have implemented several construction projects within WSPs as a way of enhancing provision of water and sanitation services. However, not all these projects have been successful despite the substantial amount of resources involved. Thus, with each project having several parties/experts, project manager's leadership style is critical in ensuring successful project completion.

1.2 Research Problem

One of the most significant trends in the world has been the increasing amount of project activities across different sectors and industries (Winter & Szczepanek, 2008). With the utility of a project being dependent upon successful completion, the search for ways of enhancing project performance has been on for several years (Chan & Kumaraswamy, 1997; Zimmerer & Yasin, 1998; Assaf & Al-Hejji, 2006) which has led to identification of critical success factors. Despite this, poor project performance seems to be a universal phenomenon in construction projects (Talukhaba, 1999; Assaf & Al-Hejji, 2006;

Frimpong, et al., 2003, Gichunge, 2000). With leadership having been recognised as a key success factor in general management (Dulewicz & Higgs, 2005; Zaccaro, et al., 2001) and the fact that leadership style is positively related to teamwork in terms of team communication, collaboration and cohesiveness (Bass, 1990; Zaccaro, et al., 2001; Wang, et al., 2005), it would be expected that project manager's leadership style should influence teamwork and project performance. In addition, based on contingency theory it is expected that project characteristics would influence leadership style adopted within a project.

In Kenya, investments in water and sanitation projects are huge. For instance, the total development expenditure on water supplies and related services increased from KShs 20.5 billion in 2012/13 to KShs 44.5 billion in 2013/14 financial year (KNBS, 2014). However, despite the importance of these projects to the social-economic development of the country, the amount of resources invested and the fact that the utility of these projects depend upon successful completion, the performance of these projects has been poor with majority experiencing time and cost over-run (Manyindo, 2009; Elliott & Kimotho, 2013).

An analysis of existing literature on project performance and the role of leadership resulted in findings that are inconsistent. For instance, although several studies (Keller, 1992; Waldman & Atwater, 1994; Tabassi & Babar, 2010; Kissi, et al., 2013) found transformational leadership to be a predicator of project performance, Keegan and Den Hartog (2004) found no significant link between transformation leadership style and project performance. In addition, several studies (Chan, et al., 2001; Wang, et al., 2005; Mishra, et al., 2011) have found that project manager's leadership style, teamwork and project performance are highly correlated. Further, despite Yang, et al., (2011) findings that project characteristics moderates the relationship between teamwork and project performance, Gowan and Mathieu (2005) found that some project characteristics such as technical complexity and project size have no impact on project performance. This contradicts emerging literature which recognizes the need to adopt different project leadership and management styles based on project characteristics, technology in use and

operating environment (Turner & Cochrane, 1993; Shenhar & Dvir, 1996; Crawford, et al., 2005, 2006; Muller & Turner, 2007). One possible explanation to the non-conclusive results from the aforementioned empirical studies might be due to the fact the studies assessed direct relationships between project manager's leadership style and project performance and did not introduce moderating and intervening variables. For example, Gowan and Mathieu (2005) tested the direct link and did not consider the moderating effect of teamwork on the relationship between leadership style and project performance. Another possible explanation of the conflicting results would be the methodological differences in the studies. For instance, several studies (Prabhakar, 2005; Yakhchali & Farsani, 2013) analysed data from project managers perspective only while Muller and Turner (2010) used data from project managers and other professionals involved in various projects. In addition, some of the studies such as Yang, et al., (2011) looked at the issue of leadership in general and did not consider impact of specific leadership styles on project performance.

Although several studies on project manager's leadership style and project performance have been undertaken internationally, the area remains under-studied in Kenya with most researches concentrating on identification of causes of cost and time over-runs. For instance, Talukhaba (1999) investigated causes of cost and time over-runs in building project in Kenya where he found that time and cost performance of construction project was poor to the extent that over 70 percent of the projects were likely to experience time over-run of more than 50 percent. On the other hand, Kibuchi (2012) investigated the relationship between human factors and project performance in construction projects in Kenya where he found a strong correlation between human factors and project performance. However, for most of the aforementioned studies, the relationship between project manager's leadership style and project performance has not been directly addressed. In addition, the combined influence of project manager's leadership style, teamwork, project characteristics and project performance have not been comprehensively addressed. Thus, with the key objective in project management being ensuring successful completion of projects (Atkinson, 1999; Toor & Ogunlana, 2010; Love, et al., 2011) and given the fact that project managers have been reluctant in

adopting leadership style proposed in various studies (Giritli & Civan, 2008; Ozorovskaja, et al., 2007; Yang, et al., 2011) due to limited research and inconsistencies in research findings, the need for more research in this area was identified. Thus, this study was undertaken to answer the following question; what is the impact of project manager's leadership style, teamwork and project characteristics on project performance in Kenya?

1.3 Research Objectives

The overall objective of this study was to determine the relationship between project manager's leadership style, teamwork, project characteristics and their impact on project performance in water sector projects in Kenya. The specific objectives were to:

i. Establish the relationship between project manager's leadership style and project performance.
ii. Establish the relationship between project manager's leadership style and teamwork.
iii. Examine the relationship between teamwork and project performance.
iv. Examine whether the relationship between project manager's leadership style and project performance is intervened by teamwork.
v. Investigate whether the relationship between project manager's leadership style and project performance is moderated by project characteristics.
vi. Examine the joint effect of project manager's leadership style, project characteristics and teamwork on project performance.

1.4 Value of the Study

The water sector plays an important role in the social-economic development of the country. Thus, the results of this study will be useful to various stakeholders and will make several contributions. For the government, development partners, project managers, consultants, contractors and clients in the water sector, the study has clarified the relationship between project manager's leadership style, teamwork, project characteristics and project performance. Through this, project managers are expected to adopt appropriate leadership style which will enhance project performance in the water sector.

With enhanced project performance in the water sector, the study findings will result in values for money and hence reduce wastage of public funds through reduction of time and cost over-runs. This will enable the government to channel available resources to other sectors of the economy. In addition, the study findings are expected to spur social-economic development in the country through provision of affordable and sustainable water services to industries and the citizens. Further, completion of sanitation projects on time and within budget will support government effort of addressing health and hygiene issues.

In relation to project management theory, the study findings provide new insight to the conflicting results found in the literature. To academicians and researchers, the study findings will inform curricular design as a way of ensuring that graduates have the right mix of technical and leadership skills necessary for successful project execution. In addition, with project management being an emerging and dynamic area, the findings may act as a stimulus for further research in the area.

1.5 Organization of the Thesis

This thesis is organized into five chapters: introduction; literature review; research methodology; findings and discussion; and summary, conclusion and implications. The coverage of each of these chapters is as follows:

Chapter one covers the background of the study and details the main concepts of the study namely leadership styles, teamwork, project characteristics and project performance. The chapter also contains a discussion of water projects in Kenya, the research problem, the research objectives and value of the study.

Chapter two provides a review of both theoretical and empirical literature that explains the interrelationships among the key study variables. The chapter also contains a summary of empirical studies, conceptual framework and research hypotheses.

Chapter three describes the research methodology and details the research philosophy, the research design, the study population and sample, data collection methods, reliability and validity of the measurement instruments, operationalization of the study variables and data analysis techniques.

Chapter four covers the study findings including the response rate, respondent's profile, diagnostic tests, projects characteristics and descriptive statistics of key study variable ratings. In addition, correlation analysis and test of hypothesis and discussions of the study findings results are presented in this chapter.

Chapter five presents a summary of findings for each of the research objectives, conclusion from study findings and study contributions. In addition, the chapter presents limitations of the study and possible areas of future research.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter examines both conceptual and empirical literature on leadership style, teamwork, project characteristics and project performance. Theoretical and conceptual framework has also been covered in this chapter.

2.2 Theoretical Foundation

Several theories exist that explains the relationship between leadership style, teamwork, project characteristics and project performance. These theories include visionary leadership theory, Resource Based View (RBV) theory, contingency theory, stakeholder theory and agency theory. A summary of these theories and their implications to this study are discussed in the sections that follow.

2.2.1 Visionary Leadership Theory

The literature on leadership is vast and this has resulted in several definitions with Cole (1996) defining leadership as a dynamic process in which one individual influences others to contribute to the achievement of the group tasks. Although there is no universal definition, one key aspect is that leadership is a process and hence time is needed for a leader to influence subordinates in the desired way. Leaders influence followers by communicating ideas, creating acceptance of the ideas, motivating them to support and implement the ideas. While leadership is part of a manager's job, leaders always have the ability to influence will but managers may not. Leaders influence followers differently and hence leader's exhibit a combination of traits, skills and behaviours which have resulted in different schools of thought or different leadership styles (Dulewicz & Higgs, 2005; Turner & Muller, 2005; Higgs, 2003).

Over the past decade, there have been six schools of leadership theory namely the trait, behavioural, contingency, visionary, emotional and competency school (Turner & Muller, 2005). The trait theory was most prevalent up-to 1940 and the key idea behind

the trait approach was that effective leaders have common characteristics and hence leaders are born and not made (Kirkpatrick & Locke, 1991; Turner & Muller, 2005). Based on this theory, Turner & Muller (2005) identified problem solving ability, results orientation, energy and initiative, self-confidence, perspective, communication and negotiating ability as the key qualities of an effective project manager. During 1940-1960, the behavioural school was dominant which in contrast to the trait approach assumed leaders can be made and that effective leaders embrace certain behaviour. In 1960-1970, the contingency approach was the most prevalent theory with the key concept being that leadership style should be dependent on the situation. The visionary /charismatic school, which identified transactional and transformation leadership styles arose from the study of successful business leaders during 1980-1990 period. From 1990, the emotional intelligence school has been prevalent and considers leader's emotional intelligence as being more critical than their intellectual capability. Lastly, in the late 1990s, the competency school emerged which postulates that certain key competencies make leaders effective. In addition, the theory advocates for need of different competencies in dissimilar situations. Since competencies can be learnt, this theory assumes leaders can be made which is in sharp contrast to the trait's theory.

This study was based on the visionary theory in which there is transactional and transformational leadership styles which were first articulated by Burns (1978) and later developed further by Bass (1985, 1990). Transactional leadership style emphasises on contingency reward and management by exception. Contingency reward emphasises on the leader agreeing with followers on the goals, responsibilities, operating structure and reward to be received upon achievement of set performance targets (Bass & Avolio, 1994). On the other hand, management by exception may be categorised into two namely Management by Exception-Active (MBEA) and Management by Exception-Passive (MBEP). MBEA arises in cases where the leader actively monitors progress and initiates corrective action before things go wrong. In case of MBEP, the leader waits passively and only takes action when there are problems (Bass, 1985).

In transformational leadership style, leaders motivate followers to achieve objectives by raising their level of awareness, motivation as well as addressing and modifying their values and self–esteem. According to Bass and Avolio (1994), transformation leadership involve four I's namely Idealized Influence (II), Inspirational Motivation (IM), Intellectual Stimulation (IS) and Individualized Consideration (IC). Idealized influence refers to the ability of the leader to exert influence by acting as a role model to the followers while IM refers to the ability of the leader to develop and articulate a compelling future vision as well as creating an image of success. On the other hand, IS arouses intelligence, rationality and focused problem solving by questioning assumptions, seeking differing perspectives and encouraging innovation and creativity. Individualised consideration emphasises on the need for leaders to treat followers as individuals and not as just as members of a group. As noted by Felfe, et al., (2004), transformational and transactional leadership styles exist in a continuum and are not independent of each other since a leader can combine certain aspects based on the circumstances. However, in most cases, one may identify the dominant style for a given leader.

While leadership and leadership styles have been identified as critical factors in organisation performance, a literature search by Turner and Muller (2005) found inadequate coverage of the impact of project manager's leadership style/competencies and project performance. In addition, given results from existing studies, there has not been consensus in the area of project performance on which project manager's leadership style would guarantees high level of project performance (Kissi, et al., 2012; Muller, et al., 2012; Yang, et al., 2011). Thus, with majority of the articles in project management (Clarke, 2012; Kissi, et al., 2012; Muller, et al., 2012; Yang, et al., 2011) linking transactional and transformational leadership styles, and project performance, there was need to identify which leadership style would lead to higher level of project performance in Kenya.

2.2.2 Resource Based View Theory

The theoretical foundation of RBV dates back to 1950's Penrose's view of an organization as a pool of resources and articulation of the same by Wernerfelt in 1984

(Penrose, 1995; Wernerfelt, 1984). The RBV consider the resources of a firm as being fundamental determinants of competitive advantage and performance. Whereas resources can be categorized in different ways, for instance tangible and intangible, tangible resources facilitate execution of business process while the intangible resources are the ones that might result in competitive advantage by allowing organizations to incorporate unique and valuable practices (Ray, et al., 2004; Barney, 1991).

As noted by Barney (1991), RBV is based on two assumptions of resources being heterogeneously distributed across organizations and the non-transferability of productive resources from one organization to another without incurring cost. Thus, given the two assumptions, RBV holds that only an intangible resource that is valuable, rare, hard to imitate and without strategically equivalent substitutes is critical in sustaining a firm's competitiveness (Barney, 1991).

Within projects, RBV is critical in that project management practices are based on both tangible and intangible resources (DeFillippi & Arthur, 1998; Fernie, et al., 2003). For instance, tangible resources within project management include the use of codified methodologies, templates, tools and techniques that are readily available across the discipline (Crawford, et al., 2006; Jugdev & Mathur, 2006). On the other hand, project management intangible resources include leadership, teamwork, knowledge-based assets, tacit knowledge, and unique human capital practices between project manager and project team members such as mentoring, brainstorming and surveillance that might contribute towards competitive advantage (Barney, 1986; Hunt, 1997; Killen, et al., 2012; Jugdev & Mathur, 2006). Thus, given leadership and teamwork are valuable, rare, and imperfectly imitable resources, it is expected that these resources should have an impact on project performance.

In terms of applicability, RBV is criticized due to lack of consensus in the uses of various definitional terms such as capabilities, assets, resources and competences. In addition, RBV is criticized on the basis of whether it can be tested due to lack of methodology to measure intangible resources (Barney, et al., 2011).

2.2.3 Contingency Theory

The history of contingency theory can be traced back to the late 1950, in which Woodward (1958) argued that technologies determine differences in organizational features such as span of control, level of centralization of authority and formalization of rules and procedures. Thereafter, Burns and Stalker (1961) introduced the notion of mechanistic and organic organizations in which they proposed the use of organic organizations in turbulent environments. In addition, Lawrence and Lorsch (1967) investigated on how different rates of change can impact on organizations ability to cope. Although the theory was initially concerned with organization's structural issues, other aspects have been incorporated for instance Fiedler (1967) focused on leadership aspects while Doty and Delery (1996) have concentrated on human resource related issues.

The classical contingency theory holds that organizational effectiveness is dependent on its ability to adjust or adapt to the environment (Sauser, et al., 2009). When applied to leadership, contingency theory holds that there is no best way to lead in that leadership is dependent upon the internal and external situational factors. Fiedler (1967) noted the need for different leadership style based on three variables first, the relationship between team members and leader in terms of loyalty, trust and motivation. Second, the task structure in terms of clarity and attainability of goals, and third, position power in terms of authority to give direction, evaluate team performance and reward/punish based on performance.

Within project management, contingency theory is used to identify the extent of fit or misfit between project characteristics and project management approach being adopted. Based on the theory, project managers must understand the uniqueness of the project they are leading and avoid the temptation that all projects are alike and hence can be managed in the same way. This view is supported by Payne and Turner (1999) who found high level of project performance when specific project management approaches are used based on project characteristics. In addition, PMI (2003) has documented the need for identification and application of unique and specific project management principles based on project types.

Tyssen, et al., (2013) and Engwall (2003) posit that leadership in projects is complicated by existence of loose authority on team members, temporary nature of the relationship between project team and project manager, uniqueness of tasks, and limited project duration. Arising from the contingency theory, project performance is dependent not only on the technical qualifications of the project manager but also on the characteristics of the project being undertaken. Thus, based on the above, it is expected that project characteristics should moderate the relationship between project manager's leadership style and project performance.

2.2.4 Stakeholder's Theory

Stakeholder theory can be traced back to 1984 when Freeman defined a stakeholder as "any group or individual who can affect or is affected by the achievement of the organization's objectives". Although it has origin in strategic management, Cleland (1986) introduced stakeholder thinking in project management with identification and recognition that projects have diverse stakeholders with their own objectives, interests and expectations which at times conflict with each other. Stakeholders are so critical in projects that PMI defines project management as the process of adapting the specifications, plans and approaches to be in line with concerns and expectations of the various stakeholders (PMI, 2008). Thus, one of the key functions of a project manager is to manage project stakeholders' expectations and concerns as successful completion of the project is dependent not only on cost, time and quality, but also on stakeholder satisfaction (Bourne & Walker, 2005; Cleland, 1995).

Stakeholder theory provides a framework of categorizing and understanding stakeholders in order to strategically manage them and hence get support for the project. Within project management, a variety of ways of categorizing stakeholders exist with the most popular classification systems being based on the stakeholders' role in the project (for instance, sponsors, client, contractor, project team member, customers, supplier), stakeholders' involvement and the nature of their relationship with the project (for example, internal or external), the nature of stakeholders' claim and position towards the

project (for example, promote or oppose), and the degree to which stakeholders' behavior can be anticipated.

Given the diverse needs of stakeholders at various stages of project life cycle, it is imperative that their stakes and roles in the whole project be determined during project conception. Mitchell, et al., (1997) contends that the importance of a stakeholder can be determined by three factors namely, legitimacy which refers to the moral or legal claim of a stakeholder. Secondly, power, the capability of the stakeholder to influence project outcome. Thirdly, the degree in which the stakeholder's claim is compelling or urgent. Based on the importance of the stakeholder in the project, appropriate management strategies must be designed to win their support in the project and hence facilitate attainment of project objectives in a timely and cost effective way. For instance, within projects, project teams are considered as key stakeholders due to their capacity to influence project performance. Arising from the stakeholder's theory, there is need for project managers to adopt appropriate leadership style and management strategies for both internal and external stakeholders as a way of enhancing project performance.

2.2.5 Agency Theory

The agency theory is concerned with the relationship between the principal and the agent, in which the principal delegates work to the agent, who then in turn performs the work on behalf of the principal (Eisenhardt, 1989). In the construction industry, the relationship between the project owner and the contractor creates a principal-agent relationship in which the principal (project owner) depends on the agent (contractor) to achieve the project objectives. However, within projects, the principal–agent relationship is complicated by the fact that the principal and the agent also delegate their duties to their respective project managers. This creates multiple relationships in which several participants with divergent interest are expected to work together to achieve project goal (Turner and Muller, 2004).

Several studies have identified communication as an important factor in project execution as it facilitates sharing of project information among project team members. In addition,

communication facilitates teamwork, motivation and monitoring of project activities. However, as pointed out by several authors (Turner & Muller, 2004; Ceric, 2011) poor communication is one of the leading project risks which can contribute to poor project performance. Further, due to project team members' self-interests, conflict of interest and inadequate communication, information asymmetry exists within projects.

Information asymmetry arises when one party within a project is more informed than the others (Schieg, 2008). Due to information asymmetry, projects experience three types of risks namely adverse selection, moral hazard and hold-up. Adverse selection problem occurs before the parties in the project signs a contract in that the project owner may not have all information about the contractor or consultant and hence there is risk in their selection which might affect project performance. In addition, due to project team's self-interest and lack of guarantee that the selected contractor or consultant will mobilize their capabilities to execute the client's activities, moral hazard risk occurs. Finally, hold-up problem occurs when one party in the contract behaves in an opportunistic manner to the determent of the project (Chang & Ive, 2007). The consequence of these risks is poor project performance.

To address principal–agent problem, project owners implements screening systems during hiring of key project team members such as consultants and contractors. In addition, during project execution, clients also implement monitoring systems as a way of reducing information asymmetry. However, this can result in an increase in agency costs. Thus, arising from the agency theory, there is need for project managers to adopt appropriate leadership style and management strategies that deals with project team members' self-interests, conflict of interest, inadequate communication and information asymmetry as these would affect project performance.

2.3 Review of Empirical Studies

This section reviews the empirical literature on the relationship between leadership styles, teamwork, project characteristics and project performance.

2.3.1 Leadership and Project Performance

Kissi, et al., (2013) examined the impact of portfolio manager's transformational leadership style on project performance through administration of questionnaires to 350 project managers in the United Kingdom (UK). Using data from 112 completed responses, the study found that transformational leadership behavior of portfolio managers was positively related to project performance. The results were consistent with Waldman and Atwater (1994) study who found that transformational leadership of higher level managers positively influenced project outcomes (quality, cost, time and stakeholders satisfaction). In addition, innovation championing and existence of a climate for innovation were found to intervene on the relationship between transformational leadership and project performance. However, the study was based on one organization which limited generalizability of the results. In addition, risk of common source data was present as data was collected from project managers only and hence other project team members' perspective were not included in the study.

In a study to assess leadership style in the construction industry, Tabassi and Babar (2010) administered 220 questionnaires to top management team's members of large construction companies in Iran. Analysis of data from 107 responsive questionnaires identified transformational leadership style as the most common style in the Iranian construction industry. However, their results of high task and almost high relationship were in contradiction with those of Rowlinson, et al., (1993) and, Walker and Kalinowski (1994) who had observed a low-task and high relationship attitude as appropriate leadership style in Hong Kong. In addition, data was only collected from contractors and hence did not incorporate views of other project team members.

Prabhakar (2005) investigated the importance of transformational leadership style on project success using a two phased study. In the first phase, there were 46 respondents out of 225 contacted while in second phase, there were 107 responses out of 400 contacts made. Using data collected from 153 project managers across 28 nations, the study found that 51.7 percent of variance in project success was due to project manager's years of

experience, relationship orientation, teams understanding of the technology being used, project manager's leadership and management style. Although the study established that project manager's switches leadership styles during project execution, no significant correlation was found on its impact on project performance. In addition, the study found a positive relationship between transformational leadership style and project success, which supports Keegan and Den Hartog (2004) assertion on the importance of transformational leadership style in projects. Further, project manager's experience was found to be positively correlated with project success. However, project managers assessed their own leadership style and thus project team views were not considered to give a 360 degree view of the relationship between leadership and project performance. In addition, project performance was subjectively assessed based on the perception of project managers which introduces the risk of overrating of performance.

Limsila and Ogunlana (2008) examined the relationship between project manager's leadership style, subordinates' commitment and work performance in Thailand's construction industry. Using data from 52 construction projects in which there were 52 project managers, 92 engineers and 12 architects, it was found that project managers switch leadership style based on the needs of the project. However, transformational leadership style was found to be the most dominant style in Thailand. In addition, transformational leadership style was found to generate higher subordinates commitment and to create higher leadership outcomes (effectiveness, satisfaction and extra effort) than the transactional leadership style. Although the results were in line with those of Ogunlana, et al., (2002), they were in contradiction to those of previous study by Komin (1990) who had found the dominant style being transactional. One possible explanation of the differences was the effect of culture change in Thailand from high distance between leader and subordinate to a more democratic culture that encourage subordinates to be democratic and participative and hence the trend towards transformational leadership style.

2.3.2 Leadership, Teamwork and Project Performance

Wang, et al., (2005) investigated the impact of charismatic leadership style on team cohesiveness and performance of Enterprise Resource Planning (ERP) project through administration of 300 questionnaires to project team members in Taiwan. Based on 106 returned questionnaires, they found a significant correlation between leadership style of ERP project manager and level of team cohesiveness. In addition, the study found a positive correlation between team cohesiveness and project performance. The results were consistent with those of Cheung, et al., (2001) findings that charismatic leadership has enormous effect on team members' behaviour and efforts as well as those of Thite (2000) who found a correlation between charismatic leadership and project performance. Further, the study also found that regardless of the leadership style adopted, the project manager's experience had a positive influence on project performance. However, the impact of project characteristics on the relationship between leadership styles, teamwork and project success was not analyzed.

With the aim of identifying leadership qualities of an effective project manager, Mishra, et al., (2011) administered 500 questionnaires to project team members in India. Using data from 137 questionnaires returned, they found a strong correlation between project manager's leadership style, teamwork and project performance. In addition, they found communication ability of the project manager as the most important factor followed by visionary, integrity and being supportive of team members. Their finding on communication ability supports Hyvari (2006) finding of communication ability being a critical factor in leadership. However, no attempt was made to determine which leadership style would result in good project performance. Further, the study did not investigate the impact of project characteristics on the relationship between leadership styles, teamwork and project performance.

Chan, et al., (2001) investigated the effect of inter-organizational teamwork on project outcome in Hong Kong. The study involved administration of 120 questionnaires to project managers, architects, quantity surveyors and engineers. Based on data from 53 questionnaires that were received back, the study found a positive relationship between

teamwork, project team members' job satisfaction and successful project performance. The study findings were consistent with Assaf, et al., (2014) who found a positive and high correlation between teamwork and project performance in Saudi Arabia. In addition, the study noted that project leaders must not assume existence of teamwork in a project but must adopt measures to build an effective team. However, the study did not consider the effect of project characteristics on the relationship between leadership style, teamwork and project performance.

Muller and Turner (2007) investigated the impact of project manager's leadership style on project success. The study used data from 400 web based questionnaires from project managers and interview results from 14 people involved in appointment of project managers. Based on project categorization framework developed by Crawford, et al. (2005), they found that certain project manager's leadership competencies influenced project success. Specifically, emotional competence was found to be a significant contributor to project success for all projects, managerial competence to be a significant contributor in some projects while intellectual competence was found to be negatively correlated with project success. In addition, different leadership competencies were found to be appropriate for different types of projects. For instance, they found emotional resilience and communication which are key teamwork aspects as important for projects of medium complexity while sensitivity was important for projects of high complexity, which points at transformational leadership being the appropriate style for projects which is in line with Keegan and Den Hartog (2004) prediction. However, they could not verify this due to insufficient number of project of low complexity.

In a study to investigate the relationship between transformational leadership style of project managers and of line managers on team/employee's motivation, commitment and stress, Keegan and Den Hartog (2004) administered 181 questionnaires to employees working under different project managers and line managers. Based on data from 115 returned questionnaires, they found no significant difference in leadership style between the line managers and project managers. In addition, despite finding a significant link between transformation leadership style and employee's commitment and motivation for

those working under line manager, no significant relationship was found for employees working in project teams. However, generalizability of their results was limited by the fact that the study was based on one organization in which project based work was not fully established.

In an endeavour to address the issue of time over-run, cost over-run and quality of projects in Saudi Arabia, Assaf, et al., (2014) investigated the impact of project team effectiveness on project performance. Based on analysis of data collected from 94 project team members from 13 different construction projects, they found a strong positive correlation between team effectiveness and project performance. In addition, they found a correlation between leadership style and project performance, which was consistent with Choi (2002) findings that leadership plays an important role in team motivation and unity and consequently in project performance. The study also found that effective teams have clear goals, high level of cooperation and cohesiveness. However, the effect of project characteristics on the relationship was not considered in the study.

2.3.3 Leadership, Project Characteristics and Project Performance

Yakhchali and Farsani (2013) carried out a study to assess whether different project categories require different leadership styles. The study involved administration of 341 questionnaires to project managers in Iran, out of which 106 usable questionnaires were received. The results showed differences in leadership style of project managers in successful projects in different application areas which was in line with Crawford, et al. (2005) finding that project manager's leadership style influences project success and that different leadership styles are appropriate for projects in different application areas. However, their finding was in sharp contrast to Muller and Turner (2010) who found no significant difference in project manager's competencies for projects in different application areas. The study also found differences in leadership styles of project managers in successful projects of different project typicality, which suggests that specific leadership styles were more appropriate in specific project categories and hence the relationship between leadership style and project performance was being moderated by project characteristics. Since questionnaires were administered to project managers

only, there was high risk of mono-source bias which could have resulted in high self-rated performance.

Muller and Turner (2010) investigated leadership competency profiles of successful project managers through administration of a web based questionnaire to project management professional and masters students in project management in the UK, Ireland, Australia, New Zealand, USA and Canada. Using data from 400 returned questionnaires, they found differences in project manager's leadership competency profiles in terms of complexity and contract type and not in terms of application area and project importance. They also found manifestation of critical thinking, influence, motivation and conscientious in all successful project managers. Based on the results, they proposed the need for more transactional style in simple projects and more transformational style in complex projects. However, their study did not analyze profiles of project managers of successful projects with low complexity due to their small sample size. In addition, project size was not considered in their study. The study supported and validated Dulewicz and Higgs (2005) findings of the need for different leadership competences profiles in organizational change projects of different complexity which suggests that project characteristics acts as a moderator in the relationship between project manager's leadership styles and project performance.

Gowan and Mathieu (2005) investigated the relationship between project characteristics (technical complexity and project size), use of project methodology and completion of Information System (IS) project on time. Using data from 449 returned questionnaires, they found that technical complexity and project size did not directly affect completion of the project on the due date. They also found that the use of formal project methodology facilitated successful completion of a project within the budgeted duration. However, the impact of leadership style and teamwork was not considered in the study.

Rwelamila, et al., (1999) studied the issue of African project failure syndrome by analyzing data on the Botswana public building sector and eight other Southern Africa development community countries. Using data from construction firm's employees, the

study found that in most public construction projects, project characteristics are not identified at the start of the project and hence inappropriate construction procurement systems were used which contributed to project failure. Teamwork was found to be important in the fulfillment of project's client needs. However, not critical analysis was undertaken on teamwork and its impact on project performance.

2.3.4 Leadership, Teamwork, Project Characteristics and Project Performance

Yang, et al., (2011) examined the relationships among the project manager leadership style, teamwork and project performance in the Taiwanese construction industry. Using data from 213 interview responses, they found a significant relationship between leadership style and teamwork. This was is in line with other studies (Wang, et al., 2005; Zaccaro, et al., 2001) that had found positive relationship between leader's behaviour and teamwork. In addition, they also found teamwork to be positively related to project performance. Further, project type was found to moderate the relationship between teamwork and project performance. For instance, complex projects were found to benefit more from high level of teamwork than projects of low complexity. However, the study sample was drawn from capital facility projects which limited generalizability of findings in other projects. In addition, despite the study capturing data on transformational and transactional leadership styles, they did not investigate the impact of specific leadership styles on project performance.

In a study to assess the impact of leadership, team building and team member characteristic on project performance, Ammeter and Dukerich (2002) collected data from 150 project teams through interviews and questionnaire administration. In the study, project performance was objectively determined through computation of cost index and schedule index as well as through subjective assessment of performance by project team members. Based on the analysis, leadership behaviour was found to be strongly correlated with project performance. However, no significant relationship was found between team building, team member characteristic and project performance. In addition, despite the sample having different types of projects, no analysis was undertaken on the

impact of project characteristics on the relationship between leadership and project performance.

Yang, et al., (2013) undertook a study to validate the effect of project manager's leadership style on project performance in the Taiwanese construction industry. Based on data from 213 interview responses and Structural Equation Modeling (SEM), they found a significant relationship between leadership style and project performance. In addition, they found a strong link between leadership and teamwork in terms of communication, collaboration and cohesiveness. Further, the study found a strong correlation between teamwork and project performance as well as the mediating role of teamwork in the relationship between leadership style and project performance. However, generalizability of findings is limited since the study sample was drawn from capital facility projects. In addition, qualitative factors which could have helped to explain other explanatory variables were not included in the analysis. Further, the study did not consider the effect of project characteristics on the relationship between leadership and project performance.

2.4 Summary of Empirical Studies and Research Gaps

An analysis of empirical literature on the relationship between leadership style, teamwork, project characteristics and project performance was undertaken and a number of research gaps were identified. These gaps include lack of consensus on which leadership style would enhance the likelihood of a project being successful. Secondly, the intervening role of teamwork on the relationship between project manager's leadership style and project performance is not clear. Thirdly, there is lack of consensus on the effect of project characteristics such as size and complexity on the relationship between project manager's leadership style and project performance. A summary of the empirical literature review in terms of researchers, focus of the study, methodology, findings, research gaps and the way in which the gaps were addressed in this study is provided in Table 2.1 below.

Table 2.1 Summary of Empirical Literature and Research Gaps

Researcher(s)	Focus of the Study	Methodology	Key Study Findings	Research Gaps	Current Study and the Gaps
Assaf, et al., (2014)	Impact of project team effectiveness on project performance (cost and time performance).	Survey involved 94 project team members from 13 different projects.	A strong positive correlation between team effectiveness and project performance was found as well as correlation between leadership style and project performance.	Effect of project characteristics on the relationship was not considered in the study.	Effects of project characteristics were included in this study.
Kissi, et al., (2013)	Role of portfolio manager's transformational leadership style on project performance in UK.	Case study approach was used. 350 questionnaires administered to project managers for a company operating across the UK.	Transformational leadership behavior of portfolio managers was found to be positively related to project performance.	Study was based on one organization which limits generalizability. Effect of project characteristics was not considered.	Projects from several organizations included in the study. Project characteristics were also introduced in this study.
Yakhchali and Farsani (2013)	Investigation on whether different project require different leadership styles.	Survey method used, 341 questionnaires administered to project managers in Iran.	Results showed differences in leadership style of project managers in successful projects of different application areas.	Effect of teamwork was not investigated.	In this study, effect of teamwork was investigated.

Researcher(s)	Focus of the Study	Methodology	Key Study Findings	Research Gaps	Current Study and the Gaps
Mishra, et al., (2011)	Leadership qualities of successful project managers in India.	Cross-sectional survey was undertaken in which 500 questionnaires were administered.	Project manager's leadership style, teamwork and project performance were found to be highly correlated.	Effect of project characteristics on the relationship was not considered.	Project characteristics were included in this study.
Tabassi and Babar (2010)	Leadership style and quality of transformational leadership in Iran construction industry.	220 questionnaires administered to construction team members in which 107 responded.	Transformational leadership style was found to be the most common style in the Iranian construction industry.	Effect of project characteristics was not considered.	Project characteristics aspects included in this study.
Muller and Turner (2010)	Leadership competency profiles of successful project managers in different types of projects.	Snowball sampling technique was used. Study used data from 400 questionnaires received back.	Differences in project manager's leadership competency profiles in successful projects of different type were found.	The study did not consider the effect of teamwork.	Teamwork aspects captured in this study.
Limsila and Ogunlana (2008)	Relationship between project manager's leadership style, subordinates' commitment and work performance in Thailand's construction industry.	Survey data was collected from 52 project managers, 92 engineers and 12 architects.	Study found that project managers switch leadership style based on the needs of the project. Transformational leadership style was found to be the most dominant style in Thailand.	Effect of teamwork and project characteristics not considered in the study.	Teamwork and project characteristics aspects analyzed in this study.

Researcher(s)	Focus of the Study	Methodology	Key Study Findings	Research Gaps	Current Study and the Gaps
Muller and Turner (2007)	Impact of project manager's leadership style on project success and whether different leadership styles are appropriate for different types of projects.	Snowball sampling technique used. Study used data from 400 questionnaires and 14 interview results.	Project manager's leadership style was found to influence project success and that different leadership styles were found to be appropriate for different types of projects.	Study did not include projects of low complexity. Effect of teamwork was also not considered.	Teamwork and project complexity aspects captured in this study.
Gowan and Mathieu (2005)	Relationship between project characteristics, use of project methodology and completion of IS projects on time.	Survey method, used data from 449 returned questionnaires that were administered to project participants.	Study found that technical complexity and project size did not directly affect project completion date.	Impact of leadership style and teamwork was not considered in the study.	Leadership style and teamwork aspects included in this study.
Prabhakar (2005)	Importance of transformational leadership style in enhancing project success.	Two phased approach was used in which data collected from 153 project managers across 28 nations was analyzed.	About 52 percent of variance in project success was found to be due to project manager's years of experience, teams understanding of the technology being used, project manager's leadership and management style.	Subjective measures of project performance used. Views of the project team members were not taken into account as project managers assessed their own leadership style.	Objective measures of project performance used and project team members views included in this study.

Researcher(s)	Focus of the Study	Methodology	Key Study Findings	Research Gaps	Current Study and the Gaps
Chan, et al., (2001)	Effect of inter-organizational teamwork on project outcome	Study involved administration of 120 questionnaires to project team members. 53 participants responded.	Positive relationship between teamwork, project team members' job satisfaction and high level of project performance was found.	Effect of project characteristics on the relationship between teamwork and project performance was not considered	Project characteristics included in this study
Rwelamila, et al., (1999)	Causes of project failure in Africa.	Study analyzed data on the Botswana public building sector and eight other countries.	Study found that in most public construction projects, no project characteristics are identified and hence inappropriate procurement systems were used which lead to project failure. Teamwork was found to be critical in addressing clients' needs.	No critical analysis was undertaken on teamwork.	Teamwork aspects included in this study.

2.5 Conceptual Framework

This study was based on the visionary leadership theory, RBV theory of the firm, the contingency theory, stakeholder theory and the agency theory as the theoretical framework through which the relationship between leadership style, teamwork, project characteristics and project performance were examined.

The dependent variable in this study was project performance. Project performance was measured in terms of project time and cost performance based on extant literature (Pinto & Slevin, 1988; Cookie-Davies, 2002; Othman, et al., 2006; Dissanayaka & Kumaraswamy, 1999; Kaka & Price, 1991). In addition, based on reviewed literature (Burns, 1978; Bass 1985, 1990; Turner & Muller, 2005; Pieterse, et al., 2010; Yang, et al., 2011; Kissi, et al., 2012; Muller & Turner, 2012), the independent variable namely leadership style was identified and operationalized into transformational and transactional leadership styles. Further, transformational and transactional leadership styles aspects were also identified through the same literature.

Based on visionary leadership theory and extant literature (Kissi, et al., 2013; Muller & Turner, 2012; Tabassi & Babar, 2010; Prabhakar, 2005; Keegan & Den Hartog, 2004), it was theorized that project manager's leadership style has an influence on project performance. For instance, a project manager may make use of transformational leadership style in order to enhance ownership of the project objectives and hence completion of project on time; this relationship is represented by null Hypothesis (H1). In addition, the study also theorized a relationship between project manager leadership style and teamwork based on reviewed literature (Wang, et al., 2005; Muller & Turner, 2007; Mishra, et al., 2011). This relationship is represented by null Hypothesis (H2). Further, based on Chan, et al., (2001) and Assaf, et al., (2014) findings, a relationship between teamwork and project performance was theorized; this relationship is represented by null Hypothesis (H3).

In this study, based on the study findings by Yang, et al., (2013), it was theorized that the relationship between project manager's leadership style and project performance was not

direct, but is intervened by teamwork; this relationship is represented by H4. The intervening variable, teamwork was operationalized in terms of collaboration, communication and cohesiveness (Zaccaro, et al., 2001; Wang, et al., 2005). In addition, based on reviewed literature (Yakhchali & Farsani, 2013; Muller & Turner, 2010; Dulewicz & Higgs, 2005; Gowan & Mathieu, 2005), it was theorized that the relationship between project manager's leadership style and project performance was moderated by project characteristics; this relationship is depicted by H5. For the moderating variable, project characteristics, were analyzed in terms of project size, initial site condition, complexity, project location and funding source. Further, arising from the reviewed literature, it was also theorized that the combined effect of project manager's leadership style, teamwork and project characteristics influence project performance; this relationship is represented by H6. The schematic representation of these relationships is shown in Figure 2.1 below.

2.6 Hypotheses

Based on the research objectives and the conceptual framework, the null hypotheses for the study were:

H1: There is no significant relationship between project manager's leadership style and project performance.

H2: There is no significant relationship between project manager's leadership style and teamwork.

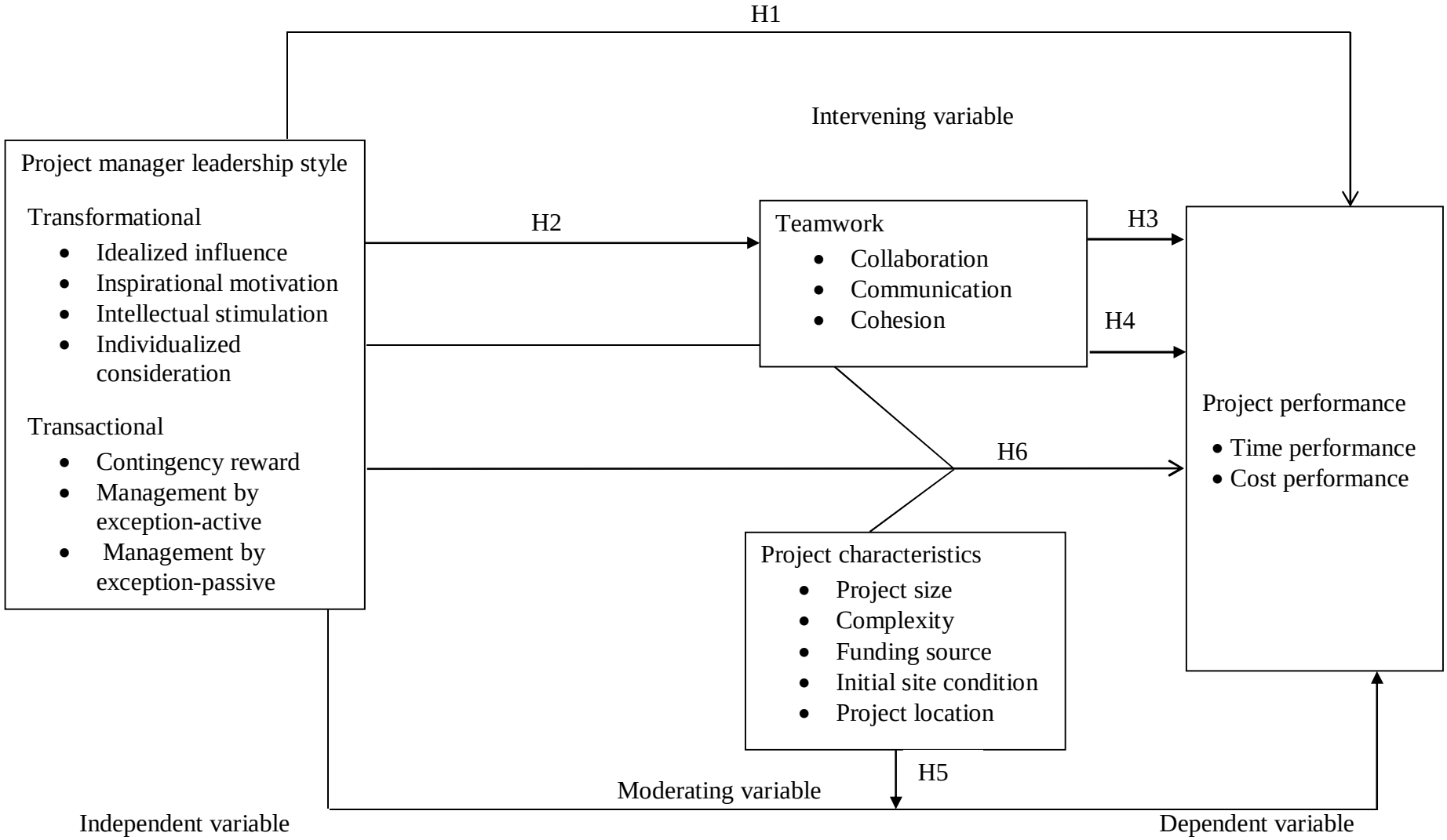
H3: There is no significant relationship between teamwork and project performance.

H4: The relationship between project manager's leadership style and project performance is not intervened by teamwork.

H5: The relationship between project manager's leadership style and project performance is not moderated by project characteristics.

H6: The joint effect of project manager's leadership style, project characteristics and teamwork on project performance is not significant.

Figure 2.1 Conceptual Framework



CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter describes the research methodology and details the research philosophy, the research design, the study population and sample, data collection methods, reliability and validity of the measurement instruments, operationalization of the study variables and data analysis.

3.2 Research Philosophy

Research philosophy refers to the fundamental belief about the way in which data about a phenomenon should be gathered, analyzed and used. Within a continuum, two research philosophies exists namely phenomenological/naturalistic and positivistic paradigm. The two paradigms can be distinguished based on four axioms namely views about reality, cause and effect relationships, views about knowledge and truth, and relationship between investigator and inquiry (Mugenda, 2008).

The phenomenological paradigm is qualitative in nature and focuses on the immediate experience in which the researcher draws meanings by interpreting experiences that have been observed during his/her involvement in the phenomena. On the other hand, the positivist paradigm is quantitative in nature and is premised on complete separation of the researcher and the phenomenon being investigated (Bryman & Bell, 2011; Mugenda 2008). In addition, positivism assumes that the research is based on real facts, neutrality, impartiality, consistency, measurements and validity of results (Blumberg, et al., 2005; Mugenda, 2008).

In this study, positivist paradigm was used in that testable hypotheses were drawn from the literature and tested through collection and analysis of data. In addition, since there was complete separation of the researcher and the phenomenon of project manager's leadership style, teamwork, project characteristics and project performance, positivist paradigm was found to be the most appropriate. This was in line with Mugenda (2008)

assertion that positivist paradigm is ideal in cases where there is complete separation of the researcher and the phenomenon being investigated.

3.3 Research Design

This study adopted a descriptive cross-sectional research design. As noted by Churchill and Iacobucci (2002), descriptive studies are structured with clearly stated hypotheses or investigative questions and serve a variety of research objectives including description of phenomena or characteristics of certain groups, estimation or prediction of the proportion of population with certain characteristics and determination of association among different variables. Since the objectives of this study were based on clearly stated hypothesis and were to determine the relationship among project manager's leadership style, teamwork, project characteristics and project success, descriptive research design was found to be the most appropriate design to explain the what, when and how much of the variations in project performance can be explained by project manager's leadership style.

The study was also cross-sectional in that data was collected across several projects at one point in time in order to determine the relationship among the study variables. In the past, several related studies had employed similar research design (Muller & Turner, 2007; Gichunge, 2000; Muller & Turner, 2010; Tabassi & Babar, 2010; Kibuchi, 2012; Yakhchali & Farsani, 2013).

3.4 Population of the Study

The population of this study comprised of water and sanitation projects undertaken by WSBs and WSPs and which were completed in the last four years (2011 to 2014) across the country. Although 2014 water projects would have facilitated faster recall of what transpired during project execution and also easy access to project team members, the number of projects was not adequate to facilitate testing of research hypothesis and hence the period of study was extended to four years.

List of projects completed within the last four years was compiled from WSB's license achievement reports to WASREB, WSB's websites and strategic plans. In total, 102

projects were identified and this formed the population of the study (see Appendix III). Given the size of the population, all projects were included in the study and hence no sampling was undertaken.

3.5 Data Collection

The study made use of secondary and primary data and in respect to each project, secondary data used in the study comprised of budgeted project cost, actual project cost at the time of completion, budgeted project duration and actual project duration. Secondary data was collected from WSB's license achievement reports and project files that were available at WSB and WSP offices. Details of consultants and contractors were also collected at the time of collecting secondary data in order to facilitate administration of questionnaires. To facilitate secondary data collection, a secondary data collection form was used (see Appendix IV).

Primary data was collected through administration of questionnaires to project managers and project team members that were involved in each of the identified projects. For each project, project team members comprised of consultants, contractors and WSP representatives. Thus, two different questionnaires were used, one for the project managers and another for project team members. Project manager's questionnaire had four sections with section one capturing project manager bio-data, section two covering project characteristics, section three capturing project manager assessment of his/her leadership style and section four capturing teamwork aspects (see Appendix V). Similarly, project team member's questionnaire had four sections with section one capturing team member bio-data, section two covering project characteristics, section three capturing team member assessment of the project manager's leadership style and section four capturing teamwork aspects (see Appendix VI).

Data collection instruments were administered through a drop and pick later approach. For each questionnaire, there was an introduction letter explaining the purpose of the study and assuring the respondent about confidentiality of data collected (see Appendix VII). In addition, a research permit from National Commission for Science, Technology

and Innovation (NACOSTI) was used to facilitate data collection to give an assurance to the respondents that the research had been authorized by relevant government authorities (see Appendix VIII).

3.6 Validity and Reliability

Validity refers to the extent with which the instrument being used is measuring the concept set out to measure. For validity, the instrument was first subjected to an expert evaluation in which its adequacy was assessed given the study objectives. In addition, the questionnaire was subjected to a pilot survey to ensure clarity and understandability of the survey instruments. Results of the expert evaluation and pilot survey were used to update the study instruments. A similar approach was used by other research such as Gichunge (2000) and Kibuchi (2012).

Reliability of a measure is concerned with the stability and consistency with which the instrument measures the concept. Stability gives an assurance on the extent to which results are consistent over time. On the other hand, internal consistency is concerned with the homogeneity of the items that measure the concept. For reliability, the study made use of survey items that had been tested for reliability by other researchers. In addition, by making use of data from the piloted questionnaires, internal consistency was measured through computation of Cronbach alpha and the results are shown in Table 3.1 below.

Table 3.1 Reliability Analysis

Scale	Number of Items	Cronbach's Alpha
Leadership aspects	32	0.837
Teamwork aspects	11	0.788

As shown in Table 3.1, the Cronbach alpha for leadership style and teamwork aspects were above the 0.7 cut-off point advocated by several researchers (Sekaran, 1992; Kothari, 2004) and hence the instrument was considered to have strong internal consistency.

3.7 Operationalization of Study Variables

Operationalization of variables entailed development of an operational definition to facilitate measurement of the study variables. The independent variable; leadership style was operationalized into two variables namely transformational and transactional leadership styles. These two leadership styles were further operationalized in accordance with the latest version of the Multifactor Leadership Questionnaire (MLQ) 5x-short. Consequently, transformational leadership had four sub-scales namely idealized influence, inspirational motivation, intellectual stimulation and individualized consideration while transactional leadership was operationalized into three subscales namely contingency reward, MBEA and MBEP.

The dependent variable, project performance, was operationalized based on Muller and Turner (2007, 2010), Pinto and Slevin (1988) and Yang, et al., (2011) and was evaluated in terms of time and cost performance due to existence of objective measures. Operationalization of the moderating variable, project characteristics, was based on Crawford, et al., (2005) project categorization system and the relevant variables used in the study were project size, initial site condition, complexity, project location and funding source. The intervening variable, teamwork was operationalized through collaboration, communication and cohesiveness based on Wang, et al., (2005) and the model validated by Yang, et al., (2013). Table 3.2 below is a summary of the operationalized variables as used in this study.

3.8 Data Analysis

To prepare data for analysis, completed questionnaires were checked for consistency, coded and data entered into a database. For each project, completeness of data was based on availability of secondary data, receipt of project manager's questionnaire and at least a questionnaire from one of the project team members. Since the unit of analysis was project, multiple responses for a given project were consolidated through computation of mean rating for each of the Likert scale items.

Table 3.2 Operationalization of Variables

Variable	Nature	Source	Indicator	Scale	Question Number
Leadership style: Transformational	Independent variable	Avolio, B., Bass, B. M., & Jung, D. I. (1999).	Idealized influence	Interval scale	• Q12 in the project manager's questionnaire • Q13 in the project team member's questionnaire
			Inspirational motivation		
			Intellectual stimulation		
			Individualized consideration		
Leadership style: Transactional	Independent variable	Avolio, B., Bass, B. M., & Jung, D. I. (1999).	Contingency reward		
			Management by exception-active		
			Management by exception-passive		
Project performance	Dependent variable	Muller & Turner (2007, 2010), Pinto & Slevin (1988) ; Yang, et al., (2011).	Time performance	Ratio scale	• Index computed based on secondary data collected using Appendix IV
			Cost performance		
Teamwork	Intervening variable	Wang, et al., (2005), Yang, et al., (2011, 2013).	Collaboration	Interval scale	• Q13 in the project manager's questionnaire • Q14 in the project team member's questionnaire
			Communication		
			Cohesiveness		
Project characteristics	Moderating variable	Crawford, et al., (2005), Yang, et al., (2011).	Project size	Ratio scale	• Q9 and 10 in the project manager's questionnaire • Q11 and 12 in the project team member's questionnaire • Secondary data on project location, funding source and size (Appendix IV)
			Initial site conditions	Nominal scale	
			Complexity		
			Project location		
			Funding source		

Descriptive statistics namely the mean and standard deviation were computed for each of the study variables in order to understand the data. Further, based on extant literature (Othman, et al., 2006; Dissanayaka & Kumaraswamy, 1999; Kaka and Price, 1991), Time Performance Index (TPI) and Cost Performance Index (CPI) were computed for each of the project in which complete data was available. Computation of TPI and CPI was as follows:

TPI = (actual contract duration/projected contract duration)

CPI = (actual contract cost /budgeted contract cost)

The computed TPI shows the efficiency in which project activities were undertaken, with index less than one indicating completion of the project before the planned project duration; index equal to one indicating completion of the project on time and index being greater than one indicating the project had a time over-run (project taking a longer duration than planned). On the other hand, CPI indicates the efficiency in which resources were utilized within the project with index less than one indicating completion of the project at a cost lower than budgeted; index equal to one indicating completion of the project within the budgeted cost, and index being greater than one indicating the project had a cost over-run (project cost being greater that the budget). An Overall Performance Index (OPI) was also computed as an average of time performance index and cost performance index.

In the analysis, Coefficient of Variation (CV) was used to measure variability across a set of measurements while correlation analysis was undertaken to assess the relationship between the study variables. Multiple linear regression analysis was used to assess the nature of the relationship between various variables while coefficient of determination (R^2) as well as the adjusted R^2 were computed and used to determine the strength of the relationship between the independent variables and dependent variable. In addition, F-test was used to determine the statistical significance of the resulting regression model while t-test was used to test the significance of each of the model coefficients. Further, multicollinearity was tested through the use of Variance Inflation Factor (VIF), multicollinearity exists if VIF >10. For each of the objectives and hypotheses, data analysis was undertaken as detailed in Table 3.3 below.

Table 3.3 Data Analysis Methods

Objectives	Hypotheses	Analysis Model	Analytical Method	Interpretation
Establish the relationship between project manager's leadership style and project performance	H1: There is no relationship between project manager's leadership style and project performance	PP= $\beta_0+\beta_1 II+\beta_2 IM+\beta_3 IS+\beta_4 IC+\beta_5 CR+\beta_6 MBEA+\beta_7 MBEP+ \varepsilon$ where : PP = Project performance in terms of TPI or CPI, II =Idealised influence, IM= Inspirational motivation, IS=Intellectual stimulation, IC = Individualized consideration, CR = Contingency reward, β_i's=regression coefficients, ε = random error term	• Multiple linear regression analysis • R^2 • F –test • t-test	R^2 provides predictive power of model Model significant if p value ≤ 0.05 Results are significant if at least one of βi's is significant.
Establish the relationship between project manager's leadership style and teamwork	H2: There is no significant relationship between project manager's leadership style and teamwork.	$r = r_{xy} = \frac{\sum_{i=1}^{n}(x_i - \bar{x})(y_i - \bar{y})}{\sqrt{\sum_{i=1}^{n}(x_i - \bar{x})^2}\sqrt{\sum_{i=1}^{n}(y_i - \bar{y})^2}}$ Where: $x_1,...,x_n$ is the first dataset containing n values and $y_1,...,y_n$ is the second dataset containing n values, $\bar{x}, \bar{y}$ represent the mean of first and second dataset respectively.	• Correlation coefficient	r provides predictive relationship and significance tested at 5 percent level.

Objectives	Hypotheses	Analysis Model	Analytical Method	Interpretation
Establish the relationship between teamwork and project performance	H3: There is no significant relationship between teamwork and project performance.	$PP=\beta_0+\beta_1CO+\beta_2C+\beta_3CH+\varepsilon$, where : CO = Collaboration, C =Communication, CH =Cohesion	• Multiple linear regression analysis • R^2 • F –test • t-test	R^2 provides predictive power of model Model significant if p value ≤ 0.05 Results are significant if at least one of βi's is significant.
Examine whether the relationship between project manager's leadership style and project performance is intervened by teamwork	H4: Relationship between leadership style and project performance is not intervened by teamwork	$PP=\beta_0+\beta_1II+\beta_2IM+\beta_3IS+\beta_4IC+\beta_5CR+\beta_6MBEA+\beta_7MBEP+\beta_8CO+\beta_9C+\beta_{10}CH+\varepsilon$ where : CO = Collaboration, C =Communication, CH =Cohesion	• Multiple linear regression analysis • R^2 • F –test • t-test	R^2 provides predictive power of model Model significant if p value ≤ 0.05 Results are significant if at least one of the $\beta_{8,}$ $\beta_{9,}$ β_{10} is significant
Investigate whether the relationship between project manager	H5: Relationship between leadership style and	$PP=\beta_0+\beta_1PML+\beta_2PS+\beta_3PML*PS+\varepsilon$ where : PS = Project size, PML = Project manager's leadership. Same procedure repeated for each project characteristics namely ISC =	• Multiple linear regression analysis • F –test	R^2 provides predictive power of model Model significant if p value ≤ 0.05

Objectives	Hypotheses	Analysis Model	Analytical Method	Interpretation
leadership style and project performance moderated by project characteristics	project performance is not moderated by project characteristics	Initial site condition, PC = Project complexity, PL = Project location, FS = Funding source	• t-test	Project characteristic was moderating the relationship if coefficient of interaction term was significant
Examine the joint effect of project manager's leadership style, project characteristics and teamwork on project performance.	H6: Joint effect of leadership style, teamwork and project characteristics on project performance is not significant	$PP=\beta_0+\beta_1 II +\beta_2 IM+\beta_3 IS+\beta_4 IC+\beta_5 CR+\beta_6 MBEA+\beta_7 MBEP+ \beta_8 CO+\beta_9 C+\beta_{10} CH+\beta_{11} PS+ B_{12} ISC+\beta_{13} C+\beta_{14} PL + \beta_{15} FS+\varepsilon$	• Multiple linear regression analysis • R^2 • F –test • t-test	A relationship exist if at least one of βi's is significant R^2 provides predictive power of model Model significant if p value ≤ 0.05 Results are significant if at least one of βi's is significant

CHAPTER FOUR

FINDINGS AND DISCUSSIONS

4.1 Introduction

This chapter covers the response rate, respondent's profile, diagnostics tests, projects characteristics and descriptive statistics of key study variable. In addition, relationship among variables, hypothesis testing and discussions of findings are presented.

4.2 Response Rate

Out of the targeted 102 projects, complete data (primary and secondary) was received for 68 projects giving a response rate of 67 percent. This response rate was considered good for further analysis based on Mugenda and Mugenda (2003) and Saunders et al., (2007) assertion that a response rate of 50 percent is adequate, 60 percent is good while a responses rate of 70 percent is very good. In addition, this response rate was within the range of responses rate for similar researches. For instance, Talukhaba (1999) had a response rate of 51 percent, Gichunge (2000) had a response rate of 31 percent while Kibuchi (2012) had a response a response rate of 63 percent in studies undertaken in the construction industry in Kenya.

In terms of distribution of the study projects across the WSBs, majority of the projects (20.6 percent) were from Athi Water Services Board (AWSB), followed by Tanathi Water Services Board (TAWSB) and Tana Water Services Board (TWSB) at 16.2 percent. On other hand, Lake Victoria South Water Services Board (LVSWSB) and Lake Victoria North Water Services Board (LVNWSB) had 14.7 percent and 11.8 percent of the projects in the study respectively while Northern Water Services Board (NWSB) had the least number of projects in the study at 1.5 percent as depicted in Table 4.1 below.

Table 4.1 Distribution of Study Projects Across the Water Services Boards

Water Services Board	Frequency	Percent
Athi Water Services Board	14	20.6
Tanathi Water Services Board	11	16.2
Tana Water Services Board	11	16.2
Lake Victoria South Water Services Board	10	14.7
Lake Victoria North Water Services Board	8	11.8
Coast Water Services Board	7	10.3
Rift Valley Water Services Board	6	8.8
Northern Water Services Board	1	1.5
Total	68	100

4.3 Respondents' Profile

In order to avoid self rating biases, questionnaires were administered to project managers and also other project team members namely consultants, contractors and WSP representative(s). For each project, completeness of data was based on availability of secondary data, receipt of project manager's questionnaire and at least a questionnaire from one of the project team members. Since the unit of analysis was project, multiple responses for a given project were consolidated through computation of mean rating for each of the items. Profiles of the respondents are detailed in the following sections.

4.3.1 Distribution of Respondents by Category

For the 68 projects in which complete data was availed, there were a total of 171 individual respondents. Distribution of the respondents by project team member categorization was as presented in Table 4.2 below.

As shown in Table 4.2 below, majority of the respondents (39.8 percent) were project managers followed by representatives of WSP in which the water projects were being implemented at 32.2 percent while consultants were at 15.8 percent. On the other hand, contractors accounted for 9.4 percent while 'others' accounted for 2.9 percent. Within the

'others' category, there were WSB representatives such as engineers and finance specialists who were also involved in the project.

Table 4.2 Distribution of Respondents by Category

Category	Frequency	Percent
Project manager	68	39.8
Water service provider representative	55	32.2
Consultant	27	15.8
Contractor	16	9.4
Others	5	2.9
Total	171	100.0

Despite follow up on the completion of the questionnaires, most of the contractors were reluctant in filling up the questionnaire citing confidentiality clause in their contract. The response rate for each of the categories mirrors that of Kibuchi (2012) in which the contractors had the lowest response rate.

4.3.2 Distribution of Respondents by Gender

On the distribution of the respondents by gender, 89.5 percent of the respondents were male while 10.5 percent were female as presented in Table 4.3. In addition, it was found that 91.2 percent of the project managers were male while 8.8 percent were female.

Table 4.3 Distribution of Respondents by Gender

Respondent Category	Gender	Frequency	Percent
All respondents	Male	153	89.5
	Female	18	10.5
	Total	171	100.0
Project managers	Male	62	91.2
	Female	6	8.8
	Total	68	100.0

4.3.3 Distribution of Respondents by Age and Education Level

To understand the profile of the people involved in projects, analysis of the respondents was undertaken based on age and education level. Table 4.4 below shows the distribution of the respondents by age.

Table 4.4 Distribution of Respondents by Age

Respondent Category	Age Category	Frequency	Percent
All respondents	Below 25 years	2	1.2
	25 to 34 years	23	13.5
	35 to 44 years	82	48.0
	45 to 54 years	53	31.0
	55 to 60 years	11	6.4
	Total	171	100.0
Project managers	25 to 34 years	13	19.1
	35 to 44 years	30	44.1
	45 to 54 years	21	30.9
	55 to 60 years	4	5.9
	Total	68	100.0

The results shows that majority of the respondents (48 percent) were in the 35 to 44 years age category while 31 percent were in the 45 to 54 years category. For project managers, a similar trend was observed with 44.1 percent being in the 35 to 44 years category while 30.9 percent were in the 45 to 54 years category. Table 4.5 presents the distribution of respondents by education level.

As shown in Table 4.5 below, majority of the respondent (57.3 percent) had bachelor's degree as their highest level of education while 25.7 percent had diploma as their highest education level. In addition, 11.8 percent of project managers had master's degree while 60.3 percent had bachelor degree. However, it is important to note that the 27.9 percent of the project managers who had diploma as their highest education level were responsible for projects initiated by WSPs.

Table 4.5 Distribution of Respondents by Education Level

Respondent Category	Education Level	Frequency	Percent
All respondents	PhD	1	0.6
	Master's degree	17	9.9
	Bachelor degree	98	57.3
	Diploma	44	25.7
	Certificate	5	2.9
	High school	6	3.5
	Total	171	100.0
Project managers	Master's degree	8	11.8
	Bachelor degree	41	60.3
	Diploma	19	27.9
	Total	68	100.0

4.3.4 Distribution of Respondents by Experience

In most jobs, experience is considered as one of the key determinants of performance. Thus, respondents' profile was analyzed in terms of their experience. The results of the analysis are shown in Table 4.6.

Table 4.6 Distribution of Respondents by Experience

Respondent Category	Experience Category	Frequency	Percent
All respondents	Missing	4	2.3
	Below 3 years	9	5.3
	3 to 5 years	65	38.0
	6 to 10 years	45	26.3
	11 to 15 years	19	11.1
	Above 15 years	29	17.0
	Total	171	100.0
Project managers	Below 3 years	4	5.9
	3 to 5 years	19	27.9
	6 to 10 years	26	38.2
	11 to 15 years	6	8.8
	Above 15 years	13	19.1
	Total	68	100.0

In terms of experience, 38 percent of the respondents had 3 to 5 years of experience, 26.3 percent had 6 to 10 years of experience while 17 percent had more than 15 years of experience. For project managers, 27.9 percent of the respondents had 3 to 5 years of experience, 38.2 percent had 6 to 10 years of experience while 19.1 percent had more than 15 years of experience. Results in Table 4.6 show that majority of the projects in the water sector were being managed by project officers with more than five years working experience.

4.4 Diagnostics Tests

Data collected was subjected to tests of normality, multicollinearity and homoscedasticity and the results were as follows.

4.4.1 Normality

To determine on whether the distribution of the data was normally distributed, Shapiro-Wilk test which is more appropriate in testing normality for small sample sizes was used. The results of the analysis are shown in Table 4.7 below.

Table 4.7 Test of Normality

Aspects	Tests of Normality		
	Shapiro-Wilk		
	Statistic	df	Sig.
Idealized influence	0.975	68	0.194
Inspirational motivation	0.971	68	0.111
Intellectual stimulation	0.977	68	0.232
Individual consideration	0.968	68	0.077
Contingent reward	0.950	68	0.069
Management by exception - active	0.981	68	0.386
Management by exception- passive	0.990	68	0.845

The results in Table 4.7 above show that the significant value of the Shapiro-Wilk test for each of the aspects were greater than 0.05 and hence the data was normally distributed.

4.4.2 Multicollinearity

To test for multicollinearity, that is, on whether there is high correlation among the independent variables, Tolerance and VIF statistics were computed and the results were as shown in Table 4.8 below.

Table 4. 8 Multicollinearity

Study independent variables	Collinearity Statistics	
	Tolerance	VIF
Idealized influence	0.311	3.218
Inspirational motivation	0.275	3.633
Intellectual stimulation	0.443	2.259
Individual consideration	0.335	2.989
Contingent reward	0.527	1.899
Management by exception - active	0.412	2.428
Management by exception - passive	0.674	1.484

The results in Table 4.8 above show that the Tolerance value for each of the independent variable is greater than 0.10 while VIF are all less than 10 and hence based on the criteria by Pallant (2011) in which multicollinearity exists if Tolerance value for a variable is less than 0.10 or VIF >10, there was no multicollinearity among the study variables.

4.4.3 Homoscedasticity

Homoscedasticity was tested through the use of Levene's test and the results are shown in Table 4.9 below.

Table 4. 9 Homoscedasticity test

Variable	Levene Statistic	Sig.
Idealized influence	1.725	0.194
Inspirational motivation	1.296	0.259
Intellectual stimulation	0.472	0.495
Individual consideration	0.295	0.589
Contingent reward	1.064	0.306
Management by exception - active	0.067	0.797
Management by exception – passive	2.200	0.143

The results in Table 4.9 above show that the variances are not significantly different ($p>0.05$) and hence the assumption of homoscedasticity holds.

4.5 Projects Characteristics

As mentioned in Section 3.7, water projects covered in this study had different characteristics in terms of size, funding source, complexity and initial site condition as detailed in the following sections.

4.5.1 Project Size

In this study, project size was based on project's budgeted cost. Due to lack of a universal project size classification system across WSBs, the study adopted the criteria depicted in Table 4.10 which was in use in a number of WSBs. Thus, based on cost, projects were classified into three classes namely small, medium and large as shown in Table 4.10 below.

As shown in Table 4.10, majority of the projects (47.1 percent) were large, 27.9 percent were small while 25 percent were of medium size.

Table 4.10 Distribution of Study Projects by Size

Project Budged Cost (KShs)	Project Size	Frequency	Percent
Less or equal to 50 million	Small	32	27.9
50 to 200 million	Medium	17	25.0
Above 200 million	Large	19	47.1
Total		68	100.0

4.5.2 Funding Source

In terms of funding, projects were classified into three categories namely government funded, development partners funded and mixed funding (government and development partners) as presented in Table 4.11 below. Included within government funding category

were projects funded by the national government as well as those funded by various water sector institutions such as WSB, WSP and Water Services Trust Fund (WSTF).

Table 4.11 Distribution of Study Projects by Funding Sources

Funding Source	Frequency	Percent
Development partners	33	48.5
Mixed (government and development partners)	23	33.8
Government	12	17.6
Total	67	98.5

The results in Table 4.11 show that development partners had funded majority of the projects (48.5 percent) while 17.6 percent of the projects were government funded. The results implies that development partners are playing a major role in supporting the government towards the realization of the Constitution 2010 provision of water and sanitation services as a human right in Kenya.

4.5.3 Project Complexity

For each project, project managers evaluated the level of project complexity (low, medium and high) by comparing the project with other water projects in the country. Table 4.12 provides distribution of projects in terms of their complexity level and shows that majority of the projects (52.9 percent) were in the medium category while high and low category had 23.5 percent each.

Table 4.12 Distribution of Projects by Complexity Level

Project Complexity Level	Frequency	Percent
High	16	23.5
Medium	36	52.9
Low	16	23.5
Total	68	100.0

4.5.4 Project Type

Project type classification was based on the initial site condition at the inception of the project. Three categories were identified namely rehabilitation/renovation, greenfield/new and expansion. As shown in Table 4.13, 42.6 percent were greenfield projects, 29.4 percent rehabilitation projects and 27.9 percent were expansion projects.

Table 4.13 Distribution of Projects by Type

Project Type	Frequency	Percent
Greenfield/ new	29	42.6
Rehabilitation/renovation	20	29.4
Expansion	19	27.9
Total	68	100.0

The implication of these results is that several new projects have been completed in the last four years possibly towards the realization of government priority of ensuring access to affordable and sustainable water and sanitation services.

4.6 Project Performance

In this study, project performance was evaluated in terms of project time and cost performance. Using secondary data and equations in Section 3.8, TPI and CPI were computed for each of the project. Table 4.14 below shows classification of project by performance in which project performance was classified 'good' if TPI or CPI was equal to or less than one and 'poor', if the respective TPI or CPI was greater than one.

Table 4.14 Distribution of Projects by Performance

Performance Classification	Evaluation Criteria			
	Cost Performance Index		Time Performance Index	
	Frequency	Percent	Frequency	Percent
Good	35	51	12	18
Poor	33	49	56	82
Total	68	100	68	100

The results in Table 4.14 indicates that based on TPI, 82 percent of the projects had poor performance while based on CPI, 51 percent of the projects had good performance. These results also show that although a project may experience time over-run, it is not automatic that the project will also experience cost over-run. For projects that had time and cost over-run, further analysis was undertaken and the results are presented in Table 4.15 below.

Table 4.15 Projects Time and Cost Over-run

Projects with Time Over-run		Projects with Cost Over-run	
Number of projects	56	Number of projects	32
Mean	1.95	Mean	1.19
Standard deviation	0.90	Standard deviation	0.25
Range	3.72	Range	1.14
Minimum	1.03	Minimum	1.00
Maximum	4.75	Maximum	2.14
Coefficient of variation	0.46	Coefficient of variation	0.21

Based on the results in Table 4.15 above, the average time-overrun in the water sector was approximately 100 percent, which means that majority of the projects were being completed at double the initially projected time. In terms of cost, the average cost over-run was approximately 19 percent. Thus, majority of the projects were being completed at a cost 19 percent higher than what was initially budgeted. These findings mirror those of Talukhaba (1999) who found poor project performance in Kenya with over seventy percent of construction projects experiencing time over-run in excess of 50 percent and over fifty percent of the project experiencing cost over-run of over 20 percent. However, as shown in Table 4.15, some projects had time over-run in excess of four times the initially planned duration and cost over-run equivalent to double the budgeted cost. The results in Table 4.15 above also show that project cost over-run measurements had less variability (CV = 0.21) compared to those of project time over-run (CV = 0.46).

4.7 Rating of Variables

The study variables in this study were project manager's leadership style, teamwork and project performance. Individual rating of these variables was assessed through computation of descriptive statistics for each aspect as follows.

4.7.1 Project Manager Transformational Leadership Style Rating

For transformational leadership style, there were four key aspects that were assessed namely idealized influence, inspirational motivation, intellectual stimulation and individual consideration. A summary of respondent's mean rating of the four aspects and overall transformational leadership style was as presented in Table 4.16 below.

Table 4.16 Transformational Leadership Style Rating

	One-Sample Statistics			Test Value = 0	
Aspect	Mean	Standard Deviation	Coefficient of Variation	t*	Sig. (2-tailed)
Idealized influence	3.49	0.43	0.12	66.792	.000
Inspirational motivation	3.73	0.65	0.18	47.120	.000
Intellectual stimulation	3.52	0.59	0.17	49.546	.000
Individual consideration	3.61	0.58	0.16	51.585	.000
Overall transformational	3.59	0.50	0.14	59.436	.000
H_o: There is no difference between the means, at α=5%, 2 tailed test. Reject Ho if p value $\leq \alpha$, otherwise fail to reject H_o if p value $> \alpha$					

The results show that project managers use transformational leadership style to a moderate extent with a mean score of 3.59 out of 5. Within transformational leadership style, the most practiced aspect was inspirational motivation with a mean score of 3.73 out of 5. Detailed statistics for the various elements under each aspect are depicted in Appendix IX.

The results in Table 4.16 above also show that idealized influence measurements had less variability (CV = 0.12) compared to inspirational motivation (CV = 0.18), intellectual

stimulation (CV = 0.17), individual consideration (CV = 0.16). In addition, the independence among the means was evaluated through one sample t-test and the results show that the means of the various transformational leadership style elements were statistically independent.

4.7.2 Project Manager Transactional Leadership Style Rating

In transactional leadership style, there were three aspects that were assessed namely contingent reward, MBEA and MBEP. A summary of the respondent's mean rating of each of the three aspects and overall transactional leadership style rating are shown in Table 4.17 below.

Table 4.17 Transactional Leadership Style Rating

	One-Sample Statistics			Test Value = 0	
Aspect	Mean	Standard Deviation	Coefficient of Variation	t*	Sig. (2-tailed)
Contingent reward	3.34	0.49	0.15	55.837	.000
Management by exception- active	3.29	0.48	0.14	56.915	.000
Management by exception - passive	2.98	0.69	0.23	35.450	.000
Overall transactional	3.20	0.45	0.14	59.126	.000
H_o: There is no difference between the means, at α=5%, 2 tailed test. Reject Ho if p value $\leq \alpha$, otherwise fail to reject H_o if p value $> \alpha$					

The results in Table 4.17 above show that project managers use transactional leadership style moderately with a mean score of 3.20 out of 5. Within transactional leadership style, the most practiced aspect was contingent reward with a mean score of 3.34 out of 5. Detailed statistics for the various elements under each aspect are depicted in Appendix X.

The results in Table 4.17 above also show that MBEP measurements had a high variability (CV = 0.23) compared to MBEA (CV = 0.14) and contingent reward (CV = 0.15). In addition, the independence among the means was evaluated through one sample

t-test and the results show that the means of the various transactional leadership style elements were statistically independent.

4.7.3 Project Teamwork Rating

Teamwork was evaluated in terms of communication, collaboration and cohesion. Table 4.18 presents a summary of the respondents' mean rating of each of the three aspects as well as overall teamwork rating.

Table 4.18 Project Teamwork Rating

Aspect	One-Sample Statistics			Test Value = 0	
	Mean	Standard Deviation	Coefficient of Variation	t*	Sig. (2-tailed)
Communication	3.45	0.65	0.19	44.046	.000
Collaboration	3.57	0.50	0.14	58.378	.000
Cohesion	3.64	0.56	0.15	53.825	.000
Overall teamwork	3.55	0.51	0.14	57.510	.000
H_o: There is no difference between the means, at α=5%, 2 tailed test. Reject Ho if p value $\leq \alpha$, otherwise fail to reject H_o if p value $> \alpha$					

The results in Table 4.18 show that the overall teamwork rating was 3.55 out of 5. Within teamwork, cohesion was rated highly with a mean score of 3.64 out of 5 while communication had the lowest rating of 3.45. Detailed statistics for the various elements under each aspect are depicted in Appendix XI.

On the issue of variability, communication measures had a high variability (CV = 0.19) followed by cohesion (CV = 0.15) and lastly collaboration (CV = 0.14). In addition, the independence among the means was evaluated through one sample t-test and the results show that the means of the various teamwork elements were statistically independent.

4.8 Relationship Among Variables

In the analysis of the relationship among the study variables, the Pearson product - moment correlation coefficient (r) was computed. The absolute value of the correlation coefficient (r) provided a measure of the strength of the relationship between the variables. The computed correlation coefficients among the variables are presented in Table 4.19.

The results in Table 4.19 indicated a varied degree of interrelationship among the study variables. For instance, there was a strong statistically significant positive relationship between II and other transformational leadership aspects namely IM ($r = 0.764$, $p < 0.01$), IS ($r = 0.689$, $p < 0.01$) and IC ($r = 0.729$, $p < 0.01$). A statistically significant negative relationship exist between II and transactional leadership aspect namely CR ($r = -0.338$, $p < 0.01$); MBEA ($r = -0.320$, $p < 0.01$) and MBEP ($r = -0.406$, $p < 0.01$).

As shown in Table 4.19, there is a statistically significant negative relationship between measures of project performance and transformational leadership aspects. For instance, the relationship between TPI and II ($r =-0.519$, $p < 0.01$), TPI and IM ($r = -0.622$, $p < 0.01$), TPI and IS ($r = -0.619$, $p < 0.01$) and IC ($r =-0.542$, $p < 0.01$). In addition, a statistically significant negative relationship exists between CPI and II ($r = -0.246$, $p < 0.01$). The implication of this is that as the level of transformational leadership style increases within a project, TPI reduces and hence project performance becomes better.

Transactional leadership aspects are positively correlated with measures of project performance. For instance, the relationship between TPI and CR ($r = 0.365$, $p < 0.01$), TPI and MBEA ($r = 0.599$, $p < 0.01$) and TPI and MBEP (0.514, $p < 0.01$). However, there was no statistically significant relationship between CPI and transactional leadership style aspects.

A statistically significant positive relationship exists between teamwork and transformational leadership aspects. For instance, the correlation between C and II ($r = 0.364$, $p < 0.01$), C and IM ($r = 0.621$, $p < 0.01$), CO and IM ($r = 0.643$, $p < 0.01$), CH

and IC ($r = 0.479$, $p < 0.01$). This means as the level of transformational leadership increases, teamwork is enhanced. On the other hand, a statistically significant negative relationship exists between teamwork aspects and transactional leadership aspects as depicted in Table 4.19, which implies that an increase in the level of transactional leadership style would result in low level of teamwork.

As mentioned in Section 3.8, a composite measure of project performance (OPI) was computed as an average of TPI and CPI. However, the correlation between TPI and OPI was high ($r = 0.974$, $p < 0.01$) which was above the $r = 0.9$ cut-off limit by Pallant (2011) and hence the two variable were measuring the same aspects. Consequently, OPI was dropped off from further analysis and hence project performance was evaluated in terms of TPI and CPI separately.

Table 4.19 Correlation Matrix

	II	IM	IS	IC	CR	MBEA	MBEP	C	CO	CH	TPI	CPI	OPI
Idealized influence	1												
Inspirational motivation	.764**	1											
Intellectual stimulation	.689**	.678**	1										
Individual consideration	.729**	.768**	.650**	1									
Contingent reward	-.338**	-.430**	-.257*	-.371**	1								
Management by exception- active	-.320**	-.517**	-.363**	-.478**	.667**	1							
Management by Exception -passive	-.406**	-.455**	-.427**	-.455**	.311**	.481**	1						
Communication	.364**	.621**	.367**	.534**	-.439**	-.551**	-.377**	1					
Collaboration	.503**	.643**	.476**	.537**	-.322**	-.371**	-.503**	.678**	1				
Cohesion	.388**	.558**	.467**	.479**	-.370**	-.436**	-.495**	.640**	.802**	1			
Time performance index	-.519**	-.622**	-.619**	-.542**	.365**	.599**	.514**	-.556**	-.450**	-.478**	1		
Cost performance index	-.246*	-.216	-.192	-.114	.076	.109	.080	-.201	-.048	-.054	.259*	1	
Overall performance index	-.531**	-.619**	-.610**	-.521**	.351**	.572**	.488**	-.555**	-.422**	-.449**	.974**	.472**	1

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

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

4.9 Relationship Between Study Variables and Project Performance

To address the study objectives, six research hypotheses were tested and the results are presented in this section. In each of the regression analysis, R^2 and adjusted R^2 have been reported. However, in order to avoid over-stating of the model predictive power as the number of predictors increases, the study adopted the use of adjusted R^2. In addition, F-test was used to determine the statistical significance of the resulting regression model while t-test was used to test the significance of each of the model coefficients. Further, multicollinearity was tested through the use of VIF and was considered to exist if VIF >10.

4.9.1 Relationship Between Project Manager's Leadership Style and Project Performance

The first objective was to evaluate the relationship between Project Manager's Leadership (PML) style and project performance. The study null hypothesis was that there was no significant relationship between PML styles and project performance.

In order to determine the contribution of each of the leadership style towards project performance, hierarchical multiple linear regression analysis was done. In this analysis, two steps were used; in the first step, TPI was regressed on transformational leadership style while in step two, TPI was regressed on both transformational and transactional leadership styles and the results are summarized in Table 4.20.

As shown in Table 4.20, two models were generated. Results for model 1, show that 42.7 percent of the variance in project time performance was explained by project manager's transformational leadership style while model 2 shows that 53.2 percent of the variance in project time performance was explained by both transformational and transactional leadership style. In addition, based on change in R^2, transactional leadership style accounts for 12 percent of the variance in project time performance. Thus, adoption of transformational leadership style leads to higher level of project performance.

Table 4.20 Regression Results of Time Performance Index and Project Manager's Leadership Style

Model		Unstandardized Coefficients[a]	t	Sig.	Collinearity Statistic
		B			VIF*
1[b]	(Constant)	5.549	8.086	.000	
	Idealized influence	0.144	0.435	.665	2.983
	Inspirational motivation	-0.515	-2.242	.028	3.268
	Intellectual stimulation	-0.567	-2.708	.009	2.192
	Individual consideration	-0.099	-0.407	.685	2.848
	R Square	0.461			
	Adjusted R^2	0.427			
	F	13.473		.000	
2[c]	(Constant)	2.083	1.755	.084	
	Idealized influence	-0.109	-0.349	.728	3.218
	Inspirational motivation	-0.262	-1.197	.236	3.633
	Intellectual stimulation	-0.485	-2.529	.014	2.259
	Individual consideration	0.103	0.458	.649	2.989
	Contingent reward	-0.187	-0.891	.377	1.899
	MBEA	0.756	3.083	.003	2.428
	MBEP	0.179	1.362	.178	1.484
	R Square	0.581			
	Adjusted R^2	0.532			
	R Square change	0.120			
	F	11.875		.000	
*With VIF being less than 10, there is no multicollinearity					

a. Dependent Variable: TPI

b. Predictors: (Constant), Individual, Intellectual, Idealized, Inspirational

c. Predictors: (Constant), Individual, Intellectual, Idealized, Inspirational, Contingent, MBEP, MBEA

Results in Table 4.20 also show that the two models were statistically significant with model 1 reporting a significant F value of 13.473 ($p < 0.05$) and model 2 with a significant F value of 11.875 ($p < 0.05$). Given these results, the null hypothesis was rejected and hence there was a statistically significant relationship between project manager's leadership style and project performance (based on TPI).

The findings in Table 4.20 also indicate that for model 1, the significant predictors of project time performance were IM ($\beta = - 0.515$, $p < 0.05$) and IS ($\beta = - 0.567$, $p < 0.05$). Thus, IC ($\beta = - 0.099$, $p > 0.05$) and II ($\beta = 0.144$, $p > 0.05$) were not significant predictor of project time performance. For model 2, the findings indicate that the significant predictor of project time performance were IS ($\beta = - 0.485$, $p < 0.05$) and MBEA ($\beta = 0$ .756, $p < 0.05$) since all the other variables (II, IM, IC, CR and MBEP) were not significant predictors of performance ($p > 0.05$).

Although the two models (model 1 and model 2) are statistically significant, model 2 was a better model as it account for a higher variation of the project time performance (53.2 percent) compared to model 1 (42.7 percent). Based on the above results, the predictive model for project time performance in Kenya becomes:

$TPI = – 0.485\ IS + 0.756\ MBEA.$

The predictive model implies that water project performance (in terms of TPI) in Kenya is a function of IS and MBEA. Specifically, a unit increase in IS would result in a 0.485 reduction in TPI while a unit increase in MBEA would result in a 0.756 increase in TPI.

To determine the relationship between PML and CPI, CPI was first regressed on transformational leadership style while in step two CPI was regressed on both transformational and transactional leadership styles. This resulted in two regression models whose results are shown in Table 4.21. Results for model 1, show that 8.1 percent of the variance in project cost performance was explained by project manager's transformational leadership style while model 2 shows that 8.6 percent of the variance in project cost performance was explained by both transformational and transactional

leadership style. In addition, based on change in R^2, transactional leadership style accounts for 0.4 percent of the variance in project cost performance.

As shown in Table 4.21, the two models generated after regressing CPI on project manager's leadership style were not statistically significant since model 1 had F value of 1.397 ($p > 0.05$) and model 2 with F value of 0.806 ($p > 0.05$). Given the results, the null hypothesis was not rejected. Thus, there was not enough statistical evidence to suggest that a significant relationship exist between PML style and project performance (based on CPI).

Table 4.21 Regression Results of Cost Performance Index and Project Manager's Leadership Style

Model		Unstandardized Coefficients[a]	t	Sig.	Collinearity Statistic
		B			VIF*
1[b]	(Constant)	1.502	6.501	.000	
	Idealized influence	-0.133	-1.189	.239	2.983
	Inspirational motivation	-0.058	-.747	.458	3.268
	Intellectual stimulation	-0.024	-.340	.735	2.192
	Individual consideration	0.093	1.136	.260	2.848
	R Square	0.081			
	F	1.397		.245	
2[c]	(Constant)	1.484	3.283	.002	
	Idealized influence	-0.149	-1.261	.212	3.218
	Inspirational motivation	-0.051	-0.611	.544	3.633
	Intellectual stimulation	-0.023	-0.310	.758	2.259
	Individual consideration	0.098	1.143	.257	2.989
	Contingent reward	-0.027	-0.337	.737	1.899
	MBEA	0.048	0.518	.606	2.428
	MBEP	-0.014	-0.280	.780	1.484
	R Square	0.086			
	R Square Change	0.004			
	F	0.806		.586	
*With VIF being less than 10, there is no multicollinearity					

a. Dependent Variable: CPI

b. Predictors: (Constant), Individual, Intellectual, Idealized, Inspirational

c. Predictors: (Constant), Individual, Intellectual, Idealized, Inspirational, Contingent, MBEP, MBEA

The study found a statistically significant relationship between PML style and project performance (in terms of TPI). The results of the study are consistent with the extant literature (Kissi, et al., 2013; Waldman & Atwater, 1994; Prabhakar, 2005). For instance, Kissi, et al., (2013) found transformational leadership behavior of portfolio managers in United Kingdom to be positively related to project performance while Waldman and Atwater (1994) found project manager's transformational leadership style to be positively related to project outcomes. Similarly, Prabhakar (2005) found a positive relationship between transformational leadership style and project performance. The results that transformational leadership style accounts for 42.7 percent of the project time performance confirms Keegan and Den Hartog (2004) assertion that transformational leadership style is critical in enhancing project performance. In addition, the finding that both transformational and transactional leadership style accounts for a higher explanatory power, 53.2 percent compared to 42.7 percent for transformational leadership aspects was in line with Felfe, et al., (2004) findings who established that both transformational and transactional leadership styles aspects can both be adopted by a leader based on the task at hand. These results are consistent with visionary leadership theory and contingency theory which advocates for adoption of an appropriate leadership style based on the situation at hand.

On the relationship between PML style and project cost performance, no statistical significant relationship was found. One possible explanation of non-existence of a statistically significant relationship between PML style and project cost performance (CPI) could be due to the use of fixed price contract in the water sector projects in Kenya. The fixed price contract limits cost adjustment by specifying cases in which project costs can be varied and also stating the maximum allowable cost variations. This means that even if a project has time over-run, it is not automatic that there will be cost adjustment. In addition, even in cases where cost adjustments are allowed due to various reasons, the 10 percent maximum cost escalation limit in most fixed contracts could have made the changes in CPI insignificant. In addition, based on Talukhaba (1999) findings, another possible explanation would be that cost estimates for most construction projects are

generally accurate due to availability and application of well tested cost estimation models and hence this limits instances of cost over-run.

The study findings established a predictive model TPI = – 0.485 IS + 0.756 MBEA, which shows that in order to improve project time performance in Kenya, project managers should engage project team members intellectually and also reduce MBEA practices. Based on the results in Appendix IX, project managers can achieve intellectual stimulation through re-examination of project assumptions with team members, seeking differing perspectives when addressing project issues, looking at problems from different dimensions and suggesting new ways of executing project activities. The results in Appendix X show that some of MBEA practices that project managers should avoid in order to improve project performance in Kenya include focusing their efforts on identification of irregularities, mistakes and failures as well as directing their efforts towards identification of failures to meet standards.

4.9.2 Relationship Between Project Manager's Leadership Style and Teamwork

The second objective was to evaluate the relationship between PML style and teamwork. The study null hypothesis was that there was no significant relationship between PML style and teamwork.

To determine the relationship, correlation analysis among PML style aspects (that is, transformation and transaction) and overall teamwork index was undertaken and the results are shown in Table 4.22. Results in Table 4.22 show a statistically significant positive relationship between teamwork and transformational leadership ($r = 0.631$, $p < 0.01$). Thus, an increase in the level of transformational leadership style would result in an increase in the level of teamwork within the projects. On the other hand, a statistically significant negative relationship was found between teamwork and transactional leadership ($r = -0.602$, $p < 0.01$). Thus, an increase in the level of transactional leadership style would result in a decrease in the level of teamwork within the projects.

Table 4.22 Correlation Matrix Among Transformational, Transaction and Teamwork

Aspect	Transformational leadership style	Transactional leadership style	Teamwork
Transformational leadership style	1		
Transactional leadership style	-.574**	1	
Teamwork	.631**	-.602**	1
** Correlation is significant at the 0.01 level (2-tailed).			

In addition, a statistically significant negative relationship was found between transformational and transactional leadership ($r = -0.574$, $p < 0.01$). The implication of this is that an increase in transformation leadership style would be accompanied by a decrease in the level of transactional leadership. Given the above results, the null hypothesis was rejected and hence there was a statistically significant relationship between PML style and teamwork.

The results of the study are in line with other studies (Wang, et al., 2005; Chan, et al., 2001; Mishra, et al., 2011; Tennant, et al., 2011). For instance, Wang, et al., (2005) found a positive correlation between PML style and level of team cohesiveness in Taiwan while Chan, et al., (2001) found a positive relationship between teamwork and project performance in Hong Kong. Mishra, et al., (2011) found a strong positive correlation between PML style and teamwork in India. In addition, Tennant, et al., (2011) found high correlation between teamwork and project performance in the UK construction industry.

Existence of a strong positive correlation between overall transformation leadership style and teamwork ($r = 0.631$, $p < 0.01$) concur with Dionne, et al., (2004) findings that transformational leadership aspects facilitate team communication and cohesion. These findings concur with the results of correlation analysis in Table 4.19. For instance, the study found a statistically significant positive relationship between teamwork and transformational leadership aspects namely between C and II ($r = 0.364$, $p < 0.01$), C and IM ($r = 0.621$, $p < 0.01$), CO and IM ($r = 0.643$, $p < 0.01$), CH and IC ($r = 0.479$, $p < 0.01$).

On the other hand, as shown in Table 4.19, a statistically significant negative relationship was found between teamwork aspects and transactional leadership aspects. For instance C and MBEA ($r = -0.551$, $p < 0.01$), CO and MBEP ($r = -0.503$, $p < 0.01$), CO and MBEA ($r = -0.371$, $p < 0.01$), CH and CR ($r = -0.370$, $p < 0.01$), CH and MBEA ($r = -0.436$, $p < 0.01$). This means that a project manager who adopts transformational leadership style would experience high level of teamwork than a project manager who is more transactional.

The implication of these findings is that in order to enhance teamwork, project managers in Kenya should be more transformational when dealing with project team members. Thus, based on the results in Table 4.20, project managers in Kenya needs to adopt practices that intellectually stimulates team members. In addition, given teamwork mean scores that are shown in Appendix XI, project managers should adopt practices that enhance communication, collaboration and cohesion. These practices include ensuring that project team members stay focused during group discussions and that team members express themselves without interruption.

4.9.3 Relationship Between Teamwork and Project Performance

Objective three was to evaluate the relationship between teamwork and project performance. The study null hypothesis was that there was no significant relationship between teamwork and project performance.

The multiple linear regression analysis was used to test the relationship and since project performance was being measured from two perspectives, TPI and CPI, two separate regression analysis were undertaken. The TPI was regressed against teamwork aspects and this resulted in regression model whose results are shown in Table 4.23 below.

The results in Table 4.23 below show that 30.4 percent of the variance in project time performance is explained by teamwork. In addition, the regression model in Table 4.23 was statistically significant with F value of 10.745 ($p < 0.05$). Given these results, the

null hypothesis was rejected and hence there was a statistically significant relationship between teamwork and project performance (based on TPI).

Table 4.23 Regression Results of Time Performance Index and Teamwork

Model		Unstandardized Coefficients[a]	t	Sig.	Collinearity Statistics
		B			VIF*
1[b]	(Constant)	5.005	7.506	.000	
	Communication	-0.592	-3.006	.004	1.944
	Collaboration	0.020	0.063	.950	3.210
	Cohesion	-0.344	-1.224	.226	2.944
	R^2	0.335			
	Adjusted R^2	0.304			
	F	10.745		.000	
*With VIF being less than 10, there is no multicollinearity					

a. Dependent Variable: TPI

b. Predictors: (Constant), Cohesion, Communication, Collaboration

The results in Table 4.23 also show that C ($\beta = -0.592$, $p < 0.05$) as the only significant predictor of project time performance since CO and CH were not significant predictors of performance ($p > 0.05$). Arising from above, the predictive model for the relationship between project time performance and teamwork in Kenya becomes:

TPI = 5.005–0.592 C

Thus, when the level of communication within a project is zero, project time performance would be poor at a maximum TPI value of 5.005. However, a unit increase in the level of communication would result in a 0.592 reduction in TPI which means that as the level of communication increases, project performance (in terms of TPI) would be enhanced.

Regressing CPI against teamwork resulted in regression model whose results are shown in Table 4.24 below.

Table 4.24 Regression Results of Cost Performance Index and Teamwork

Model		Unstandardized Coefficients[a]	t	Sig.	Collinearity Statistic
		B			VIF*
1[b]	(Constant)	1.182	5.770	.000	
	Communication	-0.114	-1.883	.064	1.944
	Collaboration	0.062	0.617	.539	3.210
	Cohesion	0.018	0.204	.839	2.944
	R^2	0.055			
	Adjusted R^2	0.011			
	F	1.249		.300	
*With VIF being less than 10, there is no multicollinearity					

a. Dependent Variable: CPI

b. Predictors: (Constant), Cohesion, Communication, Collaboration

The results in Table 4.24 show that 1.1 percent of the variance in project cost performance is explained by teamwork. However, the regression model was not statistically significant with F value of 1.249 ($p > 0.05$) and hence the null hypothesis was not rejected. Thus, there was not enough statistical evidence to suggest that a significant relationship exist between teamwork and project performance (based on CPI).

The finding that there is a significant relationship between teamwork and project performance (based on TPI) is consistent with other studies such as Mishra, et al., (2011) and Assaf, et al., (2014). For instance, Mishra, et al., (2011) found a strong correlation between teamwork and project performance in Taiwan while Assaf, et al., (2014) found a high correlation between teamwork and project performance in Saudi Arabia. The study predictive model for the relationship between project time performance and teamwork in Kenya; TPI = 5.005–0.592 C. The implication of this is that communication is important in enhance project time performance. This could be due to the fact that communication facilitates dissemination of information on various project aspects and hence ensures collaboration among team members. In addition, the results supports claim by several

authors (Turner & Muller, 2004; Ceric, 2011) that poor communication is one of the leading project risks, which can contribute to poor project performance. Thus, in order to improve project time performance in Kenya, there is need for project manager's to enhance communication within their project. Based on the results in Appendix XI and extant literature, project manager can enhance communication by ensuring that project team members stay focused during group discussions, team members express themselves without interruption, and problems are reported, discussed and resolved honestly.

4.9.4 Relationship Between Project Manager's Leadership Style, Teamwork and Project Performance

The fourth objective was to determine whether the relationship between PML style and project performance was intervened by teamwork. The study null hypothesis was that the relationship between PML style and project performance was not intervened by teamwork.

Testing of the mediating effect of teamwork on the relationship between PML style and project performance was achieved through application of the four causal steps approach by Baron and Kenny (1986). Based on the results of objective one in which there was a statistically significant relationship between PML style and project performance (based on TPI), results of objective 2 in which there was significant correlation between PML style and teamwork, and results of objective 3 in which there was a statistically significant relationship between teamwork and project performance (based on TPI) met the first three conditions that were specified by Baron and Kenny (1986) for testing mediation.

The fourth condition was tested by use of simultaneous entry method in which TPI was regressed on PML style and teamwork. The results are shown in Table 4.25. As shown in Table 4.25, 54.5 percent of the variance in project time performance is explained by PML style and teamwork. Comparing the results of Table 4.20 and Table 4.25 shows that the inclusion of teamwork aspects in the model increased the predictive power by 1.3

percent. In addition, the predictive model was statistically significant with F value of 9.032 ($p < 0.05$).

Table 4.25 Regression Results of Time Performance Index on Project Manager's Leadership Style and Teamwork

Model		Unstandardized Coefficients[a]	t	Sig.	Collinearity Statistic
		B			VIF*
1[b]	(Constant)	3.038	2.195	.032	
	Idealized influence	-0.274	-0.860	.393	3.459
	Inspirational motivation	-0.141	-0.594	.555	4.412
	Intellectual stimulation	-0.508	-2.625	.011	2.361
	Individual consideration	0.179	0.798	.428	3.072
	Contingent reward	-0.223	-1.071	.289	1.933
	MBEA	0.622	2.491	.016	2.599
	MBEP	0.205	1.491	.142	1.670
	Communication	-0.388	-2.083	.042	2.667
	Collaboration	0.311	1.078	.286	3.885
	Cohesion	-0.086	-0.360	.720	3.233
	R^2	0.613			
	Adjusted R^2	0.545			
	F	9.032		.000	
*With VIF being less than 10, there is no multicollinearity					

a. Dependent Variable: TPI

b. Predictors: (Constant), Cohesion, Contingent, Idealized, MBEP, Communication, Intellectual, MBEA, Individual, Collaboration, Inspirational

The results in Table 4.25 above, show the statistically significant predictors of TPI were IS ($\beta = -0.508$, $p < 0.05$), MBEA ($\beta = 0.622$, $p < 0.05$) and C ($\beta = -0.388$, $p < 0.05$). Thus, the predictive model for project time performance in Kenya becomes:

TPI = 3.038 - 0.508 IS + 0.622 MBEA - 0.388 C

Thus, when IS, MBEA and C are each equal to zero, TPI will be at the maximum TPI value of 3.038. In addition, a unit increase in IS would result in reduction of TPI by 0.508, while a unit increase in MBEA would result in an increase of TPI by 0.622. Further, a unit increase in C would result in reduction of TPI by 0.388.

Given PML style continued to be a significant explanatory variable even after the introduction of teamwork and with the three mediation conditions being satisfied, teamwork was found to be an intervening variable on the relationship between PML style and project performance (in terms of TPI). Consequently, the null hypothesis four was rejected.

On the mediating effect of teamwork on the relationship between PML style and project performance (based on CPI), it was established that two of the first three conditions for mediation were not met. First, based on the results of objective one in Table 4.21, there was no statistically significant relationship between PML style and project performance (based on CPI). Secondly, the results of objective 3 in Table 4.24, found no statistically significant relationship between teamwork and project performance (based on CPI). In addition, through simultaneous entry method, CPI was regressed on PML style and teamwork and the results are shown in Table 4.26 below.

As shown in Table 4.26, 15.2 percent of the variance in project cost performance was explained by PML style and teamwork. However, the predictive model was not statistically significant with F value of 1.019 ($p > 0.05$). Thus, there was not enough statistical evidence to support the mediating effect of teamwork on the relationship between PML style and project performance (based on CPI).

The results of the study found that teamwork mediates the relationship between PML style and project performance (in terms of TPI). The study findings are in line with extant literature such as Choi (2002) and Yang, et al., (2013). For example, Choi (2002) found that leadership style plays an important role in enhancing team motivation and unity with the end results being good project performance.

Table 4.26 Regression Results of Cost Performance Index on Project Manager's Leadership Style and Teamwork

Model		Unstandardized Coefficients	t	Sig.	Collinearity Statistics
		B			VIF*
1[b]	(Constant)	1.575	2.980	.004	
	Idealized influence	-0.193	-1.587	.118	3.459
	Inspirational motivation	-0.037	-0.402	.689	4.412
	Intellectual stimulation	-0.037	-0.507	.614	2.361
	Individual consideration	0.120	1.400	.167	3.072
	Contingent reward	-0.031	-0.396	.694	1.933
	MBEA	-0.001	-0.015	.988	2.599
	MBEP	0.011	0.206	.837	1.670
	Communication	-0.135	-1.898	.063	2.667
	Collaboration	0.144	1.309	.196	3.885
	Cohesion	0.010	0.109	.913	3.233
	R^2	0.152			
	F	1.019		.439	
*With VIF being less than 10, there is no multicollinearity					

a. Dependent Variable: CPI

b. Predictors: (Constant), Cohesion, Contingent, Idealized, MBEP, Communication, Intellectual, MBEA, Individual, Collaboration, Inspirational

On the other hand, Yang, et al., (2013) found the mediating role of teamwork on the relationship between PML style and project performance in Taiwan. The study findings are consistent with visionary leadership theory, which emphasises on the need for leaders to motivate followers by raising their level of awareness, motivation as well as addressing and modifying their values and self–esteem as this enhances teamwork and consequently good project performance. With project team being a key stakeholder, the study findings are also in line with stakeholder's theory, which calls upon project managers to manage

project stakeholders' expectation and concerns as a way of enhancing project performance.

The predictive model between the PML style, teamwork and project performance was TPI = 3.038 – 508 IS + 0.6 MBEA – 0.388 C. Thus, in order to improve project time performance in Kenya, there is need for project manager's to adopt practices that intellectually stimulate project team members, enhance communication within the project and reduce MBEA practices. As the agency theory posits, effective communication within a project would reduce information asymmetry and hence facilitate teamwork and consequently attainment of project objectives. Thus, there is need for project managers in Kenya to ensure effective communication within their project as this would facilitates teamwork which would consequently impact on project performance.

4.9.5 Relationship Between Project Manager's Leadership Style, Project Characteristics and Project Performance

The fifth objective was to examine whether the relationship between project manager leadership style and project performance is moderated by project characteristics. The study null hypothesis was that the relationship between PML style and project performance was not moderated by project characteristics. The key project characteristics evaluated were Project Size (PS), Project Complexity (PC) and Funding Source (FS). Given the nature of these characteristics, a composite measure of project characteristics could not be computed and hence the moderating effect was evaluated for each of the characteristics separately. In addition, for each characteristic, moderating effect was undertaken based the relationship between PML style and TPI as well as between PML style and CPI.

The moderating effect was evaluated based on Baron and Kenny (1986) approach of testing the main effects and that of the interaction term. For each project characteristic, the interaction term was computed as the product of PML style and the respective project characteristic score. To reduce the risk of multicollinearity, PML and the respective

project characteristic scores were first converted into standardized scores that have mean zero and standard deviation one before computation of the interaction term.

To determine the moderating role of PS on the relationship between PML style and TPI, hierarchical multiple linear regression analysis was used and the results are shown in Table 4.27 below.

Table 4.27 Regression Results of Time Performance Index on Project Manager's Leadership Style, Project Size and Interaction Term (Leadership*Project Size)

Model		Unstandardized Coefficients[a]	T	Sig.	Collinearity Statistics
		B			VIF*
1[b]	(Constant)	1.782	21.537	.000	
	Project manager leadership	-0.579	-6.907	.000	1.011
	Project size	-0.078	-0.927	.357	1.011
	R square	0.437			
	Adjusted R^2	0.419			
	F	25.206		.000	
2[c]	(Constant)	1.780	21.202	.000	
	Project manager leadership	-0.576	-6.744	.000	1.035
	Project size	-0.086	-0.912	.365	1.250
	Leadership*project size	0.019	0.194	.847	1.249
	R square	0.437			
	Adjusted R^2	0.411			
	F	16.568		.000	
*With VIF being less than 10, there is no multicollinearity					

a. Dependent Variable: TPI

b. Predictors: (Constant), Project manager leadership, Project size

c. Predictors: (Constant), Project manager leadership, Project size, Leadership*Project size

As shown in Table 4.27, model 1, show that 41.9 percent of the variance in TPI was explained by PML and PS. In addition, the results show that the model was statistically significant with a significant F value of 25.206 ($p < 0.05$). Model 2 show that 41.1 percent of the variance in TPI was explained by PML style, PS and interaction term (PML*PS). Thus, inclusion of the interaction term in the model resulted in a reduction of adjusted R^2 by 0.008 (0.419 - 0.411). In addition, model 2 was also statistically significant with a significant F value of 16.568 ($p < 0.05$).

The findings in Table 4.27 above also indicate that for model 1, the significant predictor of TPI was PML style ($\beta = -0.579$, $p < 0.05$) while PS ($\beta = -0.078$, $p > 0.05$) was not significant predictor. For model 2, the findings indicate that the significant predictor of TPI was PML ($\beta = -0.576$, $p < 0.05$) while PS ($\beta = -0.086$, $p > 0.05$) and PML*PS ($\beta = 0.019$, $p > 0.05$) were not significant predictors of TPI. Thus, since the interaction term was not statistically significant ($p > 0.05$), the null hypothesis was not rejected. Thus, there was not enough statistical evidence to suggest that PS has a moderating effect on the relationship between TPI and PML.

The moderating effect of project size on the relationship between PML style and CPI was undertaken and the results are shown in Table 4.28. The findings in Table 4.28 indicate that for model 1, 2.1 percent of the variance in CPI was explained by PML style and PS. In addition, the results show that model 1 was not statistically significant with F value of 1.703 ($p > 0.05$). Model 2 results show that 0.9 percent of the variance in CPI was explained by PML style, PS and PML*PS. In addition, model 2 was not statistically significant with F value of 1.205 ($p > 0.05$). Thus, the null hypothesis was not rejected and hence there was not enough statistical evidence to suggest that PS has a moderating effect on the relationship between CPI and PML style.

Table 4.28 Regression Results of Cost Performance Index on Project Manager's Leadership Style, Project Size and Interaction Term (Leadership*Project Size)

Model		Unstandardized Coefficients[a]	t	Sig.	Collinearity Statistics
		B			VIF*
1[b]	(Constant)			.000	
	Project manager leadership	-0.048	-1.702	.093	1.011
	Project size	-0.015	-0.535	.595	1.011
	R square	0.050			
	Adjusted R^2	0.021			
	F	1.703		.190	
2[c]	(Constant)	1.074	38.256	.000	
	Project manager leadership	-0.050	-1.749	.085	1.035
	Project size	-0.008	-0.260	.796	1.250
	leadership*project size	-0.016	-0.498	.620	1.249
	R square	0.053			
	Adjusted R^2	0.009			
	F	1.205		0.315	
*With VIF being less than 10, there is no multicollinearity					

a. Dependent Variable: CPI

b. Predictors: (Constant), Project manager leadership, Project size

c. Predictors: (Constant), Project manager leadership , Project size, Leadership*Project size

To determine the moderating role of PC on the relationship between PML style and TPI, hierarchical multiple linear regression analysis was undertaken and the results are shown in Table 4.29 below. As indicated in Table 4.29, model 1 show that 42.6 percent of the variance in TPI was explained by PML style and PC. In addition, the results show that the model was statistically significant with a significant F value of 25.855 ($p < 0.05$). Model

2 show that 45.7 percent of the variance in TPI was explained by PML style, PC and PML*PC. Thus, inclusion of the interaction term in the model resulted in an increase in adjusted R^2 by 0.031 (0.426 - 0.457). In addition, model 2 was also statistically significant with a significant F value of 19.781 ($p < 0.05$).

Table 4.29 Regression Results of Time Performance Index on Project Manager's Leadership Style, Project Complexity and Interaction Term (Leadership* Complexity)

Model		Unstandardized Coefficients[a]	t	Sig.	Collinearity Statistics
		B			VIF*
1[b]	(Constant)	1.782	21.658	.000	
	Project manager leadership	-0.569	-6.754	.000	1.031
	Project complexity	-0.106	-1.265	.210	1.031
	R square	0.443			
	Adjusted R^2	0.426			
	F	25.855		.000	
2[c]	(Constant)	1.753	21.596	.000	
	Project manager leadership	-0.585	-7.110	.000	1.039
	Complexity	-0.123	-1.501	.138	1.040
	Leadership*project complexity	0.171	2.166	.034	1.021
	R square	0.481			
	Adjusted R^2	0.457			
	F	19.781		.000	
*With VIF being less than 10, there is no multicollinearity					

a. Dependent Variable: TPI
b. Predictors: (Constant), Project manager leadership, Complexity
c. Predictors: (Constant), Project manager leadership, Complexity, Leadership*Projectcomplexity

The findings in Table 4.29 above also indicate that for model 1, the significant predictor of TPI was PML style ($\beta = -0.569$, $p < 0.05$) while PC ($\beta = -0.106$, $p > 0.05$) was not a significant predictor. For model 2, the findings indicate that the significant predictors of TPI were PML style ($\beta = -0.585$, $p < 0.05$) and the interaction term ($\beta = 0.171$, $p < 0.05$)

while PC (β = -0.123, $p > 0.05$) was not significant predictors of TPI. Thus, since the interaction term was statistically significant ($p < 0.05$), the null hypothesis was rejected. Thus, PC has moderating effect on the relationship between TPI and PML style.

To determine the moderating role of PC on the relationship between PML style and CPI, hierarchical multiple linear regression analysis was undertaken and the results are shown in Table 4.30 below.

Table 4.30 Regression Results of Cost Performance Index on Project Manager's Leadership Style, Project Complexity and Interaction Term (Leadership* Complexity)

Model		Unstandardized Coefficients[a]	t	Sig.	Collinearity Statistics
		B			VIF*
1[b]	(Constant)	1.073	38.647	.000	
	Project manager leadership	-0.051	-1.798	.077	1.031
	Complexity	0.010	.350	.728	1.031
	R square	0.047			
	Adjusted R^2	0.018			
	F	1.618		0.206	
2[c]	(Constant)	1.070	37.828	.000	
	Project manager leadership	-0.053	-1.839	.071	1.039
	Complexity	0.008	0.287	.775	1.040
	Leadership*Projectcomplexity	0.017	0.626	.533	1.021
	R square	0.053			
	Adjusted R^2	0.009			
	F	1.199		.317	
*With VIF being less than 10, there is no multicollinearity					

a. Dependent Variable: CPI
b. Predictors: (Constant), Project manager leadership, Complexity
c. Predictors: (Constant), Project manager leadership, Complexity, Leadership*Projectcomplexity

The results in Table 4.30 above indicate that for model 1, 1.8 percent of the variance in CPI was explained by PML style and PC. In addition, the results show that the model 1 was not statistically significant with F value of 1.618 ($p > 0.05$). Model 2 show that 0.9

percent of the variance in CPI was explained by PML style, PC and PML*PC. In addition, model 2 was not statistically significant with F value of 1.199 ($p > 0.05$). Thus, the null hypothesis was not rejected and hence there was not enough statistical evidence to suggest that PC has a moderating effect on the relationship between PML style and CPI.

To determine the moderating role of FS on the relationship between PML and TPI, TPI was regressed on PML, FS and the interaction term and the results are shown in Table 4.31 below.

As shown in Table 4.31 below, model 1 indicates that 41.4 percent of the variance in TPI was explained by PML style and FS. In addition, the results show that the model was statistically significant with a significant F value of 16.534 ($p < 0.05$). Model 2 shows that there was no change in the explanatory power of the model after inclusion of interaction term with 41.4 percent of the variance in TPI being explained by PML, FU and interaction terms. In addition, model 2 was also statistically significant with a significant F value of 10.445 ($p < 0.05$).

The findings in Table 4.31 indicate that for model 1, the significant predictor of TPI was PML style ($\beta = -0.607$, $p < 0.05$) while FS-development partners ($\beta = -0.020$, $p > 0.05$) and FS-government ($\beta = 0.104$, $p > 0.05$) were not a significant predictors. For model 2, the findings indicate that the significant predictor of TPI was PML style ($\beta = -0.639$, $p < 0.05$) while FS-development partners ($\beta = 0.026$, $p > 0.05$), FS-government ($\beta = 0.155$, $p > 0.05$), PML* FU-development partners ($\beta = 0.069$, $p > 0.05$) and PML* FU-government ($\beta = -0.093$, $p > 0.05$) were not significant predictors of TPI. Since the interaction terms were not statistically significant, the null hypothesis was not rejected and hence there was not enough statistical evidence to suggest that FS has a moderating effect on the relationship between TPI and PML style.

Table 4.31 Regression Results of Time Performance Index on Project Manager's Leadership Style, Funding and Interaction Term (Leadership* Funding)

Model		Unstandardized Coefficients[a]	t	Sig.	Collinearity Statistics
		B			VIF*
1[b]	(Constant)	1.782	21.275	.000	
	Project manager leadership	-0.607	-7.033	.000	1.044
	Funding-development partners	0.020	0.212	.833	1.288
	Funding-government	0.104	1.070	.289	1.337
	R square	0.441			
	Adjusted R^2	0.414			
	F	16.534		.000	
2[c]	(Constant)	1.803	20.956	.000	
	Project manager leadership	-0.639	-7.036	.000	1.165
	Funding-development partners	0.026	0.265	.792	1.317
	Funding-government	0.155	1.506	.137	1.492
	Leadership* funding development partners	0.069	0.641	.524	1.666
	Leadership * funding government	-0.093	-0.803	.425	1.657
	R square	0.461			
	Adjusted R^2	0.414			
	F	10.445		.000	
*With VIF being less than 10, there is no multicollinearity					

a. Dependent Variable: TPI

b. Predictors: (Constant), Project manager leadership, Funding -development partner, funding-government

c. Predictors: (Constant), Project manager leadership Funding -development partner, funding-government, leadership * funding -development partner, Leadership * funding-government

To determine the moderating role of FS on the relationship between PML style and CPI, CPI was regressed on PML, FS and the interaction term and the results are shown in Table 4.32. The results in Table 4.32 indicate that for model 1, 2.9 percent of the variance in CPI was explained by PML, FS-development partners and FS-government. In addition, the results show that model 1 was not statistically significant with F value of 1.667 (p >

0.05). Model 2 show that 0.8 percent of the variance in CPI was explained by PML, FS-development partners, FS-government, PML* FS-development partners and PML*FS–government. In addition, model 2 was not statistically significant with F value of 1.105 ($p > 0.05$). Thus, the null hypothesis was not rejected and hence there was not enough statistical evidence to suggest that FS has a moderating effect on the relationship between PML style and project performance (based on CPI).

Table 4.32 Regression Results of Cost Performance Index on Project Manager's Leadership Style, Funding and Interaction Term (Leadership* Funding)

Model		Unstandardized Coefficients[a]	t	Sig.	Collinearity Statistics
		B			VIF
1[b]	(Constant)	1.073	38.585	.000	
	Project manager leadership	-0.054	-1.904	.061	1.044
	Funding-development partner	0.041	1.290	.202	1.288
	Funding-government	0.034	1.037	.304	1.337
	R square	0.074			
	Adjusted R^2	0.029			
	F	1.667		.183	
2[c]	(Constant)	1.067	36.882	.000	
	Project manager leadership	-0.057	-1.854	.069	1.165
	Funding -development partner	0.044	1.350	.182	1.317
	Funding-government	0.029	0.833	.408	1.492
	Leadership * funding - development partner	0.018	0.491	.625	1.666
	Leadership * funding-government	0.031	0.791	.432	1.657
	R square	0.083			
	Adjusted R^2	0.008			
	F	1.105		.367	
*With VIF being less than 10, there is no multicollinearity					

a. Dependent Variable: CPI

b. Predictors: (Constant), Project manager leadership, Funding -development partner, funding-government

c. Predictors: (Constant), Project manager leadership Funding -development partner, funding-government, leadership * funding -development partner, Leadership * funding-government

The results of the study that project size had no moderating role on the relationship between leadership and project performance (based on TPI) contradict those of Yang, et al., (2011) who found the moderating role of project size in Taiwan. In addition, the results of this study that project complexity moderates the relationship between leadership and project performance are in line with those of Muller and Turner (2007) who found project complexity to moderate the relationship between leadership style and project performance in a study that covered USA, Australia and six countries in Europe. However, Muller and Turner (2007) concentrated on medium and high level of complexity due to inadequate number of projects with low complexity in their sample. Thus, given the moderating role of project complexity, the results of this study support those of Yakhchali and Farsani (2013) who found differences in project manager's leadership styles for projects with different characteristics. The results also concur with those of Higgs and Dulewicz (2004) who established the need for different leadership style based on project complexity. Based on the above results, there is need for clients to consider project complexity and PML style during allocation of projects to various project managers. Likewise, there is need for project managers to adopt appropriate leadership style based on project characteristics such as project complexity.

4.9.6 Relationship Between Project Manager's Leadership Style, Teamwork, Project Characteristics and Project Performance

The last objective was to determine the joint effect of PML style, teamwork and project characteristics on project performance. The study null hypothesis was that the joint effect of PML style, teamwork and project characteristics on project performance was not significant. The multiple linear regression analysis was used to test the relationship in which, TPI was regressed on PML style, teamwork and project characteristics; the regression results are shown in Table 4.33.

The results in Table 4.33 show that 53.8 percent of the variance in project time performance was explained by PML style, teamwork and project characteristics. In addition, the regression model was statistically significant with F value of 5.797 ($p <$

0.05). Given the results of the model, the null hypothesis was rejected. Thus, PML style, teamwork and project characteristics combined have a statistically significant relationship with project performance (in terms of TPI)

Table 4.33 Regression Results of Time Performance Index on Project Manager's Leadership Style, Teamwork and Project Characteristics

Model		Unstandardized Coefficients[a]	t	Sig.	Collinearity Statistics
		B			VIF*
1[b]	(Constant)	3.568	2.338	.023	
	Idealized influence	-0.359	-1.079	.286	3.668
	Inspirational motivation	-0.049	-0.195	.846	4.777
	Intellectual stimulation	-0.514	-2.484	.016	2.621
	Individual consideration	0.087	0.362	.719	3.445
	Contingent reward	-0.315	-1.382	.173	2.240
	MBEA	0.665	2.486	.016	2.888
	MBEP	0.196	1.363	.179	1.765
	Communication	-0.418	-2.042	.046	3.121
	Collaboration	0.274	0.884	.381	4.335
	Cohesion	0.009	0.037	.971	3.711
	Project size -medium	0.179	0.659	.513	2.502
	Project size -large	-0.039	-0.159	.874	2.744
	Funding- government	0.356	1.145	.258	2.565
	Funding- development partners	0.010	0.049	.961	1.719
	Complexity-high	-0.301	-1.145	.258	2.253
	Complexity-medium	-0.307	-1.487	.143	1.912
	F	5.797		.000	
	R2	0.650			
	Adjusted R2	0.538			
*With VIF being less than 10, there is no multicollinearity					

a. Dependent Variable: TPI

b. Predictors: (Constant), Complexity-Medium, Project size-Large, Collaboration, Funding- development partners, MBEA, Idealized, Funding - government, MBEP, Complexity-high, Contingent, Intellectual, Project size-medium, Communication, Individual, Cohesion, Inspirational

In addition, the results of the model show that the statistically significant predictors of TPI were IS ($\beta = -0.514$, $p < 0.05$), MBEA ($\beta = 0.665$, $p < 0.05$) and C ($\beta = -0.418$, $p < 0.05$). Thus, the predictive model for project time performance in Kenya becomes:-
TPI = 3.568 – 0.514 IS + 0.665 MBEA - 0.418 C. Thus, when IS, MBEA and C are each equal to zero, TPI will be at the maximum value of 3.568. In addition, a unit increase in IS would result in reduction of TPI by 0.514, while a unit increase in MBEA would result in an increase of TPI by 0.665. Further, a unit increase in C would result in reduction of TPI by 0.418. Arising from the model, project time performance improves as a result of increased use of IS and C while use of MBEA would result in poor project performance.

On the relationship between PML style, teamwork, project characteristics and CPI, multiple linear regression analysis was used in which CPI was regressed on project manager's leadership style, teamwork and project characteristics and the regression analysis results are shown in Table 4.34 below. The results in Table 4.34 show that 20.1 percent of the variance in project cost performance was explained by PML style, teamwork and project characteristics. However, the regression model was not statistically significant with F value of 0.784 ($p > 0.05$) and hence the null hypothesis was not rejected. Thus, there was not enough statistical evidence to suggest that a significant relationship exist between PML style, teamwork, project characteristics and project performance (based on CPI).

The study findings that there is a significant relationship between PML style, teamwork project characteristics and project performance (based on TPI) is consistent with those of similar studies such as Yang, et al., (2011) and Yang, et al., (2013). For instance, Yang, et al., (2011) found a significant positive relationship between PML style, teamwork and project performance in Taiwan. On the other hand, Yang, et al., (2013) found a significant relationship between leadership style and project performance, a strong link between leadership and teamwork, and a strong correlation between teamwork and project performance. The results are also in line with those of Kibuchi (2012) who established that performance of construction projects in Kenya are dependent upon team

member's commitment, motivation and use of appropriate leadership and management style.

Table 4.34 Regression Results of Cost Performance Index on Project Manager's Leadership Style, Teamwork and Project Characteristics

Model		Unstandardized Coefficients[a]	t	Sig.	Collinearity Statistics
		B			VIF*
1[b]	(Constant)	1.628	2.738	.009	
	Idealized influence	-0.158	-1.218	.229	3.668
	Inspirational motivation	-0.063	-0.645	.522	4.777
	Intellectual stimulation	-0.019	-0.233	.817	2.621
	Individual consideration	0.098	1.039	.304	3.445
	Contingent reward	-0.038	-0.425	.672	2.240
	MBEA	-0.049	-0.471	.640	2.888
	MBEP	0.026	0.467	.643	1.765
	Communication	-0.156	-1.949	.057	3.121
	Collaboration	0.187	1.554	.126	4.335
	Cohesion	-0.012	-0.118	.906	3.711
	Project size medium	-0.006	-0.056	.956	2.502
	Project size large	0.059	0.617	.540	2.744
	Funding-government	0.090	0.742	.462	2.565
	Funding –development partners	0.042	0.548	.586	1.719
	Complexity- high	-0.074	-0.721	.474	2.253
	Complexity-medium	0.039	0.485	.630	1.912
	R^2	0.201			
	F	0.784		0.695	
*With VIF being less than 10, there is no multicollinearity					

a. Dependent Variable: CPI

b. Predictors: (Constant), Complexity-Medium, Project size-Large, Collaboration, Funding- development partners, MBEA, Idealized, Funding - government, MBEP, Complexity-high, Contingent, Intellectual, Project size-medium, Communication, Individual, Cohesion, Inspirational

The resulting predictive model for project time performance in Kenya was TPI = 3.568 – 0.514 IS + 0.655 MBEA – 0.418 C. Thus, for enhanced project time performance (TPI) in Kenya, there is need for project manager's to adopt practices that intellectually

stimulates project team members, increases level of communication and reduce focus on MBEA. Given the correlation between leadership aspects and project performance, results in Appendix X1 and extant literature, there is need for project managers to adopt practices that enhances communication, collaboration and cohesion as this would increase teamwork and subsequently improved project performance given existence of a statistically significant relationship between teamwork and project performance. Table 4.35 present a summary of the results of each of the hypotheses.

Table 4.35 Summary of Hypotheses Findings

Objectives	Hypotheses	Findings	Conclusion
Establish the relationship between project manager's leadership style and project performance	H1: There is no relationship between project manager's leadership style and project performance	Results based on TPI: Adjusted R^2 = 0.532, model significant (F = 11.875, $p < 0.05$)	H1 was rejected and hence there was a statistically significant relationship between project manager's leadership style and project performance (based on TPI) in Kenya. The predictive model is: TPI = – 0.485 IS + 0.756 MBEA.
		Results based on CPI: Adjusted R^2 = 0.086, model not significant (F = 0.806, $p > 0.05$)	H1 was not rejected and hence there was not enough statistical evidence to suggest that a significant relationship exist between project manager's leadership style and project performance (based on CPI) in Kenya.
Establish the relationship between project manager's leadership style and teamwork	H2: There is no significant relationship between project manager's leadership style and teamwork	A statistically significant positive relationship between teamwork and transformational leadership (r = 0.631, $p < 0.01$). A statistically significant negative relationship was found between teamwork and transactional leadership (r = -0.602, $p < 0.01$).	H2 was rejected and hence there was a statistically significant relationship between project manager's leadership style and teamwork.

Objectives	Hypotheses	Findings	Conclusion
Establish the relationship between teamwork and project performance	H3: There is no significant relationship between teamwork and project performance**.**	Results based on TPI: Adjusted R^2 = 0.304, model significant (F = 10.745, p < 0.05)	H3 was rejected and hence there was a statistically significant relationship between teamwork and project performance (based on TPI) in Kenya. The predictive model is: TPI = 5.005–0.592 C
		Results based on CPI: Adjusted R^2 = 0.011, model not significant (F = 1.249, p > 0.05)	H3 was not rejected and hence there was not enough statistical evidence to suggest that a significant relationship exist between teamwork and project performance (based on CPI) in Kenya.
Examine whether the relationship between project manager's leadership style and project performance is intervened by teamwork	H4: Relationship between leadership style and project performance is not intervened by teamwork	Results based on TPI: Adjusted R^2 = 0.545, model significant (F = 9.032, p < 0.05)	H4 was rejected and hence teamwork was found to be an intervening variable on the relationship between project manager's leadership style and project performance (in terms of TPI) in Kenya. The predictive model is: TPI = 3.038 - 0.508 IS + 0.622 MBEA - 0.388 C
		Results based on CPI: Adjusted R^2 = 0.152, model not significant (F = 1.019, p > 0.05)	H4 was not rejected and hence there was not enough statistical evidence to support the mediating effect of teamwork on the relationship between project manager's leadership style and project performance (based on CPI) in Kenya.
Investigate whether the relationship between project manager	H5: Relationship between leadership style and project performance is not	Results based on TPI and PS: Model significant (F =16.568, p < 0.05), PML*PS (β =	H5 was not rejected and hence there was there was not enough statistical evidence to suggest that PS has a moderating effect on

Objectives	Hypotheses	Findings	Conclusion
leadership style and project performance moderated by project characteristics	moderated by project characteristics	0.019, $p > 0.05$) was not significant	the relationship between TPI and PML.
		Results based on CPI and PS: Model not significant ($F= 1.205$, $p > 0.05$)	H5 was not rejected and hence there was not enough statistical evidence to suggest that PS has a moderating effect on the relationship between CPI and PML
		Results based on TPI and PC: Model significant ($F = 19.781$, $p < 0.05$) and interaction term ($\beta = 0.171$, $p < 0.05$) significant	H5 was rejected and PC has moderating effect on the relationship between TPI and PML
		Results based on CPI and PC: Model not significant ($F = 1.199$, $p > 0.05$)	H5 was not rejected and hence there was not enough statistical evidence to suggest that PC has a moderating effect on the relationship between CPI and PML
		Results based on TPI and FS: model significant ($F = 10.445$, $p < 0.05$). However, PML* FU-development partners ($\beta =0.069$, $p > 0.05$) and PML* FU-government ($\beta = -0.093$, $p > 0.05$) not significant	H5 was not rejected and hence there was not enough statistical evidence to suggest that FS has a moderating effect on the relationship between TPI and PML.
		Results based on CPI and FS: Model not significant ($F = 1.105$, $p > 0.05$).	H5 was not rejected and hence there was not enough statistical evidence to suggest that FS has a moderating effect on the relationship between PML and CPI.

Objectives	Hypotheses	Findings	Conclusion
Examine the joint effect of project manager's leadership style, project characteristics and teamwork on project performance.	H6: Joint effect of leadership style, teamwork and project characteristics on project performance is not significant	Results based on TPI: Adjusted R^2 = 0.538, model significant (F=5.797, p < 0.05)	H6 was rejected and hence project manager's leadership style, teamwork and project characteristics combined have a statistically significant relationship with project performance (in terms of TPI) in Kenya. The predictive model is: TPI = 3.568 – 0.514 IS + 0.665 MBEA - 0.418 C
		Results based on CPI: Adjusted R^2 = 0.201, model not significant (F = 0.784, p > 0.05)	H6 was not rejected and hence there was not enough statistical evidence to suggest that a significant relationship exist between project manager's leadership style, teamwork, project characteristics and project performance (based on CPI) in Kenya.

CHAPTER FIVE
SUMMARY, CONCLUSION AND IMPLICATIONS

5.1 Introduction

This chapter presents a summary of findings for each of the research objectives, conclusion from study findings and study contributions. In addition, the chapter presents limitations of the study and possible areas of future research.

5.2 Summary

The overall objective of this study was to determine the relationship between PML style, teamwork, project characteristics and their impact on project performance in water sector projects in Kenya. To achieve the objective, a descriptive cross-sectional research design was used to collect secondary and primary data. Primary data was collected from project managers and project team members who had been involved in various water projects in the country. The study achieved a response rate of 67 percent.

Water projects covered in this study had different characteristics in terms of size, complexity and funding source. For instance, in terms of project cost, 27.9 percent of the projects had a budget of less than KShs. 50 million, 25 percent had a budget of between KShs. 50 to 200 million while 47.1 percent had a budget of over KShs. 200 million. In addition, 48.5 percent of the projects had been financed by development partners, 17.6 percent by government and 33.8 percent were partly financed by the development partners and government. In terms of project performance, 82 percent of the projects had experienced time over-run, with the average time over-run being 100 percent. On the other hand, 49 percent of the projects had experienced cost over-run with the average cost over-run being approximately 20 percent. In testing hypotheses, project performance was evaluated from time and cost perspectives through the use of TPI and CPI.

The first hypothesis evaluated the relationship between PML style and project performance in Kenya. The study found a statistically significant relationship between PML style and project performance (in terms TPI). The predictive model for the

relationship was TPI = -0.485 IS + 0.756 MBEA. However, no statistically significant relationship was found between PML style and project performance (in terms of CPI).

In hypothesis two, the relationship between PML style and teamwork was evaluated. The results of the study found a statistically significant positive relationship between teamwork and transformational leadership ($r = 0.631$, $p < 0.01$), Thus, an increase in the level of transformational leadership style would result in an increase in the level of teamwork within a project. On the other hand, a statistically significant negative relationship was found between teamwork and transactional leadership ($r = -0.602$, $p < 0.01$) and hence an increase in the level of transactional leadership style would result in a decrease in the level of teamwork within a project.

The third hypothesis explored the relationship between teamwork and project performance. The study found a statistically significant relationship between teamwork and project time performance (in terms of TPI), with the predictive model being TPI = 5.005 – 0.592C. Thus, as the level of communication within the team increases, TPI reduces which results in improved project performance. The analysis also indicated that 30.4 percent of the variance in project time performance was explained by the level of teamwork within the project team. However, no statistically significant relationship was found between teamwork and project performance (in terms of CPI).

Determination of whether teamwork mediates the relationship between PML style and project performance was undertaken in the fourth hypothesis. The results confirmed the mediating role of teamwork on the relationship between PML style and project performance (in terms of TPI). On the other hand, hypothesis five examined the moderating effect of project characteristics on the relationship between PML style and project performance. Project complexity was found to moderate the relationship between PML style and TPI while project size and funding were found not to moderate the relationship.

The sixth hypothesis assessed the joint effect of PML style, teamwork and project characteristics on project performance in Kenya. The results of regression model revealed a statistically significant relationship between PML style, teamwork, project characteristics and project performance (in terms of TPI). The resulting predictive model was TPI = 3.568 – 0.514 IS + 0.655 MBEA – 0.418 C. In addition, the regression model showed that 53.8 percent of the variance in project time performance (TPI) was explained by PML style, teamwork and project characteristics.

5.3 Conclusion

The overall objective of this study was to determine the relationship between PML style, teamwork, project characteristics and their impact on project performance in water sector projects in Kenya. Based on study findings, it can be concluded that majority of water project in Kenya experience significant amount of time and cost over-run with the average time over-run being 100 percent and average cost over-run being 20 percent. The implication of time and cost over-run is non-availability of envisioned water and sanitation services. From the study findings, it can also be concluded that existence of time over-run does not automatically imply that the project will experience a cost over-run. Further, given the results of Talukhaba (1999) on the magnitude of time and cost over-run for projects implemented before the introduction of the 10 percent capping on cost variation in which over fifty percent of the project would experience huge cost over-run and the results of this study, it can be concluded that cost escalation clause in the construction project contracts has had an impact in containing project cost over-run. Further, given the statistically significant relationship between PML style and project time performance and the resulting predictive model, it can be concluded that project manager's transformational leadership style has a major impact on project performance in the water sector. Thus, there is need for project managers to adopt transformative leadership style as a way of enhancing water project performance in Kenya.

Implementation of water projects in Kenya involves several experts or teams who are in most cases drawn from different organizations. Thus, based on the confirmed mediating role of teamwork on the relationship between PML style and project performance, positive relationship between teamwork and PML style as well as positive relationship

between teamwork and performance, it can be concluded that teamwork is critical in the attainment of project performance targets. From the study results, it can be concluded that teamwork is a key determinant of project performance and hence project managers should adopt ways of enhancing teamwork through effective communication, stimulating team members intellectually through examination of project assumptions, seeking differing perspectives when addressing project issues and suggesting new ways of executing project activities, and reducing emphasis on identification of irregularities, mistakes and failures during project implementation.

The study found that the relationship between PML style and project time performance is moderated by project characteristics namely project complexity. Based on this, it can be concluded that the selection and adoption of an appropriate leadership style within a project should be take cognizance of project complexity. For instance, organizations should consider project complexity when allocating project managers to projects. In addition, project managers should also adopt appropriate leadership style based on project characteristics.

5.4 Study Contribution

Within project management, there has not been consensus on the relationship between PML style and project performance. In addition, most of the existing literature has been limited to developed countries. Thus, a key contribution is that as the visionary leadership theory had predicted, this study has confirmed existence of a statistically significant relationship between PML style and project performance within a developing country context.

The results of the predictive model between project performance and different aspects of transformational and transactional leadership style, has confirmed Keegan and Hartog (2004) assertion on the importance of transformational leadership style in enhancing project performance. Thus, the study provides new insights that adoption of transformational leadership style by project managers is more likely to yield better project performance than for those that adopts transactional leadership style. These

results have a major implication on PMBOK area of time management. Equally, the finding that the project manager's leadership style has no statistically significant relationship with project cost performance is expected to impact on PMBOK area of cost management.

Within project management, some studies in the past have treated teamwork as an independent variable that directly affects project performance. However, results of this study have confirmed the mediating role of teamwork in the relationship between project performance and PML style. This confirmation may help to resolving issue of conflicting results in extant literature as the study has clarified that teamwork should be treated as a mediating variable and hence the study results will facilitate design of appropriate conceptual framework in future research. Further, given the mediating role of teamwork, the study findings provide support to the stakeholder theory assertion on the importance of key stakeholder in enhancing project performance.

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The results of this study are of importance to various stakeholders involved in the water sector. These stakeholders include national and county governments, Ministry of Water and Irrigation, WSBs, WSPs, development partners, contractors, consultants, training institutions, WSTF and other water sector institutions. Specifically, the study findings have identified the importance of transformational leadership style in the implementation of water projects in Kenya. In addition, since project managers have different

competencies and also have different inclinations to certain leadership style, the study findings would facilitate allocation of project managers to various projects given PML style and specific project characteristics. In addition, given the results of the study and findings by Talukhaba (1999) that for most project, the estimated project duration is normally under-estimated due to various reasons such as inadequate use of time estimation models, time limits specified by the client or financiers, lack of adequate project details during the bidding process as well as the need to win the contract with the hope they can request for time extension, there is need for organizations to invest in project time estimation models and also seek for project information before project bidding. Similarly, there is need for site visits by contractors in order to familiarize themselves with site conditions before bidding as well as benchmarking proposed project duration with those of similar completed projects.

With the study findings having identified teamwork as a critical factor in enhancing project performance, project managers should adopt effective and efficient communication systems, collaboration as well as other practices that would enhance teamwork as a way of improving project performance. Similarly, contractors, consultants and other team members should put in place systems to facilitate effective communication, monitoring and control of project activities.

With adoption of the study findings, there would be improved project performance in the water sector. This would result in value for money due to reduced wastage of public funds through reduction of time and cost over-runs. In addition, the study findings are expected to spur social-economic development in the country through provision of affordable and sustainable water services to industries and the citizens. Further, completion of sanitation projects on time and within budget would support government effort of addressing health and hygiene issues that are related to provision of water and sanitation services.

For training institutions, there is need to undertake review of curricular design as a way of ensuring that graduates have the right mix of technical and leadership skills necessary for successful project execution. In addition, since the study has identified that leadership is important in ensuring project performance, WSBs, WSPs and other water sector institutions should sponsor their staff for leadership training.

5.5 Limitations of the Study

This study had some limitations; firstly, the study used a descriptive cross-sectional research design in which data were collected from project team members long after the completion of the water project. This could have introduced some bias in the study as some of the study participant could not fully recall what had transpired during project execution.

Secondly, project performance was based on objective measures of cost and time and hence the study did not consider qualitative measure of project performance which probably could have resulted in a different model. Thirdly, given the research objectives and study design, causality among the variables could not be established. Finally, the study was based on a single sector and this limits generalizability of the study findings to other sectors.

5.6 Suggestions for Further Research

Based on study findings and limitations, several possible research areas are suggested. First, since the study used a cross-sectional design, there is need for a longitudinal research design that would track project performance from the start of the project to completion. This would facilitate determination of PML style across the different project implementation phases.

Secondly, given the predictive power of the models in this study, there seems to be other factors that can explain the performance of water sector project in Kenya. As such, there is need for a comprehensive study that would incorporate both exogenous and

endogenous variables in the prediction of project performance. In addition, since project performance was based on cost and time performance only, there is need for further research that would incorporate other aspects of project performance such as client satisfaction, stakeholder satisfaction, and impact of the project on the environment.

Thirdly, this study was undertaken in the water sector and this may restrict generalizability of the results. Consequently, there is need for a country wide study investigating causes of poor project performance across various sectors of the economy.

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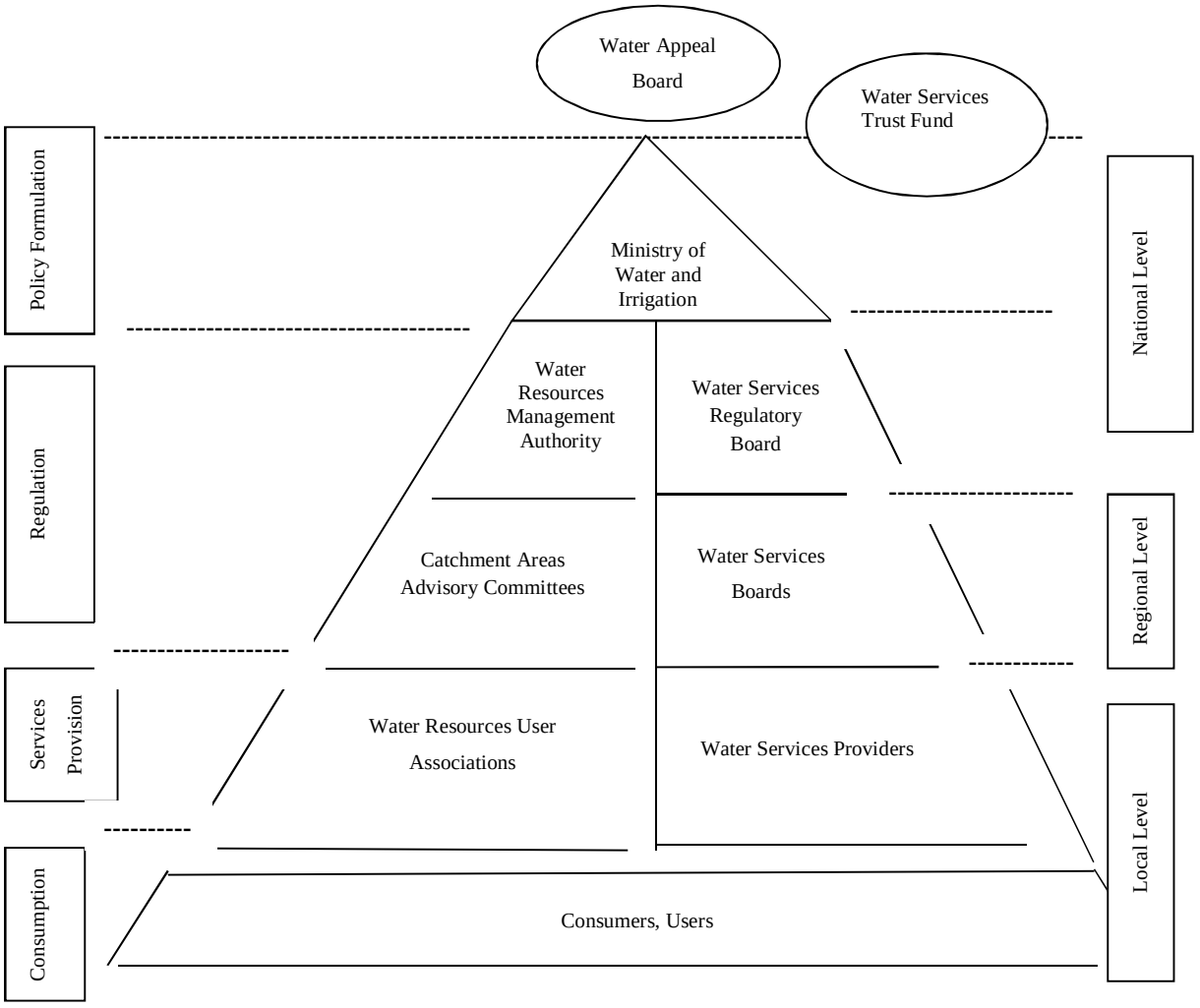
APPENDICES

Appendix I Water Sector Institutions



Appendix II List of Water Service Boards and Water Service Providers

a) Water service boards

1. Athi Water Services Board (AWSB)
2. Tana Water Services Board (TWSB)
3. Coast Water Services Board (CWSB)
4. Lake Victoria South Water Services Board (LVSWSB)
5. Lake Victoria North Water Services Board (LVNWSB)
6. Northern Water Services Board (NWSB)
7. Rift Valley Water Services Board (RVWSB)
8. Tanathi Water Services Board (TAWSB)

b) Water service providers

Urban		Rural	
Very large WSPs (≥ 35,000 connections)			
1	Nairobi		
2	Mombasa		
3	Eldoret		
4	Nakuru		
5	Thika		
Large WSPs (10,000 – 34,999 connections)			
1	Nzoia	1	Othaya
2	Nyeri	2	Murang'a
3	Kirinyaga	3	Gatanga
4	Malindi	4	Gatundu
5	Kakamega	5	Kahuti
6	Tilibei	6	Tetu
7	Mathira	7	Imetha
8	Kisumu	8	Gichugu
9	Nakuru		
10	Embu		
11	Kericho		
12	Gusii		
13	Kilifi		
14	Nanyuki		

15	Nyahururu		
16	Muranga		
17	Garissa		
18	Sibo		
19	Meru		
Medium WSPs (5,000 – 9,999 connections)			
1	Kwale	1	Gatamathi
2	Kikuyu	2	Karimenu
3	Tavevo	3	Ngandori
4	Machakos	4	Ngagaka
5	Ruiru	5	Nthi
6	Oloolaiser	6	Tuuru
7	Kiambu	7	Githunguri
8	Isiolo	8	Kyeni
9	Limuru		
10	NolTuresh		
11	Amatsi		
12	South		
13	Mavoko		
14	Kitui		
Small WSPs (< 5,000 connections)			
1	Mikutra	1	Embe
2	Lodwar	2	Nyandarua
3	Kibwezi	3	Murugi
4	Karuri	4	Muthambi
5	Nyanas	5	Ndaragwa
6	Lamu	6	Rukanga
7	Kapenguria	7	Kikanamku
8	Eldama	8	Nyasare
9	Kiambere	9	Mbooni
10	Gulf	10	Engineer
11	Mandera	11	Nyakanja
12	Narok	12	Tachasis

13	Mwala	13	Mawingo
14	Kapsabet	14	Kinja
15	Naivasha	15	Tia
16	Maralal	16	Upper
17	Iten	17	Ruiri
18	Yatta	18	Kathita
19	Hola	19	Gitei
20	Namanga	20	Kathita
21	Olkejuado		
22	Moyale		
23	Runda		
24	Olkalou		
25	Kiamumbi		
26	Matungulu		
27	Rumuruti		
28	Wote		

Source: Impact Report 2013

Distribution of water service providers

Size Category (Based on Number of Registered Water and Sewerage Connections)	Urban	Rural	Total
Very large (>= 35,000)	5	0	5
Large (10,000 – 34,999)	19	8	27
Medium (5,000 – 9,999)	14	8	22
Small (< 5,000)	28	20	58
Total	66	36	102

Source: Impact Report 2013

Appendix III Study Projects

Project Name	WSB
Drought Intervention Works in Nairobi - Construction of Steel Towers for Water Storage Tanks	AWSB
Drought Intervention Works in Nairobi - Drilling of Boreholes - Lot 1	AWSB
Drought Intervention Works in Nairobi - Drilling of Boreholes - Lot 2	AWSB
Drought Intervention Works in Nairobi - Drilling of Boreholes - Lot 3	AWSB
Drought Intervention Works in Nairobi - Equipping New Boreholes -Lot 2	AWSB
Drought Intervention Works in Nairobi - Equipping New Boreholes-Lot 1	AWSB
Drought Intervention Works in Nairobi - Equipping New Boreholes-Lot 1	AWSB
On Site Sanitation and Hygiene - Construction of VIP Latrines (Lot I)	AWSB
Gatharaini Trunk Sewers	AWSB
Kibera Water and Sewerage Support Project	AWSB
Komothai Water Supply – Rehabilitation and Expansion of Existing Works	AWSB
Lavington - Riruta Trunk Sewers Extensions	AWSB
Mataara Water Production Systems	AWSB
Nairobi City Water Distribution Network - Rehabilitation and Improvement Works	AWSB
Nairobi Informal Settlement Water and Sewerage Improvement Project	AWSB
Rehabilitation of Dandora Sewerage Treatment Works and Reconstruction of Ngong River Trunk Sewers	AWSB
Rehabilitation of GiriGi - Kabete (3B)	AWSB
Rehabilitation of Ngethu - GiGiri (3A)	AWSB
Rehabilitation of Ngethu Works	AWSB
Rehabilitation of Theta Dam	AWSB
Ruiru-Juja Water Supply Works	AWSB
Sasumua Dam Rehabilitation	AWSB
Thika Road Water and Sewerage Facilities Relocation	AWSB
Umoja Relief Sewer	AWSB
Baricho - AFD	CWSB
Kakuyuni Watamu-IDA	CWSB
Kilifi-Mtwapa - IDA	CWSB

Project Name	WSB
Kwale – Ukunda – IDA	CWSB
Mzima Pipeline Rehabilitation	CWSB
Tiwi Boreholes	CWSB
West Mainland Sewers (Kipevu)	CWSB
Voi – upgrade Distribution System	CWSB
Awendo Water Supply and Sanitation	LVNWSB
Eldoret Water Supply (Chebara Dam)	LVNWSB
Kapsabet Water Supply	LVNWSB
Lessos Water Supply	LVNWSB
Nzoia Cluster Phase I – Kitale – Webuye Water	LVNWSB
Nzoia Cluster Phase II - Kakamega	LVNWSB
Asembo Ndori Intake Works	LVSWSB
Asembo Ndori Treatment Works	LVSWSB
Bomet Water Supply	LVSWSB
Bondo Water Supply Expansion Works	LVSWSB
Homabay Water and Sanitation	LVSWSB
Kisumu Water and Sanitation Project, LTAP II	LVSWSB
Kisumu Water Supply, LTAP	LVSWSB
Kisumu Water Supply, STAP	LVSWSB
Migori Water Supply	LVSWSB
Suba Water Supply and Sanitation	LVSWSB
Archers Post Dam	NWSB
Maralal Dam –Treatment Works, Tanks and Pipelines	NWSB
Merti Water Supply	NWSB
Rehabilitation and Extension of Isiolo Sewerage Facility	NWSB
Lakeview, Gilanis, Rhonda, Mwariki Water Meter Project	RVWSB
Baruti Water Supply	RVWSB
Free Area – Kiratina Water	RVWSB
Githima, Bondeni, Misonge Water Supply	RVWSB
London – Manyani Water Supply	RVWSB
Mzee Wa Nyama Water Supply	RVWSB

Project Name	WSB
Naivasha-Gilgil – Rift Valley Water Supply and Sanitation	RVWSB
Nakuru Works – Rift Valley Water Supply and Sanitation	RVWSB
Ikanga – Tuvila Water Supply	TAWSB
Ikanga – Mutomo Water Supply	TAWSB
Kaiti Borehole Water Supply	TAWSB
Kajiado Water Supply	TAWSB
Kamunyolo Dam Water Supply	TAWSB
Kasaala Water Supply	TAWSB
Kicheko Ngwata Water	TAWSB
Kiserian Dam	TAWSB
Kitunduni Water Supply	TAWSB
KMC – Njoguini Water	TAWSB
Kwa Matinga Water Supply	TAWSB
Manguva Dam Water Supply	TAWSB
Masinga – Kitui Water Supply and Sanitation	TAWSB
Mavoko – Portland Cement Dam	TAWSB
Mavoko Sewer Rehabilitation and Lukenya Sewer	TAWSB
Mutitu Town and Thua – Kinakoni Water Supply	TAWSB
Muuoni Dam	TAWSB
Mwaani 2 Borehole Water Supply	TAWSB
Slota Sanitation	TAWSB
Sofia –Jua kali Water	TAWSB
Umanyi – Mutito Andei Water Supply	TAWSB
Rehabilitation of Maruba Dam	TAWSB
Kahuti Water Supply	TWSB
Muiga Pipeline	TWSB
Siakago – Ishiara Town Pipeline	TWSB
Embu Water Supply	TWSB
Embu Water Supply – JICA	TWSB
Ewasco – Mbeere Pipeline Water	TWSB
Kandara Bulk Water Supply System	TWSB

Project Name	WSB
Mathira Water Supply	TWSB
Muranga Bulk Water Supply	TWSB
Naromoru Town Water Supply	TWSB
Nyeri Municipality – Kiganjo Water Transmission Main Supply	TWSB
Nyeri Municipality Water Supply	TWSB
Nyeri Water Supply	TWSB
Othaya Sewerage	TWSB
Othaya Water Supply	TWSB
Ragati Water Dam	TWSB
Runyenjes Town Water Supply	TWSB
Sagana Town Water Supply	TWSB
Tigania Water Supply Phase I	TWSB
Tigania Water Supply Phase II	TWSB

Source: WSBs Achievements – Investment Projects Reports

Appendix IV Secondary Data Collection Form

	Name of water service board	Name of water service provider	Project location (rural or urban)	Funding source (internal or external)	Water project name	Water project number	Name of main contractor	Name of main project consultant	Project start date	Project contract duration	Original contract completion date	Actual project completion date	Original contract cost (KShs)	Final contract cost (KShs)
1														
2														
3														
4														
5														
6														

Appendix V Project Manager Questionnaire

1. Name of the water project _____
2. Name of the water service board_____
3. Name of the beneficially water service provider _____
4. Kindly indicate your gender. [ ] Male [ ] Female
5. Kindly indicate your age bracket in years

☐ Below 25	☐ 35 to 44	☐ 55 to 60
☐ 25 to 34	☐ 45 to 54	☐ Above 60

6. Please indicate your highest level of education attained so far.

☐ PhD	☐ Diploma	☐ Others (please specify…….)
☐ Master's degree	☐ Certificate	
☐ Bachelor degree	☐ High school	

7. Kindly indicate your work experience.

☐ Below 3 years	☐ 6 to 10 years	☐ Above 15 years
☐ 3 to 5 years	☐ 11 to 15 years	

8. Apart from the current employer, how many other organizations have you worked for _____
9. Compared to other projects that your organization has undertaken in the past, kindly rate the project complexity

☐ Low	☐ High
☐ Medium	

10. For the above mentioned project, kindly specify the project type/initial site condition

☐ Greenfield, that is new	☐ Expansion
☐ Renovation	

11. Classification of the main contractor

☐ Local	☐ International

12. For the project mentioned above, kindly indicate the extent to which you as the project manager/engineer agree with each of the following statements by putting a tick **(√)** in the appropriate response.

	Statements	Not at all	To a little extent	Not sure	To a great extent	To a very great extent
1.	During the project execution, I talked about my most important values and beliefs					
2.	I specified the importance of having a strong sense of purpose during the project execution					
3.	I considered the moral and ethical consequences of each decision during the project execution					
4.	During the project execution, I emphasized the importance of having a collective sense of mission					
5.	I instilled pride in others for being associated with the project					
6.	I went beyond self-interest for the good of the project team					
7.	During the project execution, I acted in ways that brought respect among project team members					
8.	During the project execution, I displayed a sense of power and confidences of my decisions					
9.	During the project execution, I talked optimistically about the project future					
10.	During the project execution, I talked enthusiastically about what needed to be accomplished					
11.	I articulated a compelling vision of the project future					
12.	I expressed confidence that the project goals would be achieved					
13.	During the project execution, I re-examined the appropriateness of stated project assumptions					
14.	I sought differing perspectives when solving problems related to the project					
15.	I made team members to look at project issues/problems from many different dimensions					
16.	I suggested new ways of looking at how to complete the project activities					
17.	I spent time teaching and coaching the project team members					
18.	I treated the project members as individuals rather than just as a member of the project					
19.	I considered the project members as having different needs, abilities, and aspirations					
20.	During the project execution, I helped team members to develop their strength/skills					
21.	I provided the project team members with assistance in exchange for their efforts					
22.	I discussed in specific terms who was responsible for achieving the project performance targets					

	Statements	Not at all	To a little extent	Not sure	To a great extent	To a very great extent
23.	I made it clear what each project member was to receive once the project performance goals are achieved					
24.	During the project execution, I expressed satisfaction when expectations were meet					
25.	During the project execution, I focused attention on irregularities, mistakes, exceptions and deviations from standards					
26.	I concentrated my full attention on dealing with mistakes, complaints and failures during the project execution					
27.	I kept track of all mistakes within the project					
28.	I directed my attention to failures to meet project standards					
29.	During the project execution , I did not intervene until problem (s) became serious					
30.	During project execution, I waited for things to go wrong before taking action					
31.	I am a firm believer in "if it isn't broke don't fix it"					
32.	I demonstrated that problems must become chronic before taking action					

13. In relation to the above mentioned project, indicate the extent to which you agree with each of the statements by putting a tick **(√)** in the appropriate response.

	Statements	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
1.	Project team members avoided drifting from the topic during discussions.					
2.	Project team members responded to each other positively during discussions.					
3.	Project team members did not stop others from expressing their opinions during discussions.					
4.	During discussions, project team members reported problems in a honest manner.					
5.	During the project execution, team members were willing to share information.					
6.	Project team members discussed problem-solving methods and collaborated with others to address them.					

	Statements	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
7.	Project team members listened to each other to clarify problems/issues.					
8.	Project team members did not show a defensive or mistrustful attitude during discussions.					
9.	Project team members were strongly attached to the project					
10.	Project team members felt proud to be part of the project.					
11.	Every project team member felt responsible for maintaining and protecting the project.					

14. In the space provided, kindly list the major causes of time over-runs (delays) and cost over-runs in the water projects in Kenya.

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Thank for your participation in the study.

Appendix VI Project Team Member's Questionnaire

1. Name of the water project

   _____

2. Name of the water service board _____
3. Name of the beneficially water service provider _____
4. Kindly select the category that describes your role in the above mentioned water project:

   ☐ Consultant representative /Resident Engineer
   ☐ WSP representative
   ☐ Contractor /Site Agent
   ☐ Others (Kindly Specify ……..

5. Kindly indicate your gender. [ ] Male [ ] Female
6. Kindly indicate your age bracket in years

   ☐ Below 25
   ☐ 25 to 34
   ☐ 35 to 44
   ☐ 45 to 54
   ☐ 55 to 60
   ☐ Above 60

7. Please indicate your highest level of education attained so far.

   ☐ PhD
   ☐ Master's degree
   ☐ Bachelor degree
   ☐ Diploma
   ☐ Certificate
   ☐ High school
   ☐ Others(please specify…….)

8. Kindly indicate your professional background _____
9. Kindly indicate your work experience.

   ☐ Below 3 years
   ☐ 3 to 5 years
   ☐ 6 to 10 years
   ☐ 11 to 15 years
   ☐ Above 15 years

10. Apart from the current employer, how many other organizations have you worked for _____
11. Given the complexity of water projects in the country, kindly rate the complexity of the above mentioned water project.

    ☐ Low
    ☐ Medium
    ☐ High

12. For the above mentioned project, kindly specify the project type/initial site condition

    ☐ Greenfield, that is new
    ☐ Renovation/Rehabilitation
    ☐ Expansion

13. For the above mentioned project, kindly indicate the extent to which you agree with each of the following statements in relation to the project manager/engineer leadership style by putting a tick **(√)** in the appropriate response.

	Statements	Not at all	To a little extent	Not sure	To a great extent	To a very great extent
1.	During the project execution, the project manager talked about his/her most important values and beliefs					
2.	The project manager specified the importance of having a strong sense of purpose during the project execution					
3.	The project manager considered the moral and ethical consequences of each decision during the project execution					
4.	During the project execution, the project manager emphasized the importance of having a collective sense of mission					
5.	The project manager instilled pride in project team members for being associated with the project					
6.	The project manager went beyond self-interest for the good of the project team					
7.	During the project execution, the project manager acted in ways that brought respect among project team members					
8.	During the project execution, the project manager displayed a sense of power and confidences of his/her decisions					
9.	During the project execution, the project manager talked optimistically about the project future					
10.	During the project execution, the project manager talked enthusiastically about what needed to be accomplished					
11.	The project manager articulated a compelling vision of the project future					
12.	The project manager expressed confidence that the project goals would be achieved					
13.	During the project execution, the project manager re-examined the appropriateness of stated project assumptions					
14.	The project manager sought differing perspectives when solving problems related to the project					
15.	The project manager made team members to look at project issues/problems from many different dimensions					
16.	The project manager suggested new ways of looking at how to complete the project activities					
17.	The project manager spent time teaching and coaching the project team members					
18.	The project manager treated project members as individuals rather than just as a member of the project					
19.	The project manager considered project members as having different needs, abilities, and aspirations					
20.	During the project execution, the project manager helped team members to develop their strength/skills					

	Statements	Not at all	To a little extent	Not sure	To a great extent	To a very great extent
21.	The project manager provided the project team members with assistance in exchange for their efforts					
22.	The project manager discussed in specific terms who was responsible for achieving the project performance targets					
23.	The project manager made it clear what each project member was to receive once the project performance goals are achieved					
24.	During the project execution, the project manager expressed satisfaction when expectations were meet					
25.	During the project execution, the project manager focused attention on irregularities, mistakes, exceptions and deviations from standards					
26.	The project manager concentrated my full attention on dealing with mistakes, complaints and failures during the project execution					
27.	The project manager kept track of all mistakes within the project					
28.	The project manager directed attention to failures to meet project standards					
29.	During the project execution , the project manager did not intervene until problem (s) became serious					
30.	During project execution, the project manager waited for things to go wrong before taking action					
31.	The project manager is a firm believer in “if it isn’t broke don’t fix it”					
32.	The project manager demonstrated that problems must become chronic before taking action					

14. In relation to the project mentioned above, indicate the extent to which you agree with each of the statements by putting a tick **(√)** in the appropriate response.

	Statements	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
1.	Project team members avoided drifting from the topic during discussions.					
2.	Project team members responded to each other positively during discussions.					
3.	Project team members did not stop others from expressing their opinions during discussions.					
4.	During discussions, project team members reported					

	Statements	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
	problems in a honest manner.					
5.	During the project execution, team members were willing to share information.					
6.	Project team members discussed problem-solving methods and collaborated with others to address them.					
7.	Project team members listened to each other to clarify problems/issues.					
8.	Project team members did not show a defensive or mistrustful attitude during discussions.					
9.	Project team members were strongly attached to the project					
10.	Project team members felt proud to be part of the project					
11.	Every project team member felt responsible for maintaining and protecting the project					

15. In the space provided, kindly list the major causes of **time over-runs (delays)** and **cost over-runs** in water projects in Kenya.

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Thank for your participation in the study.

Appendix VII Introduction Letter

UNIVERSITY OF NAIROBI
COLLEGE OF HUMANITIES AND SOCIAL SCIENCES
SCHOOL OF BUSINESS
DOCTORAL STUDIES PROGRAMME

Telephone: 4184160/1-5 Ext. 225
Email: dsp@uonbi.ac.ke

P.O. Box 30197
Nairobi, Kenya

18th May , 2015

TO WHOM IT MAY CONCERN

RE: JAMES THUO KARIUKI:D80/8500/2000

This is to certify that, **JAMES THUO KARIUKI: D80/8500/2000** is a Ph.D Candidate in the School of Business, University of Nairobi. The title of his study is:
"Project Managers Leaders Style, Teamwork, Project Characteristics and Performance of Water Projects in Kenya".

The purpose of this letter therefore, is to kindly request you to assist and facilitate in carrying out the research/study in your organization. A questionnaire is herewith attached for your kind consideration and necessary action.

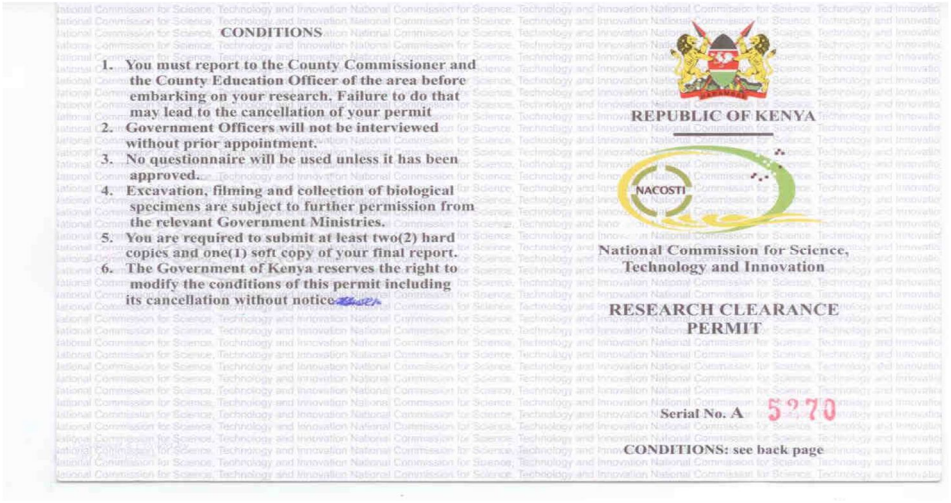
Data and information obtained through this exercise will be used for academic purposes only. Hence, the respondents are requested not to indicate their names anywhere on the questionnaire.

We look forward to your cooperation.

PROF. STEPHEN N.M. NZUVE
ASSOCIATE DEAN
GRADUATE BUSINESS STUDIES
SCHOOL OF BUSINESS

MO/nwk

Appendix VIII **National Commission for Science, Technology and Innovation Research Permit**



CONDITIONS

1. You must report to the County Commissioner and the County Education Officer of the area before embarking on your research. Failure to do that may lead to the cancellation of your permit
2. Government Officers will not be interviewed without prior appointment.
3. No questionnaire will be used unless it has been approved.
4. Excavation, filming and collection of biological specimens are subject to further permission from the relevant Government Ministries.
5. You are required to submit at least two(2) hard copies and one(1) soft copy of your final report.
6. The Government of Kenya reserves the right to modify the conditions of this permit including its cancellation without notice

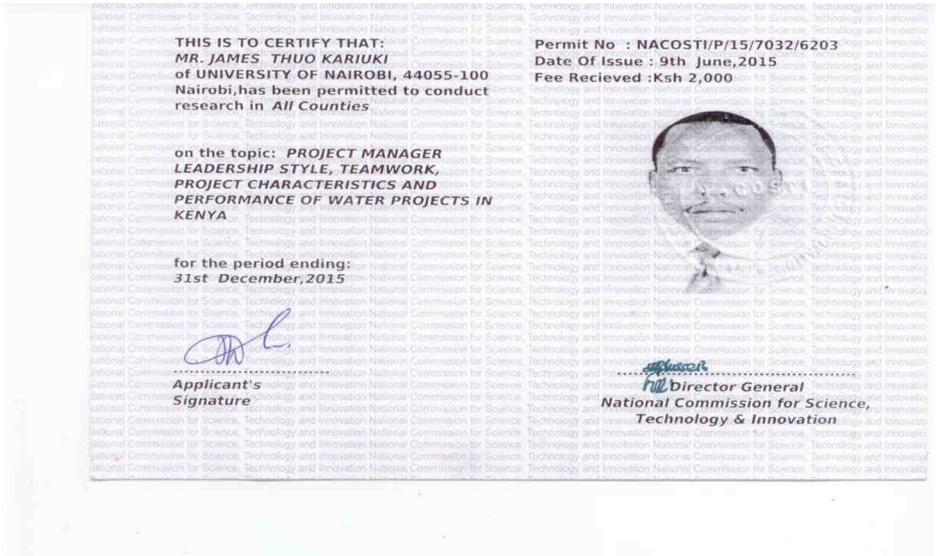
REPUBLIC OF KENYA

National Commission for Science, Technology and Innovation

RESEARCH CLEARANCE PERMIT

Serial No. A 5270

CONDITIONS: see back page



THIS IS TO CERTIFY THAT:
MR. JAMES THUO KARIUKI
of UNIVERSITY OF NAIROBI, 44055-100
Nairobi,has been permitted to conduct
research in *All Counties*

on the topic: *PROJECT MANAGER LEADERSHIP STYLE, TEAMWORK, PROJECT CHARACTERISTICS AND PERFORMANCE OF WATER PROJECTS IN KENYA*

for the period ending:
31st December,2015

Applicant's Signature

Permit No : NACOSTI/P/15/7032/6203
Date Of Issue : 9th June,2015
Fee Recieved :Ksh 2,000

Director General
National Commission for Science, Technology & Innovation

Appendix IX Transformational Leadership Aspects Ratings

Aspect	Sample	Mean	Standard Deviation	Test Value = 0			
				t	df	Sig. (2-tailed)	Mean Difference
Talked about his/her most important values and beliefs	68	2.88	0.67	35.18	67	.000	2.88
Specified the importance of having a strong sense of purpose	68	3.48	0.52	55.26	67	.000	3.48
Considered the moral and ethical consequences of a decision	68	3.54	0.50	58.18	67	.000	3.54
Emphasized the importance of having a collective sense of mission	68	3.63	0.54	55.09	67	.000	3.63
Instilled pride in others for being associated with him/her	68	3.61	0.64	46.82	67	.000	3.61
Went beyond self-interest for the good of the project team	68	3.56	0.66	44.15	67	.000	3.56
Acted in ways that built respect among team members	68	3.66	0.61	49.34	67	.000	3.66
Displayed a sense of power and confidences of decisions	68	3.61	0.60	49.58	67	.000	3.61
Overall idealized influence	68	3.49	0.43	66.79	67	.000	3.49
Talked optimistically about the project future	68	3.69	0.71	42.82	67	.000	3.69
Talked enthusiastically about what needs to be accomplished	68	3.73	0.69	44.70	67	.000	3.73
Articulated a compelling vision of the project future	68	3.72	0.71	43.00	67	.000	3.72
Expressed confidence that project goals will be achieved	68	3.76	0.73	42.35	67	.000	3.76
Overall inspirational motivation	68	3.73	0.65	47.12	67	.000	3.73
Re-examined critical assumptions to question whether they are appropriate	68	3.54	0.65	45.04	67	.000	3.54
Sought differing perspectives when solving problems	68	3.56	0.67	43.91	67	.000	3.56
Made me to look at problems from many different dimensions	68	3.53	0.65	44.57	67	.000	3.53
Suggested new ways of looking at how to complete project activities	68	3.47	0.75	38.37	67	.000	3.47
Overall intellectual stimulation	68	3.52	0.59	49.55	67	.000	3.52
Spent time teaching and coaching project team members	68	3.60	0.71	41.64	67	.000	3.60
Treated me as an individual rather than just as a member of a group	68	3.60	0.65	45.71	67	.000	3.60
Considered me as having different needs, abilities, and aspirations from other members	68	3.59	0.69	42.82	67	.000	3.59
Helped me to develop my strengths	68	3.65	0.67	44.60	67	.000	3.65
Overall individual consideration	68	3.61	0.58	51.59	67	.000	3.61
Overall transformational aspects	68	3.59	0.50	59.44	67	.000	3.59

Appendix X Transactional Leadership Aspects Ratings

Aspect	Sample	Mean	Standard Deviation	Test Value = 0			
				t	df	Sig. (2-tailed)	Mean Difference
Provided me with assistance in exchange for my efforts	68	3.24	0.67	40.12	67	.000	3.24
Discussed in specific terms who was responsible for achieving performance targets	68	3.49	0.54	53.48	67	.000	3.49
Made it clear what one was to receive when performance goals are achieved	68	3.23	0.66	40.12	67	.000	3.23
Expressed satisfaction when I met expectations	68	3.38	0.57	49.30	67	.000	3.38
Overall contingent reward	68	3.34	0.49	55.84	67	.000	3.34
Focused attention on irregularities, mistakes, exceptions and deviations from standards	68	3.37	0.52	53.01	67	.000	3.37
Concentrated his/her full attention on dealing with mistakes, complaints, and failures	68	3.20	0.57	46.70	67	.000	3.20
Kept track of all mistakes within the project	68	3.30	0.57	47.78	67	.000	3.30
Directed my attention to failures to meet standards	68	3.27	0.60	44.76	67	.000	3.27
Overall management by exception - active	68	3.29	0.48	56.91	67	.000	3.29
Failed to interfere until problems become serious	68	3.05	0.71	35.15	67	.000	3.05
Waited for things to go wrong before taking action	68	2.97	0.80	30.78	67	.000	2.97
Demonstrated that he/she is a firm believer in “If it isn’t broke don’t fix it”	68	2.99	0.77	31.86	67	.000	2.99
Demonstrated that problems must become chronic before he/she take action	68	2.92	0.82	29.25	67	.000	2.92
Overall management by exception -passive	68	2.98	0.69	35.45	67	.000	2.98
Overall transactional aspects	68	3.20	0.45	59.13	67	.000	3.20

Appendix XI Teamwork Ratings

Aspect	Sample	Mean	Standard Deviation	Test Value = 0			
				t	df	Sig. (2-tailed)	Mean Difference
Team members avoided straying from the topic during group discussion.	67	3.54	0.74	39.25	66	.000	3.54
Team members responded to each other during group discussion.	68	3.37	0.74	37.69	67	.000	3.37
Team members did not stop others from expressing their opinions during group discussion.	68	3.38	0.71	39.29	67	.000	3.38
Team members honestly reported problems during group discussion.	68	3.54	0.75	38.82	67	.000	3.54
Overall communication	68	3.45	0.65	44.05	67	.000	3.45
Team members were willing to share project information.	68	3.57	0.59	49.90	67	.000	3.57
Team members discussed problem-solving methods and collaborated with others to solve problems.	68	3.58	0.59	50.43	67	.000	3.58
Team members listened to each other to clarify problems.	68	3.56	0.59	49.54	67	.000	3.56
Team members did not show a defensive or mistrustful attitude during group discussion.	68	3.57	0.51	57.22	67	.000	3.57
Overall collaboration	68	3.57	0.50	58.38	67	.000	3.57
The team members were strongly attached to the project	68	3.54	0.55	53.14	67	.000	3.54
Members of this project felt proud to be a part of the project.	68	3.50	0.61	47.71	67	.000	3.50
Every project member felt responsible for maintaining and protecting the project.	68	3.64	0.56	53.83	67	.000	3.64
Overall cohesion	68	3.64	0.56	53.83	67	.000	3.64
Overall teamwork aspects	68	3.55	0.51	57.51	67	.000	3.55