PROJECT MANAGEMENT PRACTICES AND SUSTAINABILITY OF WATERPROJECTS IN KIAMBU COUNTY, KENYA

Maina Peter Kariuki & Dr. Josphat Kyalo, PhD

The Strategic JOURNAL of Business & Change MANAGEMENT
ISSN: 2312-9492 www.strategicjournals.com
Vol. 10, Iss.4, pp 796 – 810. November 5, 2023. www.strategicjournals.com, ©Strategic Journals

PROJECT MANAGEMENT PRACTICES AND SUSTAINABILITY OF WATERPROJECTS IN KIAMBU COUNTY, KENYA

[1] Maina, P. K., & [2] Kyalo, J.

[1] MBA (Project Management) Candidate; BSC (Applied Accounting), Kenyatta University, Kenya
[2] Lecturer, Management Science Department, Kenyatta University, Kenya

Accepted: October 18, 2023

DOI: http://dx.doi.org/10.61426/sjbcm.v10i4.2787

ABSTRACT

Rapidly developing areas like Kiambu County constantly struggle with strained water resources. Suitable project management approaches can help increase the sustainability of water projects in such areas. This study aimed at investigating effect of a range of project management approaches, such as stakeholder engagement, resource allocation, management commitment, and digital inclusion on the sustainability of projects toward more sustainable outcomes in Kiambu County. Some of the theories utilized in this research are the stakeholder theory, resource dependence theory, Lewin's theory of change, and the technology acceptance model. The study adopted a descriptive research design. The target population constituted about 20 projects and 200 participants or members or employees comprising team leaders, project managers, community representatives, and managers. The sample size was 105 respondents drawn using stratified random sampling. The findings established that stakeholder involvement significantly influences project sustainability. Additionally, Resource Allocation has a substantial impact on Project Sustainability. Furthermore, there was evidence of a substantial impactof digital inclusion on project sustainability. The final factor influencing project sustainability is management commitment. The study concludes that by involving every stakeholder in decision-making processes, cost-sharing, and process monitoring will increase the sustainability of a project. There is need for employment of suitable and competent human resources, a budget that has been approved by all stakeholders. Project requirements must be properly defined to produce a quantifiable result. Furthermore, firms can make sustainable concepts a reality by utilizing digital mapping, social media, and information management. Finally, aspects including expertise, change management, and project management training are crucial for projects to succeed. The devotion of the management team is one of the most crucial elements of any high-qualityproject management. The study recommends that stakeholder involvement is essential for the success of any water project. They must participate specifically in the project's decision- making, cost-sharing, monitoring, and assessment processes.

Keywords: *Project Management Practices, Stakeholder Engagement, Resource allocation, Management commitment, Digital Inclusion, Project Sustainability*

CITATION: Maina, P. K., & Kyalo, J. (2023). Project management practices and sustainability of waterprojects in Kiambu County, Kenya. *The Strategic Journal of Business & Change Management,* 10 (4), 796 – 810. http://dx.doi.org/10.61426/sjbcm.v10i4.2787

INTRODUCTION

County water projects involve organized activities in planning, developing resources, protecting and conserving water sources, and controlling adverse conditions. Sustainable water projects contribute to the balance in the supply and demand of water resources. County water projects are termed sustainable when they result in irrigation management, laws, policies, and strategies for managing water resources, protection of catchments, managing wetlands and floods, and stable water supply to rural and urban areas (Hirji et al., 2012). Water is not only a raw material and critical social amenity but also a key indicator of environmental and socio-economic well-being. Strategic project management of county water projects is thus an indispensable necessity. In Kiambu County, effective project management approaches are necessary because water scarcity is a lingering concern owing to rapid population growth, poor planning and usage of water resources, climate change, and the failure of projects despite enormous investments.

Kiambu is one of the counties in Kenya that has extensive water needs. The county is largely urban, consisting of several cosmopolitan areas like Kikuyu, Ruaka, Juja, Thika, and Karuri, with thousands of residents requiring access to clean water and sanitation services (Njenga, 2020). The area relies on several underground and surface water sources, and several projects have been enacted to facilitate water management initiatives. The Tigoni-Karuri 11.6km pipeline launched in 2020 is such an initiative (Njenga, 2020). However, many water projectsin the county have also failed and proven unable to meet their initial objectives. Poormanagement is one of the fundamental reasons that county leaders have cited as a cause of failure. The leaders often seek mergers in community projects that could result in better waterand sewerage companies.

Disagreements, politics, legal issues, and poor management have resulted in the failure of water projects in Kiambu County. For instance, the former governor of the county, Ferdinand Waititu, merged eight water companies in the county using legislation which resulted in outrage and court processes (Njenga, 2022). The High Court barred the implementation of theKiambu Water and Sanitation Amendment Act 2018, and the merger was dissolved. Other leaders have argued that the water deficit in the county can be managed through supplementary budgets. However, challenges like using piped water for irrigation are still persistently showing poor planning and agreement on the management of water resources. 74% of Kiambu's land area is under agricultural production, constituting 17% of the county's income (The Ministry of Agriculture, Livestock, Fisheries and Cooperatives, 2021). Such a factor, coupled with commercial, residential, and recreational water uses, makes water projects critical for the county.

WASREB (2022) estimated that Kiambu County had a population of 2,497180. 69% of the population had access to water services. The county estimated that 35% of the population hadaccess to potable water. Kamau (2019) highlights that regulated service providers performed better than unregulated ones by WASREB. It was also noted that the technical teams needed competence enhancement. Project funding delays played a significant role in assessing whether the providers were sustainable or not. Community members comprised the management teams of the water projects (Olela, 2018). The report further notes that technical capacity was lacking in developing or maintaining new water projects. There were delays in handling repairs and water breakages due to a lack of technical capability.

Water resources in Kiambu County are managed and provided to residents through service providers. Athi Water Services Board (AWSB) came into the Law of the Water Act 2002 and licensed water service providers (WSPs) to manage water resources in Kiambu County (County Government of Kiambu, 2018). These include Limuru, Kikuyu, Kiambu, Karuri, Githunguri, Ruiru-Juja, Thika Water and Sewerage companies, Gatundu South, and Karimenu Water and Sanitation Companies. Most of these WSPs operate in areas that previously had water schemes

and ensured better water and sanitation services. As a result,the areas outside the jurisdiction of these WSPs lack the infrastructure or receive services through community water projects (County Government of Kiambu, 2018). In some areas,the projects are inoperative and managed poorly, so services never reach residents. Although WSPs' jurisdictive regions have often been increased in the past and third-party agreements used to monitor services, project management is still largely a challenge.

The difficulties of managing a project sustainably are manifold. Without the proper project management approaches, a project can experience delays, dissatisfied stakeholders, budget overruns, poor results, and stress (Water Integrity Network, 2016). Project managers have a task to understand project components and purpose to employ suitable tools in management. Project management is a "carefully planned effort to accomplish a specific objective, using knowledge, skills, tools, and techniques to plan and implement activities to meet or exceed stakeholder needs and expectations from a project" (Loucks & van Beek, 2017).

According to APM,2019, knowledge management is one of the tools that can be utilized to improve the outcomes of projects. Knowledge management allows the project management staff to anticipate and understand changing conditions and support decision-making processes. Project managers tend to fail in conducting knowledge transfer on projects they work on leading to sustainability challenges when they exit (Doskočil & Lacko, 2018). In order for project managers to make informed decisions, they rely on accurate and timely information. This information can only be delivered through an information management system (APM, 2019). The project manager utilizes information management tools to design collect, store, curate, disseminate and archive information. Marnewick (2017) notes that IT plays a critical role in project sustainability and should be incorporated into all projects irrespective of the nature of the project.

Change management plays an important role in delivering sustainable projects. Projects require continuous monitoring to gain insights into why change occurs with a focus on the human aspects (Verhulst & Lambrechts, 2015). APM, 2019 emphasizes change control from both internal and external sources to ensure sustainability. Understanding change management allows a better understanding of variations and prediction of outcomes of the projects. Change freeze can also be incorporated to ensure that the project is implemented without risking the objectives. Sustainability in projects can be achieved by the allocation of the right resources from human capital, finances, and technology at the right time APM,2019.Project managers can adopt a facilitative approach in the engagement of project stakeholders to ensure a balance between the needs of the stakeholders and the project.

Statement of the Problem

Water scarcity affecting Kiambu County like most developing areas can be attributed to urbanization, population growth, and unsustainable economic growth that strains water resources and sanitation services (Mulwa et al., 2022). The Joint Monitoring Program (JMP) by the World Health Organisation and the United Nations Children's Fund (UNICEF) 2021 projects that the world will need to quadruple the current rate of progress on SDG 6.1 to achieve the target by 2030. SGD 6.1 focuses on attaining worldwide and equitable access to safe and reasonably priced drinking water for all. The JMP report further notes that only 33% of the national population accessed piped water,22% of the rural population and 60% of the urban population.

Water rationing in Kiambu County has become a feature of Kiambu Water companiesattributable to the rainfall scarcity as well as the historically low levels of water in boreholes according to Kiambu County CECM David Kuria, 2023. The Maguo wetland, a source of water for the residents in the Limuru area was reported to have dried up a phenomenon never witnessed by the residents. Herders who relied on the wetland for drinking water for their animals have been forced to utilize

piped water at an additional cost to their farming enterprise (Odhiambo, 2023).

The merger of the eight water companies by a previous county administration and thesubsequent court injunction on the merger points to a poor engagement of all stakeholders derailing policy implementation (Njenga, 2022). Implementation of Ndarugu II dam project was also a subject of a court process where area residents affected by the development of the projects cited transparency and public participation as lacking in its implementation (Ndungu,2023).

The Lusegeti Community borehole was disconnected as a result of a power bill of Kes 323,000 with the borehole cited to be old and collapsing (Kiambu County). The Auditor General,2019 in his audit report questioned the sustainability of Kiambu Water Company andSewerage Limited due to the loss of water from standard production and sales done after adjusting for allowable loss. 43% of the water had not been accounted for. Management also spent Kes 3,818,494 of customer deposit money without authority (Ouko,2019). This study aimed to understand the impact of the lack of stakeholder engagement, poor management commitment on water projects, the utilization of digital inclusion technology and resource allocation on the sustainability of water projects in Kiambu County.

Research Objectives

This study's main objective was to investigate the project management approaches and the sustainability of water projects in Kiambu County. The specific objectives of the study included: to determine the effect of stakeholder engagement on the sustainability of waterprojects in Kiambu County, to evaluate the role of resource allocation on water projects in Kiambu County, to evaluate the extent of management's commitment to water projects in KiambuCounty, and to assess the role of digital inclusion on the sustainability of water projects in Kiambu County.

Empirical Review

Stakeholder engagement from the onset of the project and goal congruence with the stakeholders play a significant role in project sustainability (Brenda, 2021). A manager's ability to distinguish and utilize informal procedures, relationships and communication channels also play a critical role in sustainably implementing projects (Ndungu, 2017). Sustainable projects are completed within the budget, within the stipulated timelines, and to the stakeholders' satisfaction. Community involvement in projects through consultations tends to delay project decisions before consensus is reached. The legitimacy of such decisionsin the community has also been viewed as an extension of existing power structures, as the less fortunate cannot participate in such forums (Mecha, 2012). Sustainable community projects are achieved through continuous involvement of the community in the decision-making and execution of decisions instead of merely receiving benefits. Such an approach creates ownership of the project decisions and ensures resource-saving, contributing to financial success.

The concept of sustainability is traditionally measured through time; meeting user requirements do not always apply. Project commencement delays, unforeseen factors during the implementation phase, and poor stakeholder engagements are some of the causes that affect project sustainability. A study on the sustainability of community-based projects concluded that most failed to sustain themselves and downscaled their operations after funding organizations exited (Ndungu, 2017). The following factors; capacity and skills, government support, leadership choice, training and cost of the project primarily influence the sustainability of community projects. Contributions by the community, either in kind or cash contributions, allow the community members to participate in the project and thusensure sustainability.

The rising urban population in African countries is creating an increased demand for housing and utilities. Areas where urban development is skewed to the affluent result in unplanned settlements. Overcrowded people are associated with increased infectious and waterborne diseases as a result of

poor water quality & sanitation services (Kanugo, et al). Water project sustainability involves managing all costs, not just the construction costs. Costs associated with water storage, environmental protection, and pollution abatement; water policy development usually gets neglected (UNESCO, 2010). The responsibility of water provision is mainly the county governments' responsibility. As a result of population pressures and inadequate resources, their efforts are complemented by the private sector, non-profit organizations, and community-based organizations.

Poor project resource management is a likely hindrance of project sustainability. Often, project decisions are made based on intuition and other influences as opposed to rational factsand thinking process which results in financial risks (Svensson & Dollerup, 2020). Money or more collectively resources are a significant sustainability factor in projects. Project management is critical because maintaining a balance between time, money and quality canbe problematic. However, it is critical to recognize that properly managed resources have considerable impact on overall project sustainability (Svensson & Dollerup, 2020). Project managers have a mandate to prioritize different aspects while ensuring that all stakeholders participate effectively with their needs being well met.

As a requisite, project managers must possess both management and leadership skills to ensure project sustainability. The project manager's profile should encompass soft and hard skills (Tafara, 2013). Project managers who are experienced tend to perform better than inexperienced project leads, thus ensuring project sustainability. More specifically, top management commitment in a project facilitates quality and project sustainability and employee empowerment (Javed, 2015).

When the top managers are committed towards organizational or project objectives, they are able to instil necessary skills and motivation to their subordinates to attain the same goals. Studies have detailed that some of the distinguishing aspects of quality leadership and management is displaying consistent commitment toward desired outcomes (Javed, 2015). Some of these can include continuous improvement throughout the project phases, a focus on customer satisfaction and employee participation.

Change management can also be utilized as a performance management approach towards sustainability. Anyieni (2016) intimates that change management is not an ad hoc performance rather a critical skill for leaders. The skills need to be structured around management of the human capital, technology and processes as a result of the ever changing environment and to align to the organizational goals. As the world becomes more aware of the role of technology in political platforms and public policies, digital inclusion is receiving more attention. Subject experts highlight that the basic premise of digital inclusion is "to bring the knowledge and use of ICT closer to those who do not already have it thus bridging the digital divide" (Morte-Nadal & Esteban-Navarro, 2022).

Communication among the team members has been demonstrated to have a positive influenceon project sustainability. Communication can be done on project challenges, time schedules and cost of the projects (Magagan, 2021). Since projects usually have a strict time schedule, ICT based business systems, communication tools and shared storage servers are crucial for better communication.

Social media communication can be utilised to create public awareness and promoting organisation communication among stakeholders. The social media sites are a useful tool for networking with project stakeholders, sharing of opinions and social media movements activations (Chepkech ,2021). According to Nzomo,2022, technology can be deployed in the management of water resources to enhance sustainability. Measures deployed include but are not limited to urban settlement mapping, monitoring high-risk areas for water quality, network-linked systems tracking water leakages, and waste recycling. Project managers can benefit from knowledge management by maintaining validity of

information generated by the projects. The use of analytics in projects presents an opportunityto gain commercial advantage be revealing patterns presenting paradigm shifts that challenges ideas of data integrity forcing new ways of thinking and an opportunity to establish stability (Whyte et al.,2016). Managers of complex projects should expect changes in both assets and associated asset information and incorporate these changes in the project implementation (Whyte et al.,2016). As project incorporate digital technologies in their projects, configuration management can be utilised a tool for maintaining data integrity.

METHODOLOGY

The research design assists in developing methods of gathering and scrutinizing data. This study utilized a descriptive design research approach where we aim to answer the research questions. Explanatory techniques were also embedded in the research design seeing as the study seeks to answer the 'what' and 'why' of the sustainability of water projects in Kiambu County (Yin, 2018). Deductive reasoning was employed to unearth the insights through a cross-sectional study approach.

The target population were 200 members involved in 20 completed projects within Kiambu. The population size of Kiambu County concerning the target participants is unclear. Therefore, the study utilized sample data. The sample was classified by sub-county, and a sample were selected for examination from each sub-county**.** Each of the water providers by WASREB were included in the study representing 100% population.

Stratified random sampling was utilized for water service providers. Mugenda and Mugenda (2008) propose that a sample of 10 per cent to 30 per cent of the entire population is adequatefor descriptive research. The sample size was 105 respondents for water service providers in Kiambu County. The strata of the study was included the project management committee team, project managers, community representatives and the management. The following isthe proposed matrix of the respondents.

Table 1: Sample Size

Category	Size	% of Sample
Management Committee	30	28.5%
Project Managers	20	19%
Community representatives	30	28.5%
Management	25	24%
Total	105	100%

Source: Author (2023)

The data collection tool used in the study is the questionnaire. Questionnaires are easy to collect quantitative data in a standard approach. They are also inexpensive to administer and design (Mourougan & Sethuraman, 2017). The questionnaire was semi-structured. The study adopted the drop-and-pick method of questionnaire administration (Bernard and Bernard, 2013) as the expected respondents are a busy class of respondents. The researcher delivered the instrument to the respondents in person but also collected them back later. The questionnaires were delivered via email where respondents requested for this type of delivery. Respondents were accorded up to two weeks to answer the questionnaires and submit the instruments back.

This research aims to establish a relationship between project management approaches and the sustainability of water projects in Kiambu County. The relationship were represented in the form of an equation showing dependent and independent variables such as the one shown below. The data

collected using the questionnaire was analysed using the SPSS software and presented using descriptive, relational and inferential statistics. Descriptive analysis included means, standard deviation. The inferential analysis included ANOVA test while correlationalcoefficients was based on the multiple linear regression equation as shown below;

$$Y_{sust} = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \epsilon$$

FINDINGS

The main goals of correlation analysis in research are to establish the presence of a relationship between variables, as well as to quantify and characterize that relationship. This section explores the utilization of Pearson correlation in analysing relationship between project management practices and sustainability of water projects variables.

Table 2: Pearson Correlations

		Project Sustainability	X1	X2	X3	X4
Stakeholder Engagement	Pearson Correlation	.720**	1			
	Sig. (2-tailed)	.000				
	N	83	83			
Resource Allocation	Pearson Correlation	.776**	.762**	1		
	Sig. (2-tailed)	.000	.000			
	N	83	83	83		
Management Commitment	Pearson Correlation	.758**	.642**	.751**	1	
	Sig. (2-tailed)	.000	.000	.000		
	N	83	83	83	83	
Digital Inclusion	Pearson Correlation	.712**	.482**	.613**	.864**	1
	Sig. (2-tailed)	.000	.000	.000	.000	
	N	83	83	83	83	83

**. Correlation is significant at the 0.01 level (2-tailed). X1-Stakeholder engagement; X2-Resource allocation; X3; Management commitment;X4- Digital Inclusion.

The study established that Stakeholder Engagement has a statistically significant and positive relationship with project sustainability ($r=0.720^{**}$; $p<0.05$). This may imply that the sustainability of a project will be improved by the involvement of all stakeholders in decision-making, cost-sharing, and process monitoring.

Furthermore, it was observed that Resource Allocation significantly correlates with project sustainability ($r=0.776^{**}$; $p<0.05$). This demonstrates that resources intended for project development should have a budget that is authorized by every stakeholder, appropriate and qualified human resources, and a clearly defined method for resource scheduling.

Thirdly, it was revealed that management commitment statistically and significantly correlates with project sustainability ($r=0.758^{**}$; $p<0.05$). This finding infers that for projects to be successful, aspects such as competency, change management and training from project management is essential.

Finally, there exists a statistically and significant relationship between Digital Inclusion and project sustainability ($r=0.712^{**}$; $p<0.05$). This implies that when firms employ digital mapping, social media, and knowledge management, sustainable in the projects will befeasible.

Regression Analysis

The main objective of the study was to investigate the project management approaches and the sustainability of water projects in Kiambu County. The regression model is useful in estimating the

significance of the predictors on the dependent variable. The benchmark is based on the rejection of the null hypothesis at 0.05 alpha level. The results are presented in the following Tables.

A model summary is produced automatically when a classification or regression modeling is conducted. Additionally, appropriate summary statistics for the individual model type are also presented in parametric models. Table 3 illustrates the results.

Table 3: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.853[a]	.728	.714	.42906

a. Predictors: (Constant), Digital Inclusion, Stakeholder Engagement, Resource Allocation,Management Commitment

The association between independent and the dependent variable is at 0.853. Furthermore, the findings revealed that 71.4% in Project Sustainability can be described using the four independent variables (Digital Inclusion, Stakeholder Engagement, Resource Allocation, Management Commitment). This leaves the unexplained variation at 28.6%.

Regression Coefficients

Regression coefficients are statistical parameters that are utilized to determine the average operational interaction among variables. Table 4 illustrated the beta coefficients used in study.

Table 4: Coefficients[a]

	Unstandardized Coefficients		Standardized Coefficients			Collinearity Statistics	
Model	B	Std. Error	Beta	t	Sig.	Tolerance	VIF
(Constant)	.316	.239		1.325	.189		
Stakeholder Engagement	.211	.068	.290	3.100	.003	.399	2.506
Resource Allocation	.320	.109	.317	2.951	.004	.303	3.299
Management Commitment	.032	.143	.032	.223	.824	.166	6.016
Digital Inclusion	.319	.109	.350	2.926	.004	.244	4.095

a. Dependent Variable: Project Sustainability

The benchmark for this analysis rests on the rejection of the null hypothesis when the p value is less than 0.05. According to this analysis, it was established that stakeholder engagement (β=0.290; p=0.003) and Resource Allocation (β=0.317; p=0.003) significantly influence Project Sustainability. The research also established that there was evidence of a significant impact of Digital Inclusion on Project Sustainability (β=0.350; p=0.003). Finally,

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4$$

Management Commitment does not significantly influence Project Sustainability (β=0.032;p=0.824). Equation for the Model:

$$Y = 0.316 + 0.290x_1 + 0.317x_2 + 0.032x_3 + 0.350x_4$$

SUMMARY AND RECOMMENDATIONS

Any water project that succeeds needs to involve stakeholders. Many participants in this study concur that the project objectives were clearly stated. Additionally, participants saidthat there was enough communication at every stakeholder meeting. This suggests that any sponsored project with multiple stakeholders should have its goals and intended audience well defined, as well as be conveyed to them in a clear and concise manner. Costing a project is said to be necessary for its success because it calls for multiple contributions from various stakeholders. According to the results, respondents concurred that the project's cost-sharing is carried out with the community. Some of the participants, though, disagreed. This suggests that in order to prevent project delays, sufficient consultations are required.

The most important deciding factor in project management is effective communication. Most of the people that were sampled stated that there was frequent communication regarding the water project's viability. A project team's culture will become more cohesive as a result of excellent communication management, which also promotes team members' involvement in decision-making.

Stakeholder involvement has been shown to boost project performance. The study found that more than half of respondents believed that all stakeholders must play a role in the development of water projects. Additionally, a majority of respondents said they were happy with the level of stakeholder participation on the project. Thus, it follows that the contributions made by these interested parties will improve coordination and cooperation. When done successfully, stakeholder engagement improves communication between parties, fosters long-term project support, gathers information for the organization, and lowers the likelihood of conflict.

It is generally acknowledged that effective project evaluation and monitoring enable management to plan for appropriate action. The majority of people, according to the report, concur that project monitoring assessments are done. Monitoring is a useful tool for determining any changes that must be made for a project to be implemented successfully as well as for routinely and timely updating its status.

The availability of sufficient resources is a crucial element in project implementation. The majority of participants, according to the survey, agreed that the project's resources were distributed appropriately. Additionally, respondents claimed that resources were delivered on schedule and as needed. This implies that resource mobilization and provision are essential for organizations to ensure that their initiatives and programs are having the expected effects and achieving their intended aims.

Project requirements should be properly defined in order to provide a quantifiable outcome for the project. The project's technical requirements were correctly defined, according to a portion of the participants. Delivering a quality product, at an agreed-upon cost, and within

predetermined deadlines to the stakeholders is the result of a properly defined and managed scope.

The process of determining and distributing the resources necessary to finish a certain projectwithin a certain time frame is known as resource scheduling. This result showed that the majority of the participants accepted that scheduling was a mechanism used by management to manage

resources. With the use of resource scheduling, project managers can give assignments to team members depending on their expertise and availability, providing a more clever and efficient manner. Resource scheduling is the main tool for ensuring that resource allocation is balanced throughout the project.

Budget management must be done correctly for a project to be completed effectively. Participants in this study confirmed that the project was completed within the allocated budget. This suggests that budget overruns can have a detrimental impact on a project or activity in a variety of ways, such as by endangering quality standards, prolonging duration, reducing scope, and upsetting stakeholders. Budgeting and accounting are crucial components that must cooperate in order to achieve an organization's goals and objectives.

Managerial commitment is one of the most crucial elements of any high-quality project management. This study found that more than 50 percent of the participants agreed that the management was dedicated to the project. This implies that managerial commitment is a key component in ensuring that the organization remains committed to the accomplishment of objectives and goals. The achievement of goals for any establishment depends on the project managers' expertise in project management-related issues. The majority of participants in the current study indicatedthat the project management team is competent to oversee the project, according to the study.

This implies that in order to accomplish the goals of the project, a capable, qualified project manager is required. Experience at the place of employment is a crucial component of successful project management. This study showed that respondents believed the management team had the necessary skills to oversee the project. This demonstrates how project managers' experience has a favorable influence on projects' success. The advancement of organizational performance depends on staff members' professional development in their field of work. The study found that the majority of participants said the project had a training program for new project workers. In addition, it was noted that some of the participants who said they approved of the way the water project was managed This demonstrates how training programs help individuals increase their knowledge and skills so they can keep up with the always changing demands of the business.

Any company that wants to continue to be competitive must integrate technological infrastructure into its daily operations. As a result, it was stated in a section that the project uses digital technology in its operations. The general effectiveness and market performance of a company can be considerably improved with the application of the suitable technology. The results that were provided by the sampled participants showed that the water project's digital technology had received enough training. It is well known that firms need to upgrade their technology if they want to maintain their competitiveness, increase productivity, and reduce income loss. By doing so, the company's internal data flow can be preserved while monitoring and streamlining processes. According to the majority of respondents to this study, digital technology is frequently updated to keep up with modern trends. The way businesses run is significantly impacted by technology. The conclusions reached by the group of participants who were in agreement that management communicates project-related information via technology. Furthermore, the majority claimed that management uses the information gathered to make decisions. This shows that employing technology efficiently could boost employee productivity and lessen disruption, both of which are typically expected.

With the use of data backups, a corporation can recover from an unexpected calamity by accessing data from a previous time period. Data backups were done in the cloud, according to the respondents' part. In a similar vein, section disclosed that data was also backed up inthe workplace. By regularly backing up their data and recovering it, businesses

are protected from threats including accidental deletion, hardware failure, and software damage.

Any company that wants to be competitive must put data security first. The project's data is, in the participants' opinion, both physically and digitally secure. As a result, it is implied that data will be secured from unauthorized access. As a result, robust data cybersecurity is required to prevent the damage to reputation that results from a data breach.

The study found that stakeholder involvement significantly influences project sustainability (β =0.290; p=0.003). This may imply that involving every stakeholder in decision-making processes, cost-sharing, and process monitoring will increase the sustainability of a project. Stakeholder involvement is essential for the success of any water project. This covers proper participation at each stage of the project life cycle as well as good communication.

Additionally, Resource Allocation has a substantial impact on Project Sustainability (β=0.317; p=0.003). This highlights the need for suitable and competent human resources, a budget that has been approved by all stakeholders, and a strategy for resource scheduling that is well specified. Project requirements must be properly defined in order to produce a quantifiable result. In particular, resource provision and mobilization are essential for aproject to be finished on schedule.

The study found evidence of a substantial impact of digital inclusion on project sustainability (β =0.350; p=0.003). This suggests that businesses can make sustainable concepts a reality by utilizing digital mapping, social media, and information management. The integration of technology infrastructure into corporate operations is a requirement for any company that hopes to continue to be successful. According to this, effective use of technology may boost workers' productivity. To remain competitive, businesses must put a high priority on data protection. The project's data is, in the participants' opinion, both physically and digitally secure.

The final factor influencing project sustainability was noted to be impacted by management commitment (β=0.032;p=0.824) According to this result, variables including expertise, change management, and project management training are crucial for projects to succeed. The devotion of the management team is one of the most crucial elements of any high-quality project management. This is reinforced by the staff members' training, work history, and professional advancement in their field.

Stakeholder involvement is essential for the success of any water project. They must participate specifically in the project's decision-making, cost-sharing, monitoring, and assessment processes. Second, for the project to be accomplished within the stipulated time frame, sufficient resource mobilization and deployment are essential. It is advised that resources be properly allotted by proper budgeting, the employment of qualified human employees, and the timely scheduling of resources.

Thirdly, in order for businesses to remain competitive, they must deploy technology infrastructure effectively and give data security top priority. This includes modernizing already-used digital business tools to reflect emerging trends.

Finally, factors like employee proficiency, change management, and training from top-level project management are crucial for projects to succeed. Therefore, in order to advancesustainability, project managers must concentrate on creating a culture of excellence by persistently pushing for improvement in elements that are related to both people and non-people.

REFERENCES

Anyieni, A. (2016, December). Organisational change: A critical review of the literature. https://irlibrary.ku.ac.ke/ bitstream/handle/123456789/18185/Organisational%20Change.pdf?sequence=1

Assembly, N. (2021, August 4). A report on a sessional paper No.1 of 2021 on Nationalwater policy. Bunge Library. http://libraryir.parliament.go.ke/handle/123456789/394

Attanasio, G., Preghenella, N., Toni, A. D. D., & Battistella, C. (2021, October 8). Stakeholder engagement in business models for sustainability: The stakeholder value flow model for sustainable development: Semantic scholar. Business Strategy and the Environment. https://onlinelibrary.wiley.com/doi/pdf/10.1002/bse.2922

Aziz, N. bt., Muda, M. S. b., Ibrahim, M. Y. b., & Mansor, N. R. bt. (2017). The application of Kurt Lewin´s model of change in the implementation. https://hrmars.com/papers_submitted/3212/The_Application_of_Kurt_Lewin%C2%B4s_Model_of_Change_in_the_Implementation_of_Higher_Order_Thinking_Skills_in_School.pdf

Bernard, H. R. (2012). Social Research Methods: Qualitative and quantitative approaches. Google Books. https://books.google.com/books/about/Social_Research_Methods.html?id=7sZHuhyz BNQC

Burgess, G. L., & Worthington, A. K. (2021). Application of the technology acceptance model. https://ua.pressbooks.pub/persuasiontheoryinaction/chapter/application-of-the-technology-acceptance-model/

Burnes, B. (2004, August 12). Kurt Lewin and the planned approach to change: A re-appraisal - burnes ... https://onlinelibrary.wiley.com/doi/full/10.1111/j.1467- 6486.2004.00463.x

Chepkech, I. T. (2021). Social media usage and performance of agrovet sector in Trans Nzoia County kenya. Repository Home. https://ir-library.ku.ac.ke/handle/123456789/23598

Chepng'eno, J. (2021). Integrated Management Skills and sustainability of road projects in Kericho County, Kenya. Repository Home. https://ir-library.ku.ac.ke/handle/123456789/23409

Cvijović, J., Obradović, V., & Todorović, M. (2021, August 24). Stakeholder management and project sustainability-a throw of the Dice. MDPI. https://www.mdpi.com/2071-1050/13/17/9513

Davis, G. F., & Cobb, J. A. (2009, April 1). Resource dependence theory: Past and future - University of Michigan. https://webuser.bus.umich.edu/gfdavis/Papers/davis_cobb _09_RSO.pdf

Deborah, O. (2018, December 4). Lewin's theory of change: Applicability of its principles ina contemporary organization. Semantic Scholar.https://www.semanticscholar.org/paper/ Lewin%E2%80%99s-Theory-of-Change:- Applicability-of-its-in-a-eborah/7a2aefcc47ff08c5e1 221466fd21354637ae502b

Drying wetlands and drought threaten water supplies in Kenya's Kiambu County. Mongabay Environmental News. (2023, April 6). https://news.mongabay.com/2023/04/drying- wetlands-and-drought-threaten-water-supplies-in-kenyas-kiambu-county/

Eyibio, O. N., & Daniel, C. O. (2020, June 30). The Effective Resource Budgeting as a tool for project management. Asian Journal of Business and Management. https://www.ajouronline.com/index.php/AJBM/article/view/6190

Freeman, R. E. (n.d.). The stakeholder approach revisited. Zeitschrift für Wirtschafts- und Unternehmensethik. https://www.ssoar.info/ssoar/handle/document/34707

Habumuremyi, J. B., & Tarus, T. K. (2021, September). [PDF] effect of stakeholders'participation on sustainability of community projects in Ruhango District, Rwanda:Semantic scholar. International Journal of Research and Innovation in Social Science.https://www.semanticscholar.org/paper/Effect-of-

Stakeholders%E2%80%99-Participation-on-of-in-Habumuremyi- Tarus/2742507b849a0e7136c55ef2ca5ce5d3823510d8

Hirji, R.,& Molapo, J. (2012). Knowledge for development |SARDC.https://www.sardc.net/books/MainWB/MainWB.pdf

https://kilimo.go.ke/. (2021). Climate Risk Profile for Kiambu County. Kenya County Climate Risk Profile Series, The Ministry of Agriculture, Livestock, Fisheries and Cooperatives (MoALFC). The Ministry of Agriculture, Livestock, Fisheries and Cooperatives.

Impact Capital For Development. (2021). Inclusive Digital Economies for the Sustainable Development Goals. Inclusive Digital Economies for the Sustainable Development Goals - UN Capital Development Fund (UNCDF). https://www.uncdf.org/ide4sdg

Javed, S. (2015, August 8). Impact of top management commitment on quality management - IJSRP. https://www.ijsrp.org/research-paper-0815/ijsrp-p4453.pdf

Kadurira, P., & Nyagah, J. (2021). Influence of Stakeholder's involvement in Project Monitoring and evaluation on sustainability of community projects in Kenya: Case study of kenya Red Cross Integrated Community Projects in Tana River County. *Journal of Entrepreneurship & Project Management.* https://stratfordjournals.org/journals/ index.php/ journal-of-entrepreneurship-proj/article/view/881

Kamau, J. (2022, March 23). 800,000 Kiambu residents yet to be connected to clean water. The Star. https://www.the-star.co.ke/counties/central/2022-03-23-800000-kiambu-residents-yet-to-be-connected-to-clean-water/

Kanungo, S., Chatterjee, P., Saha, J., Pan, T., Chakrabarty, N. D., & Dutta, S. (2021, November). Water, sanitation, and hygiene practices in urban slums of eastern India. The Journal of infectious diseases. https://pubmed.ncbi.nlm.nih.gov/35238356/

Kiambu County Government. (2018, February). County government of Kiambu CountyIntegrated Development Plan 2018-2022. https://kiambu.go.ke/departments/ images/YASC/ CIDP_2018_2022.pdf

KNBS. (2022, April). Analytical Report on urbanization volume VIII. Kenya National Bureau of Statistics. https://www.knbs.or.ke/download/analytical-report-on- urbanization-volume-viii-2/

Kookana, R. S., Drechsel, P., Jamwal, P., & Vanderzalm, J. (2020, May 7). Urbanisationand emerging economies: Issues and potential solutions for water and food security. Science of The Total Environment.https://www.sciencedirect.com/science/article/pii/S004896 9720325 742

KWENA, E. A. N. (2018, July). Selected Organizational Restructuring Strategies And Employee Commitment At Kenya Revenue Authority. https://ir-library.ku.ac.ke/bitstream/handle/123456789/18827/Selected%20organizational%20restructuring%20strategies%20and%20employee%20commitment. pdf?sequence=1&isAllowed=y

Lacko, R. D. & B. (2018, May 5). Risk management and knowledge management as critical success. Sustainability. https://ideas.repec.org/a/gam/jsusta/v10y2018i5p1438-d144744.html

Loucks, D. P., & Beek, E. van. (2017). Water Resource Systems Planning and Management. SpringerLink. https://link.springer.com/book/10.1007/978-3-319-44234-1

Ma, G., Jia, J., Ding, J., & Wu, M. (2021). Examining the Impact of Social Media Use on Project

Management Performance: Evidence from Construction Projects in China. https://ascelibrary.org/doi/epdf/10.1061/%28ASCE%29CO.1943-7862.0002009

Magagan, K. C., & Ngugi, L. (2021, June 12). Influence of Project management Practices on Performance of Projects in Unilever Kenya Ltd. https://ir-library.ku.ac.ke/bitstream/handle/123456789/22361/Influence%20of%20project%20 management%20practices. pdf?sequence=1&isAllowed=y

Mahjoub, M., Atashsokhan, S., Khalilzadeh, M., Aghajanloo, A., & Zohrehvandi, S. (2018). Linking "Project Success" and "Strategic Talent Management": satisfaction/motivation and organizational commitment as mediators. https://www.sciencedirect.com/ science/article/pii/S1877050918317472

Maritan, C. A., & Lee, G. K. (2017, October). Resource Allocation and Strategy. https://journals.sagepub.com/doi/full/10.1177/0149206317729738

Marnewick, C. (2017, August). Information system project's sustainability capabality levels. https://www.sciencedirect.com/science/article/abs/pii/S0263786317302090

Mecha, V. N. (2021). Stakeholder Involvement And Project Outcome In Kalamba Fruit Processing Factory Project In Makueni County, Kenya. https://ir-library.ku.ac.ke/bitstream/handle/123456789/22817/Stakeholder%20Involvement%20.pdf?sequence=1

Mohajan, H. (2017). Two Criteria for Good Measurements in Research: Validity and Reliability. https://mpra.ub.uni-muenchen.de/83458/1/MPRA_paper_83458.pdf

Mourougan, S., & Sethuraman, Dr. K. (2017, May). Enhancing Questionnaire Design,Development and Testing throughStandardized Approach. https://www.iosrjournals.org/iosr-jbm/papers/ Vol19-issue5/Version- 1/A1905010108.pdf

Mugenda, A., & Mugenda, O. (2008). Social Science Research: Theory and Principles. Mugo, G. (2023, January 17). Drying up of water sources raise concerns in Kiambu. The Star. https://www.the-star.co.ke/counties/central/2023-01-17-drying-up-of-water-sources-raise-concerns-in-kiambu/

Nations, U. (2021, February). Digital Inclusion for All. https://www.un.org/development/desa/dspd/ wp-content/uploads/sites/22/2021/02/Draft-DigitalInclusion4All- OnlineGlobalForum2021-8Feb.pdf

Nations, U. (n.d.). Ensure availability and sustainable management of water and sanitation forall. United Nations. https://sdgs.un.org/goals/goal6

Ndungu, M. (2023, March 11). Gatundu landowners move to court seeking to stop Ruto's Ksh13b Dam Project. People Daily. https://www.pd.co.ke/news/gatundu-landowners- move-to-court-seeking-to-stop-rutos-ksh13b-dam-project-172648/

Ndungu, M. M. (2017). Sustainability of Community Based Projects Undertaken by commercial Banks in Kenya: A Case of Barclays Bank. https://ir- library.ku.ac.ke/handle/123456789/19149?locale-attribute=fr

Njenga, S. (2020, June). Water project to serve 20,000 Kiambu residents. https://www.the-star.co.ke/counties/central/2020-06-11-water-project-to-serve-20000-kiambu- residents/

Organisation, W. H., & United Nations Children's Fund. (2021). 2000-2020 five years into the sdgs - washdata.org. https://washdata.org/sites/default/files/2021- 07/jmp-2021-wash-households.pdf

Ouko, E. (2019). Report of the Auditor-General on Kiambu Water Company and SewerageLimited for the

year ended 30 June 2018 Report on the financial statements. https://www.oagkenya.go.ke/wp-content/uploads/2021/09/Kiambu-Water-Company- and-Sewerage-Limited-2017-2018.pdf

Phillips, R. A., Barney , J. B., Freeman , R. E., & Harrison, J. S. (2019). Stakeholder Theory. https://scholarship.richmond.edu/cgi/viewcontent.cgi?article=1105&context=ma nagement-faculty-publications

Svensson, A., & Dollerup, E. (2020, May). Improving Project Resource Management in Project Based Organisations. https://www.diva-portal.org/smash/get/diva2:1446827/ FULLTEXT01.pdf

Tafara, A. C. (2013). Factors influencing sustainability of rural community based water ... http://erepository.uonbi.ac.ke/bitstream/handle/11295/56220/Tafara_Factors%20Influ encing%20Sustainability%20Of%20Rural%20Community%20Based%20Water%20P rojects%20In%20Mtito%20Andei%2C%20Kibwezi%20Sub- County%2C%20Kenya.pdf?sequence=5

Tamara Morte-Nadal, & Miguel Angel Esteban-Navarro. (2022, January).Digital Competences for Improving Digital Inclusion in E-Government Services: A Mixed-Methods Systematic Review Protoc ol.https://journals.sagepub.com/doi/10.1177/16094069211070935

UNESCO. (2010). Waterfor sustainable urbanhuman settlements. Unesdoc.unesco.org. https://unesdoc.unesco.org/ark:/48223/pf0000211294#:~:text=WAC%20specifically%20promotes%20 pro%2Dpoor,the%20world's%20cities%20are%20manageable.

UNICEF. (2022). Water Crisisin the Horn of Afric. https://www.unicef.org/ media/126006/ file/water-crisis-horn-africa-2022.pdf

Verhulst, E., & Lambrechts, W. (2015). Fostering the incorporation of sustainabledevelopment in higher education. Lessons learned from a change management perspective. https://www.sciencedirect.com/science/article/abs/pii/S0959652614009792

Water integrity Network. (n.d.). A Carefully Planned Effort to accomplish a specific of a project. https://www.waterintegritynetwork.net/2015/12/04/project-management/#:~:text=Project%20 management%20is%20a%20carefully,and%20expectations%20from%20a%20project.

Water Services Regulatory Board. (2020). Public notice: Proposed formation of Kiambu Water Company. WASREB. https://wasreb.go.ke/purported-dissolution-of-boards-of- water-companies-in-muranga-county-2-2-2/

Whyte, J., Stasis, A., & Lindkvist, C. (2016). Managing change in the delivery of complex projects: Configuration management, asset information and 'big data.' https://www.sciencedirect.com/science/article/pii/S0263786315000393

World Bank Group. (2021, November 13). Global Water Security & SanitationPartnership: Working with Country Partners for a resilient water future

World Bank. https://www.worldbank.org/en/news/feature/2021/11/15/global-water- security-sanitation-partnership-working-with-country-partners-for-a-resilient-water- future

Yin, R. K. (2018). Case Study Research and Applications Design and Methods.