Journal of Entrepreneurship & Project Management

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ISSN: 2616-8464

Stratford Peer Reviewed Journals and Book Publishing
Journal of Entrepreneurship & Project Management
Volume 7||Issue 1||Page 40-54 ||January||2024|
Email: info@stratfordjournals.org ISSN: 2616-8464

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***How to cite this article*: Mutoni H., & Afolabi A. (2024). The Role of Effective Planning on Performance of Kigali Bulk Water Supply Project in Kanzenze Cell in Bugesera District, Rwanda. *Journal of Entrepreneurship & Project Management. Vol* 8(1) pp. 40-54**
https://doi.org/10.53819/81018102t2317

Abstract

Effective planning is a crucial for the success of any project, as it helps to define objectives, allocate resources and develop strategies to achieve goals. This study aimed to examine the role of effective planning on performance of Kigali Bulk Water Supply Project implemented in Kanzenze cell in Bugesera district in Rwanda. The research achieved the following specific objectives: To determine the role of project scope planning on performance of Kigali Bulk Water Supply project in Kanzenze cell, to assess the role of budget planning on performance of Kigali Bulk Water Supply project in Kanzenze cell, to assess the role of effective communication planning on performance of Kigali Bulk Water Supply project in Kanzenze cell and to determine the role of risk management planning on performance of Kigali Bulk Water Supply project in Kanzenze cell. The study was done through descriptive and correlational research design that involved inferential statistics approach which used in the test of correlation analysis and multiple regression analysis for the establishment of the relationship between effective planning and project performance. The study was guided by three theories which are resource-based view theory, contingency theory and stakeholder theory. As far as this study is concerned, the study relied on the data collected from the respondents for the period of two months from July to August 2023. The population was comprised of respondents of Kigali Bulk Water Supply Project in different departments targeting 200 respondents. The study adopted simple random sampling technique and used Slovin' s Formula to obtain the sample from the study population and the sample size were 133 respondents. Data collection method adopted was closed ended questionnaires. The correlation and regression analysis were performed in SPSS version 27 and through analysis and discussion of results, the researcher found that risk management planning has a positive and significant effect on performance of Kigali Bulk Water Supply Project in Kanzenze cell ($\beta 4=0.835$; $t=19.135$, p-value=.000<.05),the research finding also revealed that project scope planning has a positive and significant effect on performance of Kigali Bulk Water Supply Project in Kanzenze cell ($\beta_1=0.437$; $t=10.301$; p-value=.000<.05). Lastly, the research finding revealed that budget planning has a positive and significant effect on performance of Kigali Bulk Water Supply Project in Kanzenze cell ($\beta_2=0.315$; $t=8.537$; p-value=.000<.05). The researcher found that risk management planning, project scope planning and budget planning are best predictors and have a significant effect on performance of Kigali Bulk Water Supply Project. The study recommended that management of Kigali Bulk Water Supply Project should put more emphasis on providing the adequate training towards the effective planning processes in the

development of water treatment plants to ensure that the project team are aware of all necessary procedures that has to be undertaken in the planning phase so that the project performance can be achieved effectively. The researcher further recommended that project manager should communicate effectively with the project team and stakeholders throughout the project life cycle to ensure that any risks and circumstances that can hinder the progress of the water treatment plant projects are identified early and mitigation measures are provided to ensure that the project will not incur budget overruns and will be completed on time and this will foster the economic growth of the government in the construction sector.

1. Introduction

In project management, there is a universal acceptance that a failure to achieve project performance of the implemented projects are due to not delivering project at its planned cost, not delivering it on the planned project duration, not delivering it with its expected functionality (quality) as well as not delivering it with in the planned scope (Yvette, 2022).According to (Billman, 2014), Rwanda has a smaller population of 11.5 Million, It faces the challenges where 31 percent of the population do not have access to clean water and about 3,000 children die each year from diarrhoea caused by lack of access to clean water and inadequate sanitation. Rain is natural source of water in Rwanda, so the main issue is not water supply but the collection, storage and catchment systems to capitalize on Rwanda's natural sources of water. Decentralization is 76 currently a main focus of the Government of Rwanda to delegate responsibilities to communities in an attempt to increase self-sufficiency. It has been figured out that an increase of the water rates in town can be affordable by people in urban areas which can then finance the measures to alleviate the lack of clean water access by poor communities. Regarding to this identified problem in 2015 the government of Rwanda come up with a solution of Kigali Bulk Water Supply Project to overcome the scarcity of water and provide access to clean water to the citizens of Bugesera and Kigali.

The Kigali Bulk Water Supply project is a public private partnership (PPP) between Government of Rwanda (GoR) represented by the Ministry of Infrastructure, Water Sanitation and Corporation (WASAC), the government water utility company and Kigali Water Limited (KWL). The project scope involves the development, design, financing, construction and operation of 40,000 m^3/day treatment plant then supply 30,000m^3/day to Kigali and 10,000m^3/day to Bugesera. The project comprises of a well field, a water treatment plant constructed by Kigali water limited, and associated forwarding infrastructure provided by the government and constructed by WASAC that includes a storage reservoirs and pipelines. Under a 27-year concession agreement, Kigali water limited will supply bulk water to the WASAC which will then sell to the local consumers. The project is a milestone in Rwanda's progressive vision to build an economic, prosperous and first class developed country. It will provide secured and sustainable water supply that will have a huge impact on the socio-economy development of the country. The project is expected to have strong development outcomes Firstly, by providing clean potable water to the population therefore contributing to improving public health, Secondly, by addressing Rwanda's growing demand in industry sector for reliable water, Thirdly, increased economic growth due to improved productivity particularly for women and redeployment of government budgetary savings to the health sector and lastly strong demonstration effect given that this is the country's first independent water producer project on a large scale in the continent therefore contributing to private sector development (WASAC, 2021).

Many projects implemented in developing countries has failed due to poor and ineffective planning and several studies have been conducted with an aim of determining the success

factors that contributes to project performance. For instance, (Soumi, Soumyajit, & Debasish, 2021) studied the impact of effective construction planning in project performance improvement in India and they concluded that if we assume that the project planning is done in the best way it will create high impacts on project completion. It is the art to make economic growth of the nation. Effective and appropriate construction project planning brings organizational success.

Abura and Omenga (2022) analysed the influence of project planning practices on expenditure overruns in road construction projects in Nairobi and they recommended that project planning practices should be seen as a vital for the successful completion of project, (Christian & David, 2021) assessed the influence of project planning on project performance in public institutions in Rwanda. The study concluded that planning practices influences project performance, (Muhammad, Zohreh, & Mojde, 2013) examined the significance of scope planning on project success and the study found that a major contribution to unsuccessful projects is the lack of understanding or defining project scope at the start of the project. The properly defined and managed scope leads to delivering a quality project in agreed cost and within specified schedules to the stakeholders. The researcher concluded that for the project to achieve its success, project team should spend time at the beginning to accomplish and getting agreement on critical activities before writing project requirements and these activities include clearly defining project scope, goals, project drivers, constraints, assumptions, operational concepts, external interfaces, feasibility and risk assessments so that the project can be delivered on time and on budget and meets customer's expectations. Furthermore, (Ahmed & Lamiaa, 2021) conducted a study aimed to identify the factors affecting the budget planning in construction projects in Egypt and the study found that the project cost estimation accuracy and control through budgeting were positively related to project success. Similarly, a study by (Amjad, Abolfazl, Faizul, & Norhanim, 2019) found that proper budget planning helped to mitigate cost overruns and improve project outcomes. Effective budget planning also helps project managers to avoid unexpected expenses and delays, which can cause project failure. According to a study by (David, 2020) found that poor budget planning was one of the primary reasons for the failure of projects in the construction sector.

However, these researchers concentrated on construction projects such as road construction, building construction and none of them investigated on the construction of water treatment plants specifically in Rwanda. There is a lack of academic studies linking effective planning and project performance with focus on construction of water treatment plant projects. Hence, that gap gave the researcher a motive to undertake the study and examine the role of effective planning on project performance using a case of Kigali Bulk Water Supply Project implemented in Kanzenze cell in Bugesera district in Rwanda. The research has been conducted to evaluate how the effective planning plays a key role towards the project performance with the specific case of Kigali Bulk Water Supply project implemented in Kanzenze cell in Bugesera district. Additionally, with the view of the above forementioned problem, researcher examined the role of effective planning on project performance.

1.1. objective of the study

The main objective of the study was the role of effective planning on the performance of Kigali Bulk Water Supply Project in Kanzenze cell in Bugesera district in Rwanda.

The study sought the following specific objectives:

i. To determine the role of project scope planning on performance of Kigali Bulk Water Supply project in Kanzenze cell.

Stratford Peer Reviewed Journals and Book Publishing
Journal of Entrepreneurship & Project Management
Volume 7||Issue 1||Page 40-54 ||January||2024|
Email: info@stratfordjournals.org ISSN: 2616-8464

ii. To assess the role of budget planning on performance of Kigali Bulk Water Supply project in Kanzenze cell.
iii. To assess the role of effective communication planning on performance of Kigali Bulk Water Supply project in Kanzenze cell.
iv. To determine the role of risk management planning on performance of Kigali Bulk Water Supply project in Kanzenze cell.

1.2.Research hypothesis

The study relied on the below research hypotheses;

i. $H0_1$: There is no significant effect of project scope planning on performance of Kigali Bulk Water Supply Project in Kanzenze cell.
ii. $H0_2$: There is no significant effect of budget planning on performance of Kigali Bulk Water Supply Project in Kanzenze cell.
iii. $H0_3$: There is no significant effect of effective communication planning on performance of Kigali Bulk Water Supply Project in Kanzenze cell.
iv. $H0_4$: There is no significant effect of risk management planning on performance of Kigali Bulk Water Supply Project in Kanzenze cell.

2. Literature review

2.1 Theoretical Review

This study was supported by three theories which are resource-based view theory, contingency theory and stakeholder theory. These theories have been accepted to be applied in examining the role of effective planning towards the project performance.

2.1.1 Resource-based view (RBV) theory

The Resource-based view theory is a management theory that suggests that a company's unique resources and capabilities are the key drivers of its competitive advantage and long-term success. According to RBV theory, a company can achieve sustainable competitive advantage by developing and leveraging its resources and capabilities more effectively than its competitors. Resources can be tangible, intangible and capabilities can include knowledge, skills and organizational processes.one key concept of RBV theory is that resources must be valuable, rare, inimitable and non-substitutable (VRIN) to create competitive advantage. If a resource is not VRIN then it can be easily replicated by competitors and will not provide a long-term advantage. RBV theory is widely used and applied by different managers in project management. It has been a promising theory which examines how resources can drive a competitive advantage. Competitive advantage is the ability to create more values than rivals and therefore generate higher returns on investments. This theory is built on the concept that resources and capabilities are heterogeneous across organizations. Project management resources and capabilities that have been customized to a specific environment and developed over time are not easily imitated (Barney, 1991). According to (Khalid & Paul, 2014), The RBV has become of the most influential strategic management theories cited in the strategic management literature due to its face validity, appealing core message and easy to grasp and learning. However, these advantages come along with the criticisms. Those who are against the application of the RBV are criticizing areas which are mainly related to the state of the definitions that RBV is based on, the empirical and conceptual methodology and deficiency of the concept. The opponents want to temper what they refer to as an overenthusiastic attitude for the RBV, while the supporters feel the advantage outweigh the disadvantages and with minor modification to the theory, it will uphold its historical advantage over other theories and continue to contribute to the advancement of research in other disciplines such as project

management. The advantages of the RBV concept to researchers and practitioners cannot be ignored simply because the concept is not perfect or cannot easily be generalized.

The Resourced-based view theory has contributed not only to the development of new extensions of the RBV theory but also to the success of other theories when integrated with them such as agency and transactions cost theories. The RBV of the firm is a strategic theory that is widely used by managers in project management. It allows them to spread resources according to alignment with strategy, to identify the value of such resources and required capabilities for the competitive advantage of the organization, in addition to providing the managers a snapshot of strength for intervention or for mergers and acquisition.one of application of the RBV theory in project management is in the forming of project teams. By assembling a team with diverse skills and experience, an organization can create a unique resource that can give it a competitive advantage in the market. This is because the team's abilities and expertise will be difficult for competitors to replicate, and this can lead to improved project performance.

The resource-based view theory can be applied in project scope planning to ensure project performance as it suggests that resources and capabilities are the key drivers of the firm's competitive advantage. In regard to project scope planning, the theory can be utilized to identify and leverage the resources needed to attain the project objectives. This includes identifying the necessary personnel, equipment, technology and other resources required to complete the project successfully. It also emphasizes the importance of aligning the project scope with the organization's overall strategic vision which ensures that the project contributes to the organization's long-term success. By leveraging the theory, project managers can ensure that the project scope is well defined, relevant and achievable which leads to better project performance. Additionally, resource-based view theory can also be applied to effective communication planning in project management. The theory emphasizes the importance of utilizing the organization's internal resources effectively, including human resources, technology and communication process to achieve a competitive advantage. Effective communication planning is vital for project success, as it ensures that the project team and stakeholders are aligned, informed and engaged throughout the project. By applying the resource-based view theory, project managers can identify and leverage the organization's internal resources to develop effective communication plans which includes identifying the appropriate communication channels and technologies as well as the skills and knowledge of the project team members to ensure that communication is relevant, timely and effective and this can lead to better project performance and outcomes.

2.1.2 Contingency theory

In accordance with (Muller, Drouin, & Sankaran, 2019),Contingency theory in project management is a theoretical approach that emphasizes the importance of adapting project management practices to fit the unique circumstances of each project. This theory suggests that there is no one-size-fits-all approach to project management, and that the most effective project management practices will vary depending on the specific context in which the project is being carried out. According to contingency theory, the project's success depends on the ability of project managers to match their planning strategies to the unique characteristics of the project and its environment. Effective planning involves developing a customized plan that takes into consideration the project's objectives, resources and risks. The success of this planning approach depends on the project manager's ability to adapt and adjust their plans as new information becomes available. The contingency theory was developed in the 1950s and it resonates with Burns and Stalker's (1994) classic studies on mechanistic and organic structures being appropriate for stable and unstable organizational environments respectively.

This theory is based on the principle that a unit such as an organization or organizational project management elements performs better if its structure is aligned with its context. Earlier versions identified 16 different structural designs for the management of the interactions between projects in multiproject or multiproduct organizations. Criticism of the one dimensionality of the theory that not only does context shape organizational designs but designs also shape contexts led to the refinement of contingency theory's premise to that of being mutually influential and the axiom of structural adjustment to regain fit which postulates that the ultimate cause of structural change is a change in the contingency variable.

From this perspective, the need for structural change arises from the substandard performance that comes from the mismatch of structure and contingency. Some of key concepts within contingency theory in project management include: Situational factors: these are the contextual variables that can impact project management practices such as the size and complexity of the project, the degree of uncertainty involved, the availability of resources, the culture and politics of the organization. Contingency planning: This involves developing alternative plans and strategies to address potential problems or risks that may arise during the project based on the specific situational factors. Flexibility and adaptability: Project managers who follow a contingency approach must be able to adjust their management practices as the project progresses and as new information becomes available.

Contingency theory provides a useful framework for project managers to design and implement effective project management practices that are tailored to the specific needs and constraints of each project. Project managers need to adopt their strategies based on specific circumstances of the project and effective planning can help them anticipate potential issues and develop contingency plans to deal with them. By taking a flexible and adaptive approach, project managers can increase the likelihood of project success and minimize the impact of unforeseen problems or risks (Howell, Windahl, & Seidel, 2010).

Contingency theory can play a role in budget planning for project performance by accounting for potential risks and uncertainties that may impact the project's success. A contingency budget can be included in the overall project budget to allow for unforeseen events or changes that may require additional resources or funding. By incorporating a contingency budget, project managers can be better prepared to address unexpected challenges without negatively impacting the project's overall performance. Additionally, contingency planning can help ensure that project teams remain agile and adaptable in the face of changing circumstances which can ultimately lead to improved project outcomes. Furthermore, contingency theory can also be applied to risk management planning for project performance as it allows for the consideration of potential risks and the development of strategies to mitigate or respond to them. By analysing variables such as project complexity, uncertainties and stakeholder behaviour, project managers can develop risk management plans that are tailored to the specific needs of their project. This may include identifying and prioritizing risks, developing response plans and allocating resources for mitigation efforts. Ultimately, effective risk management risk planning can help ensure that project remains on track and prevent potential setbacks from affecting the project performance.

2.1.3 Stakeholder theory

The stakeholder theory was identified and released by philosopher and a Professor Edward Freeman in his article about the theory in 1983 which later on he published a book strategic management: A stakeholder Approach (Megan, 2022). Stakeholder theory provides a valuable framework for understanding and managing the relationship between an organization and its stakeholders. When applied to project performance, stakeholder theory can offer insights and

strategies for effectively engaging with stakeholders to enhance project outcomes. Stakeholder theory helps in identifying all relevant stakeholders associated with a project, both internal and external. By analysing their interests, power and influence, project managers can prioritize stakeholders based on their importance to the project's success. It also emphasizes the importance of understanding stakeholder expectations and incorporating them into project planning. By considering the diverse needs and interests of stakeholders, project managers can align project goals, objectives and deliverables to meet stakeholder expectations thus increasing the likelihood of project success. Moreover, engaging stakeholders in decision-making processes can foster a sense of ownership and commitment to the project. Stakeholder theory encourages involving relevant stakeholders in project planning, monitoring and decision-making. Their input can provide valuable insights, contribute to more informed decisions and increase the chances of successful project outcomes. Stakeholder theory also emphasizes the importance of considering multiple perspectives when evaluating project success. Project performance should be assessed not only based on traditional metrics like cost, schedule and quality but also by considering stakeholder satisfaction, engagement and long-term impacts. This holistic evaluation helps in capturing all the outcomes and impacts that are important to stakeholders.

By integrating stakeholder theory into project planning processes, project planners can effectively identify, engage and manage stakeholders. This approach ensures that project plans align with stakeholder needs and expectations, minimizes risks and conflicts and maximizing stakeholder support hence contributing to improved project performance. Furthermore, by applying stakeholder theory towards project performance, organizations can enhance stakeholder relationships, minimize risks and improve project outcomes. Taking a stakeholder-centric approach ensures that projects are aligned with stakeholder interests and expectations, ultimately leading to greater success and sustainability (Jeffrey, 2019).

2.2 Conceptual framework

The conceptual framework gives a depiction on how variables under the study are related to each other referring to research objectives and questions. The variables defined here are independent and dependent variables. The independent variables influence the dependent variables. Effective planning was independent variable measured through project scope planning, budget planning, effective communication planning and risk management planning while project performance was dependent variable which were delivering project on time, within the planned budget, with quality standards and with the desired project specifications.

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Journal of Entrepreneurship & Project Management
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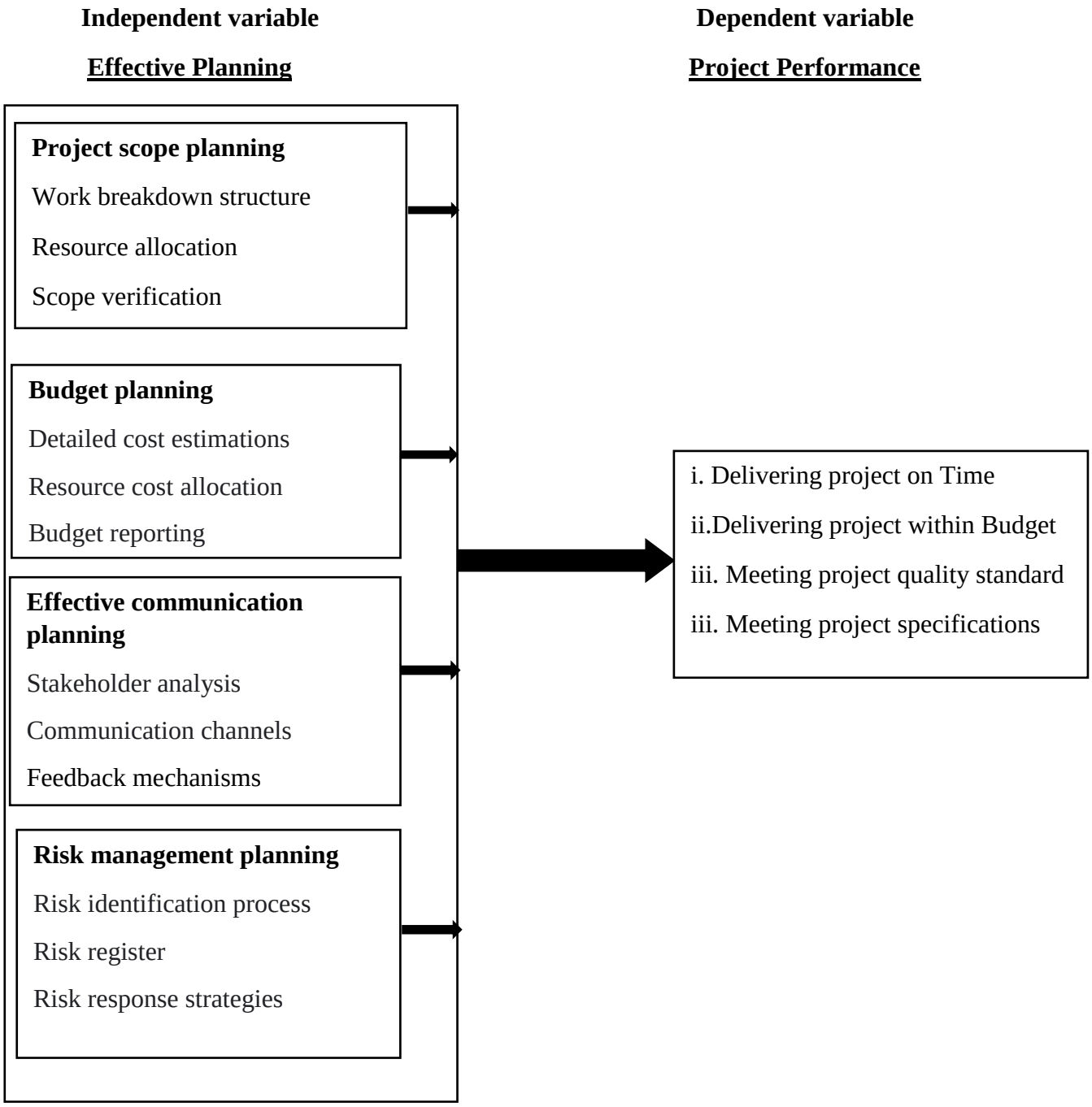
Email: info@stratfordjournals.org ISSN: 2616-8464



Source: (Researcher,2023)

Figure 1.Conceptual framework

3. Research methodology

The researcher used primary data during the study, Descriptive and correlational research design were chosen as it enables us to present data in more meaningful way and allows simpler interpretation of the association among variables. Therefore, the study relied on descriptive survey design and ascertained the role of effective planning on performance of Kigali Bulk Water Supply Project in Kanzenze cell in Bugesera district in Rwanda.

The study population depends on the research questions and the extent of the researcher's examination. With regard to this study, the study population were 200 employees of Kigali water limited with is the implementer and owner of the Kigali Bulk Water Supply project implemented in Kanzenze cell in Bugesera district in Rwanda. Slovin's Formula allows a researcher to sample the population with a desired degree of accuracy. The study considered a sample size of 133 respondents.

The study used quantitative research approach. The quantitative research approach was chosen to meet the purpose of examining how an independent variable affects the dependent variable. To collect data for the study, primary data gathering method was employed. Questionnaire was the key instrument used as a primary source of data collection The survey questionnaire was preferred due to its less expensive in administering written questions, permit anonymity and relatively responses are thought to be true and honest.

Quantitative data was analysed using both descriptive and inferential analysis. Descriptive analysis such as frequencies and percentages were used to present quantitative data in form of tables. Data from questionnaires was coded and logged in the computer using Statistical Package for Social Science (SPSS Version 27) and run descriptive analysis.

4. Research findings

This chapter presented the research findings and discussions on the role of effective planning on performance of Kigali Bulk Water Supply Project in Kanzenze cell in Bugesera district. The research findings were analysed and presented based on the research specific objectives.
This section described the inferential statistics including correlation and regression analysis used to test the hypotheses of the study.
According to Table 1. Research results showed the correlation between variables under the study. The results indicated that there is a significant relationship between project scope planning and performance of Kigali Bulk Water Supply Project in Kanzenze cell with significant value 0.000 which is less than the significant level (0.05) and Pearson correlation coefficient of 0.575. the result also showed that there is a significant relationship between budget planning and performance of Kigali Bulk Water Supply Project in Kanzenze Cell with significant value 0.000 which is less than the significant level (0.05) and Pearson correlation coefficient of 0.892. Furthermore, the result revealed that there is a significant relationship between effective communication planning and performance of Kigali Bulk Water Supply Project in Kanzenze cell with significant value 0.000 which is less than the significant level (0.05) and Pearson correlation coefficient of 0.405. the result also showed that there is a significant relationship between risk management planning and performance of Kigali Bulk Water Supply Project in Kanzenze cell with significant value 0.000 which is less than the significant level (0.05) and Pearson correlation coefficient of 0.817 see Table1.

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Email: info@stratfordjournals.org ISSN: 2616-8464

Table 1. Correlation Matrix

Correlations

		Project Scope Planning	Budget Planning	Effective Communication Planning	Risk Management Planning	Project Performance
Project Scope Planning	Pearson Correlation	1	.629**	.361**	.236**	.575**
	Sig. (2-tailed)		.000	.000	.006	.000
	N	133	133	133	133	133
Budget Planning	Pearson Correlation	.629**	1	.430**	.683**	.892**
	Sig. (2-tailed)	.000		.000	.000	.000
	N	133	133	133	133	133
Effective Communication Planning	Pearson Correlation	.361**	.430**	1	.666**	.405**
	Sig. (2-tailed)	.000	.000		.000	.000
	N	133	133	133	133	133
Risk Management Planning	Pearson Correlation	.236**	.683**	.666**	1	.817**
	Sig. (2-tailed)	.006	.000	.000		.000
	N	133	133	133	133	133
Project Performance	Pearson Correlation	.575**	.892**	.405**	.817**	1
	Sig. (2-tailed)	.000	.000	.000	.000	
	N	133	133	133	133	133

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

Source: (Field data, 2023)

Based on the results obtained in the Table 2., the Durbin-Watson value is 1.901 which is close to 2. Therefore, the researcher accepted the null hypothesis i.e., the assumption that errors are independently distributed is met see Table 2.

Table 2.Assumption-Errors are independently distributed

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.973[a]	.947	.945	.10822	1.901

a. Predictors: (Constant), Risk Management Planning, Project Scope Planning, Effective Communication Planning, Budget Planning

b. Dependent Variable: Project Performance

Source: (Field data, 2023)

Based on the results obtained in the Table 3., Variance Inflation Factor (VIF) values for all variables (2.260,3.689,2.176 and 3,696) ranges between 1 and 5. Therefore, there is no multicollinearity i.e., independent variables don't have significant correlation between them see Table3.

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Table 3.Multicollinearity Assumptions

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients			Collinearity Statistics	
		B	Std. Error	Beta	t	Sig.	Tolerance	VIF
1	(Constant)	-1.304	.159		-8.215	.000		
	Project Scope Planning	.437	.042	.315	10.301	.000	.442	2.260
	Budget Planning	.315	.037	.333	8.537	.000	.271	3.689
	Effective Communication Planning	-.312	.027	-.350	-11.669	.000	.460	2.176
	Risk Management Planning	.835	.044	.748	19.135	.000	.271	3.696

a. Dependent Variable: project Performance

Source: (Field data, 2023)

The study results in Table 4. revealed that effective planning (project scope planning, budget planning, effective communication planning and risk management planning) has a significant effect on performance of Kigali Bulk Water Supply Project with a positive coefficient of determination of 0.947 and this indicates that there is a positive significant correlation between effective planning and performance of Kigali Bulk Water Supply Project in Kanzenze cell see Table4.

Table 4. Model Summary

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.973[a]	.947	.945	.10822

a. Predictors: (Constant), Risk Management Planning, Project Scope Planning, Effective Communication Planning and Budget Planning

Source: (Field data, 2023)

Results in Table 5. showed analysis of variance (ANOVA) between independent and dependent variables whereby F=572.875 and p value 0.000 which is less than significant level (0.05) and this indicates that the regression is significant. Therefore, effective planning (project scope planning, budget planning, effective communication planning and risk management planning) are good predictors of performance of Kigali Bulk Water Supply Project in Kanzenze cell see Table 5.

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Table 5. ANOVA Test

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	26.839	4	6.710	572.875	.000[b]
	Residual	1.499	128	.012		
	Total	28.338	132			

a. Dependent Variable: Project Performance
b. Predictors: (Constant), Risk Management Planning, Project Scope Planning, Effective Communication Planning, Budget Planning

Source: (Field data, 2023)

The regression equation is $Y=-1.304+0.437X_1+0.315X_2-0.312X_3+0.835X_4+\varepsilon$

Results in Table 6. regression equation showed that performance of Kigali Bulk Water Supply Project depends on a constant factor of -1.304 regardless of other predictors.

The results revealed that every unit increase in project scope planning leads to the increase in performance of Kigali Bulk Water Supply Project by a factor of 0.437, every unit increase in budget planning leads to the increase in performance of Kigali Bulk Water Supply Project by a factor of 0.315, every unit increase in effective communication planning leads to the decrease in performance of Kigali Bulk Water Supply Project by a factor of 0.312 and every unit increase in risk management planning leads to the increase in performance of Kigali Bulk Water Supply Project by a factor of 0.835.

Stakeholder theory is relevant to project management because projects often involve a wide range of stakeholders, each with their own interests and expectations. Effective project management requires managing the needs of all stakeholders in order to achieve the project goals. The key benefit of stakeholder involvement in project planning is that it can help to ensure that the project meets the needs of all stakeholders. When stakeholders are involved in the planning process, they have the opportunity to provide input and feedback on the project goals, scope, budget and schedule. This can help to identify and address any potential conflicts or concerns early on, and to develop a plan that is more likely to be successful hence achieving project performance. The present study corresponds with the result of the previous study by the Project Management Institute PMI (2017) found that a one-unit increase in risk management planning was associated with a 0.733 increase in project performance.

The study suggested that risk management planning has a strong and positive impact on the likelihood of the project performance. Pinto, Slevin & Prescott (1993) studied the role of planning and project performance in new product development time and cost in Carolina and the study found that a one-unit increase in project scope planning was associated with a 0.656 increase in project performance. The study suggested that project scope planning has a significant impact on project performance as measured by factors such as on-time completion, within-budget completion and stakeholder satisfaction. Furthermore, Wysocki, Beck & Crane (2019) studied the impact of effective budget planning on project performance in Florida and the study found that a one-unit increase in budget planning was associated with a 0.598 increase in project performance. The study suggested that budget planning has a moderate impact on the project performance.

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Email: info@stratfordjournals.org ISSN: 2616-8464

According to this study, the results showed that, every unit increase in risk management planning leads to the increase in performance of Kigali Bulk Water Supply Project by a factor of 0.835 and every unit increase in project scope planning leads to the increase in performance of Kigali Bulk Water Supply Project by a factor of 0.437 and lastly, every unit increase in budget planning leads to the increase in performance of Kigali Bulk Water Supply Project by a factor of 0.315.

As a conclusion, the researcher found that all the p-values of the predictors are 0.000 which is less than significant level 0.05, Therefore, the researcher rejected null hypotheses: H01: There is no significant effect of project scope planning on performance of Kigali Bulk Water Supply Project in Kanzenze cell, H02: There is no significant effect of budget planning on performance of Kigali Bulk Water Supply Project in Kanzenze cell, H03: There is no significant effect of effective communication planning on performance of Kigali Bulk Water Supply Project in Kanzenze cell and H04: There is no significant effect of risk management planning on performance of Kigali Bulk Water Supply Project in Kanzenze cell. While accepted the alternative hypotheses: H1a: There is significant effect of project scope planning on performance of Kigali Bulk Water Supply Project in Kanzenze cell, H1b: There is significant effect of budget planning on performance of Kigali Bulk Water Supply Project in Kanzenze cell, H1c: There is significant effect of effective communication planning on performance of Kigali Bulk Water Supply Project in Kanzenze cell and H1d: There is significant effect of risk management planning on performance of Kigali Bulk Water Supply Project in Kanzenze cell see Table6.

Table 6. Regression Coefficients

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	-1.304	.159		-8.215	.000
	Project Scope Planning	.437	.042	.315	10.301	.000
	Budget Planning	.315	.037	.333	8.537	.000
	Effective Communication Planning	-.312	.027	-.350	-11.669	.000
	Risk Management Planning	.835	.044	.748	19.135	.000

a. Dependent Variable: Project Performance

Source: (Field data, 2023)

5. Conclusion

Based on the results of the correlation and regression analysis obtained through SPSS version 27, the results revealed that project scope planning, budget planning, effective communication planning and risk management planning are good predictors of the performance of the Kigali Bulk Water Supply Project in Kanzenze cell where the risk management planning is the greatest indicator with β_4=0.835 followed by project scope planning with β_1=0.437 followed by budget planning with β_2=0.315 and lastly effective communication planning with β_3=-

0.312.Additionally,As shown in the findings above, the project scope planning has p-value .000<.05, then the researcher rejected null hypothesis $H0_1$: There is no significant effect of project scope planning on performance of Kigali Bulk Water Supply Project in Kanzenze cell and accepted alternative hypothesis $H1_a$: There is significant effect of project scope planning on performance of Kigali Bulk Water Supply Project in Kanzenze cell. The finding also indicated that budget planning has p-value .000<.05, then the researcher rejected null hypothesis $H0_2$: There is no significant effect of budget planning on performance of Kigali Bulk Water Supply Project in Kanzenze cell and accepted alternative hypothesis $H1_b$: There is significant effect of budget planning on performance of Kigali Bulk Water Supply Project in Kanzenze cell.

The finding again revealed that effective communication planning has a p-value .000<.05, then the researcher rejected null hypothesis $H0_3$: There is no significant effect of effective communication planning on performance of Kigali Bulk Water Supply Project in Kanzenze cell and accepted alternative hypothesis $H1_c$: There is significant effect of effective communication planning on performance of Kigali Bulk Water Supply Project in Kanzenze cell. The findings also showed that risk management planning has a p-value .000<.05, therefore, the researcher rejected null hypothesis and $H0_4$: There is no significant effect of risk management planning on performance of Kigali Bulk Water Supply Project in Kanzenze cell and accepted alternative hypothesis $H1_d$: There is significant effect of risk management planning on performance of Kigali Bulk Water Supply Project in Kanzenze cell.

Effective planning plays a crucial role in project performance as it sets out the foundation for success by ensuring that goals are clearly defined, resources are allocated efficiently, risks are mitigated, and the project stays on the track and aligned with its goals and delivers value to the stakeholders. Based on the interpretation of the collected and analysed data during the study which aimed to assess the role of effective planning on performance of Kigali Bulk Water Supply Project in Kanzenze cell. The researcher concluded that effective planning demonstrates that well-executed planning processes contribute to the project performance by mitigating risks, optimizing resources, facilitating stakeholder engagement, enabling adaptability, ensuring performance measurement and control, and promoting continuous improvement. Therefore, Project managers should emphasize the importance of comprehensive effective planning and its ongoing review and refinement throughout the project lifecycle to enhance performance of the projects.

6. Recommendations

The researcher recommends management of Kigali Bulk Water Supply Project to put more emphasis on providing the adequate training towards the effective planning processes in the development of water treatment plants to ensure that the project team are aware of all necessary procedures that has to be undertaken in the planning phase so that the project performance can be achieved effectively.

The researcher also recommends the Government of Rwanda to put more effort in the mobilization through forums and workshops to ensure that different private and government institutions involved in the development of water treatment plant projects should be taught how effective planning plays an essential role towards the project performance which will eventually help to reduce the failure of many projects in Rwanda.

Acknowledgement

I would like to express my deepest appreciation to my supervisor, Dr. Afolabi Luqman for his guidance, patience and expertise throughout the entire process of this research dissertation. His

insights and feedback have been invaluable in shaping the direction of this study. I sincerely appreciate the senior management of University of Kigali for creating a conductive learning environment and considering project management as major course to be taught.

I would also like to thank my family and friends for their unwavering support and encouragement, especially during the challenging times. Their love and believing in me have been my greatest source of strength.
I am grateful to the respondents who generously shared their time and insights with me. Without their views, I would not respond the overall research objectives. Their willingness to participate in this research made this study possible. I also express my profound gratitude to the management of Kigali Water Limited for their closely collaboration during the data collection.

Lastly, I would like to express my gratitude to the entire staff of University of Kigali for their significant collaboration throughout my studies and for doing their best until I complete my studies with well-equipped knowledge and professionalism in project management and for their overall inputs for this dissertation.

May God bless you all abundantly for the tremendous support you provided to me during the research dissertation period.

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