

Project Design Approaches, Community Participation and Performance of Water Projects

Obadiah Mutinda Kithome¹, Dr. Angeline Mulwa², Dr. Charles M. Wafula³

¹PhD Student, University of Nairobi-Kenya

^{2,3}Lecturers, University of Nairobi-Kenya

Abstract: The performance of water projects can be influenced by project design approaches and community participation. Access to water is a basic human need and a fundamental human right that is key for human and economic development. The provision of sustainable water supply in terms of quantity and quality is a critical aspect in achieving socio-economic development. The Constitution of Kenya 2010, states that every person has a right to clean and safe water in adequate quantities, however, this has been impaired by the current poor performance of water projects across the world, which has been a result of project design challenges coupled by low community participation which has led to dismal performance of water projects. The main aim of this study paper was to review existing literature to establish the relationship among project design approaches, community participation, and performance of water projects. In project planning and management context, the performance of water projects can be either positive or negative depending on whether it was implemented within the triple constraint of time, cost, and quality to the scope and delivered sustainable benefits to the clients. The study utilised a desktop review to access the available literature on project design approaches, community participation in the performance of water projects across the world. The study was based on the systems and stakeholder theories and the following propositions were made:- availability of resources, project risk management, monitoring and evaluation, and community participation have a significant influence on the performance of water projects. The paper concluded that project design approaches and community participation influence the performance of water projects. The study recommended that availability of resources, risk management, monitoring and evaluation, and community participation should be clear in the project life cycle stages to enhance performance in the water projects.

Keywords: Project design, project design approaches, community participation, project performance, water projects

I. INTRODUCTION

A project can be considered as a set of activities that must be completed in accordance with specific objectives which involve utilization of a company's resources (Bakar., Razak, Karim, Yusof & Modifa, 2011). The authors further define a project as a temporary endeavor having a definitive beginning and definitive end undertaken to create a unique product or service. According to Project Management Body of Knowledge, a project is a temporary endeavour undertaken to create a unique product, service, or result. The temporary nature of projects indicates that a project has a definite

beginning and end. Projects undergo a series of activities that are necessary to fulfill project goals and objectives.

A project design is a strategic organization of ideas, materials, and processes to achieve project objectives and goals. A good project design will help in avoiding pitfalls by ensuring that a project is implemented timely, within budget, and quality maintained for sustainable outcomes. The performance of water projects is dependent on project design stage of project life cycle which can either be good or bad depending on the design approach employed. Jarocki (2014) argues that project design entails making key decisions on governing and management of the project. In this stage of the project life cycle, a project plan is created that focuses on the availability of resources, risk management, and monitoring and evaluation. The project plan that is created in the design phase is used in managing all other subsequent phases in the project life cycle. Project design provides an estimate of the project budget and reveals how monitoring and evaluation will be conducted (Alqahtani, Chinyio, Mushat & Oloke, 2015). This shows that to enhance project performance, projects should be well designed.

The authors critically reviewed the literature on the availability of resources, risk management, and monitoring and evaluation as the key sub-themes for developing quality design plans for water projects. Availability of resources entails human capital, budget, and equipment. Risk management involves risk identification, risk analysis, and control of risks in the water sector to enhance performance. Monitoring and evaluation helps the project team to track the progress of water projects against the initial set plans for corrective actions and entails project relevance, impact, lessons learnt, and progress report. Minyiri, A. C., and Muchelule, Y. (2018), reveal that monitoring and evaluation influences the performance of water projects and this shows that monitoring and evaluation should be incorporated in the design of water projects to ensure all projects are initiated and implemented to closure effectively and efficiently.

Project performance is determined by the level of capacity building, customer satisfaction, and adherence to the triple constraint of time, cost, and quality. It involves delivering a project on time, within the budget, scope and ensuring that citizens are satisfied. It also justifies the project costs and an assessment of the extent to which the project objectives are being met. Omondi, J. A., Odek, R., & Siringi, E. (2019),

argue that Kenya's water projects leave no doubt that performance is a challenge. This is evident in most water projects that have been undertaken over time with little impact after closure despite the numerous resources spend by Non-Governmental Organizations, private developers, and the Government.

Community participation is the process through which stakeholders influence and share control over development initiatives and resources which affect them. This is determined by the level of involvement, the number of community meetings, and how the citizens prioritize their projects that will address their felt needs. Omondi, J. A., Odek, R., & Siringi, E. (2019), opine that community participation is key in the management of water resources to ensure maximum social benefits to the people. This concurs with Mbui, J. N. (2018) who mentioned that people require opportunities to participate in development projects designed for their benefit as this entrenches a sense of responsibility which translates into the enhanced performance of water projects. In Kenya, there are water projects that have proved to be of no value in relation to their objectives due to underperformance (Kiara & Luketero, 2018).

Performance of water projects is greatly related to the design approaches used during the designing phase in the project life cycle and level of community participation in all stages of a project from initiation to closure. Chukwuma, O. M. (2016), carried out a study on community participation in the rural water supply sector of Enugu State, Nigeria, and opined that for rural development projects to succeed the host community must take an active part in the development and management of such projects. Through community participation mobilisation of local resources will be achieved and thus improve the performance of water projects. It is therefore important to establish how project design approaches and community participation influence the performance of water projects.

II. BACKGROUND OF THE PROBLEM

Water is a fundamental resource needed for social and economic development. The Constitution of Kenya 2010 states that every person has a right to clean and safe water in adequate quantity and quality. However water resource scarcity has emerged as a major problem and in fact, the world is facing a global freshwater crisis (Munyua & Mbugua, 2019). According to Maimuna, M., & Kidombo, H. (2017) most of the water projects in Kenya have been performing dismally with many becoming non-operational or requiring rehabilitation. In Kenya, it is quite a common phenomenon to observe non-functional water projects that are not operational. The authors further indicate that if the current trend of poor performance of water projects is allowed to continue, rural water facilities will be completely non-functional which will significantly lead to a lack of potable water. Performance of water projects is becoming an issue due to the undeniable relationship between poverty and lack of water and sanitation

systems. The absence of drinking water and sanitation systems has a cross-cutting impact on the dynamics of any society, region, or country through their influence on critical areas such as public health, productivity and development, quality of life, and the environment.

Globally, over 1.2 billion people lack access to safe, clean drinking water (Omondi, Odek & Siringi, 2019). The authors argue that most communities have missed the mark in regard to the Millenium Development Goal focus of decreasing considerably the number of individuals lacking accessibility to water supply by 2015. Clean water is a necessity for all humans, however, over 1.2 billion people worldwide lack access to safe drinking water (Maimuna & Kidombo, (2017). Jacob, S. K., & Gichuki, N. (2017) opine that this case worsens the already existing harsh living conditions of the general population across the rural regions in the world.

Regionally, developing countries are the most affected by the poor performance of water projects especially people living in rural areas. Africa is the second driest continent with water availability being critical for survival. Mbui, J. N. (2018), observes that Kenya is a water-scarce country. A larger area approximately over 80% of the country consists of arid and semi-arid with erratic rainfall. In line with Sustainable Development Goal number six, the performance of water projects is an integral aspect of ensuring access to water and sanitation for all which is an enabler for achieving The Big Four number two on food security and nutrition. Availability of water enables farming all through the season and thus ensuring that we strive towards achieving 100% food and nutrition security. The Water Act of 2006 guarantees every citizen the right to access water resources. The Constitution of Kenya 2010, spells out that Kenyans have a right to adequate safe and clean water. This legal framework compels the Government both National and County Governments and any other key development partner to invest heavily in the water sector to ensure that people have enough water for various purposes. For citizens in the rural areas to enjoy the water right and to cater to their continuously increasing need for the commodity, water management projects must be encouraged and supported (Mbui, 2018). This will continuously improve the performance of water projects.

2.1 Statement of the problem

Water is a fundamental resource needed for social and economic development, however, water resource scarcity has emerged as a major problem and the World is facing a global freshwater crisis (Munyua & Mbugua, 2019). It is a constitutional requirement that every Kenyan person has a right to clean and safe water in adequate quality and quantity (COK 2010). Most of the water projects in Kenya have been performing badly with many becoming un-operational or requiring rehabilitation. It is quite a common phenomenon to observe non-functional water projects that are not operational (Maimuna & Kidombo, 2017). The authors further indicate that if the current trend of poor performance of water projects

is allowed to continue, rural water facilities will completely become non-functional which will significantly lead to lack of water.

In the water sector, time, quality, and cost are key indicators of gauging the performance of a project. Projects are initiated to satisfy identified beneficiaries by delivering sustainable benefits to the target clients. The performance level of water projects can be influenced by project design approaches and community participation. Water is key for the sustenance of human life and socio-economic growth, however, the performance of water projects has been dismal and thus unable to achieve Sustainable Development Goal 6 which calls for universal and equitable access to safe and affordable drinking water for all by 2030.

Despite water being a basic need, not everyone has access to it, surprisingly not as a result of lack of water sources but rather due to poor water performance status. This situation raises concerns of why there is still low safe water access regardless of the numerous interventions undertaken by Governments and Non-Governmental Organizations to provide water to the citizens. Water projects have been undertaken to alleviate water scarcity but still the issue of rampant water shortages has been experienced across the globe from time to time in various implemented water projects (Kisumbi, Omboso & Nassiuma, 2017). The scarcity of domestic water has been a challenge to numerous households and organizations hence an impediment to development. Many implemented water projects have yielded little water while others stalled or failed due to poor designs and lack of community involvement in the project cycle. A number of studies have been carried out on the performance of water projects as a function of community participation, for example, Prokopy, L. S. (2005) investigated the relationship between participation and project outcomes in India and found out that capital cost contributions and household involvement in decision making were both associated with indicators of better water system performance. Furthermore, a similar study was carried out by Mukunga, F. M. (2012) and revealed that lack of participation led to poor performance of the Kiserian Dam project. This was attributed to 61.5% of the total respondents.

Despite the continuous efforts to provide adequate water supply by Governments and development partners across the world, there are numerous cases whereby water projects have been abandoned by the community and taps are dry, especially in piped water schemes. This paper will therefore focus on establishing the relationship among project design approaches, community participation, and performance of water projects.

III. PURPOSE OF THE STUDY PAPER

The main aim of this study paper was to carry out an in-depth literature review on project design approaches, community participation and performance of water projects. Specifically, the influence of project design approaches on the performance

of water projects with community participation as a moderating variable.

IV. RESEARCH QUESTIONS

This paper was guided by the following questions;-

- i. To what extent does resource availability influence the performance of water projects?
- ii. To what extent does risk management influence the performance of water projects?
- iii. To what extent does monitoring and evaluation influence the performance of water projects?
- iv. To what extent does community participation influence the performance of water projects?

V. REVIEW OF RELATED LITERATURE

This section of the paper presents literature on the sub-themes in relation to the performance of water projects.

5.1 Resource availability and Performance of Water Projects

Resources are assets that an organization has and can access and utilise in its operations which include human resources, financial resources, materials, and equipment. Project Management Institute (2013) refers resources to the type and quantities of material, human resources, equipment, or supplies required to perform each activity in the project design stage of the project life cycle. The financing provides the monetary resources required to meet the project construction budget as represented in the project bill of quantities. For a project to be implemented within budget, set timelines, and without compromising quality, adequate financing should be factored during the project design stage.

Kanda, E. (2016) ,investigated factors influencing completion of water projects in Kakamega County and concluded that financing is a significant predictor of the completion time of water projects and that it has a strong positive relationship with timely completion of projects. According to Maimuna, M., & Kidombo, H. (2017), for water projects to perform well, financial services should be made available to meet unexpected events during and after implementation. In their study on factors influencing the performance of water projects in arid and semi-arid areas: A case of Ewaso Ng'iro North borehole projects, Isiolo County, Kenya, they argue that availability of maintenance funds was found to have a strong positive relationship with the performance of water projects. This was evident from the coefficient of correlation of 0.706 (70.6%) of the total respondents while 29.1% was attributed to other factors. Kiara, A. N., & Luketero, S. W. (2018), argue that in many cases the implementation of water infrastructure projects is a battle won because the donors or sponsors fail to consider elements that guarantee that projects deliver long-term value. The scope of such projects needs to consider not only the installation but also the capacity-building activities. Lack of capacity building and qualified staff who are a resource underlies many failed donor projects. To overcome this problem, donors need to direct efforts and advocate for

mandatory project skills related to capacity building at the local authority level to increase the chances that the project delivers on the value they were intended for in the first place. A similar study was carried out by Kiara, A. N., & Luketero, S. W. (2018), who examined factors influencing the performance of donor-funded projects: Case of Embu Water and Sanitation Company, Embu County, Kenya. The results of this study concurred with Maimuna, M., & Kidombo, H. (2017) that resource availability influenced the performance of Embu water and sanitation donor-funded projects.

Rugiri, M. N., & Njangiru, J. M. (2018) investigated the effect of resource availability on the performance of water projects funded by Constituency Development Fund in Nyeri County, Kenya. The research established that resource availability plays a critical role in determining the level of project performance. This was determined through the use of Pearson correlation that indicated that 0.754 (75.4%) of the total respondents agreed that resource availability influenced the performance of water projects. Phinehas, N. M., & Odoyo, O. D. (2019) reviewed the factors affecting the performance of community water projects in Kenya and established a positive relationship between the availability of resources and the performance of community development projects. Therefore the availability of resources greatly influences the performance of water projects.

5.2 Project Risk Management and Performance of Water Projects

Projects operate in uncertain environments due to a number of risks that are common during the project life cycle. Risk refers to the probability of exposure. According to Project Management Institute (2013), Project risk is an uncertain event or condition that, if it occurs has a positive or negative effect on one or more project objectives such as scope, schedule, cost, and quality. For water projects to be successful, an organization should be committed to addressing risk management proactively and consistently throughout the project.

Risk management is a systematic process of planning for, identifying, analysing, responding to, and monitoring project risks. Risk management has been widely applied in various types of projects particularly on large construction projects to reduce uncertainties and achieve project success (Hidayatno, Moeis, Sutrisno & Maulidiah, 2015). Wali, K. I., & Hamadameen, B. N. (2019), argues that risk management is a systematic method of looking at risk and consciously determining how each should best be treated for identifying purposes of risk and uncertainty determining their impacts, and developing appropriate management risk plan and responses. Efficient risk management is of critical importance to water utilities and a comprehensive risk management approach is the most effective way to ensure the safety of the drinking water supply.

Risk management influences the performance of water projects as it focuses on reducing the risks over time and

budget. Successful completion of a project in the water sector depends upon proper identification of risk factors as well as determining their impact on the project objectives and the development of procedures and methods for specific risk reduction strategies. Projects undergo different stages and activities for the successful realization of specific goals. The overall goal of project risk management should comprise all stages of identifying, analysing, and responding to different project risks so that the probability of negative impact is reduced and the positive impact increased (Rolik, 2017).

Successful completion of a project in the water sector depends upon the proper identification of the risk factors, as well as determining the extent of their impact on the project objectives and the development of procedures and methods for specific risk reduction strategies (Stoyanova, Petkova & Todorova, 2018). Wali, K. I., & Hamadameen, B. N. (2019) researched risk assessments in the construction of water supply projects in Kurdistan Region-Iraq and concluded that the most critical risk factor which had a great impact on projects according to risk rate is improper estimate quantity and quality of water needed for each individual of the customer and it has become a higher position as a critical risk in the design stage, whereas inaccurate selection of the standard and specifications of materials became the second crucial risk factors. The third most considerable risk was a change of design because of improper understanding of customer needs. A similar study was carried out by Gitau, L. M. (2015) on the effects of risk management at the project planning phase on the performance of construction projects in Rwanda and indicated that risk management practices at the planning stage had a large effect on project performance. Rabechini Junior, R., & Monteiro de Carvalho, M. (2013) also carried out empirical research on understanding the impact of project risk management on project performance and revealed that risk management influences the performance of projects. Water projects should engage project risk managers to help in minimizing the effect of uncertainties in the project life cycle. This will greatly enhance the performance of water projects.

5.3 Monitoring and Evaluation and Performance of Water Projects

Monitoring is the process of collecting, analysing, and interpreting data from the project during the various phases in order to make recommendations. It is a continuous assessment of project undertakings during the implementation stage. The main idea in this is to determine whether outputs, deliveries, and planned schedules have been met so that necessary corrective action can be taken. Crawford, P., & Bryce, P. (2003), argue that the monitoring process is an ongoing process of data capture and analysis for primarily project control with an internally driven emphasis on efficiency of the project. Project evaluation on the other hand refers to a review of elements of success and failure in a project life cycle. This review helps to plan better for future projects. Evaluation in project management can also be said to be a systematic and objective examination of the relevance, effectiveness,

efficiency, and impact of project activities compared to pre-determined objectives. Project monitoring and evaluation is an integral part of the project life cycle and seeks to assure stakeholders that all is going on as desired with regard to the project undertakings.

Project monitoring and evaluation seeks to enhance both the current and future management outputs, outcomes, and impacts. Munyiri A. C, and Muchelule Y. (2018), investigated the influence of monitoring and evaluation on water project performance in Migori County. This was after Migori County report card established that there was a lack of continuity in water projects commenced and that construction of water projects does not help if they fail after a short time. The study revealed that most of the water projects were inactive yet the Government has continued to establish numerous new water projects while giving little regard to rehabilitating existing non-functional ones. The authors of this study concluded that monitoring and evaluation influences the performance of water projects. Community participation is critical in project performance as it offers new ways of assessing and learning from change that is more inclusive and more responsive to the needs and aspirations of the immediate beneficiaries (Munyiri&Muchelule, 2018).

A similar study was carried out by Atwa F, and Mudi B.I (2019) on the influence of monitoring and evaluation planning on performance of water supply projects in Kakamega County. According to these authors, monitoring and evaluation is relevant in the management of project scope, time, and cost. The results of the study concur with Munyiri A. C, and Muchelule Y. (2018), that monitoring and evaluation contribute to improved performance of water projects, and thus monitoring and evaluation planning cannot be underestimated. In addition, Mgoba S.A. and Kabote S.J, (2020) carried out a study on the effectiveness of participatory monitoring and evaluation on the achievement of community-based water projects in Tanzania. The authors recommended for strengthening of capacity building for local communities to manage community-based water projects easily and strengthening of participatory monitoring and evaluation for governmental and non-governmental funded community-based water projects to improve the achievement of the projects. Capacity building will ensure that communities are able to manage their projects in absence of external support. This will greatly reduce the time taken to repair broken-down pumps/machines or any other water infrastructure hence reduce the distances taken to water sources mainly by women and girls. It is very key to ensure accessibility to clean potable water as this will help in keeping the girl child in school and improve socio-economic development since women will be able to engage in more income-generating activities, especially in the rural areas.

5.4 Community Participation and Performance of Water Projects

Participation is a process through which stakeholders influence and share control over development initiatives and the decision and resources which affect them. Community participation is described as a process by which various individuals from all sects take control of decisions that affect their lives. Participation of the community increases project effectiveness because of the objectives which are met and the benefits to the society. It also helps in building beneficiary capacity through active participation and training during project planning and implementation. According to Harvey & Reed (2007), the participation of project beneficiaries is of great essence in that it enhances the sense of ownership among members of the community. This is important to ensure that all implemented projects are maintained after the closure stage.

In Kenya, community participation is a legal requirement as enshrined in the Constitution of Kenya, 2010, that clearly states that citizens must be involved in decision-making on matters that affect their day-to-day life. This will lead to sustainable development which is coupled by increased project performance. Njogu J, M and Wanjohi J, M. (2018) carried out a study on the influence of community participation on project performance of Ruiru water projects and concluded that community participation in financial planning had a moderate influence on project performance, community participation in monitoring and evaluation had a moderate positive influence on project performance and that community participation in project operations and management had a weak positive influence on performance. They further argued that community members were indifferent to the project by not visiting project sites, failing to attend meetings to discuss overall performance by scrutinizing progress reports. The authors opine that meetings and site visits should be organised regularly to inculcate a culture of accountability and transparency in project management.

Community participation is not a mere involvement of members of the beneficiary community but also empowering people and helping them make decisions on desired developmental outcomes. The success or failure of a community-based water management project can be influenced by the level of community participation and ownership, training, and education of project leaders (Jacob & Gichuki, 2017). The authors concluded that the more rural people were involved in addressing their development and this was associated with the success of water projects. The beneficiary community has to be active since it understands its felt needs, dynamics of implementing projects in the local areas, and accruing benefits better than external donors.

According to Mukunga, F. M. (2012), community participation in all the various stages of project development will ensure that communities own the projects and that their needs are met sustainably. Donors will be willing to fund a

project that has involved the target communities as this will ensure the sustainability of the project even after the funding period has expired. The research concluded that weak levels of community participation in all stages of the project life cycle from inception to closure led to inadequate performance of the Kiserian dam. Thwala W.D (2010) carried out a similar study on community participation as a necessity for the project success of a rural water supply project in South Africa. In his paper, he argued that the objectives of community participation are empowerment, building beneficiary capacity, increasing project effectiveness, improving project efficiency, and project cost-sharing. Further, the study gathered that 40% of the people in the community were illiterate and had no skills and thus he recommended that for water projects to succeed, communities should be involved in decision making that affects their lives. Maimuna, M., & Kidombo, H. (2017) studied factors influencing the performance of water projects in arid and semi-arid areas: A case of Ewaso Ng'iro North borehole projects in Isiolo County and revealed that community participation leads to 0.833 (83.3%) increase in performance of water projects. The study found out that community participation greatly and positively influences the performance of water projects.

Consequently, Chukwuma, O. M. (2016) researched community participation in the rural water supply sector of Enugu State, Nigeria, and indicated that community participation in the development and management of rural water schemes is a sure sign that the scheme has a bright chance of functioning optimally on a sustainable basis. From the above literature reviewed, it is evident that community participation has a moderating effect on the relationship between project design approaches and the performance of water projects.

VI. THEORETICAL FRAMEWORK

Theoretical framework entails coming up with theories that support an argument under study. A theory is an explanation of an observed phenomenon over a period of time (Wambugu L.N., Kyalo N.D., Mbii M., & Nyonje O., R., 2015). This study was guided by the systems theory and stakeholder theory.

6.1 Systems theory

This paper was guided by the Systems theory. This theory was founded by Ludwig von Bertalanffy (1968). He was a German biologist who devised a general systems theory that could be used to explain how an organism worked: this could be achieved by studying the transactional processes happening between different parts of a system. A system is a set of two or more interrelated elements where each element affects the functioning of the whole. Each element is affected by at least one other element in the system and all possible sub-groups in the system affect each other. He further argues that a system will not survive if not purposely supported by an outside agency, thus well-organized and coordinated efforts to sustain its structure and its functioning must exist.

Performance of water projects fits well in this analogy of the system as put forward by Ludwig von Bertalanffy because projects design approaches and community participation with the different elements which include the availability of resources, risk management, monitoring and evaluation, and community participation influence the performance of water projects. The main goal of initiating water projects is to have sustainable benefits to the identified beneficiaries and thus project performance becomes a key issue in the water sector that must be thought of in all stages of a project from inception to completion. In a nutshell, systems theory is relevant in explaining the performance of water projects which can only happen as a result of interaction between or among different elements such as availability of resources, risk management monitoring and evaluation, and community participation in the project setup.

6.2 Stakeholder theory

The study was also guided by the stakeholder theory that was developed by Freeman (1984). A stakeholder can be said to be an individual, a group, or an organization that is positively or negatively affected by a project. Stakeholders are any groups or individuals who can influence project success and whose living environments are positively or negatively affected by the project. Freeman argued that stakeholders are those groups without whose support the organization would cease to exist.

In project design approaches, community participation and performance of water projects, this theory can be applied to explain the performance of projects because when various sub-themes such as monitoring and evaluation, availability of resources, risk management, and community participation are involved or participate in the project life cycle, the performance of the project is likely to improve (Lynch, 1993). Community participation in project design and monitoring and evaluation brings about diversity in project management and thus enhanced project success. The theory can adequately explain the performance of water projects which can be a result of a diverse contribution by different stakeholders in the project life cycle and environment.

VII. CONCEPTUAL FRAMEWORK

This study was guided by a conceptual framework showing the relationship among the research variables. Performance of water projects is the dependent variable that varies as a result of changes in the independent variable, project design approaches with the availability of resources, risk management, and monitoring and evaluation as the sub-themes. Community participation is the moderating variable that has a significant contributory effect on the relationship between project design approaches and the performance of water projects. The conceptual framework is as shown in the figure below.

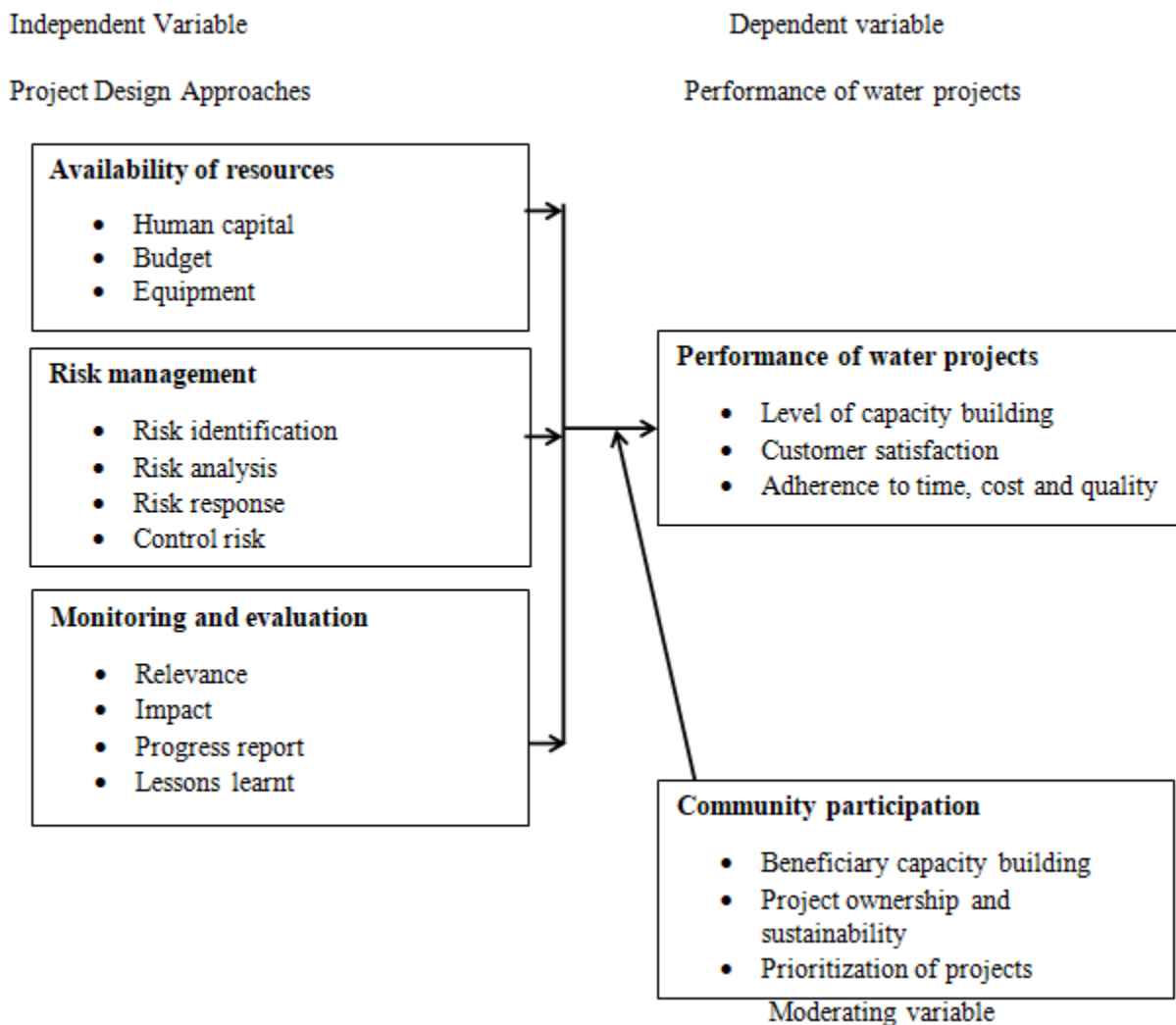


Figure 1: Conceptual Framework

7.1 Propositions

Building from the conceptual framework that guides this study, the following propositions were made.

7.1.1 Availability of resources has a significant influence on the performance of water projects

Resource availability plays a critical role in determining the level of water projects' performance. Resources are assets that an organization has and can access and utilise in its operations which include human resources, financial services, material, and equipment. Availability of the required resources will influence the performance of water projects by ensuring that initiated projects are implemented with the set timeframe, cost, and without compromising quality thus enhancing the supply of good quality and quantity of potable water to the target beneficiaries. This proposition can be supported by Rugiri, M. N., & Njangiru, J. M. (2018) who studied the effect of resource availability on the performance of water projects funded by constituency development fund in Nyeri County, Kenya, and established that there was a positive relationship

between the availability of resources and performance of water projects. Furthermore, this concurs with Maimuna, M., & Kidombo, H. (2017) who investigated factors influencing the performance of water projects in arid and semi-arid areas: A case of Ewaso Ng'iro North borehole projects, Isiolo County, Kenya and established that for water projects to perform well, financial services should be made available to meet unexpected events in the future. This will greatly reduce the dependence on donors. Specifically, availability of maintenance funds was found to have a strong positive relationship with the performance of water projects.

7.1.2 Project Risk Management has a significant influence on the performance of water projects

Project risk management influences the performance of water projects to a great extent. Efficient risk management is of critical importance to water utilities and a comprehensive risk management approach is the most effective way to ensure the safety of drinking water supply. Risk management influences the performance of water projects as it focuses on reducing

the risks over time and budget. Successful completion of a project in the water sector depends upon proper identification of risk factors as well as determining their impact on the project objectives and the development of procedures and methods for specific risk reduction strategies.

7.1.3 Monitoring and evaluation has a significant influence on the performance of water projects

Project monitoring and evaluation is an integral part of the project life cycle and seeks to assure stakeholders that all is going on as desired with regard to the project undertakings. In the water sector, monitoring and evaluation practices provide information relevant to ensure those project activities are implemented as planned and that the output and impacts are measured for future improvements. Project monitoring and evaluation significantly influences the performance of water projects by ensuring by providing relevant information that helps in managing the entire project life cycle. Minyiri, A. C., and Muchelule, Y. (2018) studied the influence of Monitoring and Evaluation on Water Project Performance in Migori County, Kenya, and confirmed that monitoring and evaluation influenced the performance of water projects in Migori County. In addition, Mgoba, S. A., & Kabote, S. J. (2020), investigated the effectiveness of participatory monitoring and evaluation on the achievement of community-based water projects in Tanzania and recommended strengthening of capacity building for local communities to manage community-based water projects easily. The study also advocated for participatory monitoring and evaluation to ensure that communities can manage the water projects in absence of external support which will reduce the distance to water sources by women and girls. Monitoring and evaluation E is relevant in the management of project scope, time, cost, and quality and concluded that monitoring and evaluation planning cannot be underestimated and contributes to improved performance of water projects. In a nutshell, monitoring and evaluation is inseparable from the performance of water projects since all stages in the project life cycle from inception to closure should incorporate monitoring and evaluation for the success of the project.

7.1.4 Community Participation has a significant influence on the performance of water projects

Community participation is considered as one of the prerequisites for improved performance of water projects. The success or failure of a community-based water management project can be influenced by the level of community participation and ownership, training, and education of project leaders (Jacob & Gichuki, 2017). The authors concluded that the more rural people were involved in addressing their development and this was associated with the success of water projects. Community participation in water projects is key since the beneficiary community will be able to identify and prioritise projects that are able to holistically address their felt needs thus leading to sustainability after closure which translates into improved performance of water projects.

VIII. RESEARCH GAPS

From the literature reviewed on project design approaches, community participation, and performance of water projects, the following gaps have been identified by the author of this independent conceptual study paper. Many scholars have carried out investigations on the influence of community participation on the performance of water projects however the researchers did not look into the aspect of disability mainstreaming. Disability mainstreaming is the key element in ensuring inclusivity of the marginalised groups which consequently influence the performance of water projects.

Also, in the project design context, it is notable that the protection and conservation of water catchment areas is a vital factor that can influence the performance of water projects. Project managers must ensure they incorporate an element of protection and conservation of water sources. This will ensure sustainable access to an adequate supply of potable water to the citizenry.

IX. CONCLUSION

Based on the reviewed literature, it can be concluded that project design and community participation influence the performance of water projects and therefore projects should be designed holistically to avoid pitfalls that can negatively influence the performance of projects. Also, community participation should be made mandatory in all stages of a project life cycle. This will enhance ownership, capacity building of the local community, and thus sustainability and improved performance of water projects.

X. RECOMMENDATIONS

This independent conceptual study paper recommends the following:-

Availability of resources necessary for implementation and maintenance of water projects should be well mobilised to ensure that projects take off to completion within the stipulated time frame in the design stage. This will also ensure that the water projects are sustainably maintained and are continuously functional to provide water to the beneficiary community.

Project risk management should be planned and budgeted while designing water projects. Water projects implementing agencies should engage project risk managers and continuously engage their staff on risk management seminars for capacity building. In addition, it is important to ensure adequate risk mitigation measures in order to thwart adverse uncertainties and events that may derail sustainable delivery of results in the water sector.

In the current project planning and management in the water sector context, monitoring and evaluation should be planned for in all projects. This will ensure that water projects adhere to the triple constraint of time, cost, and quality which also form part of the performance indicators. Monitoring and evaluation will provide facts on how to keep the project on

track and also ensure that a project achieves the set objectives to transform the lives of people.

Community participation should be emphasised in the development and management of community water projects. This will ensure that projects are implemented in line with the triple constraint and that they will deliver sustainable benefits to the target population.

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