

**PROJECT MANAGEMENT PRACTICES INFLUENCE  
LEVELS ON SUCCESSFUL IMPLEMENTATION OF  
BOREHOLE WATER PROJECTS IN MAKUENI COUNTY,  
KENYA**

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**Project Management Practices Influence levels on Successful  
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County, Kenya**

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**DECLARATION**

This Thesis is my original work and has not been presented for a degree in any other University.

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## **DEDICATION**

This thesis is dedicated to my parents, Esther Wayua and the late William Musau Naku who gave firm foundation to my education, my wife, Angeline Mueni and my children, Mwende, Katunge and Mutisya.

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## **ABBREVIATIONS AND ACRONYMS**

<b>ANOVA</b>	Analysis of variance
<b>APR</b>	Annual Progress Reports
<b>ASLs</b>	Arid and Semi Arid Lands
<b>CMI</b>	Change Management Institute
<b>GDP</b>	Gross domestic product
<b>IFAD</b>	International Fund for Agricultural Development
<b>M&amp;E</b>	Monitoring and Evaluation
<b>NIMES</b>	National Integrated Monitoring and Evaluation Systems
<b>OECD</b>	Organization for Economic Cooperation and Development
<b>ORS</b>	Organizational Research Services
<b>PMBOK</b>	Project Management Book of Knowledge
<b>PMI</b>	Project Management Institute
<b>TANATHI</b>	Tana and Athi River
<b>UNDP</b>	United Nations Development Programme
<b>UNEP</b>	United Nations Environment Programme
<b>UNICEF</b>	United Nations International Children's Emergency Fund
<b>USAID</b>	United States Agency for Internal Development
<b>WAB</b>	Water Appeal Board
<b>WAGs</b>	Water and Sanitation Action Groups

<b>WASREB</b>	Water Services Regulatory Board
<b>WCIC</b>	Weather and Climate Information Centers
<b>WHO</b>	World Health Organization
<b>WMO</b>	World Meteorological Organization
<b>WRMA</b>	Water Resources Management Authority
<b>WRUA</b>	Water Resources Users Associations
<b>WSBs</b>	Water Services Boards
<b>WSTF</b>	Water Services Trust Fund

## **DEFINITION OF TERMS**

<b>Change Management</b>	any intentional change process, including those constituted formally as a change portfolio, change programme or change project (CMI, 2013)
<b>Conflict resolutions</b>	processes of finding a peaceful to a disagreement among two or more parties (PMI, 2018).
<b>Clear objective</b>	easily understood terminal behavior or desired outcome of the project (Pass et al, 2005).
<b>Defined roles</b>	Specified position or purpose that someone or something has in a project (PMI, 2018).
<b>Effective communication</b>	A two way information sharing process which involves one party sending a message that is easily understood by the receiving party(PMI, 2018).
<b>Goal setting</b>	the process of deciding what you want to accomplish and devising a plan to achieve those desired results (PMI, 2018)
<b>Ecological factor</b>	any factor, abiotic or biotic, that may influences project implementation (Yoo and Kim (2019).
<b>Effective leadership</b>	a combination of soft skills and high emotional intelligence, which leads to certain behaviors that a person a demonstrates to influence others (PMI, 2018).

<b>Management support</b>	a procedure which is concerned with getting appropriate information to managers as and when they need it and which aids the manager in making decisions (Pass et al, 2005).
<b>Needs identification</b>	systematic set of procedures that are used to determine necessary and relevant issues for proper planning and implementation (Pradhan & Pradhan, 2011).
<b>Political factors</b>	refer to the stability of the political environment and the attitudes of political parties or movements (Mbithi et al, 2017).
<b>Project change management</b>	the capability of an organization to effectively design and transition project outcomes into the business (CMI, 2013).
<b>Project environment</b>	conditions, not under the control of the project team, that influence, constrain, or direct the project (PMI, 2013).
<b>Project implementation practice</b>	a technique, tool, method, or approach used effectively to arrive at the desired outcome (Menon, 2015).
<b>Project implementation</b>	coordinating people and resources, managing stakeholder expectations, as well as integrating and performing the activities of the project in accordance with the project management plan (PMI, 2013).

<b>Project Management</b>	application of knowledge, skills, tools and techniques to project activities to meet project requirements (PMI, 2013).
<b>Project Resource Management</b>	the processes to identify, acquire, and manage the resources needed for the successful completion of the project (PMI, 2018).
<b>Project stakeholders</b>	individuals, groups, or organizations who may affect, be affected by, or perceive themselves to be affected by a decision, activity, or outcome of a project (PMI, 2013)
<b>Project stakeholders' Involvement</b>	Practice of applying stakeholder inclusiveness in sharing information, consulting, dialoguing or deliberating on decisions in a project (Eskerold, Huemann, & Ringhofer, 2015)
<b>Project success factors</b>	the elements of a project which, when influenced, increase the likelihood of success; these are the independent variables that make success more (PMI,2018).
<b>Project sustainability</b>	the capacity of a project to continue to deliver its intended benefit over a long period of time (Amjad, Ojomo, Downs, Cronk & Bartram, 2015).

**Project team** is a group of employees with interdependent interactions and mutually-shared responsibilities (Khoshtale & Adeli, 2016).

**Project team competency** Required skills and abilities to complete the project activities in accordance with accepted design limitations (PMI, 2018).

**Teamwork** the willingness of a group of people to work together to achieve a common aim (PMI, 2018).

**Technological factors** refer to the rate of new inventions and development, changes in information and mobile technology, changes in internet and ecommerce and spending on research (Mbithi et al, 2017)

**Training** refer to developing in oneself or others, any skills and knowledge or fitness that relate to specific useful competencies.

[www.businessdictionary.com](http://www.businessdictionary.com)

## ABSTRACT

The existence of poor project implementation is likely to lead to low development levels in a country. This is because development of a country is dependent on successful project implementation. This study examined influence level of project management practices: change management, project team competency, stakeholders' involvement, and project resource management on implementation of borehole water project. It also determined the moderating effect of project environment of the study variable. It adopted cross sectional survey approach. Quantitative data was collected using a semi-structured and open-ended questionnaire which was administered to 89 chairpersons of borehole water projects and analyzed by statistical package for social sciences (SPSS) version 24. Qualitative data was collected using interview guide and analyzed by Content Analysis. Multiple regression analysis was done to establish whether there is any relationship between the dependent and independent variables. The study found that: change management positively influence implementation of borehole water projects in Makueni County ( $r = 0.346$  and  $P\text{-value} < 0.001$ ), project team competency was found also to positively influence implementation of borehole water projects ( $r = 0.265$  and  $P\text{-value} < 0.001$ ), stakeholders' involvement positively influence successful implementation of water projects in Makueni County ( $r = 0.233$  and  $P\text{-value} < 0.001$ ), and project resource management influences successful implementation of borehole water projects in Makueni County ( $r = 0.400$  and  $P\text{-value} < 0.001$ ). Project environment was found not a moderator of all study variables. The study concluded that: project resource management influence level was the highest (0.593), followed by change management (0.546), then stakeholders' involvement (0.474) and the least was project team competency (0.440). The study thus, contributed to previous knowledge by identifying the influence levels of the variables. The study recommends these practices to be given due consideration during project design, planning and implementation. Further, the study recommends further research using longitudinal study design to validate these findings, and similar research to be done in other areas to compare study findings.

## **CHAPTER ONE**

### **INTRODUCTION**

#### **1.1 Background of the study**

Project management is a means of coordinating and managing projects in a complex, vulnerable, unpredictable and ambiguous environment. Organizations using project management are therefore able to: compress the product life cycle; use knowledge explosion to their advantage; use sustainable business practices; downsize operations; and increase customer focus (Larson & Gray 2011). Thus, organizations using project management practice are innovative and are likely to have a successful outcome reached more quickly and having consumed fewer resources.

##### **1.1.1 Project Management**

Project according to Project Management Institute's (PMI, 2013) is a temporary endeavor undertaken to create a unique product, service, or result and go through a life cycle. Project life cycle consists of five stages namely: project initiation, project planning, project implementation, t monitoring and evaluation stage, and project closure. Each stage has a set of activities which are carried out in detail with involvement of stakeholders and documentation in order to ensure project success (PMI, 2013). Projects are means by which an organization can achieve development goals. Project management has been embraced by organizations to address myriad of challenges due to globalization and advances in business operations. Organizations using best project management practices have many advantages which include: transfer of knowledge, better communication, time and cost savings, better process quality, better position on the market, an international approach of labor, better monitoring and controlling of projects (Ilies, Crisan & Muresan, 2010).

### **1.1.2 Project Cycle Management**

Project cycle management (PCM) is the term given to the process of planning and managing projects, programmes and organizations (Blackman, 2006). It breaks project cycle into six stages in the life of a project thereby providing basis for effective preparation, implementation and evaluation. International Committee of the Red Cross ([ICRC], 2008) opines that, project cycle management contributes to results based management by rationalizing the steps leading to a successful outcome. Spreckley (2006) further observes that, project cycle management can achieve sustainable solutions to perceived problems by taking into account of the need to involve those who are intended to benefit in all levels of planning, implementing and evaluating. Blackman (2006) also argue that, a central value of project cycle management is monitoring and evaluation of the project which is done throughout the project cycle to ensure that any changes which have occurred or lessons learned are included in the project design and as a result, projects are more likely to be successful and sustainable. In order to collect information to be used in all phases of the project life cycle and meet the needs of all stakeholders and to measure performance against the strategic plan of the organization, work breakdown structure is developed to ensure that all tasks are identified and that participants of the project have an understanding of what is to be done; integrated information system is developed to schedule work and allocate budgets, and a communication plan is used to help coordinate project activities and follow progress (Larson & Gray 2011).

### **1.1.3 Project Implementation Practices**

According PMI(2013), Project Cycle Management [PCM] typically consist of four phases namely: project initiation which is first phase where a business problem or opportunity is identified and a business case developed; planning which is the second phase and involves detailed planning; the third phase is project implementation which involves executing the activities created in planning. Project implementation process

involves coordinating people and resources. This includes managing stakeholder expectations, as well as integrating and performing the activities of the project in accordance with the project management plan (PMI, 2013). The implementation phase is typically the longest phase of the project in terms of duration. It is the phase within which resources and effort are used to turn inputs into outputs to meet customer requirements. During this phase, people are carrying out the tasks, and progress information is being reported through regular face- to - face meetings with stakeholders. Because of the number of activities, amount of resources and amount of time involved, the implementation phase determines success or failure of projects. This is the phase which this study examined. Project closure which the fourth phase involves: releasing the final deliverables to the customer, handing over project documentation, terminating supplier contracts, releasing project resources and communicating the closure of the project to all stakeholders.

Project implementation practice refers to a technique, tool, method, or approach used effectively to arrive at the desired outcome (Menon, 2015). They are practices which have been tried in project implementation and found to deliver the expected results. Adopting project implementation best practice is likely to lead to project success. However, use of these practices is dependent on organizational parameters. As posited by Menon (2015), implementation of best practices in the project depends on the existing organizational culture, which directly influences the project organization. Properly and timely applied project management practices may lead to project success and wrongly used project management practice may lead to project failure (Al-Hajji and Zrauning, 2018). This has been demonstrated by several researchers. Fraz et al (2016) did a study in Pakistan and confirmed that, project success is correlated with project management practices in manufacturing organizations. Further, Al-Hajj and Zrauning (2018) in their study, on Project Management Implementation in Construction industry revealed that, majority of successful projects implemented, do not fully utilize contemporary project management practices to their capabilities and; the influence of

project management practices on project success depends on the practitioners' training, the timing and level of implementation achieved, whereas the human factor plays an essential part for achieving project success. Ndachi and Kimutai (2018) in their study on Project Management Practices in Public Hospitals concluded that, project management practices: government policies, project planning and project funding contribute positively to implementation of health projects in public hospitals. Mulewa, Kising'u and Oyoo (2019) in their study on Implementation of Youth Projects in Mombasa County in Kenya confirmed that the four project management practices; project stakeholder engagement, project leadership, project monitoring and project risk management were practiced and were significant in implementation of youth projects in Mombasa County. Properly and timely applied project management practices may lead to project success and wrongly used project management practice may lead to project failure (Al-Hajji & Zrauning, 2018). Idoro and Patunula-ajayi (2009), affirmed that, most projects in Nigeria failed because project implementation practices was not well established in public sector. Further, Mavuti, Kising'u and Oyoo (2019) in their study, concluded that project management is important for success of any project implementation, yet in most projects it has not been adopted effectively. Igwe and Ude (2018) established that in Nigeria, the three tiers of government have not really planned, implemented and executed projects with due diligence in accordance with global best practices leading to a widespread institutional mediocrity in project execution, deficiency of vision, and inadequate budgetary allocations leading to high cost of project financing and corruption in the long run. Adopting best project implementation practices has several challenges which include role of senior leadership, effectiveness of project management office, human factors, project management training, poor adoption of project management standards, and triple constraints (Menon, 2015). Project managers and teams implementing projects thus, need to consider these challenges against the organization's experiences and capabilities.

Project implementation process involves management of human and non human resources, diverse stakeholders, project team which integrates and performs project activities so as to bring about the desired change. Furthermore, project implementation process involves the practice of coordinating people and resources, managing stakeholder expectations, as well as integrating and performing the activities of the project to bring about the desired change (PMI, 2013). Thus this study examined the influence of project management practices: change management, resource management, project team competency, stakeholders' involvement on successful implementation of borehole water projects. Guo, Wang and Wang (2017) demonstrated that, human resource environment and social & cultural environment have no significant impact in small/medium industrial enterprises, Science & technology environment in large-scale industrial enterprises have positive impact than in small/medium. They further observed that, political environment in small/medium industrial enterprises have a better positive impact than in large scale industrial enterprises. Akanni, Oke and Akpomiemie (2015) confirmed that, economic, financial and political project environmental factors influence project implementation. Because projects are implemented in a dynamic environment, the study also determined the moderating effect of project environment on each variable.

#### **(a) Change management**

Project implementation brings about a change initiative and as observed by Crawford, Aitken, and Hassner-Nahmias (2014), project managers are embracing change implementation practices despite their absence from project management standards. Further, Menon (2015) is of the view that, change management is one of the best practices for effective project management since it provides direction towards future state and it aligns culture with people for enabling strategic changes. Successful change management can be influenced by many factors which can affect the objective of the project. Alexandrova and Kuzmanova (2017) in their study among Bulgarian business organizations operating in the IT sector concluded that, organizational change implemented by projects is effective if there is supportive role of the culture, leadership,

affirmative support by the top management and effective communications. Further, Munassar, Ghanim, and Dahlan (2013) conducted a survey among Malaysian Ministries departments and agencies on Success of IT projects and demonstrated that, effective communication, empowering individual with skills, top management and stakeholders agreement and commitment, organization culture support, effective were among the success factors for effective change management. In their study on Change Management Practices on Performance of Teachers Service Commission, Wachira and Anyieni (2015) concluded that communication have a significant effect on Teachers Service Commission performance. Furthermore, Wainaina and Anyieni (2017) concluded that, communication is very effective in delegation of duties, forwarding of grievances and enacting disciplinary procedures.

#### **(b) Project resource management**

Resources which are rare and valuable drive an organization to achieve its strategic goal. Availability or lack of resources may determine successful project implementation or failure. Furrer, Thomas and Goussevskaia (2008) opine that organizational performance is dependent on the fit between its intangible asset portfolio, foreign market entry strategies, partner relationships, and worldwide organizational structure. Bhoola and Giangreco (2018) examined the impact of Human Resource activities and practices on value-driven project management in the Indian IT industry and confirmed that efficient project leadership, effective communication, training of project leaders, ensuring job-matching and listening to team members' issues influence project success while team conflicts and personnel turnover, however, adversely impact IT project success. In their study on effect of resources management on project Success in Rural Rwanda Projects, Ndayisaba and Mulyungi (2018) concluded that human resource, time resource, financial resources are key for project success. Further, Gashuga, Kule and Ndabaga (2016) did a study on effect of funds management on project performance in Rwanda and concluded that, budgeting, fundraising, funds control and funds allocation plays a big role towards performance of the project. In their study on effects of material

management techniques on Construction Project Success in Northern Region of Ghana, Napoleon, Eugene, Asubonteng, Tom, and Alubokin (2018) revealed that, planning and monitoring of material schedule; establishing good business relations with suppliers; the use of security measures on site; use of information communication technology; and also use of competent workers as well as effective training of workers is significant for effective material management on construction site, and has direct effect on project implementation success. They further revealed that, use of ICT can help different parties involved in project implementation do some functionality such as purchasing orders, paying invoices and processing credit checks, and manage flow of material order, product, transportation and delivery of goods.

### **(c) Project team competency**

Project teams are temporary in nature and may not go through the normal team formation cycle, yet they are expected to deliver tangible results within a limited time frame. They are constituted from people with diverse background are supposed to bond and influence knowledge sharing and project implementation. Garousi, Tarhan, Pfahl, Coakuncay, & Demirors revealed that, team experience with the project development methodologies, and team's expertise with the task are key competences of a team. Han and Hovav (2013) in their study on diverse social connections in IS project teams in S. Korea concluded that, project team members with diverse social connections and is bonded share knowledge and positively influences project implementation. Khedhaouria and Jamal (2016) did a study in France on project teams confirmed that, team members' learning orientation can be increased by promoting a climate that encourages open discussion of problems, mistakes and errors and this in turn positively influences project implementation. Li Yang, Klein, and Ghen (2010) confirmed that: the ability of a team to solve problems that arise during project implementation can help to overcome uncertainty of requirements, and Project leader is a key driver of project team and his actions or inactions determine team performance. Alqahtani, Chinyio, Mushatat, and

Olke (2015) identified influencing aspects of the project leader as competencies and skills, capability, self-sufficiency, and leadership style.

#### **(d) Project stakeholders' involvement**

Projects have many stakeholders and their involvement is likely to make their needs and expectations known, contribute resources and support the project. Botwe, Aigbavboa, and Thwale (2016) quoting Mok, Shen, & Yang (2013) posited that, stakeholder issues are associated with the diverse stakeholders involved, their cultural background and the culture of the project location in context. Further, Heravi, Coffey, and Trigunarsyay (2014) quoting Saghatforough et al (2010) state that, to meet the differing demands for different stakeholder groups and in order to increase effectiveness and efficiency in decisions that are made during project cycle, a comprehensive stakeholder involvement plan must be developed. Furthermore, Ingason (2014) in his study on project management practices in quality management system concluded that, organizations using direct participation of the employees, were likely to implement their quality management systems in the time they expected. Therefore, for successful project implementation, it is important to evaluate the importance and influence levels of all stakeholders and their perception towards the project. However, involving stakeholders in project implementation has potential drawbacks which include: conflict, delay, and/or resource demand (OECD, 2015).

#### **(e) Moderating effect of project environment**

Project implementation is dependent on a dynamic environment and as such, environmental variables may impact on the implementation practice. Yoo and Kim (2019) in their study on the effects of environmental uncertainty on Korean firms' investment confirmed that, top managers' entrepreneurial orientation may be adjusted by the characteristics and intensity of environmental uncertainty. Alon et al (2013) in their study on the moderating effects of environmental dynamism on project performance

concluded that, environmental dynamism moderates the relationship between dynamic capabilities strategy and new venture performance. However, Akpomiemie (2014) in their study on impact of environmental factors in construction industry in Nigeria, confirmed that successful management of political, legal, technological, economic and financial positively influences project implementation.

#### **1.1.4 Project success factors**

It is not easy to define success or failure because, as observed by Hussein (2013), success and failure are not only subjectively perceived and constructed by people, but are also entwined in meaning and action. Project success embodies the perceived value of a project when the result or product is in operation while project management success is the ability to comply with time, cost and schedule requirements (Hussein, 2013). According to PMI (2013), project success is measured by product and project quality, timeliness, budget compliance, and degree of customer satisfaction. Project success therefore defines the benefits of the project as perceived by the beneficiaries. Steinfort and Walker (2007) argue that, project success should be seen as a collaborative achievement that involve joint-team action to identify problems and solutions to these problems, taking action to effectively deliver, while learning from the process and fine tuning strategy and tactics employed in a constructive and reflective way. Furthermore, Alias,et al, (2014) are of the view that, success on a project means that certain expectations for given participants were met whether owner, planner, engineer, contractor or any other stakeholder.

There are many competing forces in project management and managing projects focuses on balancing these competing project constraints namely: scope, quality, schedule, budget, resources and risks. The quality and the ultimate success of a project are defined by meeting and/or exceeding the expectations of the customer and upper management in terms of cost, time, and performance of the project (Larson & Gray, 2011). In addition, organizational culture, style and structure influence project performance (PMI, 2013).

Furthermore PMI (2013), observe that, organizations adhering to project management methods and strategies have reduced risks, cut costs and improved success rates. Mir and Pinnington (2014) posited that, for project success components like relations with customers and partners, policy and strategy should be made visible in the organization to all levels of project management hierarchy; organizations should invest in project management performance framework in order to achieve better project results, higher employee engagement, and improved retention rates.

Project success factors, are the elements of a project which, when influenced, increase the likelihood of success; these are the independent variables that make success more likely (Muller & Jugdev, 2012). Mir and Pinnington (2014) gives five project success measurement factors to include: efficiency, impact on customer, impact on team, business Success, and preparation for the future. Furthermore, Martens et al (2016) adds sustainability as the sixth factor. There are no universal project success factors to all projects and different projects have different project success factors, resulting in that contemporary research lacks in sufficient hard evidence, for justifying the positive influence of project management on project success. Nevertheless, due to the rich variety of different practices, which are applicable to different project life cycle phases, it seems of utmost importance to apply the right implementation practice at the right time.

#### **1.1.6 Project management practices considered as influencing successful implementation of borehole water projects**

It is always necessary to identify project success factors at the onset of a project because knowing the factors that have highest influence on the project's success not only help the management process but also increase its efficiency. Project management practices considered as influencing successful implementation of borehole water projects in this study include: change management, project team competency, stakeholders'

involvement, project resource management, and the moderating effect of project environment on the study variables.

#### **1.1.6(a) Project Change Management**

Projects are the means by which organizations and governments introduce changes in services and products. Thus, projects bring about change in an organization and that change has to be managed well. As observed by Ghanim, Munassar and Dahlan (2013), a project is considered as a core element in any organization and its continuity can be guaranteed through a successful change management. Project Change Management describes the capability of an organization to effectively design and transition project outcomes into the business (Change Management Institute [CMI] 2013). Crawford, et al (2014) affirmed that, successful project change management leads to successful project implementation. Thus, project managers need to understand how to structure a change initiative, and how to work with operational managers to ensure that it has the best possible chance of delivering the expected benefits (CMI, 2013). Furthermore, according to CMI (2013), organizational change occurs at three levels: project change management, business change readiness, and organizational change leadership.

#### **1.1.6 (b) Project Team Competency**

Projects are performed by teams. Project teams are therefore, the engines that drive the project. According to Khoshtale and Adeli (2016), project team in organizations is a group of employees with interdependent interactions and mutually-shared responsibilities. Assaf, Hassanain, & Mughal (2014) demonstrated that, three factors of teamwork are strongly associated with project success namely: team roles and responsibilities, team goals and objectives and team leadership. Assaf et al (2014) further added that, knowledgeable leadership leads to project success through convincing people of the need to change and to motivate them to work together for accomplishing project objectives in difficult work environments; understanding and

matching employees to their areas of expertise lead to project success. Furthermore, Gido and Clements (2011) concluded that, the characteristics of effective teams include: high degree of cooperation, trust, open, timely effective communication and ethical behavior. These characteristics are important factors for project success. Khoshtale and Adeli (2016) confirmed that high performing teams: have clear and understandable roles; team members understand their individual or organization's duties, rights, and responsibilities prior to starting the project. Furthermore, Khoshtale and Adeli (2016) opine that, success of a project is heavily dependent on appropriate management of internal conflicts, relationship, setting and agreeing on comprehensible goals and establishing good trusting relationships within the team.

#### **1.1.6 (c) Project Stakeholders' Involvement**

According to Aapaoja, Haapasalo and Söderström (2013), early involvement allows room for creative solutions and the intensive exchange of ideas. Thus, it leads to procedures that run in phases, which in turn change the project's value creation to holistic value co creation. As observed by Nelson (2007) ineffective stakeholder management is among the major cause of project failure and that one of the best practices in stakeholder management include the use of communication plans, creation of a project management office, and portfolio management. PMI (2013) defines project stakeholders as individuals, groups, or organizations who may affect, be affected by, or perceive themselves to be affected by a decision, activity, or outcome of a project. According to Newton (2015), one of the keys to successful project is successfully managing the relationships between stakeholders. Littau (2015) opines that, stakeholders are defined by their impact on a project and the causes of impacts are identified by power-interest-attitude they have towards the project. Furthermore, Littau (2015) identified three categories of impacts as: project execution (PE) impact which is the overall impact on the project execution process and the final delivered product; sustainability impact (SI) which is the overall impact on project sustainability performance, including environmental, social, and profit (or economical); and project

management success (PMS) impact which is the overall impact the stakeholder caused to time, cost and quality performance. Thus, the stakeholders in water sector which include: National and County governments, project team members, suppliers, water users, community surrounding the project, politicians, NGOs and donors have different power and interest in water projects. As observed in PMI (2013), it is critical for project success to identify these stakeholders early in the project or phase and to analyze their levels of interest, their individual expectations, as well as their importance and influence. The process of identifying, prioritizing and engagement of stakeholder should be continuous exercise because stakeholders move within the organization, or leave it; or their relative importance to the project or their power and influence changes over the project's lifecycle (Bourne, 2006). Furthermore, Bourne (2006) opine that, understanding stakeholder power and interest determines which stakeholder the project team should involve in project definition and planning, which stakeholders need information about the project to mitigate their opposition, and stakeholders roles and relevant responsibilities. To maintain currency of stakeholders, Bourne (2006) observe that, the project team should update their assessment regularly, particularly as the project progresses through the phases of the life cycle or as the stakeholder community changes to reflect the dynamic nature of the project's many relationships. This view is supported by Littau (2015) who asserts that dynamic stakeholder analysis needs to be conducted often, and therefore a degree of flexibility must be built into the project plans.

#### **1.1.6 (d) Project Resource Management**

The success of any project depends on how available resources are managed and as such, project resource management is pivotal to successful project implementation. Rahman, Memon, and Karim (2013), identified resources factors that affect project success to include: material, manpower, finance and, equipment. Project resource management is a complex task. According to Rahman et al (2013), factors that contribute to this complexity include: the variety and great number of existing resources of both human and material, the diversity of tasks that each working unit is able to

execute, the performance of each working unit, the involved costs, and the spatial distribution of all resources over the different places leading to the need for displacement from one site to another. Rahman et al (2013) concluded that: fluctuation of prices of material, cash flow and financial difficulties faced by contractors and shortage of material are the major factors causing cost overrun and subsequently project failure; financial problems of contractors influence the procurements of material and arrangement of adequate number of material and equipment which play an important role in achieving successful projects. Unger, Kock, Gemunden, and Jones (2012) demonstrated that, in a single project context, quantity of available resources positively influences project success. As observed by Roberts (2013), if the employees are given conducive work environment, trained to acquire the necessary skills and knowledge, motivated, and their efforts recognized, they will give the organization their best. Furthermore, as observed by Purnus (2015), lack of cash during the project progress both at the employer level but mostly at the contractor level leads to delays, penalties and loss of opportunities which are reflected in the health of projects and organizations.

#### **1.1.6 (e) Project Environment**

According to Wideman (2001), project environment are the cultural, organizational and social surroundings of the project. Further more understanding project environment leads to possibility of influencing the project environment in a positive way, for the better reception of the change which the project is designed to introduce (Wideman, 2001). Project environment is dynamic and has a high probability to change during a projects life cycle. The dimensions of project environment include: project time environment, the internal project culture, the corporate culture, and the external social surroundings (Wideman, 2001). The boundary between project and its environment is dynamic and in constant change because project organization integrates external resources into its organization. Kreiner (2012), while challenging the rational project environment is of the view that , complexity, uncertainty, and ambiguity witnessed in practice should be taken into account in the planning of the project and that there is a

need to develop skills for using project plans in more inspired and realistic ways. Akanni, Oke, and Akopomiemie (2015) are of the view that, the project environment in many developing countries presents challenges that arise mainly from inherent risks such as political instability, excessive bureaucratic contract procedures, and lack of adequate infrastructure such as transportation networks, electricity supply, and telecommunications system. Furthermore, they cite project environmental factors that have been generally identified to include; political, legal, institutional, cultural, sociological technological resource, economic, financial, and physical infrastructure. Furthermore, Akanni et al (2015) deduced that, successful development of construction projects in Delta State in Nigeria may be greatly jeopardized without effective management of economic, financial and political clusters.

### **1.1.7 Background of the water projects**

Water is essential for human life and sustainable development and therefore, proper management of water is a means to reduce poverty, improve food agricultural production to meet global food security needs and improve the health of society. According to WHO (2019), 785 million people lack even a basic drinking-water service, including 144 million people who are dependent on surface water. Globally, at least 2 billion people use a drinking water source contaminated with faeces; contaminated water can transmit diseases such diarrhoea, cholera, dysentery, typhoid, and polio; contaminated drinking water is estimated to cause 485 000 diarrhoeal deaths each year; by 2025, half of the world's population will be living in water-stressed areas. Globally, there has been concerted efforts to address the water issue: The United Nations Water Conference (1977), the International Drinking Water Supply and Sanitation Decade (1981-1990), the International Conference on Water and the Environment (1992) and the Earth Summit (1992), The 'Water for Life' International Decade for Action 2005-2015 and more recently Sustainable Development Goal target 6.1 which calls for universal and equitable access to safe and affordable drinking water. The targets cover all aspects of both the water cycle and sanitation systems, and their

achievement is designed to contribute to progress across a range of other SDGs, most notably on health, education, economics and the environment. According to Water Charity for Safe Water and Sanitation (2019), 41 percent of Kenyans still rely on unimproved water sources, such as ponds, shallow wells, boreholes and rivers; 9 out of 55 public water service providers in Kenya provide continuous water supply, leaving people to find their own ways of searching for appropriate solutions to these basic needs. According to WHO (2012), gaining universal access to adequate water and sanitation would result in an estimated \$18.5 billion in economic benefits per year from deaths avoided and Sub-Saharan Africa loses an estimated 4.3% of GDP each year due to lack of water supply and sanitation.

In the current environment which is characterized by change, Project Management as demonstrated by Cleland and Ireland (2002) is the principal means by which operational and strategic changes are managed in contemporary organizations. Thus, it is no doubt that best project management practices if adopted will most likely lead to successful project implementation. The continued poor performance of rural water projects in Kenya and other developing countries, demonstrates the need to do studies on project management practices. Over and above that, identification of project management practice influence levels on implementation of borehole water projects may aid researchers and policy makers in recognizing their importance.

## **1.2 Statement of Research Problem**

The management of water projects all over the world continues to be faced with many problems. This has lead to projects not delivering the anticipated outcome, continued high level of poverty, suffering and people dying of hunger in ASALs and wastage of resources. Statistics from *Improve International* indicate that, in 2015, data from 126,251 water points across 37 countries syndicate that 20% are not functional and 10% are functional but have problems. According to WHO-UNICEF (2006), most rural areas of developing countries, safe drinking water from improved source and sanitation

services remain below acceptable standards. According to The Kenya Population Census (2009), 27.9% of the population obtained water from piped water from water service providers while 37.2% obtained water from either improved or un-improved springs, wells or boreholes. All over the world, there have been increased concerns to address the issue of access to safe water. It is being addressed as one of the basic human rights of nations (UNDP 2006). The United Nations General Assembly at its 58<sup>th</sup> session declared 2005 to 2015 as the International Decade for Action “Water for Life”. The Decades goals were: a greater focus on water- related issues, with emphasis on women as managers of water to help to half by 2015 the proportion of people who are unable to reach or afford safe drinking water and do not have access to basic sanitation; recommit countries to achieving the water related goals of 2000 Millennium Declaration; the Johannesburg Plan of Implementation of World Summit for Sustainable Development and Agenda 21.

The promulgation of The Kenya Constitution in 2010 saw the devolution of the functions of Central Government and more involvement of local communities in projects. Participation by local communities in decision making on matters which affect them is guaranteed in article 24(1) of the Constitution. In Kenya, the Vision for Water and Sanitation Sector is “to ensure water and improved sanitation availability and access to all by 2030”. All Kenya’s Vision 2030 flagship projects: Tourism, Agriculture, Manufacturing, Wholesale and trade, Health, Environment and, Governance will consume additional water. Kenya being a water scarce country will therefore need to develop sustainable water projects to meet the targets for Vision 2030. One of the focuses for Water Sector in Kenya’s Vision 2030 is to shove up water and sanitation infrastructure with the aim to achieve 90% and 70% access to safe and reliable water for urban and rural areas and to reduce levels of unaccounted-for-water by 30%. During the Second Medium Term Plan (MTP II) 2013-2017, one of the flagship projects for Rural Water Supply Subsector will be to construct and rehabilitate 150 rural water schemes annually, drill an average of 70 water boreholes annually in areas lacking surface water

and construct 160 small dams/pans in ASALs. Within the period 2009-2014, the Ministry of Environment, Water and Natural Resources, increased Water Purification Points from 198 to 236 and bore holes drilled increased from 97 to 451 across the country. The Development Expenditure on Rural Water Supply increased from Ksh 1,044.8 to Ksh 2,786.5 million (Kenya Economic Survey, 2014).

However, despite tremendous investment, water projects and interventions have encountered startling high failure rates over the past several decades. Statistics from *Improve International* (2015) show that in 2015, data from 126,251 water points across 37 countries show that 20% are not functional and 10% are functional but have problems. An assessment of 100 water systems built between 2006–2010, shows that, 75% are still in use, 45 are affected by minor technical issues or serious damages, 14% are not functional (welthhungerlife, 2011). Numerous projects have been undertaken by both the Kenya Government and other development agencies to address the water problem in Makueni County but have not achieved the anticipated results. According to Makueni County Water Office (2015) between the year 2004 and 2010, twenty two water projects were undertaken in Makueni County at a cost of Kshs167.74 m but could not deliver the expected results. The high number of failed water projects suggests existence of underlying project management practices that are likely to influence project implementation which have not been identified. It has been realized that many projects failed even after satisfying the triple criteria and this has evoked researchers to investigate in depth about success (Velayudhan & Thomas, 2016). Furthermore, Velayudhan and Thomas (2016) are of the view that, other than the triple criteria, many other criteria also should be considered to determine success or failure of a project. Several studies have been done on project management practices that influence success of projects. Ndachi and Kimutai (2018) in their study concluded that project management practices: government policies, project planning and project funding contribute positively to implementation of health projects in public hospitals. Mulewa, Kising'u and Oyoo (2019) in their study on confirmed that, the four project management

practices; project stakeholder engagement, project leadership, project monitoring and project risk management were practiced and were significant in implementation of youth projects in Mombasa County. Further, Mavuti, Kising'u and Oyoo (2019) in their study effect of project management practices on implementation of projects concluded that project management is important for success of any project implementation, yet in most projects it has not been adopted effectively.

However, few studies have empirically tested the influence levels of: change management, project team competency, project stakeholders' involvement, project resource management, and moderating effect of project environment on these variables on successful implementation of borehole water projects. It is against this background that, the study examined project management practices influence levels on successful implementation of water projects in Makueni County, Kenya. This study examined the relationship between the five variables and their influence on project management practices.

### **1.3 Objectives**

The general objective of this study was to examine project management practices influence levels on successful implementation of borehole water projects in Makueni County, Kenya.

Specific objectives of study were to:

1. Analyze the influence level of change management on successful implementation of borehole water projects in Makueni County.
2. Examine the influence level of project team competency on successful implementation of borehole water projects in Makueni County.
3. Determine the influence level of project stakeholders' involvement on successful implementation of borehole water projects in Makueni County.

4. Establish the influence level of project resource management on successful implementation of borehole water projects in Makueni County.
5. Determine the moderating effect of project environment on relationship between each study variable and the implementation of the water project in Makueni County.

#### **1.4 Hypotheses of the study**

A hypothesis is a statement that describes an unknown but tentatively reasonable outcome for the existing phenomenon (Kombo and Tromp 2006). It is a tentative answer to what the researcher considers to ought to be the possible outcome of an existing problem or phenomenon. It is a likely solution to a problem being studied, which is advanced before the actual research is undertaken. Furthermore, Kothari (2004) defines hypothesis as a preposition or a set of preposition set forth as an explanation for the occurrence of some specified group to guide some investigation or accepted as highly probable in the of phenomena either asserted merely as a provisional conjecture light of established facts. The study tested null hypotheses. As observed by Lavrakas (2011), null hypothesis always states that there are no differences between groups on a particular variable being studied, no effects of particular independent variables on the dependent outcome variable, or no relationship between the variables being examined. Thus a null hypothesis is used in a study with the purpose to reject the relationship between variables. Bonett (2012) used null hypothesis and concluded that, formal assessments of replication can be obtained, effect sizes can be estimated with greater precision and generalizability, misleading findings from prior studies can be exposed, and moderator effects can be assessed. Further, Glickman et al (2014) used null hypothesis in their study and concluded that, the use of false discovery rate control in the context of multiple testing can provide a solid basis for drawing conclusions about statistical significance. Null hypothesis has therefore been used by several scholars in research.

The study tested five null hypotheses as listed below:

1.  $H_{01}$ : Change management has no influence on implementation of borehole water projects in Makueni County.
2.  $H_{02}$ : Project team competency has no influence on implementation of borehole water projects in Makueni County.
3.  $H_{03}$ : Project stakeholders' involvement has no influence on implementation of borehole water projects in Makueni County.
4.  $H_{04}$ : Project resource management has no influence on implementation of borehole water projects in Makueni County.
5.  $H_{05}$ : Project environment does not moderate the effect of change management, project team, stakeholders' involvement, and resource management on implementation of borehole water projects in Makueni County.

### **1.5 Justification**

The existence of poor project implementation is likely to lead to poor development. This is because projects are vehicles which a country uses to deliver development goals. This study examined project management practices which are likely to influence implementation of borehole water projects in Makueni County. The research findings of the study provide an understanding of project management practices within project implementation and aid researchers and policy makers in recognizing their usefulness. The results can also be used in teaching of project success factors in institutions of higher learning.

### **1.6 Scope of the Study**

The study examined project management practices influence levels on successful implementation of borehole water projects in Makueni County, Kenya. Project implementation phase is critical in determining project success because it is the phase which uses a lot of resources, time and effort. There are many project management practices which determine project success but this study was limited to only five namely: project change management, project team, project stakeholders, project resource

management and project environment. The choice of Makueni County was because it is located in an ASALs region with unreliable rainfall, there are no many permanent rivers and the major source of water are boreholes. These boreholes are well distributed within the County.

### **1.7 Limitations of the study**

The study had several limitations. First, the study adopted cross sectional survey data for analysis. But as posited by Setia (2016), in cross sectional survey participants are selected based on the exposure status, it is difficult to derive causal relationships from cross-sectional analysis since it is a one – time measurement, and is prone to selection and recall biases. There is therefore, need to conduct further research using longitudinal study design to validate these findings. Secondly, data for analysis was obtained from chairpersons of the water borehole chairpersons only. The response from one cadre is prone to biases since it will depend on their experience. A Longitudinal studies can be conducted to address this issue. This is because as observed by Caruana, Roman and Solli (2015), longitudinal studies have the ability to exclude recall bias in participants, correct for the cohort effect and can establish sequences of events.

## **CHAPTER TWO**

### **LITERATURE REVIEW**

#### **2.1 Introduction**

This chapter gives an overview of literature related to practices likely to facilitate or impede project success. It tries to integrate project management theory into water projects with a view to identify project management practices influencing levels on successful implementation of borehole water projects in Makueni County. The chapters captures the theoretical framework, conceptual framework, and review of variables, empirical reviews, critique of relevant literature, research gap, ethical considerations, and concludes with a summary

#### **2.2. Theoretical Framework**

Charmaz (2006) observes that, definition of a theory can be viewed from two schools of thought: positivists who view a theory as a statement of relationships between abstract concepts that cover a wide range of empirical observations and the theory seeks to determine cause – effect relationship and emphasize generality and universality; interpretative theory which assumes emergent and multiple realities and calls for imaginative understanding of the phenomena under study. The study adopted positivist approach. Imenda (2014) opines that, a theory is a set of interrelated concepts, which structure a systematic view of phenomena for the purpose of explaining or predicting. He further observes that, a theory is like a blueprint, a guide for model which the theory is applicable, a set of relationships amongst the variables, and specific predictive claims. A theory therefore gives predictions and should give clear picture of the relationships. Therefore, theories are necessary in research as they determine and define the focus and goal of research (Bwisa, 2015).

A theoretical framework is a broad overview, outline, or skeleton of interlinked items which supports a particular approach to a specific objective, and serves as a guide that

can be modified as required by adding or deleting items (Bwisa, 2015). It is the structure that supports the study. Furthermore, a theoretical framework provides guidance to a research project (Bwisa, 2015). As Sekaran (2006) notes, a theoretical framework theorizes or makes logical sense of the relationships among several factors that have been identified as important to the problem. Furthermore, Kombo & Thromp (2006) view theoretical framework as a collection of interrelated ideas based on theories. Imenda (2014) observes that, theoretical framework refers to the theory that a researcher chooses to guide him/her in his/her research. Thus, a theoretical framework is the application of a theory, or a set of concepts drawn from one and the same theory, to offer an explanation of an event, or shed some light on a particular phenomenon or research problem. The study used the following theories: Project Management Theory, Theory of Change, Teams Theory, Stakeholders' Theory, Resource Management Theory and, Environment Theory.

### **2.2.1 Project Management Theory**

Projects in one form or another have been undertaken for millennia, but it was only in the latter part of the 20th century people started talking about project management. The genesis of the ideas that led to the development of modern project management can arguably be traced back to the protestant reformation of the 15th century. Protestants came up with ideas of removing unnecessary elements from process and breaking it into smallest units to understand and manage them well. The development of scientific management by Fredrick Taylor (1856-1915) and later the development of general management theory through to the 1960s, and the emergence of Critical Path Method from Operation Research were the critical underpinnings for the creation of modern project management (Weaver, 2007). Project management is the application of knowledge, skills, tools, and techniques to project activities to meet the project requirements. Project management is accomplished through the appropriate application and integration of logically grouped project management processes, which are categorized into five Process Groups. These five process groups are: initiating, planning,

implementation, monitoring and evaluation, and Closing (PMI, 2013). Furthermore, managing a project typically includes but is not limited to: identifying requirements, addressing the various needs, concerns, and expectations of the stakeholders in planning and executing the project; setting up, maintaining, and carrying out communications among stakeholders that are active, effective, and collaborative in nature; managing stakeholders towards meeting project requirements and creating project deliverables; balancing the competing project constraints, which include, but are not limited to: scope, quality, schedule, budget, resources, and risks (PMI, 2013). Thus, the work of a project manager job should be regarded as coordinating a process of interrelated functions that are neither totally random nor rigidly predetermined but are dynamic as the process evolves.

Success on a project means that certain expectations for a given participant were met, whether owner, planner, engineer, contractor or operator and the study of project success is often considered as one of the vital ways to improve the effectiveness of project delivery (Alias, Zawawi, Yusof, & Aris, 2014). Thus, project success is defined by the extent to which a project meets expectations of stakeholders and employees. However, stakeholder expectations are not universal but dependent on the stakeholder and project environment. There is no single process that makes a project successful. Furthermore, Alias et al. (2014) observes that, factors that lead to successful projects include: clearly defined goals and objectives, a well-defined project management process, a proven set of project management tools, a clear understanding of the role of project management. The theory has however been criticized for being a traditional model that fits only a small group of today's projects since most modern projects are uncertain, complex and changing, and are strongly affected by the dynamics of the environment, technology, or markets (Lannon ,2015). Promoters of Project Management Theory who include Warburton and Cioffi (2014) argue that, the theory provides a fundamental relation between a project's network structure (the inter-related nature of project activities, informs managers about how to calibrate projects in terms of observables, such as the

total cost and the final schedule, and can be used to guide future project improvements. This theory is relevant to the study because it provides the interrelatedness of project activities and processes, and provides observables of practice project management that define project success.

### **2.2.2 Theory of Change**

According to Serrat (2013), a theory of change is a purposeful model of how an initiative—such as a policy, a strategy, a program, or a project—contributes through a chain of early and intermediate outcomes to the intended result. Further, Serrat (2013) observes that, the chief proponents of theories of change were: Auguste Comte (1798–1857), Herbert Spencer (1820–1903), and Emile Durkheim (1858–1917); Karl Marx (1818–1883); and Talcott Parsons (1902–1979), respectively. Theories of change help navigate the complexity of social change. The concept of change management is being practiced nowadays but how it is managed varies on the change, people and the nature of business. Project implementation brings about change in an organization and the success of the project depends on how this change is managed. International Network on Strategic Philanthropy ([INSP], 2005), define Theory of Change (ToC) as the articulation of the underlying beliefs and assumptions that guide a service delivery strategy and are believed to be critical for producing change and improvement. Theory of Change articulates the intended activity and the expected change it will bring about. According to Organizational Research Services (ORS, 2004), a theory of change is a roadmap communicating project goals, activities being done, milestones to evaluate progress, and how success will be recognized once they occur. The map would also provide commentary about assumptions, such as the final destination, the context for the map, the processes to engage in during the journey and the belief system that underlies the importance of traveling in a particular way. A theory of change, therefore, is a reflection of the community's view point on how change occurs when the project is implemented. When borehole water projects are being implemented, some of the changes are planned, well defined while others may be spontaneous, emergent, informal

or sporadic, such as networking. The theory of change approach has been criticized by many scholars and researchers. Valters (2014) is of the view that, the theory creates a top – down accounts of change which emphasizes more donor interests than project beneficiaries. He further argues that, donors demand results hence placing more emphasis on the product than the process of project implementation and this discourages project implementers from critical reflection and therefore constrains Theory of Change approaches and that, it is prone to political, organizational and bureaucratic forces which can derail its transformational agenda. Supporters of Theory of Change who include Silva, Lee and Ryan (2015) argue that, the theory provides information about how, why and whether an intervention works. It helps a diverse range of stakeholders reach a realistic consensus on what is to be achieved, how, using what resources and under what constraints. It embeds the intervention in the real world and helps design an evaluation that will work and be implemented in real world, rather than just an intervention that it is possible to evaluate in a research setting. This makes it more likely that the intervention will be effective and be scaled up. This theory is relevant to the study because it provides a platform for critical reflection on project assumptions and the context in which they work.

### **2.2.3 Team Theory**

The Bruce Tuckman theory was created in 1965, and has been applied in countless organizations and scenarios. With four main stages titled forming, storming, norming, and performing; this theory is commonly referred to as the origin for successful team building. The theory assumes a linear relationship of these stages of team development. Teams are the engines which drive projects and in today's corporate environment, it is project teams which hold key to the success of the organization. According to Kozlowski and Bell (2001) work teams and groups are composed of two or more individuals, who exist to perform organizationally relevant tasks, share one or more common goals, interact socially, exhibit task interdependencies (i.e., workflow, goals, outcomes), maintain and manage boundaries, and are embedded in an organizational

context that sets boundaries, constrains the team, and influences exchanges with other units in the broader entity. The activities done by project teams are interdependent and the success of one activity determines the success or failure of the preceding phase. An understanding of how teams perform is critical to project success. According to Warner (2011), high performance teams put the mission ahead of their desires, craft and communicate dynamic visions, create an environment of trust and caring, practice and reflect so that they are prepared to perform at faces of challenges. According to De Meuse (2009), thrust refers to agreed upon vision, mission, values, and goals among members within a team and, members employ a common strategy and tactics to accomplish goals. Thrust enable project teams to have clear understanding of project goals, values it will deliver and make them forge a common method to accomplish project goals. All the five factors must be present but De Meuse (2009) quoting Lombardo & Eichinger (1995) opine that, a team cannot be high performing unless the necessary organizational and leadership support also are provided. He further asserts, it does not matter how good a team is on thrust, trust, talent, teaming skills, and task skills, it must have the support from the organization and the leadership fit to be effective. The teams strive to optimize a common objective function but have different information to reach their decisions. The team wants to determine an optimum, the global optimum if it exists. To achieve at an optimum, they use the concept of a person-by-person or person-by-person equilibrium. The main problem of team theory is then to determined conditions under which a person-by-person equilibrium is also an optimum or the global optimum, and to compute a person-by-person equilibrium (Schuppen, 2015).

The team theory has received criticism from some scholars. Genc (2017) is of the view that, for effective team functioning both task oriented and social/emotional oriented behaviors are required but some behaviors can be disruptive to completing tasks or maintaining a positive social/emotional environment such as excluding others or blocking suggestions. This implies that individuals whom others find to be difficult or adversarial will suffer discomfort and dissatisfaction. He further observes that, advances

in technology have affected the ways in which organizations operate and how individuals communicate within teams. In addition, if resilience and relational conflict are not managed effectively it can cause team members to not trust one another, limit the sharing of information and increase the tension within a team. It can also be argued that, in contemporary world characterized by rapid explosion of Information Technology and ever changing environment, virtual teams have evolved and may not necessary follow the four stages. Supporters of Team Theory among them Filho (2019) argue that, the theory presents an integrated, explanatory, and systemic theory of team dynamic focusing not only on the team-level of analysis but also account for multilayered effects arising from individual members' characteristics and contextual constraints. Team Theory is relevant to the study because it gives an understanding of high performing team.

#### **2.2.4 Stakeholders' Theory**

The origin of the stakeholder concept lies in the business science literature (Freeman, 1984), and may be traced back even as far as Adam Smith and his *The Theory of Moral Sentiments*. Its modern utilization in management literature was brought about by the Stanford Research Institute, which introduced the term in 1963 to generalize and expand the notion of the shareholders as the only group that management needed to be sensitive towards (Jongbloed et al., 2008). Within this perspective, Freeman argued that business organizations should be concerned about the interests of other stakeholders when taking strategic decisions (Mainardes et al, 2011).

Ackermann and Eden (2011) are of the view that, stakeholder theory is a strategy by top management team for management of the interface between the many (often competing) demands of an organization's different stakeholders in relation to its strategic goals. Thus, one of the critical tasks of a project leader is to identify and manage successfully stakeholders who are either affected or can affect implementation of a project. Further, Ackermann and Eden (2011) identify three themes for strategic management of

stakeholders as: identifying who the stakeholders really are in the specific situation, exploring the impact of stakeholder dynamics and, developing stakeholder management strategies. Managing project stakeholders is critical during project implementation because one stakeholder's actions can generate a dynamic of responses across a range of other stakeholders (Ackermann & Eden, 2011).

As asserted by PMI (2013), the project manager should manage the influences of various stakeholders in relation to the project requirements to ensure a successful outcome. Project manager being the link between strategy and project team should possess the following competencies for effective project implementation: Knowledge—what the project manager knows about project management; Performance—what the project manager is able to do or accomplish while applying his or her project management knowledge; Personal—how the project manager behaves when performing the project or related activity. Personal effectiveness encompasses attitudes, core personality characteristics, and leadership, which provides the ability to guide the project team while achieving project objectives and balancing the project constraints (PMI, 2013). Local community should get both economic and social benefits from borehole water projects once implemented. Benefits include: increased empowerment, shared project costs, capacity building, and increased project effectiveness. Project beneficiaries, who are the customers of borehole water projects, should have benefits which include getting water at affordable prices, improved livelihoods, financial benefits, skills related to project management.

However, as posited by Eskerold et al (2015) applying stakeholder inclusiveness in a project is likely to increase the likelihood of more engaged and satisfied stakeholders; increase the danger of losing focus on those stakeholders who possess the most critical resources for the project's survival and progress; and increase the danger of inducing stakeholder disappointment due to expectation escalation and impossibility of embracing conflicting requirements and wishes. The stakeholder theory has been criticized by some

scholars. For example Blackburn (2019), argue that stakeholders represent large and diverse groups and the interests of these groups cannot be balanced against each other.

Supporters of stakeholder theory including Harrison, Freeman and Sá de Abreu (2015) argue that, core to the theory is about creating more value. Further, Harrison et al argue that, organizations are attempting to create value for stakeholders through: better stakeholder relationships, stakeholder dialogue, better work environment, environmental preservation, increased customer base, local development, and improved reputation. This theory is relevant to the study because it enhances understanding of key players in project implementation.

### **2.2.5 Resource Management Theory**

According to Cleland and Ireland (2002), resources are the assets that an organisation has and can access and utilize in its operations which include human resources, financial resources, materials and equipment. Furthermore Resource dependence theory has its roots in Emerson's classic "Power-Dependence Relations" (1962) and Pfeffer and Salancik's *The External Control of Organizations* (1978) provides valuable guidance for managers who want to understand the considerations and consequences relevant to different types of interorganizational partnering. Resource dependency rests on a few straightforward principles. First, an organization needs resources to survive and to pursue its goals. Second, an organization can obtain resources from its environment or, more simply, from other organizations. Third, power and its inverse, dependence, play key roles in understanding interorganizational relationships (Malatesta & Smith, 2014). This suggests that, resources are the drivers of project implementation and therefore, their availability or lack of them directly affects project success or failure.

Organizational success in resource dependency theory (RDT) is defined as organizations maximizing their power. Research on the bases of power within organizations began as early as Weber (1947) and included much of the early work conducted by social

exchange theorists and political scientists. Generalization of power-based arguments from intra-organizational relations to relations between organizations began as early as Selznick (1949). It characterizes the links among organizations as a set of power relations based on exchange resources. It also explains behavior, structure, stability, and change of organizations (Nemati et al, 2010).

The nature of resources and resource management are the two main issues in project implementation; can inform the process of strategy formulation for businesses and act as a guide for strategic decision making and even setting the strategic direction and, provides models which project managers can use to analyze resources for the purposes of strategic planning exercises and decision making (Davis & Simpson, 2017). Resource dependence theory looks at many ways in which an organization can ensure it gets required resources necessary for its operation. The theory is focused on projects' external environment relationship. Further, it provides valuable guidance for managers who want to understand the considerations and consequences relevant to different types of interorganizational partnering to identify and get resources. The theory provides three strategies commonly observed in contemporary governance: merging, outsourcing, and co-opting; explains implications and consequences of merging, outsourcing, and co-opting, as well as other common managerial strategies for public and nonprofit managers (Malatesta & Smith, 2014). Project managers require skills in developing buyer–supplier relationships to respond to environmental complexity and gain resources. Firms gain power over resource providers by entering alliances with other agencies. Firms that supply resources can gain power and be able to manipulate project implementation. Resource dependency theory fails to properly value a sense of rationality in the organization, the theory does help explain the environment and context in which individual decisions are made within organizations (Nemati et al, 2010). Further, defining and measuring resources is a challenge since some of them are intangible. Sometimes, one can label certain elements in an organization as resources depending on his intention to establish definition. Definitions and units of analysis of a phenomena are

preliquisites in research and as asserted by Nemati et al (2010) quoting Truijens (2003), there are two major issues related to the definitional soundness of the resource dependency theory, the first one is the definitions are believed to be all-inclusive, and the second one is related to the unit of analysis, as there is no consensus on its definition. Resource management theory is relevant to the study because it provides information for understanding the impact of external resources on the operations of an organization.

### **2.2.6 Environment Theory**

The environmental theory developed by Florence Nightingale in the second half of the nineteenth century in England, has focused primarily on the environment, interpreted as all external conditions and influences that affect the life and development of a project, that are able to prevent, suppress or contribute to success or failure (Medeiros, Enders, & Lira, 2015). With the large scale of investments and increasingly complex technologies in projects, the delivery of projects, which is a long-term and interactive process intertwined with project implementation, is hypersensitive to the project external environment (Liu, Xue, Huo, Shen, & Fu, 2018). According to PMI (2013) project environmental factors refer to conditions, not under the control of the project team, that influence, constrain, or direct the project. Factors such as a key vendor going bankrupt, economic upheaval, wars, crime, and other events may directly impact the project's effectiveness. Furthermore, Akanni (2015) opines that, project environment includes virtually everything outside the project; its technology, the nature of its products, customer and competitors, its geographical setting, and the economic, political and even metrological climate in which it must operate. A clear understanding of these factors is critical to project success because, and as observed in PMI (2013), they are considered inputs to most planning processes, may enhance or constrain project management options, and may have a positive or negative influence on the outcome. Stantec (2013) identified some ecological factors that are likely to influence project implementation as severe weather, climate change, seismic activity, and forest fires resulting from causes other than the Project. Dickinson et al (2012) state, that web-based tools enable simple

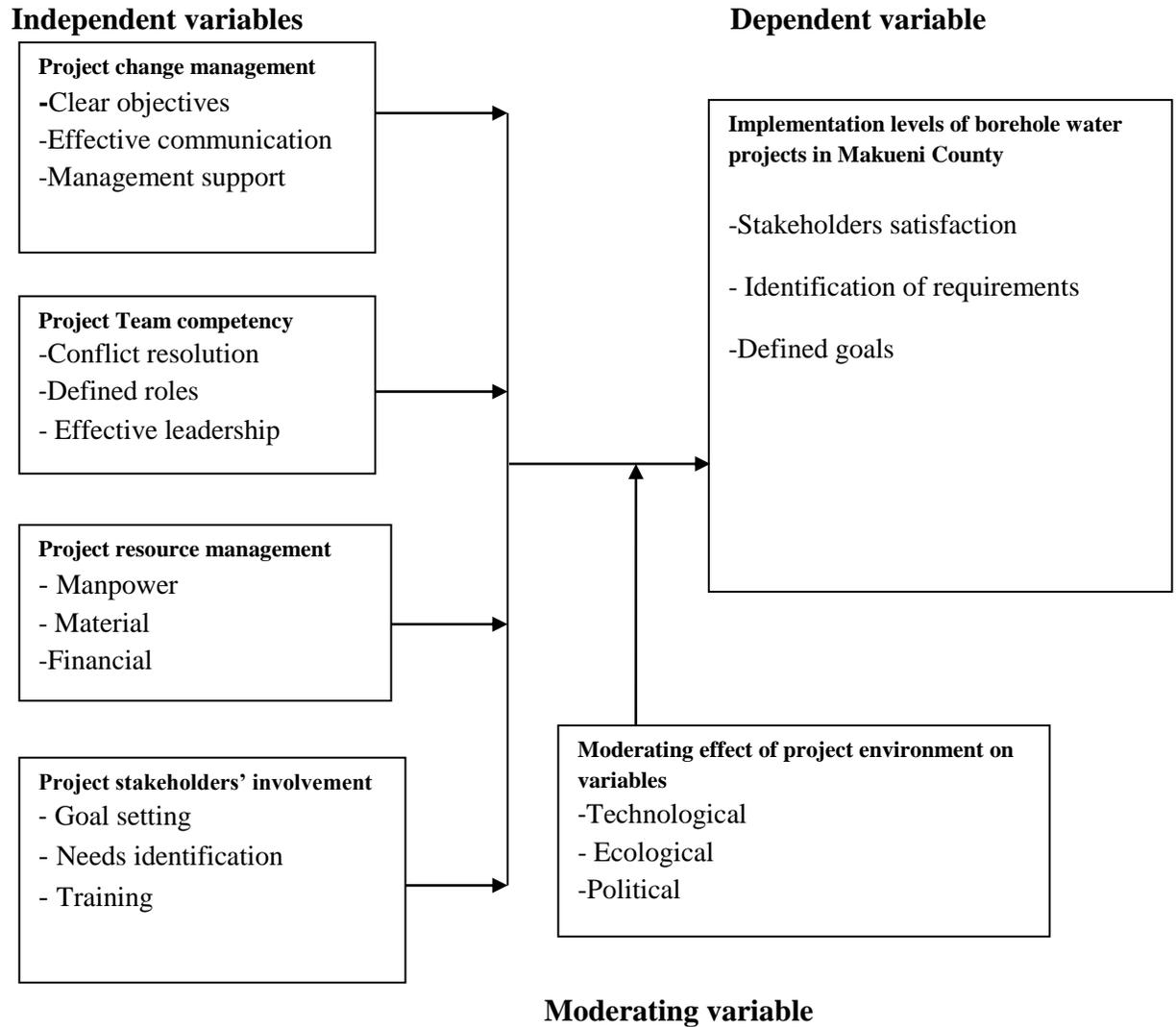
online data-entry systems that provide potential for initiating projects quickly, inexpensively, have stringent criteria to ensure data accuracy, and are democratizing project development, allowing for the creation of data-entry systems for community-based projects that arise out of local, practical issues or needs. Furthermore Dickinson et al (2012) demonstrated how new technologies can be used to increase participant interest, data quality (using quiz scores as measures of observer variation or observer bias), participant interest, and learning impacts. According to Welle et al. (2015), factors that impact on success of ICT initiatives for reporting on water supply functionality in Kenya include: mobile phone reception, availability of mobile phone charging facilities and affordability of reporting, internet connection, human resources and knowledge for processing and the availability of back-up support to solve any problems with ICTs and funds, spare parts and a mechanic are available for the repairs. Environment Theory has been criticized by scholars who include Medeiros, Enders, & Lira (2015); Ferris, (2019) argue that the theory's emphasis on environmental measures may be effective to an extent but is inherently limited. It says little about the application of globalization, technology, which are existent. Promoters of environment theory among them Medeiros, et al (2015) are of the view that the theory has significance, clear and understandable language and concepts, which induce the formulation of proposals and are explained and understood by variables. This theory is relevant to the study as it provides understanding on how the presence of project environment variable is likely to modify the original relationship between the independent and dependent variables.

### **2.3 Conceptual Framework**

Jabareen (2009) defines conceptual framework as a network, or a plane, of interlinked concepts that together provide a comprehensive understanding of a phenomenon or phenomena. Furthermore, Imenda (2014) observe that, conceptual framework is an end result of bringing together a number of related concepts to explain or predict a given event, or give a broader understanding of the phenomenon of interest. A conceptual frame work is based on ideas that may be formulated from a researchers own perception

or with a few reference to support them. According to Nachmias and Nachmias (2004), a concept is an abstraction – a symbol – a representation of an object or one of its properties, or of a behavioral phenomenon. Concepts appear in hypotheses as variables. Furthermore, Bhattacharjee (2012), define a variable as a measurable representation of an abstract construct and, constructs are abstract concepts specified at a high level of abstraction that are chosen specifically to explain the phenomenon of interest.

The conceptual framework of this study was on four independent variables, a moderating variable and one dependent variable. According to the study, project implementation in borehole water projects in Makueni County was conceptualized as the dependent variable being influenced by the four project management practices and moderated by project environment during implementation of borehole water projects in Makueni County. The factors used to measure change management were: clear objectives, defined milestone, and management support. Conflict resolution, teamwork and effective leadership were factors used to determine project team competency; those used for project stakeholders' involvement were: goal setting, needs identification and training; for project resource management: manpower, material and financial factors were used; and for moderating effect of project environment, the factors used were: technological, ecological and political. These are as shown in figure 2.1



**Figure 2.1: Conceptual framework**

Source: Author

## 2.4 Review of Literature on Variables

This section reviews literature related to the study variables: project change management, project team competency, project resource management, stakeholders' involvement, and project environment.

### **2.4.1 Project Change Management**

Projects have been used to bring a change in enterprises since the start of practice of project management. Projects have played a key role and in some instances have initiated changes in the society that are still being felt today (Cleland & Ireland, 2004). A change can be intentional or unintentional during project implementation. Some intentional changes could be a new process, product, service or improvement of product or service occasioned by changes in the market and intended to make the organization globally competitive. Also changes may be introduced to projects' scope and can produce acceptable or unacceptable effects on project deliverables (Bejestani, 2011). The change can involve cost, time, and technical performance capability and has to fit into the design and implementation of organizational strategies. At any organization, change is implemented at three levels i.e., individual, group and organization. At every level, leadership plays a critical role to manage change. According to Ryerson University(2011), in order to impact change, leaders leverage relationship with project stakeholders to address their concerns on a personal, group or organizational level; ask for their feedback and respond to their concerns honestly and openly communicate key information to project stakeholders on an on - going and consistent basis and involve them in the initiative. Changes which occur, whether intentional or unintentional during project implementation therefore, should be communicated to key project stakeholders through a change request by the project leadership and the project activities adjusted accordingly. In the 21<sup>st</sup> century, one of the challenges facing project managers is how to manage change. The leadership characteristics of a project manager can affect change management directly and effectively because these characteristics facilitate interaction and support cooperation between project manager and his/her team members (Bejestani, 2011). Furthermore, Cabrey and Haughey (2014) opine that, organizations that are highly effective at change management have common characteristics that include: have well-defined milestones and metrics, have senior management committed to change, establish and communicate concrete ownership and accountability, use standardized project management practices, and engage executive sponsors. The study analyzed the

influence support of senior management, defined goals and effective communication on change management process.

#### **2.4.2 Project Team Competency**

Teams are the engines that drive projects and a skilful project team management is vital to project Implementation. According to PMI (2018), project team competency refers to required skills and abilities to complete the project activities in accordance with accepted design limitations. Effective teams will therefore implement projects successfully if members of the team have the necessary skills and abilities to perform project activities. The project team may require skills and knowledge in project management, conflict resolution, and teamwork. The project leadership should conduct team building activities to ensure a cohesive and integrated project team. This view is supported by Mclees and Matthews (2015) who opine that, to build effective project teams and to maintain the necessary teamwork, a project leader must understand the aspects of team leadership and the crucial skills of team members. Project teamwork and leadership are intertwined as they depend on each other. Building an effective team is one of the challenges a project leader faces. Increased workforce diversity, challenges brought by information technology coupled with complex projects makes the task of assembling an effective project team difficult. Effective teams offer opportunities for organizations by finding unique, creative, and efficient ways to implement projects by bringing a diverse group of people together to brainstorm, collaborate, and solve tactical problems. Leveraging the diverse talents, background experiences, and interests of members often leads to more creative solutions during team problem solving efforts (Mclees & Matthews, 2015). Effective project teams require a strong leader to take them through the project life cycle, help them to develop credibility and influence among team members and establish vision and goals. Furthermore, Mclees and Matthews (2015) observe that: an effective team will utilize team membership to help designate team roles, and to help provide constructive feedback to one another; feedback is needed to help teams be more effective in their work; clear goals help members to succeed in

their roles because they know exactly what is expected of them and what the outcome would be once they complete their task. According to Richards, Carter and Feenstra (2012), drivers of high performing teams include positive climate, sound communication, shared goals, and constructive conflict. The examined the influence of conflict resolution, defined goals and effective leadership on project team competency.

### **2.4.3 Project stakeholders' involvement**

Project stakeholders' involvement is the practice of applying stakeholder inclusiveness in a project (Eskerold, et al, 2015). Stakeholders need to be identified, classified accordingly during all project phases depending on their interests and expectations. Further, according to Aapaoja and Haapasalo (2014), stakeholders' identification, classification, and management are crucial in order to collect and manage the stakeholder requirements, and any misjudgment in this process could lead to project failure. Furthermore, Laplume, Sonpar and Litz (2008) opine that, project managers need to take into consideration those groups and individuals that are likely to affect, or are affected by, the accomplishment of the project implementation. If the interests of some stakeholders are not catered for, the affected group may resist implementation of the project directly or indirectly. A project comprises of different sets of groups with varied interests who keep changing, have different roles and responsibilities. According to PMI (2015), because the stakeholders in a project are rarely equal, it is essential that the project management assess the salience of stakeholders and their probability of impacting the project. The interest of different stakeholders may need to be monitored, prioritized and addressed as the project progresses. Botwe, Aigbavboa and Thwale (2016), in their study on Mega Construction Projects concluded that, stakeholders first require education to embrace both stakeholder management and sustainable construction concepts as accepted by the construction industries. Project stakeholders, therefore need to have to be trained on their roles and responsibilities during project implementation. Further, stakeholders should be identified and classified to enable project managers rank stakeholders' interests, roles and influence about sustainability

targets and to establish the grounds for stakeholder engagement (Botwe, Aigbavboa & Thwale, 2016). According to Freeman, et al (2010), a stakeholder approach can be used to satisfy the demands and expectations of key stakeholders; integrate goal, resource-based and internal process approaches to measuring organizational effectiveness; and goal setting. Different stakeholders may have different needs and expectations which should be synchronized with those of the project. According to Dekkar and Qing (2014), project leaders should have ability to identify project stakeholders and understand the interaction between them, assess their vested interests and aim to consolidate common project success criteria. The study determined the influence of manpower, material and financial factors on project resource management

#### **2.4.4 Project Resource Management**

Project Resource Management includes the processes to identify, acquire, and manage the resources needed for the successful completion of the project (PMI, 2018). In addition, according to Halbesleben, Neveu, Paustian-Underdahl and Westman (2014), resources can be defined as things that people value, with an emphasis on objects, states, conditions, and other things. They further assert that, defining resources in terms of their role in attaining project goals helps to understand how individuals determine the value of their resources. For a project to deliver, it requires resources which include people, material, and finance among others. Availability of project resources may impact on project implementation. Their availability in quality and quantity is likely to affect project success or failure. Ismail, Rose, Uli, and Abdullah (2012), in their study, confirmed that, resources owned and controlled by firms have the potential and promise to generate competitive advantage, which eventually leads to superior organizational performance. They further confirmed that among the organizational resources, human resources and intangible resources namely: reputational, regulatory, positional, functional, social and cultural are the foundation of superior organizational performance. Thomas, Adekunle, Olarewaju, and Folarin (2015) investigated the role of financial management on the growth of Small Business Enterprise in Lagos state in Nigeria and

revealed that, financial management positively influences growth of Small Business Enterprises and recommended that training centers should be established by government for entrepreneurs. The study examined the influence levels of human, financial and material resources on implementation of borehole water projects.

#### **2.4.5 Moderating effect of project environment**

Project environmental factors refer to conditions, not under the control of the project team, that influence, constrain, or direct the project. Urbanski, Vi Hague and Oin (2019) conducted a study in United Kingdom and Pakistan and confirmed that, project planning had a statistically significant impact on project success while, risk management significantly moderated the relationship between project planning and project success. Project risks may be uncertainties in the project environment which may include political conditions in a country, climatic wheather conditions or technological development. These factors could moderate project management practices and influence project impact. Zwikael, Pathak, Singh, and Ahmed, (2014) in their study revealed that, risk moderates the impact of planning on success, and in different ways for various success measures. Joslin and Muller (2014) did a study and concluded that environmental factors do impact the use of a project methodology and its elements with resulting characteristics in the project success. Project environmental factors thus, may have a moderating effect on project management practices and impact on the project implementation process. The study examined the moderating effect of project environment on the relationship between the dependent and independent variables.

#### **2.5 Empirical Review**

Most of the organizations worldwide are experiencing change currently brought about by the ever changing environment. The way these changes are managed, is likely to determine success or failure of the organization. This has elicited a lot of interest by scholars and researchers to examine practices for successful change management. Njuguna and Muathe (2016) in their study confirmed that: leadership, motivational

commitment, training and communication are positively and significantly correlated to change management. Further, Basamh et al (2013) in their study affirmed that, clear objectives, top management support and aspects of communication are success factors for change management. Hennayake (2017) conducted a study and revealed that, lack of proper communication, absence of formal change management process, financial limitations and lack of strategy are highly influential in the success of change management process. The study further revealed most of the obstacles related to innovation and change in public sector are found as structural and cultural problems. Stouten, Rousseau and Cremer (2017) in their study affirmed that, organizational change is likely to be more readily implemented when it targets multiple stakeholder needs in its goals and interventions.

Researchers have tried to get an understanding of the process underlying the unfolding of relationships in teams. Lee et al (2015) in their study revealed that, emotional intelligence competencies of project manager directly influence the project performance, social intelligence competencies of project manager indirectly influence project performance only via team social capital, and cognitive intelligence competencies of project manager maintains direct influence on project performance in shorter term projects, but indirect influence only via the accumulated team social capital in longer term projects. Thus, the team members' network and how they relate with each other and emotional, intellectual and managerial capabilities of project manager are key factors for team performance. Further Maqbool et al (2015) in their study showed that, project managers with high emotional intelligence who bear the desired competencies and exhibit transformational leadership behavior are effective leaders and ensure higher success in projects. Grand et al (2016) demonstrated that agent teams generate collectively shared knowledge more effectively when members are capable of processing information more efficiently and when teams follow communication strategies that promote equal rates of information sharing across members. Project team require competencies relating to systems thinking and complexity theory and higher-

order cognitive skills required to deal with the managerial challenges brought about by the emergent, adaptive and dynamic behavior of projects (Sense, & Kiridena, 2014). A study conducted by Chan (2014) on multiple project team membership and performance concluded that, project teams integrate diverse sources of knowledge and resources into the team, and the study also found that individuals' emotional skills and cognitive skills influence project performance. Involvement of stakeholders in project management is likely to lead success and lack of their involvement may impede project implementation. Heravi et al (2015) conducted a study and concluded that, project leaders and owners should adopt improved decision-making strategies and design a plan to enhance the effectiveness of stakeholder involvement from the beginning of the project to its completion stages. Also an analysis of critical success factors to implementation of enterprise resource planning implementation from stakeholders perspective by Tarhini, et al (2015) identified top management support and commitment, training and education, project management, clear vision and objectives of the ERP system, careful change management and Interdepartmental communication as critical success factors to successful implementation of ERP projects. Nangoli et al (2016) did a study on stakeholder participation and concluded that, if stakeholders are not actively involved in the project by being consulted, taking up roles and making decisions concerning the interventions which impact them; this is likely to negatively affect the implementation of the project. In their study, Bijlsma et al (2011) concluded that stakeholders' involvement increases the quality of the knowledge base for a development process.

A study by Aryanto et al (2015) on Strategic Human Resource Management, Innovation Capability and Performance affirmed that strategic human resource management practices are positively related to innovation capability, which in turn has a positive effect on innovation performance. Sheehan (2013) conducted a study on human resource management and performance from small and medium-sized firms and confirmed that there are significant positive returns in terms of increased profitability, innovation and lower labor turnover associated with human resource investment. Materials management

in capital projects very important and is likely to affect successful project implementation. A study conducted by Caldas et al (2015) on materials management practices in the construction industry concluded that, implementation of a comprehensive materials management program contributes to more-predictable project outcomes, reduced costs, improved productivity and quality, and a safer working environment. Furthermore Gulghane and Khandve (2015) conducted a study on management for construction materials and control of construction waste in construction industry concluded that, effective material management improves performance projects in terms of cost, time, quality, and productivity. Maina and Gathenya (2014) demonstrated that, foreign currency exchange rate, funding, joint ventures and foreign investments affect the success of projects in the petroleum marketing firms. Drexler et al (2014) conducted a study in Dominican Republic to compare the impact of two distinct programs: standard accounting training versus a simplified, rule-of-thumb training that taught basic financial heuristics with micro entrepreneurs and found that, for micro-entrepreneurs with lower skills or poor initial financial practices, the impact of the rule-of-thumb training was significantly larger than that of the standard accounting training, suggesting that simplifying training programs might improve their effectiveness for less sophisticated individuals. In addition, Zayed (2014) conducted a study and revealed that, change of progress payment, payment duration, financial position of the contractor, and project delays are the most significant factors that affect cash flow in construction projects.

Projects are implemented within a dynamic environment and several researchers have empirically tested the influence of project environment on project success. As confirmed by Musa, Amirudin, Sofield, and Musa (2015) in their study in Nigeria on influence of external environmental factors on projects revealed that, the economics factor significantly affects public housing project success, the social factor significantly affects public housing project success, and the political factor significantly affects public housing project success. Rad (2015) reveals that, events signifying the change in

environmental elements such as climatic situations, rain, heat, cold or anything that may change the environment of the project, affecting the project team workable conditions. Beleiu, Crisan, and Nistor (2014) revealed that, projects environments are dynamic, so success factors might change their level of influence in time. Thus, a permanent monitoring of these factors is needed and whenever necessary the project manager should influence certain factors in order to increase chances of accomplishing success criteria. In their study Assefa, Rivera, and Vencatachellum (2013), affirmed that country policies and institutions and country capacity in general is positively correlated with project performance whilst parallel project implementation units were not correlate.

## **2.6 Critique of Existing Literature**

Theories and approaches to change management currently available to academics and practitioners are often contradictory, mostly lacking empirical evidence and supported by unchallenged hypotheses concerning the nature of contemporary organizational change management. The theory creates a top – down accounts of change which emphasizes more donor interests than project beneficiaries (Valters, 2014). The theory however, provides information about how, why and whether an intervention works (Silva, Lee & Ryan, 2015).

The Teams theory identifies the composition, structure and processes of teams and the key characteristics to their effectiveness. It considers organizational and situational factors as influencing the structure of the team as a whole which affect. But as Rico, Hera and Tabernero (2011) points out, it lacks ability to incorporate the temporal and recursive aspects imposed on teams by development and feedback, so that it can overlook the adaptive and incremental learning processes that necessarily influence their effectiveness. It is unitary, simplified and opaque treatment of team processes. Teams operate in a dynamic environment, they are not homogenous and the real demands of current organizations and the new forms of work organization (Rico, Hera & Tabernero, 2011).

Among the reasons that affect project outcomes, stakeholder influential attributes and more importantly, their understanding and effective utilization and management are identified as the key to project success (Rajalu, Marthandan, & Yussof, 2015). Stakeholder theory advocates for maximization of benefits to stakeholders. However, there are no legal provisions for stakeholder maximization. Law says do what is lawful. The model also ignores stakeholders beyond the framework of the project. Analysis of Topology of Stakeholder Influential Attributes (TSIA) shows that, stakeholders with positive quality of interest that can highly contribute to project's success should be empowered; stakeholders with positive qualities of network, legitimacy, and proximity with low to moderate contribution to project's success and should be empowered; stakeholders with negative weight of urgency that can highly disturb project's success should be controlled; stakeholders with negative weight of power that can disturb project's well-being, but if utilized under legitimate channels as authority can positively contribute to project's success should also be controlled.

In the Resource Management Theory, there is no universally accepted definition of resources; some are intangible and difficult to measure (Nemati et al, 2010). But as asserted by Cleland and Ireland (2002), resources are the assets that an organization has, can access and utilize in its operations which include human resources, financial resources, materials and equipment. Availability of project resources when required and in right quality and quantity is likely to influence its implementation.

Environment theory's emphasis on environmental measures may be effective to an extent but is inherently limited. It says little about the application of globalization, technology, which are existent Projects are implemented in an environment characterized by rapid change in technology, globalization which has resulted into climatic changes, ambiguity, workforce diversity and complexity. These are likely to affect project implementation because as observed by Schroter, Zanden, Oudenhoven & Remme, (2014) the prevailing transactional nature of Ecological System neglect societal demand and access and is in conflict with concept of biodiversity. Further as revealed by Rad (2015), changes in

environmental elements such as climatic situations, may moderate the environment of the project.

## **2.7 Research Gaps**

Despite the importance being given to project and project management by organizations and academia, many projects implemented are deemed as failed. Most studies done on the influence of project management practices on project implementation have mainly looked only at one project management practice influence on project implementation. Despite the fact that, there has been empirical evidence linking project success to adoption of best project management practices (Al-Hajji & Zrauning, 2018) , and lack of using project management practices to project failure (Idoro & Patunula-ajayi, 2009), studies to link project management practices influence levels on successful implementation of have not been exhaustive in Kenya. In developing countries, solutions to project failure may require unique and project specific implementation practices to meet the diverse challenges to deliver project success. The existence of failed project implementation is likely to lead to poor development in Kenya because, the growth of the Country is dependent on successful project implementation. There is therefore need to conduct studies and establish the link between project management practices and successful project implementation. This study addresses this gap by examining the project management practices influence levels of project change management, project team, project resource management, project stakeholders' involvement, and project environment on successful project implementation. Thus, the study was conducted to determine project management practices influence levels on successful implementation of borehole water projects in Makeni, Kenya.

## **2.8 Ethical Considerations**

Respondents were explained the importance of the study and were assured of confidentiality of the information they give. To conceal the identity of borehole water projects, they were given serial numbers BH 001 – BH 115. Participants were encouraged to be free and provide information being sought. They were also assured that the information being sought was for the purpose of research only.

## **2.9 Summary**

This chapter reviewed empirical literature on influence of implementation practices on implementation of projects. Extant literature shows that change management influences project implementation. In change management, clear objectives, effective communication and management support through their commitment are necessary for successful project implementation. The trend to use project teams to achieve organizational goals during this era of globalization has gained momentum. Factors considered for team competency are: conflict resolution, effective leadership, and defined roles. Resources are rare and key to successful implementation of projects. Prudent resource utilization through effective consideration of manpower, financial and material factors is key to project success. Project implementation affects and is influenced by different stakeholders. Involvement of stakeholders in project implementation ensures that needs satisfaction; training of key stakeholders on project operation and maintenance, and goals for the project are clearly understood so that stakeholders may own and support the project fully. Projects are implemented in an environment characterized by climatic change, explosion of information technology, continual change, and difficult to define. These factors may influence project management practices during project implementation.

## **CHAPTER THREE**

### **RESEARCH METHODOLOGY**

#### **3.1 Introduction**

This chapter reviewed literature related to research methodology that was adopted in the study. Research methodology according to Ihuah and Eaton (2013) quoting Collis and Hussey (2003) and Creswell (2009), is the overall approach to the design process of conducting research including all phases from the theoretical underpinning to the collection and analysis of data. Further, Ihuah and Eaton (2013) observe that, research methodology is a philosophical stance of worldview that underlies and informs the style of research. This chapter therefore reviewed research philosophy, research design, the methods and processes that will guide the research.

#### **3.2 Research philosophy**

A research philosophy is a belief about the way in which data about a phenomenon should be gathered, analysed and used. The study adopted positivism philosophy because as argued by Žukauskas, Vveinhardt & Andriukaitienė (2018), positivism adheres to the view that only factual knowledge gained through observation, including measurement, is trustworthy. They further observe that, in positivism studies the role of the researcher is limited to data collection and interpretation in an objective way. Furthermore, according to Hasan (2016), positivism is most suited for large-scale social surveys or for providing descriptive information about the social world. According to Siponen and Tsohou (2018), positivistic beliefs in scientific research should: be generalizable, focus on stable independent variables, and use statistical or quantitative methods rather than qualitative methods.

### **3.3 Research design**

Bhattacharjee (2012) opines that research design is a comprehensive plan for data collection in an empirical research project and is aimed at answering specific research questions. The study adopted cross sectional survey research design using both quantitative and qualitative approach. This is because, as Lavkaras (2011) observe, cross-sectional surveys are used to document the prevalence of particular characteristics in a population. Furthermore, Levin (2006) point out that in cross sectional survey: a lot of information can be collected, it is relatively inexpensive and takes up little time to conduct; can estimate prevalence of outcome of interest because sample is usually taken from the whole population; many outcomes and risk factors can be assessed. Crouch, Waters, McNair, Power & Davies (2014) used cross sectional survey in their study and demonstrated that children with same-sex attracted parents in Australia are being raised in a diverse range of family types. Further, Rockers et al (2018) used cross sectional survey in their study revealed that among patients with NCD in the country, the poorest face increased barriers to accessing needed medicines. The study used questionnaires to collect quantitative data for the study. Before administering the questionnaire, a pilot study was conducted to test the internal consistency of the instrument. Data collected was analyzed using Statistical Package for Social Sciences (SPSS) version 24. Qualitative data was collected using observation and interview guides and analyzed through Content Analysis.

### **3.4 Target population**

According to Cox (2011), the target population for a survey is the entire set of units for which the survey data are to be used to make inferences. It therefore, defines those units for which the findings of the survey are meant to generalize. Thus, the target population for the study was all borehole water projects in Makueni County implemented in the year 2010 – 2016. A total of 115 borehole water projects were interrogated as shown in appendix 3.

### 3.5 Sampling Frame

Lavkaras (2011) opines that sample frame represents a list of the target population from which the sample is selected. Therefore, the sampling frame for the study was a list of all borehole water project implemented in the year 2010 – 2016 in Makueni County as provided by Makueni County Water Office as shown in appendix 3.

### 3.6 Sample and Sampling technique

Sekaran (2006) define a sample as a subset of the population which on studying, the researcher should be able to draw conclusions that would be generalizable to the population of interest. The sample size of 89 was determined using the formula

$$n = \frac{z^2 pq}{e^2}$$

Where: n= Sample size,

z=Confidence level at 95% (standard value of 1.96)

p=Proportion in the target population estimated to have the characteristics being measured

q=1-p

e=level of statistical significance (=0.05)

z = 1.96, p = 0.5 = q, and e = 0.05

$$n = \frac{1.96^2 \times 0.5 \times 0.5}{0.05^2} = 385$$

$$n_{Adj} = \frac{385 \times 115}{385 + 115} = 89$$

Sampling is the process of selecting a sufficient number of elements from the population, so that a study of the sample of its properties or characteristics would make it possible to generalize such properties or characteristics to the population elements (Sekaran, 2006). Purposive sampling was used for the study. According to Teddlie and

Yu (2007), purposive sampling techniques involve selecting certain units or cases based on a specific purpose. Furthermore, Creswell and Plano (2011) posited that, purposive sampling enables researcher to identify and select individuals or groups of individuals that are knowledgeable about or experienced with a phenomenon of interest and, those selected are willing to communicate experiences and opinions in an articulate, expressive, and reflective manner. The study selected 89 chairpersons of the water borehole projects as these were the people best placed to provide the information sought.

### **3.7 Data collection instruments**

Quantitative data was collected using a semi-structured and open-ended questionnaire which was administered to 89 chairpersons of borehole water projects. According to Abawi (2013), a questionnaire is a data collection instrument consistent of a series of questions and other prompts for the purpose of gathering information from respondents. Further according to Rowley (2014) the advantage of questionnaires is that it is easier to get responses from a large number of people, and the data gathered may therefore be seen to generate findings that are more generalizable. Furthermore, Rowley (2014) opine that, while using questionnaire, research process is assumed to give direct access to knowledge that already exists in the mind of the respondent and can generate data that provides some interesting insights. The questionnaire had 35 items and divided into 8 sections; A for bio data , B for project implementation, C for change management, D for project team competency, E for project stakeholders' involvement, F for project resource management, and G for project environment. Section A had 5 open-ended questions and sections B – G had closed-ended questions covering the 5 variables in which respondents were asked their opinion on different issues touching on borehole water projects. It anchored on 5 – point scales with strongly agree (1) to strongly disagree (5). Qualitative data was collected using interview guide administered to selected chairpersons of borehole water projects.

### **3.8 Data collection procedure**

The target participants were the chairpersons of borehole water projects and are the ones who filled in the questionnaires. They were easy to identify and were the people who had most of the information being sought. The researcher sought approval from the County Water office and the borehole water committee for their cooperation in the research. He presented and introduced himself to County Water Officer, the borehole water project committee chairpersons, explained the purpose of the research and sought their approval and cooperation. The questionnaires were then delivered to the respondents and were waited for to fill them. The unit of analysis was borehole water projects. The numbers of questionnaires administered were 89 since this sample size of the study. Focus interviews were also conducted with chairpersons of borehole water projects as they were the key informants and notes were taken during the interviews.

### **3.9 Pilot Test**

Pilot testing of questionnaire was done to in order to identify and solve confusing points and make the questionnaire clear to all respondents (Abawi, 2013). During the pilot trial, questionnaire participants were randomly selected from the study population. Connelly (2008) suggests that a pilot study sample should be 10% of the sample projected for the larger parent study (10% of 115 = 11.5 chairpersons). The study administered the questionnaire to 12 chairpersons of borehole water project committee selected randomly from the population and not those which will be sampled during the study. This represented 10% of the study population.

### **3.10 Reliability**

According to Mohajan (2017), reliability refers to a measurement that supplies consistent results with equal values. It measures consistency, precision, repeatability, and trustworthiness of a research. It indicates the extent to which a study is without bias. The study used Cronbach's coefficient alpha test of reliability. Sekaran (2006) alludes

that, the higher the coefficients in Cronbach's alpha test of reliability, the better the measuring instrument.

### **3.11 Content and Construct validity**

Validity concerns what an instrument measures, and how well it does so. Content validity is the extent to which the questions on the instrument and the scores from these questions represent all possible questions that could be asked about the content or skill. It ensures that the questionnaire includes adequate set of items that tap the concept (Haradhan, 2017). It helps to determine presence of certain words, texts and quantify them in an objective manner. According to Smith and Pearson (2015) construct validity involves the evaluation of evidence for the validity of psychological theories and the measures used to test them. To ensure content and construct validity, the preliminary questionnaire was pre-tested with a sample of respondents from 12 borehole water projects.

### **3.12 Normality**

The main tests for the assessment of normality are Kolmogorov-Smirnov (K-S) test and Shapiro – Wilk (S-W) tests. The normal Q – Q plot are graphical assessment of normality and are used to supplement K –S and S – W tests (Ghasemi & Zahediasl, 2012). The study used the normal quartile – quartile plot (Q – Q plot) to assess the normality of the data. Loy, Follet, and Hofmann (2014) opine that, the quantile-quantile (Q-Q) plot, are arguably the most widely used method of distributional assessment, and that that lineups of standard Q-Q plots are more powerful than traditional tests of normality.

### **3.13 Data Analysis and Presentation**

Quantitative data collected was analyzed using statistical package for social sciences (SPSS) version 24 by calculating descriptive statistics such as mean, median, standard deviation. Qualitative data was coded into the different factors and analyzed through content analysis. Inferential data analysis was carried out by the use of factor analysis

and correlation analysis to determine the strength and the direction of the relationship between the dependent variable and the independent variables. Multiple regression analysis was done to establish whether there is any relationship between the dependent and independent variables. Regression models were fitted and hypothesis testing carried using multiple regression analysis and standard F tests and t tests.

### 3.13.1 Statistical models

The outcome was predicted by the models:

$$Y = \beta_0 + \beta_i X_i + e \dots\dots\dots (1)$$

$$Y = \beta_0 + \beta_i X_i + \beta_z Z + e \dots\dots\dots (2)$$

$$Y = \beta_0 + \beta_i X_i + \beta_z Z + \beta_{iz} + \beta_i z X_i Z + e \dots\dots\dots (3)$$

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_{1z} X_1 Z + \beta_{2z} X_2 Z + \beta_{3z} X_3 Z + \beta_{4z} X_4 Z + e. (4)$$

Where Y= Successful implementation of borehole water projects

$\beta_0$  = constant (Intercept)

$\beta (1, \dots, 4)$  = coefficient of the independent variable.

$X_1$  = Project Change Management

$X_2$  = Project Team Competency

$X_3$  = Project stakeholders' Involvement

$X_4$  = Project resource management

$Z$  = Project environment (Moderator)

$X_i Z$  = Product term / interaction term of the project environment with each of the independent variables ( $X_1, X_2, X_3, X_4$ )

$e$  = Error term, represents “noise” which denotes there may be a non-linear relationship between the independent and dependent variable

There may be other factors affecting implementation of borehole water projects other than those under study. These factors are represented by  $\beta_0$ .

### 3.12.2 Test of hypotheses

Hypotheses were tested to assess the influence of independent variables on implementation of borehole water projects. Analysis was done separately on each

variable to test their individual influence. The ANOVA F –test statistic was done to test hypotheses for the regressor coefficient of each variable to be equal to zero. An analysis of all combined independent variables was done. ANOVA F – test was finally carried out to test that the regressor coefficients of all independent variables are jointly equal to zero.

### 3.12.3 Operationalization of Study Variables

The independent variables of the study that were surveyed are: Project Change Management, Project Team Competency, Project Stakeholders’ Involvement and, Project Resource Management. They have been operationalized in accordance with the research objectives as shown in table 3.1 and 3.2

**Table 3.1: Operationalization of independent variables**

<b>Independent variable</b>	<b>Operational indicator</b>	<b>Section in data collection instrument</b>
Project Change Management	Clear objectives -Defined milestone -Management support	C (3)
Project Team Competency	-Conflict resolution -Teamwork - Effective leadership	D (3)
Project Stakeholders’ Involvement	- Goal setting - Needs satisfaction - Training	E (4)
Project Resource Management	-- Manpower - Material - Financial	G ( 4)
Project Environment	--Technological - Ecological - Political	F (5)

**Table 3.2: Operationalization of dependant variable**

<b>Dependent variable</b>	<b>Operational indicator</b>	<b>Section in data collection instrument</b>
Effective Project Implementation – the extent to which people and resources have been utilized in project execution	-Stakeholders satisfaction - Identification of requirements -Defined activities	A (1- 2) B ( 2) C (3) D (3) E (4) F (4) G ( 5)

## **CHAPTER FOUR**

### **RESEARCH FINDINGS AND DISCUSSIONS**

#### **4.1 Introduction**

This chapter presents the results of the study performed to test the study models and hypotheses. It outlines the response rate, assesses the reliability and validity of the constructs. The chapter also outlines the response rate, validity of research instruments, descriptive statistic, reliability analysis, variable diagnosis, influence levels of study variable on implementation of borehole water projects and concludes with a summary.

#### **4.2 Response rate**

Data for the study was collected using 89 questionnaires administered to chairpersons of borehole water projects. An interview guide was used to triangulate the results obtained from the questionnaires. The questionnaires were delivered to the respondents personally by the researcher at venues agreed upon by chairpersons of borehole water projects. Mugenda (2008) opines that, a response rate of more than 50% was enough to analyze and draw conclusions. All the 89 questionnaires administered were filled and returned making a response rate of 100% and was thus considered adequate for the purpose of further analysis.

#### **4.3 Validity of Research Instruments**

To ensure content and construct validity, the questionnaire was piloted with 12 randomly selected borehole water projects. A response rate of 70% was realized. Corrections were done appropriately in the final tool.

#### 4.4 Descriptive statistics

The purpose of the study was to examine the influence levels of project management practices influence levels on successful implementation of borehole water projects in Makueni County. The researcher analyzed the influence levels of change management, competency of project team, stakeholder involvement, resources management, and moderating effect of project environment on the study variables. This was done through presentation of frequencies, means, graphs, standard deviation, tables and graphs.

##### 4.4.1 Gender of respondents

The respondents were requested to state their gender. As shown in table 4.1, of the chairpersons who participated, 82.02% were males and 17.08% females. This does not meet the constitutional requirement of thirty percent of either gender in positions of responsibility. Women play a central role in management of water projects. According to United Nations (2006), projects designed and run with the full participation of women are more sustainable and effective than those that do not. Furthermore, Water and Sanitation Program (2010) observe that, tools that indicate responsibilities are useful for empowerment and in highlighting and redressing gender issues during key phases of the project cycle.

**Table 4.1: Gender of respondents**

	Frequency	Valid Percent	Cumulative Percent
Valid Female	16	17.08	17.08
Male	73	82.02	100.0
Total	89	100.0	

#### **4.4.2 Project implementation**

The study used a five point Likert Scale and sought the opinion of respondents on areas of project implementation. The statements were opinions which required the participant to Strongly Disagree, Disagree, Undecided, Agree and Strongly Agree. The results were presented using descriptive statistics such as mean, standard deviation and percentages as shown in table 4.2. A majority of 37.5% agreed that their projects had achieved the intended purpose while 27.3% strongly disagreed that projects had achieved the intended purpose. This implies that, majority of the respondents were of the opinion that most of the water projects had not achieved their intended purpose. This was also confirmed from results of the interview guide. A majority of 38.2% agreed that money set aside at the start of the project was used as proposed while 23.6% could not decide on how money set aside at the start of the project was used during implementation. Results of the interviews indicated that in most cases, project beneficiaries were not involved in budgeting of water projects and hence could not know how money was being spent during project implementation. Only 33% agreed that there were records showing lessons learnt during project implementation implying that there is little documentation of vital lessons learnt during project implementation. Those who strongly disagreed indicated that: 36.8% expressed the opinion that there was improved economic status of the community due to water projects; 45.5% felt that project could not operate due to disagreement among community members; and 42.5% were of the opinion that there was improved vegetation as a result of the projects. This implies that, there has been little economic change brought about by implementation of water projects in the area under study. It is worth noting that the means of all statements are less than 3.4 except one which is 3.43. This means that there was low agreement of respondents with the statements expressed on project implementation. The values of all standard deviation are all above 1, confirming that, the opinion of the respondents highly differed with the statements given.

**Table 4.2: Project implementation**

<b>Project implementation</b>	<b>SD</b>	<b>D</b>	<b>U</b>	<b>A</b>	<b>SA</b>	<b>%</b>	
	<b>%</b>	<b>%</b>	<b>%</b>	<b>%</b>	<b>%</b>	<b>M</b>	<b>S. D</b>
Our project has achieved its purpose	27.3	21.6	5.7	37.5	8	2.77	1.404
Money set aside at the start of the project was used as proposed	11.2	9	23.6	38.2	18	3.43	1.214
At the end of implementation there was a ceremony to hand over the project	35.2	17	6.8	15.9	25	2.78	1.65
There are records showing the lessons learnt during project implementation	27.3	20.5	8	33	11.4	2.81	1.437
There is improved economic status of the local community	36.8	24.1	3.4	28.7	6.9	2.45	1.412
Project could not operate due to disagreement among community members	45.5	27.3	4.5	10.2	12.5	2.17	1.424
There is improved vegetation as a result of the project	42.5	23	2.3	26.4	5.7	2.3	1.399

N=89, SD= Strongly Disagree, D= Disagree, U= Undecided, A = Agree, SA = Strongly Agree

M = Mean, S.D = Standard Deviation (Strongly Disagree range = 11.2 – 45.5, Disagree range = 9 – 27.3, Undecided range= 2.3 – 23.6, Agree range = 10.2 – 38.2, Strongly Agree range = 5.7 – 25, Mean range 2.17 – 3.43, Standard deviation range = 1.214 – 1.65, Cronbach’s alpha = 0.770)

#### **4.4.3 Project environment**

The study used a five point Likert Scale and sought the opinion of respondents on areas of Project Environment in relationship to project implementation. The statements were opinions which required the participant to Strongly Disagree, Disagree, Undecided, Agree and Strongly Disagree. The results were presented using descriptive statistics such as mean, standard deviation and percentages as shown in table 4.3. That effective change management by project team ensures project success was confirmed by 70.8% of the respondents. This was supported by a high mean of 3.66. The participants who agreed with the statement that, effective change management by project team enable them to deliver the project as expected despite all interferences comprised of 69.3% of the total number. This item posited a high mean value of 3.57. That the high competence of project teams ensures timely completion of project was confirmed by 71.6% of total participants. The high competences of the project team enable them to navigate through the interferences to deliver the project as expected. This statement was confirmed by 76.1% of the total participants. A total of 75.3% of the respondents were in agreement that, effective project stakeholder consultations by the project team ensure timely completion of the project. Participants who confirmed that, effective project stakeholder consultations by the project team enable them to go through all the interferences to deliver the project as expected comprised 76.1% of the total number. That adequate project resource support ensures timely completion of the project was confirmed by a total of 73.0% of the respondents. Adequate project resource support enables project team to go through all interferences to deliver the project as expected. A total of 73.0% of the respondents confirmed this statement. The mean of all statements on project environment were all above 3.49 which mean that, the respondents highly agreed with the statements on project environment. There were high variations on the opinion of respondents on the statements on project environment. This is supported by the high standard deviation values.

**Table 4.3 Project Environment**

<b>Project environment</b>	<b>SD</b>	<b>D</b>	<b>U</b>	<b>A</b>	<b>S A</b>	<b>M</b>	<b>SD</b>
	<b>%</b>	<b>%</b>	<b>%</b>	<b>%</b>	<b>%</b>	<b>%</b>	<b>%</b>
Effective change management by project team ensures project success	7.9	11.2	10.1	48.3	22.5	3.66	1.177
Effective change management by project team enable them to deliver the project as expected despite all the interferences	5.7	15.9	9.1	54.5	14.8	3.57	1.102
The high competence of the project team ensures timely completion of the project	13.6	10.2	4.5	56.8	14.8	3.49	1.259
The high competence of the project team enable them to navigate through the interferences to deliver the project as expected	10.2	12.5	1.1	60.2	15.9	3.59	1.200
Effective project stakeholder consultations by the project team ensures timely completion of the project	9.0	13.5	2.2	57.3	18.0	3.62	1.192
Effective project stakeholder consultations by the project team enable them to go through all the interferences to deliver the project as expected	9.1	14.8		63.6	12.5	3.56	1.163
Adequate project resource support ensure timely completion of the project	7.9	16.9	2.2	57.3	15.7	3.56	1.177
Adequate project resource support enable project team to go through all interferences to deliver the project as expected	7.9	16.9	3.4	55.1	16.9	3.56	1.187

N =89, SD = Strongly Disagree, D = Disagree, U = Undecided, A = Agree, SA = Strongly Agree. (Strongly Disagree range = 5.7– 13.6, Disagree range = 10.2– 16.9, Undecided range = 1.1– 10.1, Agree range = 48.3– 63.6, Strongly Agree range = 12.5– 22.5, Mean range = 3.49– 3.66, Standard deviation range = 1.102– 1.259, Cronbach's alpha =0.867)

#### 4.5 Reliability Analysis

Reliability can be defined as the correlation between two observations of the same measure (Santos, 1999). There are various estimate methods for reliability in social science research. However, Cronbach's Alpha tends to be the most frequently used estimate of internal consistency. Santos (1999) quoting Nunnaly (1978), observe that, Alpha coefficient ranges in value from 0 to 1 and may be used to describe the reliability of factors extracted from dichotomous (that is, questions with two possible answers) and/or multi-point formatted questionnaires or scales and the higher the score, the more reliable the generated scale is. A Cronbach's A coefficient of 0.7 means an instrument is sufficiently reliable (Nachmias & Nachmias, 2004). In the study, the reliability of the instrument was estimated using Cronbach's A Coefficient at the acceptable reliability coefficient of 0.7. In the study, the Cronbach's A Coefficient for all independent variables were all above acceptable level of 0.7 and were considered reliable for further analysis. The moderating variable, Project environment has Cronbach's A Coefficient of 0.683 very close the acceptable level of 0.7, hence a good predictor of project implementation. This is given in table 4.4

**Table 4.4: Reliability Coefficient of the Independent Variables**

<b>Influence on project implementation</b>	<b>No. of items</b>	<b>Cronbach's alpha</b>	<b>Remarks</b>
Project change management	7	.842	<b>Very good</b>
Project team	7	.932	<b>Excellent</b>
Project stakeholders	7	.841	<b>Very good</b>
Project resource support	7	.867	<b>Very good</b>
Project environment	7	.683	<b>Good</b>
<b>TOTAL</b>	<b>28</b>		

#### 4.5.1 Aggregation of Independent Variables

Having confirmed that all variable met the required reliability threshold, the items were aggregated by averaging the items to get variables of interest. Influence of Project Team ( $X_2$ ) had the highest rating and variation of responses ( $M = 3.4593$ ,  $SD = 1.09751$ ). Project change management ( $X_1$ ) had the second highest rating but exhibited high variation ( $M = 3.2809$ ,  $SD = 1.01529$ ). Project stakeholder ( $X_3$ ) had a moderately low rating and high variation ( $M = 3.2785$ ,  $SD = 0.93853$ ). Project resource support ( $X_4$ ) exhibited moderately low rating but a high variation ( $M = 2.6592$ ,  $SD = 1.00233$ ). Based on rating, the worst predictor is project resource support with the lowest mean, followed by project stakeholders. The most significant predictor is project team displaying a mean of 3.4593. Though the mean values for project stakeholders and project change management are almost equal, dispersion is greater in project change management than in project stakeholders. The real rating of project implementation index rated neutrally and dispersion is low. The aggregation is as shown in table 4.5.

**Table 4.5: Aggregation of Study Variables**

Variable		N	Mean	Standard Deviation
Project implementation index	Y	89	2.6918	.93853
Project change management	$x_1$	89	3.2809	1.01529
Project team	$x_2$	89	3.4593	1.09751
Project stakeholders	$x_3$	89	3.2785	.95402
Project resource support	$x_4$	89	2.6592	1.00233
Project environment	M	89	3.1530	.78576

## **4.6 Variables Diagnosis**

The study, after highlighting the independent variables through descriptive statistics, sought to get the influence of Project Change Management, Project Team, Project Stakeholders and Project Resource Support on implementation of borehole water projects in Makueni County. In order to get the relationship among the variables, correlation analysis was used. Further, linear regression was used to determine the nature of relationship. Inferential statistics was applied to test the hypothesis and reject or fail to reject the  $H_0$  or Null hypothesis. At 5% level of significance, the Null was rejected if p value was  $< 0.05$ .

### **4.6.1 Normality Tests for All Variables**

Many of the statistical procedures are based on the assumption that the populations from which the samples are taken are normally distributed (Ghasemi & Zahediasi, 2012). Furthermore, assessing the assumption of normality is required by most statistical procedures and parametric statistical analysis is one of the best methods of assessing the normality assumption (Razali & Wah, 2011). Parametric statistical analysis assumes the normal distribution and if this assumption is violated, interpretation and inferences may be invalid. As asserted by Ghasemi and Zahediasi (2012), Kolmogorov-Smirnov (K-S) and Shapiro-Wilk are among the main tests of normality. The Shapiro-Wilk test provides better power than K-S test and is recommended by more researchers as the best choice for testing the normality of data (Ghasemi & Zahediasi, 2012). Given  $H_0$  and  $H_1$ , set  $\alpha = 0.05$ , the rule is that reject  $H_0$  if P- value is less than  $\alpha$  and fail to reject  $H_0$  if P-value is more than  $\alpha$ : where

$H_0$ : The data is normally distributed

$H_1$ : The data is not normally distributed

As shown in table 4.6, all five variables that is Project change management, Project team, Project stakeholders' involvement, Project resource management and, Project environment had P-values less than 0.05 indicating Shapiro-Wilk test is not violated.

This study therefore, rejected their corresponding null hypotheses (H<sub>01</sub>, H<sub>02</sub>, H<sub>03</sub>, H<sub>04</sub> and H<sub>05</sub>.) and concluded that, the data sets for these five variables are normally distributed.

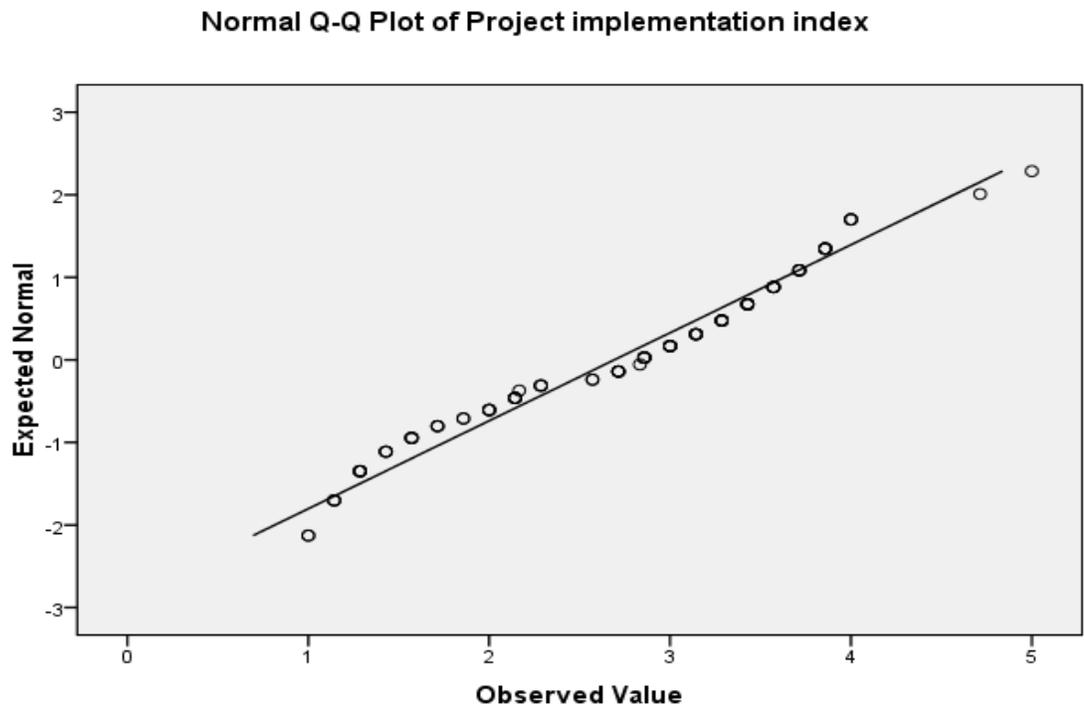
**Table 4.6: Test of Normality**

	<b>Kolmogorov-</b>					
	<b>Smirnov<sup>a</sup></b>			<b>Shapiro-Wilk</b>		
	<b>Statistic</b>	<b>df</b>	<b>Sig.</b>	<b>Statistic</b>	<b>df</b>	<b>Sig.</b>
Project implementation index	.094	89	.051	.962	89	.010
Project change management	.148	89	.000	.943	89	.001
Project team	.150	89	.000	.913	89	.000
Project stakeholders' involvement	.079	89	.195	.976	89	.018
Project resource management	.082	89	.193	.964	89	.014
Project environment	.098	89	.035	.963	89	.013

The normal quantile-quantile plot (Q-Q plot) is the most commonly used and effective diagnostic tool for checking normality of the data (Razali & Wah, 2011). Q-Q plots were done and results represented by figure 4.1, 4.2, 4.3, 4.4 4.5 and 4.6

#### **4.6.1 (a) Normal Q-Q Plot of Project implementation index**

The Q - Q plot of Project implementation shows a strong, positive, linear association between observed value and expected normal. There don't appear to be any outliers in the data. The linearity of the points suggests that the data are normally distributed. The line of fit for project implementation index shows that the approximation for project implementation was close to normal distribution and could be used for regression analysis. This is as shown in figure 4.1



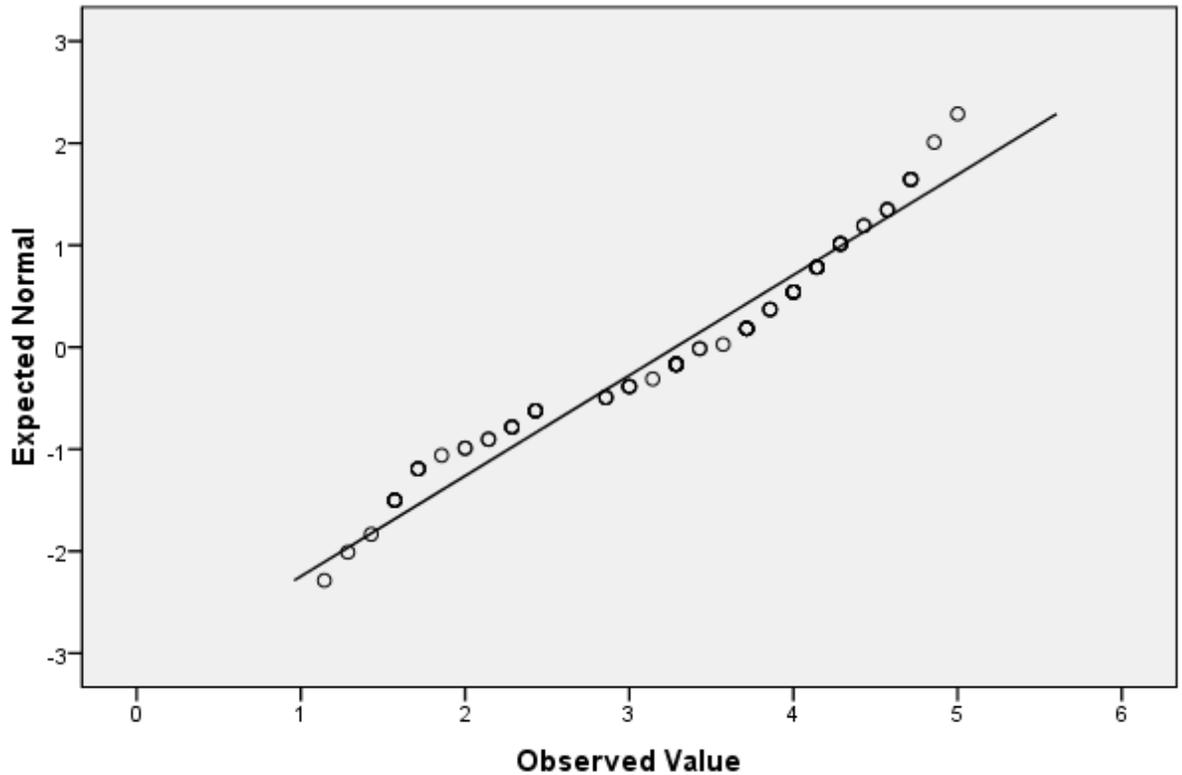
**Figure 4.1: Normal Q-Q Plot of Project implementation index**

**4.6.1 (b) Normal Q-Q Plot of Project change management**

The Q - Q plot of project change management shows a strong, positive, linear association between observed value and expected normal. There don't appear to be any outliers in the data. The linearity of the points suggests that the data are normally distributed. The line of fit for project change management index shows that the approximation for project change management was close to normal distribution and could be used for regression analysis.

This is as shown in figure 4.2

**Normal Q-Q Plot of Project change management**

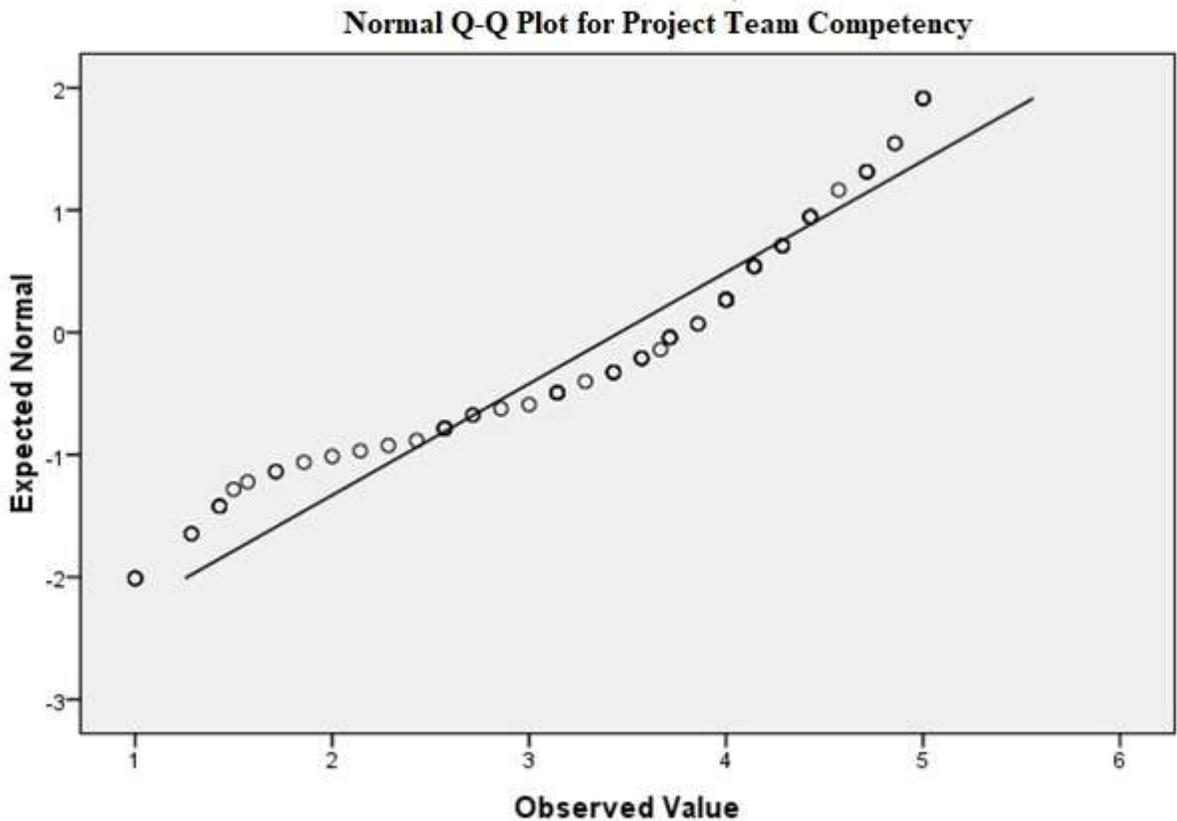


**Figure 4.2: Normal Q-Q Plot of Project change management**

#### **4.6.1 (c) Normal Q-Q Plot of Project Team Competency**

The Q - Q plot of project team competency shows a strong, positive, linear association between observed value and expected normal. There don't appear to be any outliers in the data. The linearity of the points suggests that the data are normally distributed. The line of fit for project team competency index shows that the approximation for project team competency was close to normal distribution and could be used for regression analysis.

This is as shown in figure 4.3

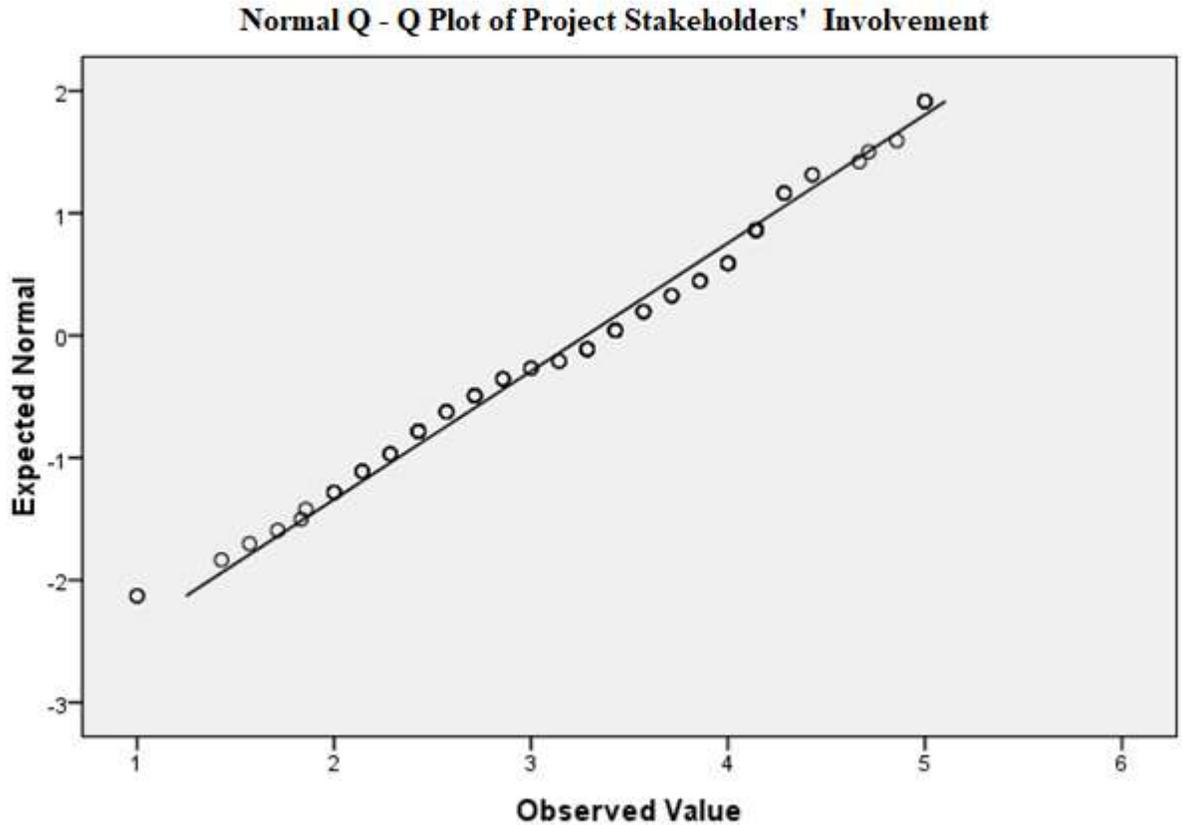


**Figure 4.3: Normal Q-Q Plot of Project Team Competency**

#### **4.6.1 (d) Normal Q-Q Plot of Project Stakeholders' Involvement**

For stakeholders' involvement, the Q –Q plot shows a strong, positive, linear association between observed value and expected normal. There don't appear to be any outliers in the data. The linearity of the points suggests that the data are normally distributed. The line of fit for project stakeholders' involvement index shows that the approximation for project stakeholders' involvement was close to normal distribution and could be used for regression analysis.

This is as shown in figure 4.4



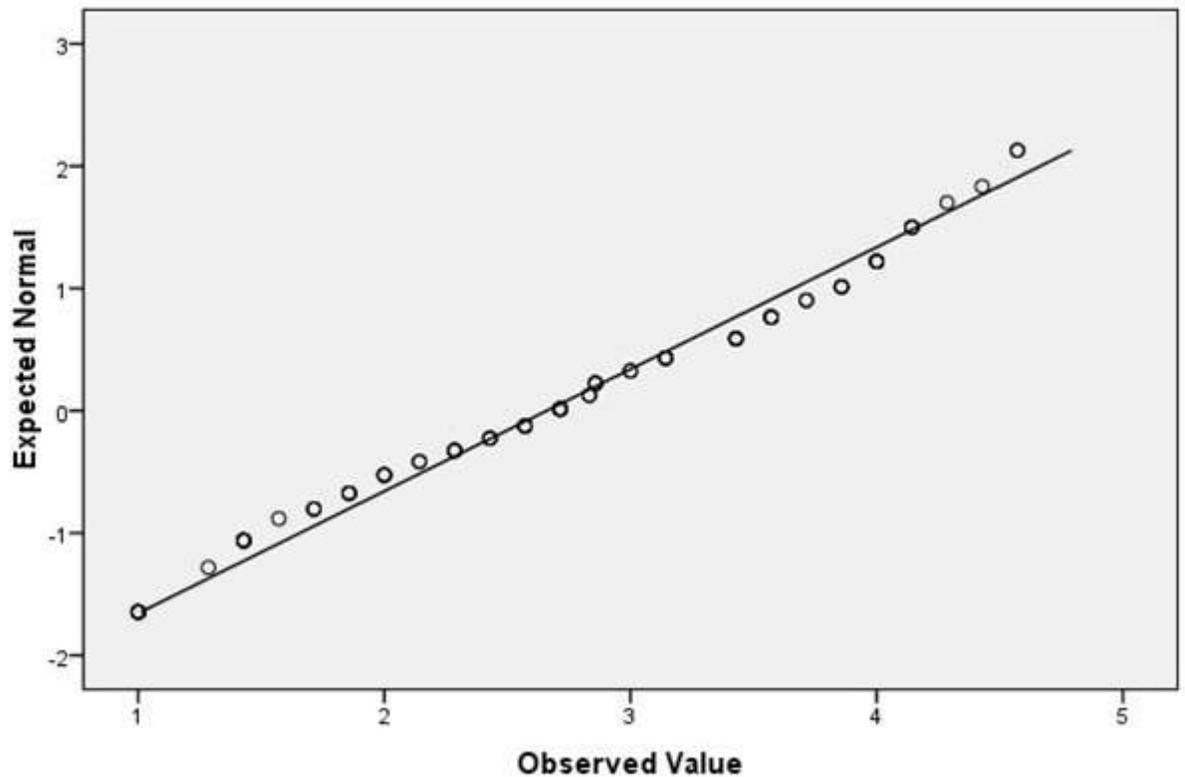
**Figure 4.4: Normal Q-Q Plot of project stakeholders' involvement**

**4.6.1(e) Normal Q-Q Plot of Project Resource Management**

For project resource management, the Q –Q plot shows a strong, positive, linear association between observed value and expected normal. There don't appear to be any outliers in the data. The linearity of the points suggests that the data are normally distributed. The line of fit for project resource management index shows that the approximation for project resource management was close to normal distribution and could be used for regression analysis..

This is as shown in figure 4.5

**Normal Q -Q Plot of Project Resource Management**



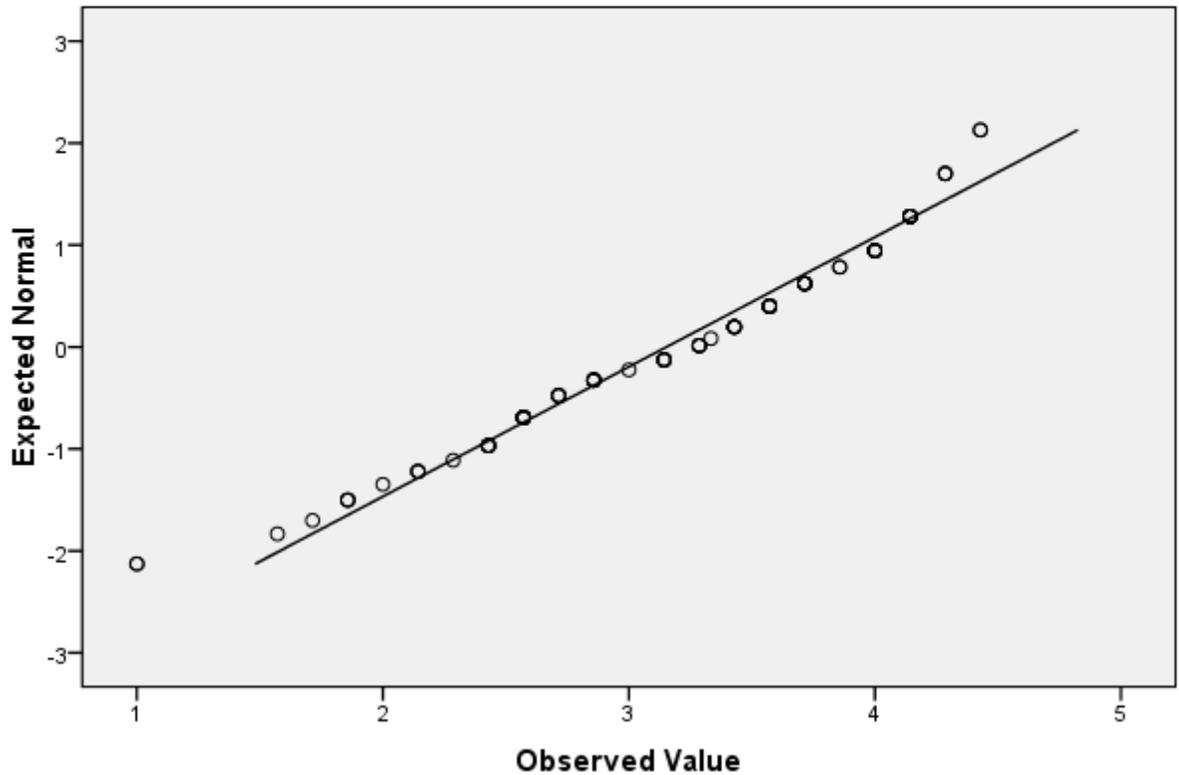
**Figure 4.5: Normal Q-Q Plot of project stakeholders**

**4.6.1(f) Normal Q-Q Plot of project environment**

For project environment, the Q -Q plot shows a strong, positive, linear association between observed value and expected normal. There don't appear to be any outliers in the data. The linearity of the points suggests that the data are normally distributed. The line of fit for project environment index shows that the approximation for project environment was close to normal distribution and could be used for regression analysis.

This is as shown in figure 4.6

**Normal Q-Q Plot of Project environment**



**Figure 4.6: Normal Q-Q Plot of project environment**

#### **4.6.2 Linear Relationship between the Study Variables**

Multiple regression analysis was used in the study to in order to determine the relationship between the independent, moderating and dependent variables. The five null hypotheses of the study were tested using linear regression model. The regression coefficients were used to describe the nature and direction of association of study variables given by the regression analysis. As asserted by Nachmias and Nachmias (2004), correlation coefficients reflect the strength and the direction of the association between the variables and the degree to which one variable can be predicted from the

other. Results of the analysis showed that there was a positive correlation between project change management and project implementation ( $r = 0.591$ ,  $p$  value  $<0.001$ ). Since  $r = 0.515$ ,  $p$  value  $<0.001$ , the linear relationship between project team and project implementation is statistically significant. This means that, use of teams enhances successful project implementation by 51.5%. That the linear relationship between stakeholders and project implementation is significant since  $r = 0.482$  and  $p$  value  $<0.001$ . A linear relationship exists between project resource and project implementation since  $r = 0.633$  and  $p$  value  $<0.001$ . Since  $r = -0.009$  and  $p$  value =  $0.934$ , there is no sufficient evidence that, project environment and implementation are linearly related. Looking at the indicator variables, it can be noted that most of them are highly correlated. For example project change management and project team are highly correlated ( $r = 0.820$ ,  $p$  value  $<0.001$ ). The results are shown in table 4.7

**Table 4.7: Correlation matrix**

		Correlations					
		Y	X <sub>1</sub>	X <sub>2</sub>	X <sub>3</sub>	X <sub>4</sub>	M
Y	Pearson Correlation	1	.591**	.515**	.482**	.633**	-.009
	Sig. (2-tailed)		.000	.000	.000	.000	.934
	N	89	89	89	89	89	89
X <sub>1</sub>	Pearson Correlation	.591**	1	.820**	.722**	.545**	.222*
	Sig. (2-tailed)	.000		.000	.000	.000	.036
	N	89	89	89	89	89	89
X <sub>2</sub>	Pearson Correlation	.515**	.820**	1	.727**	.500**	.216*
	Sig. (2-tailed)	.000	.000		.000	.000	.042
	N	89	89	89	89	89	89
X <sub>3</sub>	Pearson Correlation	.482**	.722**	.727**	1	.499**	.147
	Sig. (2-tailed)	.000	.000	.000		.000	.168
	N	89	89	89	89	89	89
X <sub>4</sub>	Pearson Correlation	.633**	.545**	.500**	.499**	1	.059
	Sig. (2-tailed)	.000	.000	.000	.000		.586
	N	89	89	89	89	89	89
M	Pearson Correlation	-.009	.222*	.216*	.147	.059	1
	Sig. (2-tailed)	.934	.036	.042	.168	.586	
	N	89	89	89	89	89	89

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

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

KEY: Y = Project implementation; X<sub>1</sub> = Project change management, X<sub>2</sub> = Project team, X<sub>3</sub> = Project stakeholders, X<sub>4</sub> = Project resource support, M = Project environment

### **4.6.3 Collinearly tests**

Collinearity is a linear association between two explanatory (predictor) variables and multicollinearity refers to a situation in which two or more explanatory (predictor) variables in a multiple regression model are related with each other and likewise related with the response variable (Akinwande, Dikko & Samsom, 2015). Furthermore, Akinwande et al (2015) observe that, variance inflation factor (VIF) assesses how much the variance of an estimated regression coefficient increases when predictors are correlated. If no factors are correlated, the VIFs will all be 1. If the variance inflation factor (VIF) is equal to 1 there is no multicollinearity among regressors, but if the VIF is greater than 1, the regressors may be moderately correlated. A VIF between 5 and 10 indicates high correlation that may be problematic. And if the VIF goes above 10, it can be assumed that the regression coefficients are poorly estimated due to multicollinearity. In all the cases, the VIF values < 10 indicating that, the low correlation among the explanatory variables can be ignored since they cannot increase the variance of the coefficient estimates. See the 7<sup>th</sup> and 8<sup>th</sup> column of coefficient tables of regression output as shown by Table 4.9 page 80, Table 4.10 page 81, Table 4.12 page 86, and Table 4.15 page 93.

## **4.7 Influence levels of study variables on Project Implementation**

Multiple regression analysis was used to determine the influence of study variables on project implementation. The five null hypotheses of the study were tested using linear regression model. The regression coefficient was used to describe the nature and strength of relationship given by the regression analysis.

### **4.7.1 Objective 1: Analyze the change management influence level on successful implementation of borehole water projects**

The study specifically sought to analyze the change management influence level on successful implementation of borehole water projects. An analysis on perceptions of chairpersons of water projects was sought through opinion statements which elicited responses in a five point likert scale. The statement were opinions which required the

participant to Strongly Disagree, Disagree, Undecided, Agree and Strongly Disagree. The results were presented by use of means, frequencies, standard deviations and percentages as shown in table 4.8.

Of those who agreed, majority of 70.8% felt consultations on the need of the project were done before it was implemented; 68.5% expressed opinion that project manager passes key information to all stakeholders; 51.5% were of the view that changed actions based on interests which occurred were integrated into final actions; 55.1% expressed their opinion that community jointly with other stakeholders identified solutions of the water project; 65.9% opined that project manager was able to address their concerns at personal group and project level; and 64% felt changes to be brought about by the project were communicated to all stakeholders. A paltry 34.8% expressed their opinion that projects received support from Makueni County Government. However, content analysis indicates a contrary opinion that, decisions during implementation of water projects were carried out between county officials and project management committee of each project.

Three of the mean values are 3.39, 3.62 and 3.65 meaning that the respondents in agreement that; changes to be brought about by the project are communicated to all stakeholders, project manager passes key information to all stakeholders, and consultations on the need of the project were done before it was implemented. The low mean values 2.76% implies majority of respondents felt that Makueni County Government was not supporting water projects. The values for standard deviation were all above 3.335. The high values of standard deviation demonstrate that, the opinion of the respondents differed with the statements on Change Management in Project Implementation.

**Table 4.8: Project change management**

<b>Project change Management</b>	<b>SD</b>	<b>D</b>	<b>U</b>	<b>A</b>	<b>SA</b>	<b>%</b>	
	<b>%</b>	<b>%</b>	<b>%</b>	<b>%</b>	<b>%</b>	<b>M</b>	<b>S.D</b>
Consultations on the need of the project were done before it was implemented	11.2	15.7	2.2	38.2	32.6	3.65	1.374
Project manager passes key information to all stakeholders	11.2	15.7	4.5	37.1	31.5	3.62	1.369
Changed actions based on interests which occurred were integrated into final actions	15.7	28.1	4.5	40.4	11.2	3.03	1.335
We have jointly with other stakeholders identified solutions of the water project	14.6	27.0	3.4	37.1	18.0	3.17	1.392
The project manager is able to address our concerns at personal group and project level	17.0	15.9	1.1	48.9	17.0	3.33	1.387
The project has support County Government	34.8	18.0	3.4	23.6	20.2	2.76	1.610
Changes to be brought about by the project are communicated to all stakeholders.	18.0	13.5	4.5	39.3	24.7	3.39	1.451

N =89, SD = Strongly Disagree, D = Disagree, U = Undecided, A = Agree, SA = Strongly Agree. (Strongly Disagree range = 11.2 – 34.8, Disagree range = 13.5 – 28.1, Undecided range = 1.1 – 4.5, Agree range = 23.6 – 48.9, Strongly Agree range = 11.2 – 32.6, Mean range = 2.76 – 3.65, Standard deviation range = 1.335 – 1.610, Cronbach’s alpha =0 .842)

#### **4.7.1(a) Regression results for change management influence level on project implementation**

In order to address the change management influence level on project implementation, hierarchical regression model was used to analyze the data.

Model 1  $Y = \beta_0 + \beta_1 X_1 + e$  was found to be significant ( $F(1, 87) = 46.582$ , P-value  $< 0.001$ ). The study hypothesized  $H_{01}$ : Change management has no effect on implementation of borehole water projects in Makueni County. Since  $r = 0.346$  and P-value  $< 0.001$ , the linear relationship between change management and project implementation is statistically significant. The null hypothesis that change management has no influence on project implementation was rejected and concluded that, Change Management ( $X_1$ ) significantly influences Project Implementation ( $Y$ ). Project change management explains that, 34.9% of the variation in project implementation index. The model equation is  $Y = 0.901 + 0.546X_1$  implying that, for one unit increase in Change Management, Project Implementation increases by 0.546. This is displayed in table 4.9

**Table 4.9: Relationship between change management and project implementation**

<b>(a) Model Summary</b>									
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	R Square Change	Change Statistics			Sig. F Change
						F Change	df1	df2	
1	.591 <sup>a</sup>	.349	.341	.76176	.349	46.582	1	87	.000
a. Predictors: (Constant), Project change management									
<b>(b) ANOVA</b>									
Model		Sum of Squares	df	Mean Square	F	Sig.			
1	Regression	27.030	1	27.030	46.582	.000 <sup>a</sup>			
	Residual	50.484	87	.580					
	Total	77.514	88						
a. Predictors: (Constant), Project change management									
<b>(c) Coefficients</b>									
Model		Unstandardized Coefficients		Standardized Coefficients			Collinearity Statistics		
		B	Std. Error	Beta	t	Sig.	Tolerance	VIF	
1	(Constant)	.901	.275		3.281	.001			
	Project change management	.546	.080	.591	6.825	.000	1.000	1.000	
a. Dependent Variable: Project implementation index									

**4.7.1 (b) The Moderating Effect of Project Environment on the Relationship between Change Management and Project Implementation**

To investigate the moderating effect of Project Environment on the relationship between Change Management and Project Implementation, model 2:  $Y = \beta_0 + \beta_1 X_1 + \beta_m M + e$  and Model 3:  $Y = \beta_0 + \beta_1 X_1 + \beta_m M + \beta_1 M X_1 + \beta_1 M X_1 M + e$  were used and the models were found to be significant (P value < 0.001). On adding Project Environment (M) into the model containing Change Management ( $X_1$ ) the change was insignificant (F change = 0.263, P value = 0.609). This shows that, Project Environment is not a predictor of Project Implementation. On adding the interaction term into the model containing both Change Management ( $X_1$ ) and Project Environment (M), the change was also not

significant (F change = 0.520, P value = 0.473). This indicates that Project Environment (M) is not a significant moderator of the relationship between Change Management (X<sub>1</sub>) and Project Implementation (Y). Regression results are shown in Table 4. 10.

**Table 4.10: The Moderating Effect of Project Environment on the Relationship between Change Management and Project Implementation**

<b>(a) Model Summary</b>									
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	R Square Change	Change Statistics			Sig. F Change
						F Change	df1	df2	
1	.591 <sup>a</sup>	.349	.341	.76176	.349	46.582	1	87	.000
2	.592 <sup>b</sup>	.351	.336	.76500	.002	.263	1	86	.609
3	.596 <sup>c</sup>	.355	.332	.76715	.004	.520	1	85	.473

a. Predictors: (Constant), Project change management  
b. Predictors: (Constant), Project change management, Project Environment  
c. Predictors: (Constant), Project change management\* Project Environment

<b>ANOVA</b>						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	27.030	1	27.030	46.582	.000 <sup>a</sup>
	Residual	50.484	87	.580		
	Total	77.514	88			
2	Regression	27.184	2	13.592	23.226	.000 <sup>b</sup>
	Residual	50.330	86	.585		
	Total	77.514	88			
3	Regression	27.490	3	9.163	15.570	.000 <sup>c</sup>
	Residual	50.024	85	.589		
	Total	77.514	88			

a. Predictors: (Constant), Project change management  
b. Predictors: (Constant), Project change management, Project Environment  
c. Predictors: (Constant), Project change management, Project Environment, X1M  
d. Dependent Variable: Project implementation index

<b>Coefficients</b>									
Model		Unstandardized Coefficients		Standardized Coefficients		t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta				Tolerance	VIF
1	(Constant)	.901	.275			3.281	.001		
	Project change management	.546	.080	.591		6.825	.000	1.000	1.000
2	(Constant)	.931	.282			3.303	.001		
	Project change management	.554	.082	.599		6.766	.000	.962	1.040
	Project Environment	-.088	.172	-.045		-.513	.609	.962	1.040
3	(Constant)	.743	.384			1.934	.056		
	Project change management	.616	.119	.667		5.175	.000	.457	2.186
	Project Environment	-.096	.173	-.050		-.557	.579	.958	1.044
	X1M	-.119	.164	-.092		-.721	.473	.471	2.123

a. Dependent Variable: Project implementation index

## **Discussion on findings of Change Management influence level on Project Implementation**

Project implementation results in change and management of this strategic change are vital in project management. As posited by CMI (2012), project change management describes the capability of an organization to effectively design and transition project outcomes into the business. The Regression Analysis results showed that project change management had an influence on implementation of water projects in Makueni County ( $r = 0.346$ ,  $P\text{-value} < 0.001$ ). For one unit increase in Change Management, Project Implementation increases by 0.546. The study findings lend support to Cabrey and Haughey (2014) who concluded that organizations that are highly effective at change management have well-defined milestones and use standardized project management practices. The research findings also support, Andrade, Albulquerque, Teofilo and Silva (2016) who revealed that, use of change management is becoming increasingly essential for the Information Technology sector, and for businesses in helping and supporting the strategic planning, targets and indicators. Furthermore, Hornstein (2015) recommends organizations to widen their thinking to acknowledge the existence and importance of change management in project success. Project environment is not a moderator on the relationship between change management and project implementation ( $F \text{ change} = 0.520$ ,  $P \text{ value} = 0.473$ ).

### **4.7.2 Objective 2: Examine the project team competency influence level on implementation of borehole water projects**

The study sought to examine the project team competency influence level on implementation of borehole water projects. An analysis on perceptions of chairpersons of water projects was sought through opinion statements which elicited responses in a five point likert scale. The statement were opinions which required the participant to Strongly Disagree, Disagree, Undecided, Agree and Strongly Disagree. The results were presented by use of means, frequencies, standard deviations and percentages as shown in table 4.11.

When respondents were asked about exchange of ideas during project implementation, 74.1% agreed that there was free exchange. This item had a mean of 3.61 which according to the scale is high. To appreciate freedom of thought, participants were asked if there was free information sharing within the team, 71.9% agreed that there was free information sharing within project team members. This item returned a mean of 3.58 which is high in the scale.

When asked if they had trust in their leaders, 73.8% of the respondents agreed they had trust in their leaders. This item returned a mean of 3.60 which is high on the scale. To assess communication, opinion of participants was sought on channels used to pass information, 73.0% agreed that, there were clear channels of passing information to project team members. This item had a mean of 3.64 which is high on the scale. Participants were required to share views on their project involvement, 71.8% agreed that, they were involved in all stages of the project. This item returned a mean of 3.36 which is high on the scale. This view was supported by content analysis which confirmed that, it is important to involve local communities from start of the water projects to its implementation. However, it revealed that community was ignored during implementation by donors especially in awarding of tenders.

**Table 4.11: Project team competency influence level on project implementation**

<b>Project Team</b>	<b>SD</b> <b>%</b>	<b>D</b> <b>%</b>	<b>U</b> <b>%</b>	<b>A</b> <b>%</b>	<b>SA</b> <b>%</b>	<b>%</b> <b>M</b>	<b>S.D</b>
There are clear channels of passing information to project team members	9.0	15.7	2.2	48.3	24.7	3.64	1.264
There is free information sharing within project team members	11.2	13.5	3.4	49.4	22.5	3.58	1.286
Team members have trust in their leaders	12.5	11.4	2.3	51.1	22.7	3.60	1.300
Individual talents, experience and skills of team members are used for the benefit of the project	15.7	19.1	4.5	47.2	13.5	3.24	1.340
Team members are assigned tasks in areas where they have best knowledge	11.4	23.9	10.2	42.0	12.5	3.20	1.261
There is free exchange of ideas within the project team	10.1	13.5	2.2	53.9	20.2	3.61	1.240
Team members are involved in all stages of the project	15.7	18.0	4.5	38.2	23.6	3.36	1.424

N =89, SD = Strongly Disagree, D = Disagree, U = Undecided, A = Agree, SA = Strongly Agree. (Strongly Disagree range = 9.0– 15.7, Disagree range = 11.4– 18.0, Undecided range = 2.2– 10.2, Agree range = 38.2– 53.9, Strongly Agree range = 12.5– 24.7, Mean range = 3.20– 3.64, Standard deviation range = 1.240– 1.424, Cronbach's alpha =0 .932)

#### **4.7.2 (a) Regression results for the project team competency influence level on project implementation**

In order to examine the project team competency influence level on project implementation, hierarchical regression model was used to analyze the data. Model 1  $Y = \beta_0 + \beta_2 X_2 + e$  was found to be significant ( $F(1, 87) = 31.395$ ,  $P\text{-value} < 0.001$ ). The study hypothesized  $H_{02}$ : Project team competency has no effect on implementation of borehole water projects in Makueni County. Since  $r = 0.265$  and  $P\text{-value} < 0.001$ , the linear relationship between project team competency and project implementation is statistically significant. The null hypothesis that project team competency has no influence on project implementation was rejected and concluded that; project team competency ( $X_2$ ) significantly influences Project Implementation ( $Y$ ). Project team competency explains 26.5% of the variation in project implementation index. The model equation is  $Y = 1.168 + 0.440X_2$  implying that, for one unit increase in project team competency, project implementation increases by 0.440. This is displayed in table 4.12

**Table 4.12: Relationship between Project Team Competency and Project Implementation**

<b>(a) Model Summary</b>									
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	R Square Change	F Change	df1	df2	Sig. F Change
1	.515 <sup>a</sup>	.265	.257	.80914	.265	31.395	1	87	.000

a. Predictors: (Constant), Project team

<b>(b) ANOVA</b>						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	20.555	1	20.555	31.395	.000 <sup>a</sup>
	Residual	56.959	87	.655		
	Total	77.514	88			

a. Predictors: (Constant), Project team

<b>(C) Coefficients</b>								
Model		Unstandardized Coefficients	Std. Error	Standardized Coefficients	t	Sig.	Tolerance	VIF
1	(Constant)	1.168	.285		4.099	.000		
	Project team competency	.440	.079	.515	5.603	.000	1.000	1.000

a. Dependent Variable: Project implementation index

**4.7.2 (b) The moderating effect of project environment on the relationship between project team competency and project implementation**

To investigate the moderating effect of Project Environment on the relationship between Project Team Competency and Project Implementation, model 2:  $Y = \beta_0 + \beta_2 X_2 + \beta_m M + e$  and Model 3:  $Y = \beta_0 + \beta_2 X_2 + \beta_m M + \beta_2 M X_2 + \beta_2 M X_2 M + e$  were used and the models

were found to be significant ( $P$  value  $< 0.001$ ). On adding Project Environment (M) into the model containing Project Team Competency ( $X_2$ ) the change was insignificant ( $F$  change = 0.479,  $P$  value = 0.491). This shows that, Project Environment is not a predictor of Project Implementation. On adding the interaction term into the model containing both Project Team Competency ( $X_2$ ) and Project Environment (M), the change was also not significant ( $F$  change = 0.139,  $P$  value = 0.710). This indicates that Project Environment (M) is not a significant moderator of the relationship between Project Team Competency ( $X_2$ ) and Project Implementation (Y). Regression results are shown in Table 4.13

**Table 4.13: The moderating effect of project environment on the relationship between project team competency and project implementation**

<b>(a) Model Summary</b>									
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	R Square Change	Change Statistics			Sig. F Change
						F Change	df1	df2	
1	.515 <sup>a</sup>	.265	.257	.80914	.265	31.395	1	87	.000
2	.519 <sup>b</sup>	.269	.252	.81157	.004	.479	1	86	.491
3	.520 <sup>c</sup>	.270	.245	.81567	.001	.139	1	85	.710

a. Predictors: (Constant), Project team  
b. Predictors: (Constant), Project team competency, Project Environment  
c. Predictors: (Constant), Project team, Project Environment, X<sub>2</sub>M

<b>(b) ANOVA</b>						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	20.555	1	20.555	31.395	.000 <sup>a</sup>
	Residual	56.959	87	.655		
	Total	77.514	88			
2	Regression	20.870	2	10.435	15.843	.000 <sup>b</sup>
	Residual	56.644	86	.659		
	Total	77.514	88			
3	Regression	20.963	3	6.988	10.503	.000 <sup>c</sup>
	Residual	56.551	85	.665		
	Total	77.514	88			

a. Predictors: (Constant), Project team  
b. Predictors: (Constant), Project team competency, Project Environment  
c. Predictors: (Constant), Project team, Project Environment, X<sub>2</sub>M  
d. Dependent Variable: Project implementation index

<b>(c) Coefficients</b>						
Model		Unstandardized Coefficients		Standardized Coefficients		Sig.
		B	Std. Error	Beta	t	
1	(Constant)	1.168	.285		4.099	.000
	Project team competency	.440	.079	.515	5.603	.000
2	(Constant)	1.200	.290		4.144	.000
	Project team competency	.455	.082	.532	5.575	.000
	Project Environment	-.128	.186	-.066	-.692	.491
3	(Constant)	1.275	.354		3.604	.001
	Project team competency	.431	.105	.504	4.110	.000
	Project Environment	-.127	.187	-.066	-.683	.496
	Project Team * Project Implementation	.063	.168	.045	.373	.710

a. Dependent Variable: Project implementation index

### **Discussion of results of project team competency influence level on project implementation**

The basic elements of every project are the people who carry out the project (Zdonek, Podgórska & Hysa, 2017). Project team is the engine of the project. Further, Zdonek et al (2017) opine that, in order to achieve success, the project team must have certain skills and competencies to carry out the entrusted task, and thus, affecting the success of each project. Effective teams offer opportunities for organizations by finding unique, creative, and efficient ways to implement projects (Mclees & Matthews, 2015). The Regression Analysis results showed that project team competency had an influence on implementation of water projects in Makueni County ( $r = 0.265$ ,  $P\text{-value} < 0.001$ ). For one unit increase in Project Team Competency, Project Implementation increases by 0.440. The findings of the study are supported by Zdonek, et al (2017) who revealed that, project team which had competencies in creativity, leadership, intuitiveness, motivation, and technical were likely to succeed in a project Implementation. Moreover, Maclees and Matthews (2015) found that, fostering a team environment based upon trust, mutual respect, and integrity often leads to more effective collaboration, creativity, teamwork, productivity, and profitability. Further, the findings are consistent with Gudience et al (2012) who revealed that, for construction projects in Lithuania, one of the critical success factors is the competence of the project team. Project Environment is not a significant moderator of the relationship between Project Team Competency and Project Implementation ( $F\text{ change} = 0.139$ ,  $P\text{ value} = 0.710$ ).

#### **4.7.3 Objective 3: Determine stakeholders' involvement influence level on implementation of borehole water projects**

The study sought to determine the stakeholders' involvement influence level on implementation of borehole water projects. An analysis on perceptions of chairpersons of water projects was sought through opinion statements which elicited responses in a five point likert scale. The statement were opinions which required the participant to Strongly Disagree, Disagree, Undecided, Agree and Strongly Disagree. The results were

presented by use of means, frequencies, standard deviations and percentages as shown in table 4.14.

The participants who agreed that survey to determine stakeholder expectations was done before implementation of projects comprised of 56.9% of the total respondents. The mean for this item was 3.24 which are high on the scale. This implies that survey to determine stakeholder expectations were fairly done before implementation of projects.

That the process of identifying individuals of influence to water project was not done continuously was supported by a total of 56.1% of the respondents. The mean for this item was 2.98 which is at the neutral level on the scale. All stakeholders support the projects. This was attested by a total of 80.9% of the respondents who agreed with the statement. The mean for this item was 4.00 which is high on the scale.

There are adequate mechanisms of passing information to all stakeholders. This statement was supported by a total of 67.4% of the respondents who agreed with it. The mean for the item is 3.49 which is very close to 3.5 the mid-point of the scale. The means of the items were majorly below 3.5 which means there was a high disagreement of the respondents on the statements on the views on stakeholders during project implementation. This was supported by the high values of standard deviation. Content analysis also, confirmed that communication was carried out through regular meetings and through mobile phone short message texts.

**Table 4.14: Influence of stakeholders' involvement on project Implementation**

<b>Stakeholders Influence</b>	<b>SD</b>	<b>D</b>	<b>U</b>	<b>A</b>	<b>SA</b>	<b>%</b>	
	<b>%</b>	<b>%</b>	<b>%</b>	<b>%</b>	<b>%</b>	<b>M</b>	<b>SD</b>
Survey to determine stakeholder expectations was done before implementation of the project	17.0	19.3	6.8	36.4	20.5	3.24	1.422
Analysis of individuals of influence was done at the onset of project	14.8	30.7	9.1	33.0	12.5	2.98	1.322
The process of identifying individuals of influence to water project is done continuously	15.7	40.4	5.6	29.2	9.0	2.75	1.282
There are established means for stakeholders to raise concerns about the project	16.9	30.3	1.1	41.6	10.1	2.98	1.348
There is total support for the project from the community	11.2	20.2	4.5	34.8	29.2	3.51	1.391
There are mechanisms of passing information to all stakeholders	9.0	21.3	2.2	46.1	21.3	3.49	1.289
All stakeholders know the benefit of the project	6.7	10.1	2.2	38.2	42.7	4.00	1.215

N =89, SD = Strongly Disagree, D = Disagree, U = Undecided, A = Agree, SA = Strongly Agree. (Strongly Disagree range = 6.7– 17.0, Disagree range = 10.1– 40.4, Undecided range = 1.1– 9.1, Agree range = 29.2– 46.1, Strongly Agree range = 9.0– 42.7, Mean range = 2.75– 4.00, Standard deviation range = 1.215– 1.422, Cronbach's alpha =0. 841)

#### **4.7.3 (a) Regression results for project stakeholders' involvement influence level on project implementation**

In order to determine the Stakeholders' involvement influence level on Project Implementation, hierarchical regression model was used to analyze the data. Model 1

$Y = \beta_0 + \beta_3 X_3 + e$  was found to be significant ( $F(1, 87) = 26.373$ ,  $P\text{-value} < 0.001$ ). The study hypothesized  $H_{03}$ : Stakeholders' involvement have no influence on implementation of borehole water projects in Makueni County. Since  $r = 0.233$  and  $P\text{-value} < 0.001$ , the linear relationship between change management and project implementation is statistically significant. The null hypothesis that stakeholders' involvement has no influence on project implementation was rejected and concluded that, Project stakeholders' involvement ( $X_3$ ) significantly influences Project Implementation ( $Y$ ). Project Stakeholders explains 23.3% of the variation in project implementation index. The model equation is  $Y = 1.136 + 0.474X_3$  implying that, for one unit increase in project stakeholders involvement, Project Implementation increases by 0.474. This is displayed in table 4.15 on page 102.

**Table 4.15: Relationship between project stakeholders' involvement and project implementation**

<b>(a) Model Summary</b>									
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	R Square Change	Change Statistics			Sig. F Change
						F Change	df1	df2	
1	.482 <sup>a</sup>	.233	.224	.82687	.233	26.373	1	87	.000

<b>(b) ANOVA</b>						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	18.031	1	18.031	26.373	.000 <sup>a</sup>
	Residual	59.483	87	.684		
	Total	77.514	88			

a. Predictors: (Constant), Project stakeholders' involvement

<b>(C) Coefficients</b>								
Model		Unstandardized Coefficients		Standardized Coefficients		Sig.	Collinearity Statistics	
		B	Std. Error	Beta	t		Tolerance	VIF
1	(Constant)	1.136	.315		3.603	.001		
	Project stakeholders' involvement	.474	.092	.482	5.135	.000	1.000	1.000

a. Dependent Variable: Project implementation index

#### **4.7.3 (b) The Moderating effect of project environment on the relationship between project stakeholders' involvement and project implementation**

To investigate the moderating effect of Project Environment on the relationship between Project Stakeholders and Project Implementation, model 2:  $Y = \beta_0 + \beta_3 X_3 + \beta_m M + e$  and Model 3:  $Y = \beta_0 + \beta_3 X_3 + \beta_m M + \beta_3 M X_3 + \beta_3 M X_3 M + e$  were used and the models were found to be significant (P value < 0.001). On adding Project Environment (M) into the model containing Project Stakeholders ( $X_3$ ) the change was insignificant (F change = 0.239, P value = 0.626). This shows that, Project Environment is not a predictor of Project Implementation. On adding the interaction term into the model containing both Project Stakeholders ( $X_3$ ) and Project Environment (M), the change was also not significant (F change = 0.708, P value = 0.403). This indicates that Project Environment (M) is not a significant moderator of the relationship between Project Stakeholders ( $X_3$ ) and Project Implementation (Y). Regression results are shown in Table 4.16

**Table 4.16: The moderating effect of project environment on the relationship between project stakeholders' involvement and Project Implementation**

(a) Model Summary									
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	R Square Change	Change Statistics			Sig. F Change
						F Change	df1	df2	
1	.482 <sup>a</sup>	.233	.224	.82687	.233	26.373	1	87	.000
2	.485 <sup>b</sup>	.235	.217	.83051	.002	.239	1	86	.626
3	.491 <sup>c</sup>	.241	.214	.83192	.006	.708	1	85	.403
a. Predictors: (Constant), Project stakeholders' involvement									
b. Predictors: (Constant), Project stakeholders' involvement, Project Environment									
c. Predictors: (Constant), Project stakeholders' involvement, Project Environment, X <sub>3</sub> M									
(b) ANOVA									
Model		Sum of Squares	df	Mean Square	F	Sig.			
1	Regression	18.031	1	18.031	26.373	.000 <sup>a</sup>			
	Residual	59.483	87	.684					
	Total	77.514	88						
2	Regression	18.196	2	9.098	13.190	.000 <sup>b</sup>			
	Residual	59.318	86	.690					
	Total	77.514	88						
3	Regression	18.686	3	6.229	9.000	.000 <sup>c</sup>			
	Residual	58.828	85	.692					
	Total	77.514	88						
a. Predictors: (Constant), Project stakeholders' involvement									
b. Predictors: (Constant), Project stakeholders' involvement, Project Environment									
c. Predictors: (Constant), Project stakeholders' involvement, Project Environment, X <sub>3</sub> M									
d. Dependent Variable: Project implementation index									
(c) Coefficient									
Model		Unstandardized Coefficients		Standardized Coefficients		t	Sig.		
		B	Std. Error	Beta					
1	(Constant)	1.136	.315			3.603	.001		
	Project stakeholders' involvement	.474	.092	.482		5.135	.000		
2	(Constant)	1.158	.320			3.621	.000		
	Project stakeholders' involvement	.486	.096	.494		5.080	.000		
	Project Environment	-.092	.189	-.047		-.489	.626		
3	(Constant)	1.400	.430			3.255	.002		
	Project stakeholders' involvement	.405	.136	.411		2.978	.004		
	Project Environment	-.081	.190	-.042		-.429	.669		
	Project Stakeholders * Project Implementation	.161	.192	.114		.841	.403		
a. Dependent Variable: Project implementation index									

### **Discussion on results of project stakeholders' involvement influence level on project implementation**

According to PMI (2015), stakeholder participation in project management is important because they contribute resources, the establish criteria for assessing project success, their resistance may affect the success of the project and, project may affect them either positively or negatively. It is therefore necessary to identify, engage and manage stakeholders during project implementation

The Regression Analysis results showed that stakeholders' involvement had an influence on implementation of water projects in Makeni County ( $r = 0.233$ , P-value  $<0.001$ ). Stakeholders' involvement explains 23.3% of the variations in project implementation. For one unit increase in Project Stakeholders' Involvement, Project Implementation increases by 0.474. This is supported by Liang, Yu and Guo (2017) in their study concluded that, stakeholders strongly influence project success, particularly for complex projects with heterogeneous stakeholders. Shah and Naqvi (2014), in their study on impact of external stakeholders in IT industry in Lahore, Pakistan and explained that, external stakeholder's engagement had significant effect on the project portfolio management success. The research findings support Muzigura, Shukla and Kibacha (2017) who concluded that, stakeholders have an imperative influence on project implementation since they are affected in one way or another by such intended projects. Furthermore, Ouma and Mburu (2017), in their study, concluded that stakeholder participation in project identification and planning influenced project sustainability. The study is supported by the findings of Ndunda, Paul and Mbura (2017) in their study revealed that, project beneficiary participation positively and significantly influences the implementation of road projects in Machakos County. Project environment is not a significant moderator of the relationship between project stakeholders and project implementation ( $F$  change = 0.708, P value = 0.403).

#### **4.7.4 Objective 4: Establish project resource management influence level on implementation of borehole water projects**

In order to establish project resource management influence level on implementation of boreholes in Makueni County, the study used a five point Likert Scale and sought the opinion of respondents on areas of resources management in relationship to project implementation. The statements were opinions which required the participant to Strongly Disagree, Disagree, Undecided, Agree and Strongly Disagree. The results were presented using descriptive statistics such as mean, standard deviation and percentages as shown in table 4.17 on page 107.

Opinion of the participants indicated that a total of 50% agreed with the statement that, project team members are always involved in identification of right materials for use in the project. These respondents expressed counter opinion and a total of 39.9% disagreed that, team members are always involved in identification of right materials for use in projects. This therefore suggests that project team members are rarely involved in identification of right materials for project. This was supported by the mean for this item which was 2.82% which is neutral on the scale

That projects always employ the people with right skills was collaborated by a total of 44.3% and disputed by a total of 47.8% suggesting that, water projects rarely employ people with right skills. The item returned a mean of 2.86 which is neutral on the scale. From the content analysis, respondents maintained that project management committees and county staff are incharge of project implementation. A total of 61.8% expressed opinion that water projects do not have right number of required equipments. Nearly half of the water projects did not have functional equipment. This was confirmed by 47.8% of the respondents while 46.5% expressed counter opinion that water projects did not have functional equipment. It was also confirmed by content analysis that, some of the challenges experienced include frequent breakdown in operations and machines. It was also sighted that the local communities are not able to manage the high cost of operation.

When participants were asked their opinion on the statement that, members had received training on the operations of the project, 67% disputed as indicated by a low

mean of 2.35. That project members had received training on management of water project was confirmed by only 28.1% and disputed by a total of 67.4% of the respondents. This implies that majority of the project members were not trained on management of the water projects. This was confirmed by the low mean value of 2.34. This was also confirmed by the Content Analysis that, water project committee members should be trained on operations and book keeping. IDC(2012) observe that, training represents one concrete step to ensure project teams possess the skills necessary to reduce failure risk, decrease costs, and increase project effectiveness. The means for all the statements on resource support were majorly below 3.5 which means there was moderate agreement by respondents that water projects were having adequate resource support during implementation. There were high variations of respondent opinion on statements of project resources management. This is supported by the high values of standard deviation.

**Table 4.17: Project resource management**

<b>Project Resource Support</b>	<b>SD</b>	<b>D</b>	<b>U</b>	<b>A</b>	<b>SA</b>	<b>%</b>	
	<b>%</b>	<b>%</b>	<b>%</b>	<b>%</b>	<b>%</b>	<b>M</b>	<b>SD</b>
Project team members are always involved in identification of right materials for use in the project	22.7	27.3	9.1	27.3	13.6	2.82	1.411
The project always employ the right number of people	20.2	23.6	13.5	27.0	15.7	2.94	1.401
The project always employ people with right skills	20.5	27.3	8.0	34.1	10.2	2.86	1.358
The project has functional equipment	29.5	17.0	5.7	36.4	11.4	2.83	1.472
The project has right number of equipments	31.5	30.3	5.6	28.1	4.5	2.44	1.314
Members have received training on the operations of the project	29.5	37.5	6.8	20.5	5.7	2.35	1.260
Members have received training on management of water project	32.6	34.8	4.5	22.5	5.6	2.34	1.296

N =89, SD = Strongly Disagree, D = Disagree, U = Undecided, A = Agree, SA = Strongly Agree. (Strongly Disagree range = 20.2– 32.6, Disagree range = 17.0– 37.5, Undecided range = 4.5– 13.5, Agree range = 20.5– 36.4, Strongly Agree range = 4.5– 15.7, Mean range = 2.34– 2.94, Standard deviation range = 1.260– 1.472, Cronbach’s alpha =0.867)

#### **4.7.4 (a) Regression results on project resource management influence level on project implementation**

In order to determine the resources management influence level on Project Implementation, hierarchical regression model was used to analyze the data. Model 1:  $Y = \beta_0 + \beta_4 X_4 + e$  was found to be significant ( $F(1, 87) = 58.109$ ,  $P\text{-value} < 0.001$ ). The study hypothesized  $H_{04}$ : Project resources management has no effect on implementation of borehole water projects in Makueni County. Since  $r = 0.400$  and  $P\text{-value} < 0.001$ , the

linear relationship between change management and project implementation is statistically significant. The null hypothesis that resources management has no influence on project implementation was rejected and concluded that, project resources management ( $X_4$ ) significantly influences Project Implementation (Y). Project resources management explains 40% of the variation in project implementation index ( $r = 0.400$ , P-value  $< 0.001$ ). The model equation is  $Y = 1.116 + 0.593X_4$  implying that, for each unit increase in Resource Support, Project Implementation increases by 0.593. This is displayed in table 4.18.

**Table 4.18: Relationship on project resource management and Project Implementation**

<b>(a) Model Summary</b>									
Model	R	R Square	Adjusted R Square	Std. Error		Change Statistics			
				of the Estimate	R Square Change	F Change	df1	df2	Sig. F Change
1	.633 <sup>a</sup>	.400	.394	.73087	.400	58.109	1	87	.000
a. Predictors: (Constant), Project resource support									
<b>(b) ANOVA</b>									
Model		Sum of Squares		df	Mean Square	F	Sig.		
1	Regression	31.041		1	31.041	58.109	.000 <sup>a</sup>		
	Residual	46.473		87	.534				
	Total	77.514		88					
a. Predictors: (Constant), Project resource support									
<b>(c) Coefficients</b>									
Model		Unstandardized Coefficients		Standardized Coefficients		t	Sig.		
		B	Std. Error	Beta					
1	(Constant)	1.116	.221			5.056	.000		
	Project resource management	.593	.078	.633		7.623	.000		
a. Dependent Variable: Project implementation index									

#### **4.7.4 (b) The moderating effect of project environment on the relationship between project resource management and project implementation**

To investigate the moderating effect of Project Environment on the relationship between Project resources management and Project Implementation, model 2:  $Y = \beta_0 + \beta_4 X_4 + \beta_m M + e$  and Model 3:  $Y = \beta_0 + \beta_4 X_4 + \beta_m M + \beta_4 M X_4 + \beta_1 M X_4 M + e$  were used and the models were found to be significant (P value < 0.001). On adding Project Environment (M) into the model containing Project Resources Management ( $X_1$ ) the change was insignificant (F change = 0.006, P value = 0.938). This shows that, Project Environment is not a predictor of Project Implementation. On adding the interaction term into the model containing both Project Resource Support ( $X_1$ ) and Project Environment (M), the change was also not significant (F change = 0.261, P value = 0.611). This indicates that Project Environment (M) is not a significant moderator of the relationship between Project Recourse Support ( $X_4$ ) and Project Implementation (Y). Regression results are shown in Table 4.19.

**Table 4.19: The moderating effect of project environment on the relationship between project resource management and project implementation**

<b>(a) Model Summary</b>									
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	R Square Change	Change Statistics			Sig. F Change
						F Change	df1	df2	
1	.633 <sup>a</sup>	.400	.394	.73087	.400	58.109	1	87	.000
2	.633 <sup>b</sup>	.400	.387	.73509	.000	.006	1	86	.938
3	.634 <sup>c</sup>	.402	.381	.73826	.002	.261	1	85	.611

- a. Predictors: (Constant), Project resource management  
b. Predictors: (Constant), Project resource management, Project Environment  
c. Predictors: (Constant), Project resource management, Project Environment, X<sub>4</sub>M

<b>(b) NOVA</b>							
Model		Sum of Squares	df	Mean Square	F	Sig.	
1	Regression	31.041	1	31.041	58.109	.000 <sup>a</sup>	
	Residual	46.473	87	.534			
	Total	77.514	88				
2	Regression	31.044	2	15.522	28.726	.000 <sup>b</sup>	
	Residual	46.470	86	.540			
	Total	77.514	88				
3	Regression	31.186	3	10.395	19.073	.000 <sup>c</sup>	
	Residual	46.328	85	.545			
	Total	77.514	88				

- a. Predictors: (Constant), Project resource management  
b. Predictors: (Constant), Project resource management, Project Environment  
c. Predictors: (Constant), Project resource management, Project Environment, X<sub>4</sub>M  
d. Dependent Variable: Project implementation index

<b>(c) Coefficients</b>						
Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	1.116	.221		5.056	.000
	Project resource management	.593	.078	.633	7.623	.000
2	(Constant)	1.110	.237		4.682	.000
	Project resource management	.592	.079	.632	7.531	.000
	Project Environment	.013	.163	.007	.078	.938
3	(Constant)	.961	.376		2.552	.012
	Project resource management	.651	.140	.695	4.651	.000
	Project Environment	.007	.164	.003	.041	.967
	Project resource management * project environment	-.087	.169	-.076	-.511	.611

- a. Dependent Variable: Project implementation index

## **Discussion of results on resource management influence level on Project Implementation**

The allocation of resources is pivotal to successful project implementation and a difficult challenge in project management (Kane and Tissier, 2012). Resources are always scarce and face competing needs. When resources are available on time and in quality and quantity, projects will be implemented successfully. The Regression Analysis results showed that resources management had an influence on implementation of water projects in Makueni County ( $r = 0.400$ ,  $P\text{-value} < 0.001$ ). The model equation is  $Y = 1.116 + 0.593X_4$ . Hence for each unit increase in project resources management, project implementation increases by 0.593. Nyandika and Ngugi (2014) in their study revealed that, enough financial resource, donor support, availability of human resource and provision of resources on time influence positively to the performance of road projects. Mwangi, Mbabazize, and Euginia (2017) in their study concluded that, resource availability have statistically significant role on MIS project success in the Banking Industry in Rwanda. The findings are supported by Rammer and Klingebiel (2013) who concluded that, breadth in resource allocation increases performance, more so than does resource allocation intensity. Project Environment is not a significant moderator of the relationship between project recourse Support and project implementation ( $F \text{ change} = 0.261$ ,  $P \text{ value} = 0.611$ ).

### **4.8 Summary of study findings**

The main objective of the study was to examine project management practices influence level on implementation of borehole water projects in Makueni County, Kenya. On the specific objectives, the study found that change management positively influence implementation of borehole water projects in Makueni County ( $r = 0.346$  and  $P\text{-value} < 0.001$ ). The model equation is  $Y = 0.901 + 0.546X_1$  implying that, for one unit increase in Change Management, Project Implementation increases by 0.546. Project environment was found not a moderator. Project team competency was found also to

positively influence implementation of borehole water projects ( $r = 0.265$  and  $P\text{-value} < 0.001$ ). The model equation is  $Y = 1.168 + 0.440X_2$  implying that, for one unit increase in project team competency, project implementation increases by 0.440. On the stakeholders' involvement, the study found that stakeholders' involvement positively influences project implementation ( $r = 0.233$  and  $P\text{-value} < 0.001$ ). The model equation is  $Y = 1.136 + 0.474X_3$  implying that, for one unit increase in project stakeholders' involvement, Project Implementation increases. Project resource management was also found to positively influence implementation of borehole water projects in Makeni County ( $r = 0.400$  and  $P\text{-value} < 0.001$ ). The model equation is  $Y = 1.116 + 0.593X_4$  implying that, for each unit increase in Resource Support, Project Implementation increases by 0.593. From the above findings, the estimated model of regression is:

$$Y = 3.301 + 0.546X_1 + 0.440X_2 + 0.483X_3 + 0.593X_4.$$

Since  $F\text{ change} = 0.520$ ,  $P\text{ value} = 0.473$ ) for change management,  $F\text{ change} = 0.139$ ,  $P\text{ value} = 0.710$  for project team competency,  $F\text{ change} = 0.708$ ,  $P\text{ value} = 0.403$  for stakeholders' involvement, and  $F\text{ change} = 0.261$ ,  $P\text{ value} = 0.611$  for project resource management, there was no sufficient evidence that project environment is a moderator on relationship between each study variable and the implementation of the water project in Makeni County. The study findings on moderating effect of project environment lend support to Alon et al (2013) who concluded that, environmental dynamism moderates project performance. However, the findings on moderating effect of project environment negates conclusion by Akpomieme et al (2014) that, successful management of political, technological, economic and financial environmental factors positively influences project implementation. The Content Analysis, also revealed that, technology effected communication by use of mobile phone and use of solar panels instead of diesel in pumps saved money; after elections and there was change of Member of County Assembly, project support changes and can take long to get financial support.

## CHAPTER FIVE

### CONCLUSION AND RECOMMENDATIONS

#### 5.1 Introduction

This chapter provides summary of the study findings as guided by the specific objectives, the conclusions as well as the recommendations drawn from the study findings. The study sought to examine project management practices influence levels on implementation of borehole water projects in Makueni County, Kenya. Specifically, the study sought to analyze change management influence level on implementation of borehole water projects in Makueni County, to examine the project team competency influence level on implementation of borehole water projects in Makueni County, to determine project stakeholders' involvement influence level on implementation of borehole water projects in Makueni County, to establish resources management influence level on implementation of borehole water projects in Makueni County, to determine the moderating effect of project environment on relationship between each study variable and the implementation of the water project in Makueni County.

#### 5.2 Study Findings

Project implementation brings about change and the manner in which this change is managed determines project success or failure. The study found that, change management positively influence successful implementation of water projects in Makueni County ( $r = 0.346$  and  $P\text{-value} < 0.001$ ). The model equation is  $Y = 0.901 + 0.546X_1$  implying that, for one unit increase in Change Management, Project Implementation increases by 0.546. For successful implementation of water projects in Makueni County, setting of clear objectives should be done, effective communication, and management support are critical factors for successful project implementation. Therefore, change management is a significant project management practice on successful implementation of water projects in Makueni County, Kenya. The study found that, project environment is not a significant moderator in the relationship

between change management and project implementation (F change = 0.520, P value = 0.473).

Projects are implemented by teams and the effectiveness and efficiency of project team will determine the success or failure of each project. The study found that, project team competency positively influences implementation of water projects in Makueni County ( $r = 0.265$  and  $P\text{-value} < 0.001$ ). The model equation is  $Y = 1.168 + 0.440X_2$  implying that, for one unit increase in project team competency, project implementation increases by 0.440. The project team competencies include conflict resolution, effective leadership, and defined roles. The study found that, project environment is not a significant moderator in the relationship between project team competency and project implementation (F change = 0.139, P value = 0.710).

A stakeholder is any person, group or organization which can influence or is affected by implementation of a project. Stakeholders, therefore, need to be identified, prioritized and managed during project management. The study found that, project stakeholders' involvement positively influence successful implementation of water projects in Makueni County ( $r = 0.233$  and  $P\text{-value} < 0.001$ ). The model equation is  $Y = 1.136 + 0.474X_3$  implying that, for one unit increase in project stakeholders' involvement, Project Implementation increases by 0.474. For successful implementation of water projects in Makueni County, stakeholder should be involved in goal setting, needs identification process, and should be trained on project operations and maintenance. An analysis of people with influence should be done continuously as the project progress, project should have total support of community, all stakeholders should know the benefits of the project, must not only be involved in goal setting, but also during implementation and other phases. Once the project is implemented, it has to perform to satisfaction of the stakeholders. The study found that, project environment is not a significant moderator in the relationship between stakeholders' involvement and project implementation (F change = 0.708, P value = 0.403).

Project implementation requires and consumes a lot of resources. When resources are available at the right time and in required quality and quantity, activities are done as planned, project outcomes and objectives are realized as expected leading to successful projects. The study found that, project resource management positively influences successful implementation of water projects in Makueni County ( $r = 0.400$  and  $P$ -value  $<0.001$ ). The model equation is  $Y = 1.116 + 0.593X_4$  implying that, for each unit increase in Resource Support, Project Implementation increases by 0.593. For successful implementation of water projects in Makueni County, projects should always employ the right number of people with right skills, have functional equipment and have adequate finances at the right time for use. The study found that, project environment is not a significant moderator in the relationship between resources management and project implementation ( $F$  change = 0.261,  $P$  value = 0.611).

### **5.3 Conclusions of study**

The study concludes that change management positively influences successful implementation of borehole water projects in Makueni County. The model equation is  $Y = 0.901 + 0.546X_1$  implying that, for one unit increase in change management, Project Implementation increases by 0.546. It means change management is critical in realizing successful implementation of water projects. During project implementation, effective change management may be facilitated by having clear objectives, effective communication as well as top management support. Project environment was found not a significant moderator in the relationship between change management and project implementation ( $F$  change = 0.520,  $P$  value = 0.473).

Project team competency was found to positively influence successful implementation of borehole water projects in Makueni County ( $r = 0.265$  and  $P$ -value  $<0.001$ ). The model equation is  $Y = 1.168 + 0.440X_2$  implying that, for one unit increase in project team competency, project implementation increases by 0.440. The performance of project team is likely to be influenced by having conflict resolution mechanisms, defined roles,

and effective leadership. Project environment was found not a significant moderator in the relationship between project team competency and project implementation (F change = 0.139, P value = 0.710).

The study concludes that, project stakeholders' involvement positively influences implementation of borehole water projects in Makueni ( $r = 0.400$  and P-value  $< 0.001$ ). The model equation is  $Y = 1.116 + 0.593X_4$  implying that, for each unit increase in project stakeholders' involvement, Project Implementation increases by 0.593. Stakeholders have to be involved in project goal setting and other phases and on completion, and in needs identification to ensure that their needs are likely to be met. Factors which enhance stakeholders' involvement include training, needs identification process, and goal setting. Project environment was found not a significant moderator in the relationship between stakeholders' involvement and project implementation (F change = 0.708, P value = 0.403).

The study concludes that, project resource management influences successful implementation of borehole water projects in Makueni County ( $r = 0.400$  and P-value  $< 0.001$ ). The model equation is  $Y = 1.116 + 0.593X_4$  implying that, for each unit increase in Resources Management, Project Implementation increases by 0.593. Practices which enhance resources management include human, material and financial management. Project environment was found not a significant moderator in the relationship between resources management and project implementation (F change = 0.261, P value = 0.611).

In conclusion, this study examined project management practices and their influence levels in implementation of borehole water projects in Makueni County. The estimated model of regression is:  $Y = 3.301 + 0.546X_1 + 0.440X_2 + 0.483X_3 + 0.593X_4$ . Project resources management influence level was found the highest (0.593), followed by change management (0.546), then stakeholders' involvement (0.474) and the least was project team competency (0.440). The study contributed to previous knowledge by identifying the influence levels of the variables.

The study also determined the moderating effect of project environment on relationship between each study variable and the implementation of the water project in Makueni County. Since  $F$  change = 0.520,  $P$  value = 0.473) for change management,  $F$  change = 0.139,  $P$  value = 0.710 for project team competency,  $F$  change = 0.708,  $P$  value = 0.403 for stakeholders' involvement, and  $F$  change = 0.261,  $P$  value = 0.611 for project resources management, there was no sufficient evidence that project environment is a moderator of the project management practices investigated. Thus, it can also be concluded that, project environment is not a moderator on relationship between each study variable and the implementation of the water project in Makueni County.

#### **5.4 Recommendations of the study**

This section gives recommendation for policy and practice, and for further research based on the study findings and conclusions.

##### **5.4.1 Recommendation for policy and practice**

Project management practices: change management, project team competency, stakeholders' involvement, and resource management all influence project implementation but at varying levels. These practices should be given due consideration during project design, planning and implementation. The study thus, advances the understanding of project management practices within project implementation with intention of aiding researchers and policy makers in recognizing their benefits and challenges.

##### **5.4.2 Recommendation for further research**

The study used cross sectional survey and therefore recommends further research using longitudinal study design to validate these findings. The study was carried out in Makueni County. The study thus, further recommends similar studies in other places to compare the findings. The study relied on five variables and recommends further study

to explore other project management practices influence levels on successful implementation of borehole water project.

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## APPENDICES

### Appendix I: Questionnaire

Name of respondent.....Date \_\_\_\_\_

Name of Borehole Water Project -----

The purpose of this exercise is to get your input concerning issues on implementation of the borehole water project which you have been involved in. There is no right or wrong answers. The information you give will be treated with lot privacy and will be used for academic work only. I am therefore, requesting you to spend about 30 minutes of your time and answer all the questions. I wish to get your answers on certain issues of the water project you have been involved in. Feel free to answer each question to the best of your knowledge.

#### SECTION A: BIO DATA

By means of a tick, select one of the answers which is most appropriate for you.

1. What is your gender  Male  Female
2. What is your highest level of education  Primary  Secondary  Tertiary  University
3. How old are you  less than 25 year old  from 25 to 35 year old  from 35 to 50 year old  More than 50 year old
4. How long have you been involved in this water projects.  less than 5 years  from 5 to 10 years  from 10 to 20 years  More than 20 years

5. Have you received any training in water project?  Yes  No

**For each question below, five options have been provided. Tick only one option which best explains your opinion**

**KEY**

**SA = Strongly Agree, A= Agree, U = Undecided, D = Disagree, SD= Strongly Disagree**

**SECTION B: PROJECT IMPLEMENTATION**

	SA	A	U	D	SD
a. Our project has achieved its purpose	<input type="checkbox"/>				
b. Money set aside at the start of our project was used as proposed	<input type="checkbox"/>				
c. At the end of implementation, there was a ceremony to hand over the project	<input type="checkbox"/>				
d. There are records showing all lessons learnt during project implementation	<input type="checkbox"/>				
e. There is improved economic status of the local community	<input type="checkbox"/>				
f. Project could not operate due to disagreement among community members	<input type="checkbox"/>				
g. There is improved vegetation as a result of the project	<input type="checkbox"/>				

**SECTION C: PROJECT CHANGE MANAGEMENT**

	SA	A	U	D	SD
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a. Consultations on the need of the project were done before it was implemented	<input type="checkbox"/>				
b. Project Manager passes key information to all stakeholders	<input type="checkbox"/>				
c. Changed actions based on interests which occurred were integrated into final actions	<input type="checkbox"/>				
d. We have jointly with other stakeholders identified solutions of the water project	<input type="checkbox"/>				
e. The project Manager is able to address our concerns at personal, group and project level	<input type="checkbox"/>				
f. The project has support County Government	<input type="checkbox"/>				
g. Changes to be brought about by the project are communicated to all stakeholders	<input type="checkbox"/>				

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**SECTION D: PROJECT TEAM**

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	SA	A	U	D	SD
a. There are clear channels of passing information to project team members	<input type="checkbox"/>				
b. There is free information sharing within project team members	<input type="checkbox"/>				
c. Team members have trust in their leaders	<input type="checkbox"/>				
d. Individual talents, experience and skills of team members are used for the benefit of the project	<input type="checkbox"/>				
e. Team members are assigned tasks in areas where they have best knowledge	<input type="checkbox"/>				
f. There is free exchange of ideas within the project team	<input type="checkbox"/>				
g. Team members are involved in all stages of the project	<input type="checkbox"/>				

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## SECTION E: PROJECT STAKEHOLDERS

	SA	A	U	D	SD
a. Survey to determine stakeholder expectations was done before implementation of the project	<input type="checkbox"/>				
b. Analysis of individuals of influence was done at the onset of project	<input type="checkbox"/>				
c. The process of identifying individuals of influence to water project is done continuously	<input type="checkbox"/>				
d. There are established means for stakeholders to raise concerns about the project	<input type="checkbox"/>				
e. There is total support for the project from the community	<input type="checkbox"/>				
f. There are mechanisms of passing information to all stakeholders	<input type="checkbox"/>				
g. All stakeholders know the benefits of the project	<input type="checkbox"/>				

## SECTION F: PROJECT RESOURCE SUPPORT

	SA	A	U	D	SD
a. Project team members are always involved in identification of right materials for use in the project	<input type="checkbox"/>				
b. The project always employ the right number of people	<input type="checkbox"/>				
c. The project always employ people with right skills	<input type="checkbox"/>				
d. The project has functional equipment	<input type="checkbox"/>				
e. The project has right number of equipments	<input type="checkbox"/>				
f. Members have received training on the operations of the project	<input type="checkbox"/>				
g. Members have received training on management of water project	<input type="checkbox"/>				

## SECTION G: PROJECT ENVIRONMENT

	SA	A	U	D	SD
a. Changes after elections affect implementation of water project	<input type="checkbox"/>				
b. The borehole dries up during dry season	<input type="checkbox"/>				
c. Government work authorization affect implementation of water projects	<input type="checkbox"/>				
d. Community governance system affect implementation of water project	<input type="checkbox"/>				
e. Community members use mobile phones in sharing information of the water project	<input type="checkbox"/>				
f. The community willingly contributes locally available material to the project	<input type="checkbox"/>				
g. There are no threats to project team members	<input type="checkbox"/>				

## SECTION H: PERCEIVED EFFECTS OF INPUTS MODERATOR ON IMPLEMENTATION

	SA	A	U	D	SD
a. Effective change management by project team ensures project success	<input type="checkbox"/>				
b. Effective change management by project team enabled them to deliver the project as expected despite all the interferences	<input type="checkbox"/>				
c. The high competence of project team ensures timely completion of the project	<input type="checkbox"/>				
d. The high competence of the project team enabled them to navigate through all the interferences to deliver the project as expected	<input type="checkbox"/>				
e. Effective project stakeholder consultations by the project team ensures timely completion of the project	<input type="checkbox"/>				

- 
- f. Effective project stakeholder consultations by the project team enabled them to go through all the interferences to deliver the project as expected
  - g. Adequate project resource support ensures timely completion of the project
  - h. Adequate project resource support enabled project team to go through all interferences to deliver the project as expected
-

## **Appendix II: Interview guide**

**Name of Interviewer** \_\_\_\_\_

**Date** \_\_\_\_\_

**Name of Interviewee** \_\_\_\_\_

**Position in water project** \_\_\_\_\_

This interview is being conducted to get your input about the implementation of the borehole water project which you have been involved in. I am especially interested in any problems/successes you have faced or are aware of and recommendations you have. I assure you that all your comments will remain confidential.

1. How do you know if the project has achieved its goal?
2. Do you have records documenting lessons learned during project implementation?
3. Is the community happy with the project?  
Why do you say so?
4. How does the leadership of the project affect its implementation?
5. Tell me how communication is carried out in your project
6. How were decisions made during implementation of the water project?

Probe to gather the information about input from staff, participant reactions, availability of technical staff, etc.

7. Has active participation of all stakeholders been encouraged?

Please describe for me how

8. What do you think the strongest points of the water project have been up to this point?

Why do you say this?

9. What other problems are you aware of?

10. What do you think about the project at this point?

I'd like to know more about what your thinking is on that issue

11. Is there any other information about the project that you think would be useful for me to know?

**Appendix III: List of Borehole Water Projects in Makueni County implemented in the year 2010– 2016.**

<b>S. NO</b>	<b>PROJECT NAME</b>	<b>Sub-County</b>
1.	BH001	Kibwezi (Kisayani)
2.	BH 002	Kibwezi (Kiunduani)
3.	BH 003	Kambi Mawe
4.	BH 004	Mukaa Ward
5.	BH 005	Tulimani
6.	BH 006	Ivingoni/Nzambani
7.	BH 007	Nzau
8.	BH 008	Kilungu
9.	BH 009	Nzau
10.	BH 010	Mbooni East
11.	BH 011	Kilili Kalamba Ward
12.	BH 012	Kalii
13.	BH 013	Muvau/Kikumini Ward
14.	BH 014	Wote Ward
15.	BH 015	Kathonzweni
16.	BH 016	Kibwezi
17.	BH 017	Kasunguni
18.	BH 018	Makindu
19.	BH 019	Ivingoni/Nzambani Ward
20.	BH 020	Kathonzweni
21.	BH 021	Kalawani
22.	BH 022	Makindu
23.	BH 023	Makindu
24.	BH 024	Kiboko
25.	BH 025	Kiboko
26.	BH 026	Mbooni
27.	BH 027	Kibwezi (Ngandani)
28.	BH 028	Mbooni East
29.	BH 029	Kilungu Ward
30.	BH 030	Nzau
31.	BH 031	Kibwezi
32.	BH 032	Kathonzweni
33.	BH 033	Makueni
34.	BH 034	Wote Ward
35.	BH 035	Mukaa
36.	BH 036	Kibwezi
37.	BH 037	Ivingoni
38.	BH 038	Nzau (Tutini)

39.	BH 039	Makindu (Ngakaani
40.	BH 040	Makindu (Nduluni)
41.	BH 041	Makindu (Ngulya)
42.	BH 042	Nzau (Tutini)
43.	BH 043	Nzau (Mulala)
44.	BH 044	Makindu (Kalindiloni)
45.	BH 045	Kalawa Ward
46.	BH 046	Kako Kyaluma
47.	BH 047	Mbooni East
48.	BH 048	Kivani
49.	BH 049	Mbooni East
50.	BH 050	Makueni
51.	BH 051	Kibwezi
52.	BH 052	Mbitini Ward
53.	BH 053	Nzau
54.	BH 054	Mukaa
55.	BH 055	Mukaa
56.	BH 056	Kiima Kiu
57.	BH 057	Makueni
58.	BH 058	Wote Ward
59.	BH 059	Mukaa
60.	BH 060	Nzau
61.	BH 061	Matiku
62.	BH 062	Nzau
63.	BH 063	Makueni
64.	BH 064	Mbitini Ward
65.	BH 065	Nzau
66.	BH 066	Makindu (Nduluni)
67.	BH 067	Nzau
68.	BH 068	Mbooni
69.	BH 069	Kikumbulyu Ward
70.	BH 070	Kikumbulyu South
71.	BH 071	Nzau
72.	BH 072	Nzau
73.	BH 073	Kathonzweni
74.	BH 074	Mukaa
75.	BH 075	Mbitini Ward
76.	BH 076	Mulala
77.	BH 077	Thange
78.	BH 078	Kee Ward
79.	BH 079	Makueni
80.	BH 080	Ilima Ward

81.	BH 081	Kitise/Kithuki
82.	BH 082	Mukaa
83.	BH 083	Wote
84.	BH 084	Ukia Ward
85.	BH 085	Mukaa
86.	BH 086	Twaandu - Makindu
87.	BH 087	Makueni
88.	BH 088	Kee Ward
89.	BH 089	Mbooni East
90.	BH 090	Kibwezi
91.	BH 091	Mukaa
92.	BH 092	Masongaleni
93.	BH 093	Kiboko
94.	BH 094	Kiboko
95.	BH 095	Wote
96.	BH 096	Kee Ward
97.	BH 097	Nzeveni
98.	BH 098	Kibwezi
99.	BH 099	Kibwezi
100.	BH 100	Thange
101.	BH 101	Nzai
102.	BH 102	Nzai
103.	BH 103	Nguumo Ward
104.	BH 104	Makindu
105.	BH 105	Nguu/ Masumba Ward
106.	BH 106	Tulimani
107.	BH 107	Kanzui (Mbooni)
108.	BH 108	Makindu (Nduluni)
109.	BH 109	Mukaa
110.	BH 110	Kibwezi
111.	BH 111	Mbitini Ward
112.	BH 112	Makueni (Mukuyuni)
113.	BH 113	Kako/Waia Ward
114.	BH 114	Kibwezi
115.	BH 115	Kibwezi

Source: Makueni County Water Office