

of risks and uncertainties that may affect the achievement of objectives, With descriptive statistics of Mean =4.00 and SD=1.02 shows that there is high mean and it is evidence of the existence of the fact and heterogeneity of responses. The results show that 9.1% disagree, 5.0% were neutral, 52.9% agree and 33.1% strongly agree that there is different activities and possible risks from them, With descriptive statistics of Mean =4.09 and SD=0.86 shows that there is high mean and it is evidence of the existence of the fact and heterogeneity of responses. 9.1% disagree, 9.1% were neutral, 16.5% agree and 65.3% strongly agree that there is involvement of external stakeholders and professionals in risk identification, With descriptive statistics of Mean =4.38 and SD=0.98 shows that there is very high mean and it is strong evidence of the existence of the fact and heterogeneity of responses.

The findings show that the majority of respondents agree and strongly on the statement regarding the effects of project risk identification on the success of water supply projects in Nyabihu District.

This is in agreement with study conducted by HM (2004) stated that risk identification is the first step of the risk management process. In order to manage risk, an organization needs to know what risks it faces. This helps to determine the risks that might affect the project and document their characteristics. The identification of risk can be separated into initial and continuous risk identification. Initial identification is for new projects or activity within an organization for which the risks have not been identified. Continuous risk identification is for ongoing project in order to identify new risks which did not previously arise, changes in existing risks in the course of the project, or risks which did exist ceasing to be relevant to the organization.

These findings are similar to the findings by Fageha(20 14) that effective needs identification leads to clear project scope definition which can alleviate the risks of inadequate project planning and inadequate design that can lead to expensive changes during construction, delays, rework, cost overruns, schedule overruns, and project failure.

Table 3: Correlation between project risk identification and success of water supply projects

		Project risk identification	Success of water supply projects
Project risk identification	Pearson Correlation	1	.797**
	Sig. (2-tailed)		.000
	N	121	121
Success of water supply projects	Pearson Correlation	.797**	1
	Sig. (2-tailed)	.000	
	N	121	121

Source: Research findings 2021

Correlation Table 3 shows that project risk identification strongly correlates with success of water supply projects in Nyabihu District: Pearson correlation of 0.797 with a p value of 0.000, which is less than 0.05. This indicates that the relationship between project risk identification and success of water supply projects is significant, implying that having project risk identification has the potential to strengthening success of water supply projects in Nyabihu District.

Table 4: Model Summary on project risk identification and success of water supply projects

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.797 ^a	.635	.632	1.51179

a. Predictors: (Constant), Project risk identification

Source: Research findings 2021

Table 4 shows the value of R-square in this study is 0.635 means that any change on success of water

supply projects (dependent variable) is explained by the independent variable (project risk identification) at 63.5%. This indicates that the model is reasonable, as the independent variable moderately describes the dependent variable. R coefficient of 0.797 indicates a strong positive relationship project risk identification and success of water supply projects in Nyabihu District.

Project Risk analysis

This sub-section refers to presentation, analysis and interpretation of primary data collected on the course of this study regarding the effects of project risk analysis on the success of water supply projects in Nyabihu District.

Table 5: Project risk analysis

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Mean	S.D
Determination of risk consequences and their likelihood.	7	26	8	14	66	3.87	1.41
	5.8%	21.5%	6.6%	11.6%	54.5%		
Comparison of levels of risk found and risk criteria established	8	9	12	42	50	3.96	1.18
	6.6%	7.4%	9.9%	34.7%	41.3%		
Consideration of existing controls, their effectiveness and efficiency.	9	0	19	48	45	3.99	1.09
	7.4%	0.0%	15.7%	39.7%	37.2%		
Collection, storage and processing of risk analysis information	3	5	4	35	74	4.42	.92
	2.5%	4.1%	3.3%	28.9%	61.2%		
Updating and validation of norms and assumptions assumed.	7	4	13	31	66	4.19	1.13
	5.8%	3.3%	10.7%	25.6%	54.5%		

Source: Research findings 2021

The results in Table 5 showed respondents views on project risk analysis of water supply projects in Nyabihu District; 5.8% strongly disagree, 21.5%disagree, 6.6% were neutral, 11.6% agree and 54.5% strongly agree that there is determination of risk consequences and their likelihood., With descriptive statistics of Mean =3.87and SD=1.41 this shows that there is high mean and it is evidence of the existence of the fact and heterogeneity of responses. The results show that 6.6%strongly disagree, 7.4%disagree, 9.9%were neutral, 34.7% agree and 41.3% strongly agree that there is comparison of levels of risk found and risk criteria established, With descriptive statistics of Mean =3.96 and SD=1.18 this shows that there is high mean and it is evidence of the existence of the fact and heterogeneity of responses.

The results show that 7.4%strongly disagree, 15.7% were neutral, 39.7% agree and 37.2% strongly agree that there is comparison of levels of risk found and risk criteria established, With descriptive statistics of Mean =3.99 and SD=1.09this shows that there is high mean and it is evidence of the existence of the fact and heterogeneity of responses.

The results show that 2.5% strongly disagree, 4.1% disagree, 3.3% were neutral, 28.9% agree and 61.2% strongly agree that there is collection, storage and processing of risk analysis information, With descriptive statistics of Mean =4.42 and SD=0.92 this shows that there is very high mean and it is strong evidence of the existence of the fact and heterogeneity of responses.

The results show that 5.8% strongly disagree, 3.3% disagree, 10.7% were neutral, 25.6% agree and 54.5% strongly agree that there is updating and validation of norms and assumptions assumed, With descriptive statistics of Mean =4.19 and SD=1.13this shows that there is high mean and it is evidence of the existence of the fact and heterogeneity of responses.

The findings show that the majority of respondents agree and strongly on the statement regarding the effects of project risk analysis on the success of water supply projects in Nyabihu District.

The findings supported by Kloosterman (2016) described that risk analysis is the process that figures out how likely that a risk will arise in a project. It studies uncertainty and how it would impact the project in terms of schedule, quality and costs if in fact it was to show up. Two ways to analyze risk is quantitative and qualitative. Risk analysis and assessment. Before ranking the risks, it is time to make an analysis and an assessment of them. This is the second step of a standard risk management, through which the reasons why the given risks should be taken care of and what are the possible aftermaths if the risks become real things are given.

Table 6: Correlation between Project risk analysis and success of water supply projects

		Project risk analysis	Success of water supply projects
Project risk analysis	Pearson Correlation	1	.636**
	Sig. (2-tailed)		.000
	N	121	121
Success of water supply projects	Pearson Correlation	.636**	1
	Sig. (2-tailed)	.000	
	N	121	121

Source: Research findings 2021

Correlation Table 6 shows that project risk analysis moderately correlates with success of water supply projects in Nyabihu District: Pearson correlation of 0.636 with a p value of 0.000, which is less than 0.05. This indicates that the relationship between project risk analysis and success of water supply projects is significant, implying that having project risk analysis has the potential to strengthening success of water supply projects in Nyabihu District.

Table 7: Model Summary on Project risk analysis and success of water supply projects

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.636 ^a	.405	.400	1.93109

a. Predictors: (Constant), Project risk analysis

Source: Research findings 2021

Table 7 shows the value of R-square in this study is 0.405 means that any change on success of water supply projects (dependent variable) is explained by the independent variable (project risk analysis) at 40.5%. This indicates that the model is tolerable, as the independent variable moderately describes the dependent variable. R coefficient of 0.636 indicates a moderate positive relationship project risk analysis and success of water supply projects in Nyabihu District.

Risk response

This sub-section refers to presentation, analysis and interpretation of primary data collected on the course of this study regarding the effects of project risk response on the success of water supply projects in Nyabihu District.

Table 8: Project risk response

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Mean	S.D
Selection of risk strategies (e.g. avoid, retain, reduce or transfer) based on output from risk analysis and evaluation.	6	0	2	33	80	4.49	.94
	5.0%	0.0%	1.7%	27.3%	66.1%		
Measurement of effectiveness and efficiency of the controls established.	4	0	12	53	52	4.23	.88
	3.3%	0.0%	9.9%	43.8%	43.0%		
Consideration of stakeholders perceptions in risk treatment selection	2	0	8	59	52	4.31	.74
	1.7%	0.0%	6.6%	48.8%	43.0%		
Establishment of indicators to track the progress of risk response	12	0	6	43	60	4.14	1.19
	9.9%	0.0%	5.0%	35.5%	49.6%		
Risk response strategies are implemented in light of risk analysis output	8	3	6	38	66	4.24	1.11
	6.6%	2.5%	5.0%	31.4%	54.5%		

Source: Research findings 2021

The results in Table 8 showed respondents views on project risk response of water supply projects in Nyabihu District; 5.0%strongly disagree, 1.7% were neutral, 27.3% agree and 66.1% strongly agree that there is Selection of risk strategies (e.g. avoid, retain, reduce or transfer) based on output from risk analysis and evaluation, With descriptive statistics of Mean =4.49 and SD=0.94 this shows that there is very high mean and it is strong evidence of the existence of the fact and heterogeneity of responses. The results show that 3.3% strongly disagree, 9.9% were neutral, 43.8% agree and 43.0% strongly agree that there is measurement of effectiveness and efficiency of the controls established, With descriptive statistics of Mean = 4.23 and SD=0.88 this shows that there is very high mean and it is strong evidence of the existence of the fact and heterogeneity of responses. The results show that 1.7% strongly disagree, 6.6% were neutral, 48.8% agree and 43.0% strongly agree that there is consideration of stakeholders perceptions in risk treatment selection, With descriptive statistics of Mean = 4.31 and SD=0.74 this shows that there is very high mean and it is strong evidence of the existence of the fact and heterogeneity of responses. The results show that 9.9% strongly disagree, 5.0% were neutral, 35.5% agree and 49.6% strongly agree that there is establishment of indicators to track the progress of risk response, With descriptive statistics of Mean = 4.14 and SD=1.19 this shows that there is high mean and it is evidence of the existence of the fact and heterogeneity of responses. The results show that 6.6%strongly disagree, 2.5% disagree, 5.0% were neutral, 31.4% agree and 54.5% strongly agree that risk response strategies are implemented in light of risk analysis output, With descriptive statistics of Mean = 4.24 and SD= 1.11 this shows that there is very high mean and it is strong evidence of the existence of the fact and heterogeneity of responses.

The findings are not far for Akintoye et al, (2008) have reported variations in the adoption of these response measures. For instance, risk reduction has been identified as the most frequently used

technique within the construction industry in Sweden, while risk transfer is the most preferable strategy among the UK practitioners.

The findings show that the majority of respondents agree and strongly on the statement regarding the effects of project risk response on the success of water supply projects in Nyabihu District.

Walewski et al. (2013) as a result, many believe that the Risk Response Planning phase is the most important in the risk process, since this is where the project team gets a chance to make a difference to the risk exposure facing the project.

Table 9: Correlation between Project risk response and success of water supply projects

		Project risk response	Success of water supply projects
Project risk response	Pearson Correlation	1	.800**
	Sig. (2-tailed)		.000
	N	121	121
Success of water supply projects	Pearson Correlation	.800**	1
	Sig. (2-tailed)	.000	
	N	121	121

Source: Research findings 2021

Correlation Table 9 shows that project risk response strongly correlates with success of water supply projects in Nyabihu District: Pearson correlation of 0.80 with a p value of 0.000, which is less than 0.05. This indicates that the relationship between project risk response and success of water supply projects is significant, implying that having project risk response has the potential to strengthening success of water supply projects in Nyabihu District.

Table 10: Model Summary on Project risk response and success of water supply projects

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.800 ^a	.640	.637	1.50216

a. Predictors: (Constant), Project risk response

Source: Research findings 2021

Table 10 shows the value of R-square in this study is 0.640 means that any change on success of water supply projects (dependent variable) is explained by the independent variable (project risk response) at 64.0%. This indicates that the model is adequate, as the independent variable moderately describes the dependent variable. R coefficient of 0.80 indicates a strong positive relationship project risk response and success of water supply projects in Nyabihu District.

Risk monitoring and control

This sub-section refers to presentation, analysis and interpretation of primary data collected on the course of this study regarding the effects of project risk monitoring and control on the success of water supply projects in Nyabihu District.

Table 11: Project risk monitoring and control

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Mean	S.D

Formal monitoring process and controls with the consideration of feedback from stakeholders and experts.	2	2	10	67	40	4.19	.72
	1.7%	1.7%	8.3%	55.4%	33.1%		
Assurance of external support (experts) and top management in the implementation of the risk management program.	6	3	18	42	52	4.14	1.01
	5.0%	2.5%	14.9%	34.7%	43.0%		
Assurance of data / reporting requirements for effective risk management and decision makers are assured	2	3	15	56	45	4.19	.75
	1.7%	2.5%	12.3%	46.3%	37.2%		
Definition and implementation of a strategy for the management of change.	3	4	2	59	53	4.42	.73
	2.5%	3.3%	1.7%	48.8%	43.8%		
Regular audits are carried out.	3	2	8	32	76	4.55	.69
	2.5%	1.7%	6.6%	26.4%	62.8%		

Source: Research findings 2021

The results in Table 11 showed respondents views on project risk monitoring and control of water supply projects in Nyabihu District; 1.7% strongly disagree, 1.7% disagree, 8.3% were neutral, 55.4% agree and 33.1% strongly agree that there is formal monitoring process and controls with the consideration of feedback from stakeholders and experts, With descriptive statistics of Mean =4.19 and SD=0.72this shows that there is high mean and it is evidence of the existence of the fact and heterogeneity of responses. The results show that 5.0% strongly disagree, 2.5% strongly disagree, 14.9% were neutral, 34.7% agree and 43.0% strongly agree that there is assurance of external support (experts) and top management in the implementation of the risk management program, With descriptive statistics of Mean = 4.14 and SD=1.01 this shows that there is very high mean and it is strong evidence of the existence of the fact and heterogeneity of responses. The results show that 1.7% strongly disagree, 2.5% strongly disagree, 12.3% were neutral, 46.3% agree and 37.2% strongly agree that there is assurance of data / reporting requirements for effective risk management and decision makers are assured, With descriptive statistics of Mean = 4.19 and SD=0.75 this shows that there is high mean and it is evidence of the existence of the fact and heterogeneity of responses. The results show that 2.5% strongly disagree, 3.3% strongly disagree, 1.7% were neutral, 48.8% agree and 43.8% strongly agree that there is definition and implementation of a strategy for the management of change, With descriptive statistics of Mean = 4.42 and SD=0.73 this shows that there is very high mean and it is strong evidence of the existence of the fact and heterogeneity of responses. The results show that 2.5% strongly disagree, 1.7% strongly disagree, 6.6% were neutral, 26.4% agree and 62.8% strongly agree that there is regular audits are carried out, With descriptive statistics of Mean = 4.55 and SD=0.69 this shows that there is very high mean and it is strong evidence of the existence of the fact and heterogeneity of responses.

The findings show that the majority of respondents agree and strongly on the statement regarding the effects of project risk monitoring and control on the success of water supply projects in Nyabihu District.

Kloosterman (2016) in case when potential risks have been addressed, there is a final imperative called risk assessment and monitoring, This is how the feasibility and validity of the solutions or strategies mentioned above to manage the risks in the fourth step (risk treatment) are assessed. After the strategies are implemented, the solutions can be improved; while at the same time, new

risks may be discovered. Newly discovered risks can be re-resolved through the 5-step risk management process.

Table 12: Correlation between project risk monitoring and control and success of water supply projects

		Project risk monitoring and control	Success of water supply projects
Project risk monitoring and control	Pearson Correlation	1	.750**
	Sig. (2-tailed)		.000
	N	121	121
Success of water supply projects	Pearson Correlation	.750**	1
	Sig. (2-tailed)	.000	
	N	121	121

Source: Research findings 2021

Correlation Table 12 shows that project risk monitoring and control strongly correlates with success of water supply projects in Nyabihu District: Pearson correlation of 0.75 with a p value of 0.000, which is less than 0.05. This indicates that the relationship between project risk monitoring and control and success of water supply projects is significant, implying that having project risk monitoring and control has the potential to strengthening success of water supply projects in Nyabihu District.

CONCLUSIONS AND RECOMMENDATIONS

The findings indicated that the variable project risk identification is good predictor of success of water supply projects, hereby the alternative hypothesis of the study is confirmed: H1: Project risk identification has statistically significant effect on success of water supply project in Nyabihu District. The findings indicated that the variable project risk analysis is good predictor of success of water supply projects, hereby the alternative hypothesis of the study is confirmed: H2: Project risk analysis has statistically significant effect on success of water supply projects in Nyabihu District. The findings indicated that the variable project risk response is good predictor of success of water supply projects, hereby the alternative hypothesis of the study is confirmed: H3: Project risk response has statistically significant effect on the success of water supply project in Nyabihu District. The findings indicated that the variable project risk monitoring and control is good predictor of success of water supply projects, hereby the alternative hypothesis of the study is confirmed: H4: Project risk monitoring and control have statistically significant effect on success of water supply project in Nyabihu District.

Recommendation

- According to the findings of this research project, a formal and structured risk management practice should be implemented during project planning, with the participation of all project stakeholders.
- This research also suggests that qualified project managers be included in all stages of a project, including the needs analysis and identification, as well as the provisional funding and project scheduling stages.

Further researches

In Rwanda, more research is needed into the factors that influence the performance of social and political projects.

The findings of this research project suggest that additional research be conducted on the difficulties faced by developers in the development of budgets and schedules for water supply projects in Rwanda.

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