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Preliminary Studies and Performance of Construction Projects in Rwanda: A Case of Gatuna One Stop Border Post

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Abstract

In spite of the vibrant significance of preliminary studies in assisting choices related to government spending on construction programs, there are no efforts to appraise such studies once construction of facilities. Hence, this study seeks to investigate the contribution of preliminary study on performance of construction projects with specific reference to Gatuna one stop border post. The study was guided by three specific objectives namely: to determine contribution of economic feasibility on performance of construction projects in Gatuna one stop border post; to assess contribution of technical requirements on performance of construction projects in Gatuna one stop border post as well as to determine how risk assessment contributes to the performance of construction projects in One Stop Border Post. The study will be important to Gatuna One Stop Border Post, citizen and traders in Rwanda. This study used descriptive research design .The target population of the study will be 150 Gatuna one stop border post staffs and a sample size of 109 beneficiaries, which was selected over, stratified random sampling technique. Questionnaires and guided interview were as data collection instruments where descriptive statistics was used for quantitative data analysis through the software of statistical package for the social sciences (SPSS) version 21,qualitative data were analyzed by using thematic method ; Karl Pearson product moment correlation coefficient was used to establish relationship between variables while regression analysis was used to check the influence of preliminary studies and performance of construction projects at 32.1 percent of R -square. Cronbach's alpha coefficient of 73.1 percent showed that the instruments were reliable while the validity was established by peer discussion with experts. This study will be significant to site engineers, site supervisors and beneficiaries as well as ministry of infrastructure. The findings on the first objective showed that IRR, NPV, PBP and PI are considered as economic feasibility as it was confirmed by 83.1 percent of beneficiaries agreed that Internal Rate of Return is used to determine stages and timelines for test performance. The findings on the second objective showed that 85.4 percent of the beneficiaries agreed that they beneficiaries agreed that Appraisal of information infrastructure fulfils the sustainability of the project. The findings on the third objective showed that risk assessment influences construction project performance, it was also shown that there is significant low degree of positive correlation of 0.026 between risk

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assessment and performance of construction projects. It was concluded that effective implementation of preliminary study leads to positive performance of construction project. The study recommends that national budget planners and intervening people should provide financial facilities and make effective set up that should enhance performance of construction project.

Keywords: *Preliminary Studies, Performance of Construction Projects, Rwanda*

1. Introduction

In 2004, the East African countries entered into an agreement with the World Bank to support the East African Trade Facilitation Project (World Bank, 2012). The improvement of border crossings in East Africa was one of its many components. In this regard, the Government of Rwanda (GoR) through the Rwanda Transport Development Agency (RTDA) planned to set up a One Stop Border Post (OSBP) at Gatuna with various objectives and benefits including to ease jamming at current facilities, lessen intervals in Rwanda as well as to upsurge dexterity between boundary government departments and streamline the practices at the borders and expedite trades (Joseph, 2018).

In addition to this; the construction of the building, retaining wall and access roads at Gatuna were under the final stage of completion and approval by stakeholders and end-users of the facilities. Even if various construction projects in both Uganda and Rwanda are always pass over pre-contract studies; they suffer to be completed within agreed timeframe as indicated in early of June 2019 where a major crack along the newly built road has appeared as well as soil settlement near the underground water tank, powerhouse (Backyard the main building) close to the swamp area. Therefore; this study intended to clarify how preliminary studies including (economic feasibility; technical feasibility and risk assessment) can be applied so that effective time management as well as quality product as performance of construction projects can be improved.

1.1 Objectives of the study

1.1.1 General objective

The general objective of this research was to assess the contribution of preliminary studies on performance of construction projects in Rwanda.

1.1.2 Specific Objectives of the Study

(i) To determine the contribution of economic feasibility on performance of construction projects in Rwanda.

(ii) To assess the contribution of technical requirements on the performance of construction projects in Rwanda.

(iii) To determine how risk assessment contributes to the performance of construction projects in Rwanda.

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1.1.3 Research Hypotheses

H_{01}: There is no significant contribution of economic feasibility on the performance of construction projects in Rwanda.

H_{02}: There is no significant contribution of technical requirements on performance of construction projects in Rwanda.

H_{03}: There is a significant contribution of risk assessment on performance of construction projects in Rwanda.

2.1 Empirical Literature Review

Reading other researchers' ideas on how preliminary studies affect the performance of construction projects led to the conclusion that preliminary studies have a major impact on the performance of construction projects.

Jones (2020) carried out a study in in sub-Saharan Africa aiming at determining the strength and weakness of preliminary studies in existing business or proposed venture. The researcher used the research instrument when collecting data within descriptive research design like questionnaire, interview guide where the researcher revealed that preliminary studies plays crucial role in both existing business and proposed venture. The researcher also purposed that preliminary studies identifies any issue, which can prevent business project from being successful in the marketplace. Levin (2015)carried out the study in America which was the influence of preliminary studies on performance of construction projects where the researcher carried out the research using interview guide and questionnaires while collecting data as well as descriptive research design for data analysis and came up with findings showed how performance of construction projects influenced by preliminary studies where the researcher showed that preliminary studies boost new formation and economic development as well as entrepreneurship .The researcher also added that preliminary studies should be conducted before any project for supporting it increasing its income so that the project performance can be improved .

Bause (2014) studied Preliminary studies in the product development process and found that revealed that there is an enormous variance between projected forecasted statistics and real statistics. The calculations of ex-ante evaluation should be repeated using the actual data for examining the influence of estimating errors on the preliminary learning outcomes. By taking into consideration the analyzed data; recommendations are highlighted for improving viability studies for construction program involving peer review of preliminary studies; before and after preliminary studies and multistage preliminary studies as well as unified scope and methodology for preliminary studies.

Merrie and Barron, (2014) studied Project initiation and Project management and study found that preliminary study is perilous way to entire achievement besides is proposed that the widespread conclusions in selecting a correct program should be done in timely manner that is probability impact the whole program achievement he level of viability of given program taken as the subsequent phase of project while initiation stage considered as the primary phase and the whole process considered as lifecycle of different stages.

Mayuri (2019) investigated Preliminary Analysis: Meaning, Importance, Report, Types, Process, Objectives, and Advantages and discovered that cost analysis estimates the resources required for the effort based on the precise result description as the issued standard industry facts provided a guided parameter for budget estimation.

However, the actual project filing method in organizations typically treats the core statistics as more powerful and precise since it is based on the organization's efficiency on similar projects in the same firm's environment.

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Activity resource requirements mostly valid when it involves the execution team members or experts (Munns & Bjeirmi, 1996). The resource will involve both hard and soft resource including man; plant; machinery and consumables as well as services man –hours Scott (2020) conducted the study for evaluating the extent to which preliminary studies related to construction project and revealed that construction project can be improved since effective preliminary study was done before starting project.

2.2 Research Gap

By the time you look at the findings of other researchers in their researches talked about the preliminary studies and sustainability of construction project; you can realize that there is a gap in the understanding the influence of preliminary studies on performance of construction project. Kendall (2020) found out that preliminary studies in different approaches but mainly focusing on suggest commercial projects which is most important in preliminary and business plan. The people who have business idea like farmers and others ought to carry out a viability research in order to determine validity of ideas afore starting a business.

Kendall (2020) added that early determination of business idea helps in saving both time and money then headache later. Ryanee (2016) indicated that a practicable commercial project is to make satisfactory cash flow; revenues while tolerate the hazard help in encountering and the project persist feasible in the protracted term as well as achieve the objectives of the plunges. Viability study is among the phases in the corporate idea assessment as well as commercial growth method that contribute a lot, as viability of program is a dire factor in corporate achievement (Scott. 2020). Numerous developments that have gone through innumerable viability studies, are ruined by unforeseen actions such as natural catastrophe, vicissitudes in regulation, demographic changes, an incapability to recruit as well as/or retain competent staff (Barron, & Barron.,2014). Additionally, projects should pass preliminary tests and studies in order to avoid incompetence, as the key factor of preliminary is to ensure correct evidences, expectations as well as update economic information.

2.3 Conceptual Framework

The conceptual framework is a model which linkages independent variable to dependent variable.

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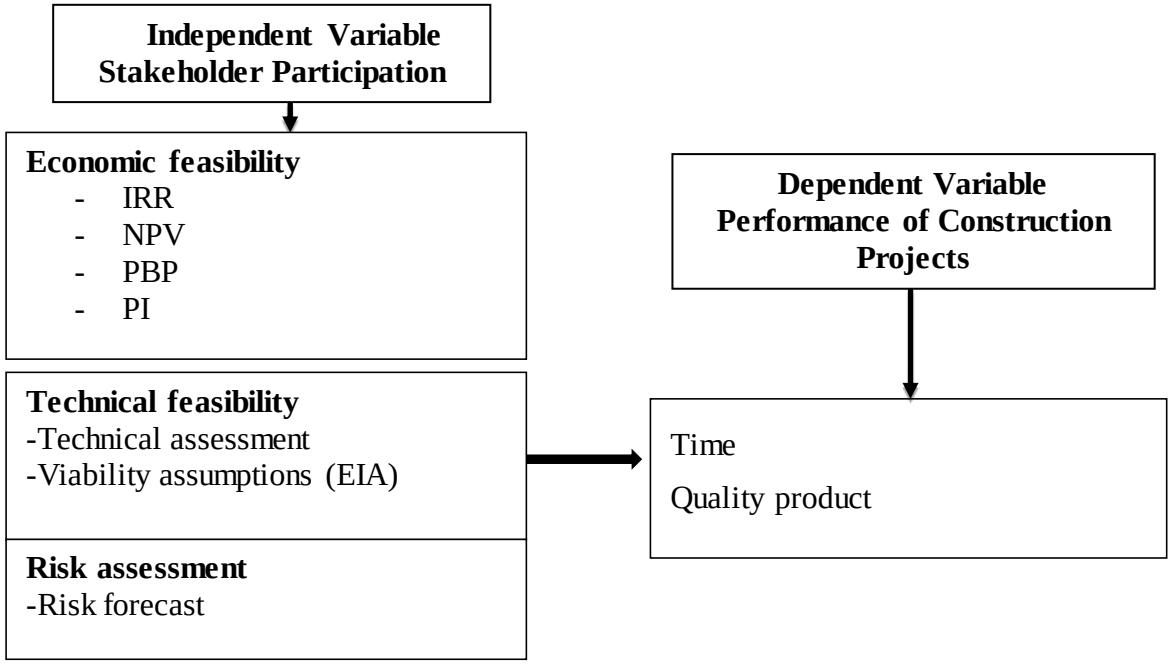

Figure 1: Conceptual Framework

Conceptual framework in the Figure 1 shows how performance of construction projects influenced by preliminary studies. Economic feasibility(IRR;NPV;PBP;PI); technical feasibility(technical assessment and viability assumption) and risk assessment as risk forecast are considered as the indicators of preliminary studies which are independent variable while time and quality product are considered as indicators of performance of construction projects which are dependent variable. When preliminary studies are conducted before any construction project like carrying out economic feasibility study; technical feasibility study as well as risk assessment; the performance of construction projects improved.

3. Materials and Methods

This research was carried out by using two research designs such as descriptive survey design. Descriptive survey design helped the researcher in all three objectives while regression analysis was used to analyze the relationship between contribution of preliminary studies and performance of construction projects. This study targeted 150 of respondents who participated and were affected by the Gatuna project. This research was composed of 150 people as the study population and sample size was found using Yamane formula, (Yamane, 1967). The simplified formula assumes the confidence level of 95% while the maximum variance is (p =0.05). By basing on the purpose of this research, the researcher selected the sample in such way that 22 Site engineers, 22 Site supervisors and 65 Rwandan beneficiaries were grouped again into strata in order to get the effective and efficient data of the research. Thus, the current study used probability-sampling technique where the researcher used stratified random sampling technique in which the decided population was grouped into strata. The researcher also used proportionate method in order to get the representative of each stratum.

The researcher used both questionnaires and guided interview to collect the data from all respondents including senior executive; site engineers and site supervisors as well as beneficiaries of Gatuna one stop border post in order to collect the data needed that are

related to preliminary studies and sustainability of construction projects in Rwanda. In addition to this; questionnaires and interview guide was employed in this study for the purpose of getting both quantitative data and qualitative data which helped the researcher to discover how performance of construction projects influenced by preliminary study in Rwanda .After completing the given questions refer to the availability of the selected respondents ,questionnaires were submitted to 109 respondents. To analyze the data descriptive statistics were used to provide summary on means and the modules of variables. Correlation analysis was used on both dependent and independent variables to show the relationship between the variables. The regression equation of $Y= \beta_0+ \beta x1+ \beta x2+ \beta X3+ \alpha$ Where Y is Performance of Construction Projects measured, X1 is economic feasibility, X2 is technical requirements, X3 is risk assessment, B1…. β3 is regression coefficient and α is error term.

4. Research Findings and discussion

4.1 The contribution of economic feasibility on performance of construction projects

This sub-section presents descriptive results on economic feasibility variable. The respondents were required to state their level of agreement or otherwise with the statements relating to economic feasibility. The scale used was as follows: SD - strongly disagree, D - disagree, N - neutral, A - agree, and SA- strongly agree. The results are shown in Table 1.

Table 1: Perception of beneficiaries on economic feasibility

Statements	SD		D		N		A		SA		Mean	Std
	F	%	F	%	F	%	F	%	F	%		
Payback period is used to determine stages and timelines for test performance	1	1.5	10	15.4	6	9.2	13	20	35	53.8	4.09	1.18
Net Present Value is used to determine stages and timelines for test performance	16	24.6	7	10.8	2	3.1	32	49.2	8	12.3	3.13	1.44
Internal Rate of Return is used to determine stages and timelines for test performance	1	1.5	0	0	10	15.4	17	26.2	37	56.9	4.36	0.85
Profitability Index is used to determine stages and timelines for test performance	7	10.8	1	1.15	3	4.6	32	49.2	22	33.8	3.93	1.19
Internal rate of return contributes to project quality product	1	1.5	23	35.4	9	13.8	11	16.9	21	32.3	3.43	1.31
Net Present Value provides contribution to time management	2	3.1	3	4.6	8	12.3	28	43.1	24	36.9	4.06	0.98

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The table 1 indicates the perception provided by beneficiaries related to the contribution of economic feasibility on performance of construction project; where 83.1 percent of beneficiaries agreed that Internal Rate of Return is used to determine stages and timelines for test performance at 4.36 of mean; 83 percent of beneficiaries agreed that Profitability Index is used to determine stages and timelines for test performance at 3.93 of mean ,80 percent of beneficiaries agreed that Net Present Value provides contribution to time management at 4.06 of mean; 73.8 percent of beneficiaries agreed that Payback period is used to determine stages and timelines for test at 4.09 and 61.5 percent of beneficiaries agreed that Performance Net Present Value is used to determine stages and timelines for test performance at 3.13 of mean while 49.2 percent of beneficiaries agreed that Internal rate of return contributes to project quality product at 3.43 of mean .According to the results indicated in the table 1;it is clear that , Internal Rate of Return is mostly used to determine stages and timelines for test performance; as shown by the mean of 4.36. However; site engineers as well as site supervisors were given guided interview about the contribution of economic feasibility on performance of construction projects; indicated that IRR,NPV,PBP and PI lead to better performance of construction projects. They also added that, such economic feasibility is not effectively done due to insufficient capital.

Basing on the perceptions of different respondents related to the contribution of economic feasibility on performance of construction projects, the researcher made comparative interpretation where it was shown that respondents have the same perception on the contribution of economic feasibility but different magnitude as shown in table 1 as well as interview given to site engineers and site supervisors. According to Mayuri (2019), cost analysis is the process, which can vary from organization to organization where the generic approach for cost analysis includes Breakdown of the activities for to be performed and it is possible in work units or to directly assign project resources.

Table 2: The R square of economic feasibility and performance of construction projects

				Std.	Change Statistics				
Model	R	R Square	Adjusted R Square	Error of the Estimate	R Square Change	F Change	df1	df2	Sig. F Change
1	.572[a]	.328	.295	.99294	.328	9.908	3	61	.000

Source: Field data (2021),a. Predictors: (Constant),Economic feasibility.

The table 2 indicates the contribution of economic feasibility on performance of construction projects. Where the findings presented that there is a high degree of correlation (r) of 0.572 and R square of 0.328. It means that economic feasibility has high contribution on performance of construction projects at 32.8 percent.

Table 3: Analysis of variance (ANOVA) of economic feasibility

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	29.305	3	9.768	9.908	.000[b]
	Residual	60.141	61	.986		
	Total	89.446	64			

Source: Primary data (2021).

a. Dependent Variable: Payback period is used to determine stages timelines for test performance
b. b.Predictors: (Constant), Internal rate of return contributes to project quality product, Profitability index is used to determine stages and timelines for test performance, Internal rate of return is used to determine stages and timelines for test performance

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The results in the table 3, show us the significance level with the p value of .000 < .05 which is less than 0.05. This means that the contribution of economic feasibility on performance of construction projects is significant. Therefore, internal rate of return contributes to the performance of construction projects. This was enforced by site engineers and site supervisors in interview where they indicated that there is a positive change of performance construction projects due to internal rate of return, NPV and PBP and added that more beneficiaries use the internal rate of return for determining stages and timelines for test performance and improve their performance. The findings are in line with the study basing on project initiation and project management where it was found that preliminary study is perilous way to entire achievement besides is proposed that the widespread conclusions in selecting a correct program should be done in timely manner that is probability impact the whole program achievement he level of viability of given program taken as the subsequent phase of project while initiation stage considered as the primary phase and the whole process considered as lifecycle of different stages(Merrie & Barron, 2014).

Table 4: Coefficients of economic feasibility and performance of construction projects

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.197	.750		1.595	0.116
	Economic feasibility	0.238	.125	.202	1.676	0.085

Source: Primary data (2021).

The findings in Table 4 proved the positive effect of economic feasibility to performance of construction projects in Gatuna border; Rwanda because the calculated coefficients are positive and significant. The simple regression analysis also confirms the positive and significant contribution also due to the fact that all calculated p values are lesser than 0.05 and the multiple regression model, $Y = \beta 0 + \beta 2x2 + \beta 3x3 + \alpha$ which turns into multiple regression model with Y= 1.197+0.238 economic feasibility +α. Thus, when economic feasibility is held constant performance of construction project among beneficiaries in Rwanda will be 1.197. Unit of economic feasibility will lead to 0.238 performance of construction project among beneficiaries in Rwanda.

$H0_1$: There is no significant contribution of economic feasibility on the performance of construction projects in Gatuna One Stop Border Post p=0.085 is greater than 0.05 hence we reject null hypothesis and conclude that there is significant contribution of economic feasibility on performance of construction projects among beneficiaries in Gatuna One Stop Border Post ,Rwanda. Jones (2020) carried out a study in in sub-Saharan Africa aiming at determining the strength and weakness of preliminary studies in existing business or proposed venture and the researcher found that economic contribution is highly correlated to the performance of any project.

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Table 5: Correlation between economic feasibility and performance of construction projects

		Economic feasibility	Performance of construction projects
Economic feasibility	Pearson Correlation	1	.706**
	Sig. (2-tailed)		.000
	N	65	65
Performance of construction projects	Pearson Correlation	.706**	1
	Sig. (2-tailed)	.000	
	N	65	65

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

The study investigated the relationship between economic feasibility and performance of construction projects basing on independent variable. The results in the table 5, investigated that there is a significance high degree of positive correlation between economic feasibility and performance where Pearson coefficient of correlation states the correlation (r) of 0.706 with the p-value=0.000<0.01. This means that economic feasibility provides enough evidence that promote performance of construction project as indicated by beneficiaries. As stated in interview, it was shown that the more economic feasibility implemented well in projects the more their performance improved.

4.2 Technical requirements and performance of construction projects

Descriptive Statistics

This sub-section presents descriptive results on technical requirements variable. The respondents were required to state their level of agreement or otherwise with the statements relating to technical requirements. The scale used was as follows: SD - strongly disagree, D - disagree, N - neutral, A - agree, and SA- strongly agree. The results are shown in Table 6.

Table 6: Perception of beneficiaries on technical requirements

Statements	SD		D		N		A		SA		Mean	Std
	F	%	F	%	F	%	F	%	F	%		
Appraisal of information infrastructure fulfils the sustainability of the project	1	1.5	2	3.1	0	0	3	4.6	59	90.8	4.8	0.73
Practical valuation in the sustainability of project plays crucial role	12	18.5	8	12.3	7	10.8	26	40	12	18.5	3.27	1.39
Risk monitoring helps in reducing disasters in construction projects	2	3.1	3	4.6	15	23.1	19	29.2	26	40	3.98	1.05
Technical expertise employed help in quality production	3	4.6	3	4.6	13	20	30	46.2	16	24.6	3.81	1.01
Technical assessment help in time management	4	6.2	8	12.3	3	4.6	22	33.8	28	43.1	3.95	1.24

Source: Primary data (2021).
Key: SD: Strongly disagree, D: disagree, N: Neutral, A: Agree and SA: Strongly agree.

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The table 6 indicates the perception provided by beneficiaries related to the contribution of technical requirements on performance of construction project; where 85.4 percent of beneficiaries agreed that Appraisal of information infrastructure fulfils the sustainability of the project at 4.5 of mean; 76.9 percent of beneficiaries agreed that at 3.95 of mean ,70.8 percent of beneficiaries agreed that Technical expertise employed help in quality production at 3.81 of mean; 69.2 percent of beneficiaries agreed that Risk monitoring helps in reducing disasters in construction projects at 1.05 and 58.5 percent of beneficiaries agreed that Practical valuation in the sustainability of project plays crucial role at 3.27 of mean .According to the results indicated in the table 6;it is clear that , Appraisal of information infrastructure fulfils the sustainability of the project ; as shown by the at 4.8 of mean .However ;site engineers as well as site supervisors were given guided interview about the contribution of technical requirements on performance of construction projects ; indicated that technical assessment and viability assumptions lead to better performance of construction projects. They also added that, such technical feasibility is not effectively done due to insufficient preliminary study. Basing on the perceptions of different respondents related to the contribution of technical requirements on performance of construction projects, the researcher made comparative interpretation where it was shown that respondents have the same perception on the contribution of technical requirements but different magnitude as shown in table 6 as well as interview given to site engineers and site supervisors. Scott (2020) conducted the study for evaluating the extent to which preliminary studies related to construction project and revealed that construction project can be improved since effective preliminary study was done before starting project. Technical preliminary is taken as an appraisal of the infrastructure as well as technology that fulfils the needs of the proposed system as stated by Mayuri, (2019).

Table 7: The R square of technical requirements and performance of construction projects

					Change Statistics				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	R Square Change	F Change	df1	df2	Sig. F Change
1	.298[a]	.089	.074	1.19582	.089	6.134	1	63	.016

Source: Field data (2021), a. Predictors: (Constant),technical requirements.

The table 7**,** indicates the contribution of technical requirements on performance of construction projects. Where the findings presented that there is a low degree of correlation (r) of 0.298 and R square of 0. 089.It means that technical requirements have low contribution on performance of construction projects at 8.9 percent.

Table 8: Analysis of variance (ANOVA) of technical requirements

ANOVA[a]

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	8.772	1	8.772	6.134	.016[b]
	Residual	90.089	63	1.430		
	Total	98.862	64			

a. Dependent Variable: Technical assessment help in time management
b. Predictors: (Constant), Risk monitoring helps in reducing disasters
Source: Primary data (2021).

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The results in the table 8, show us the significance level with the p value of .016 < .05 which is less than 0.05. This means that the contribution of technical requirements on performance of construction projects is significant. Therefore, technical assessment influence significantly the performance of construction projects among beneficiaries. This was enforced by site engineers as well as site supervisors in interview where they indicated that there is a positive change of performance of construction project due to technical assessment and risk monitoring and added that more beneficiaries implement technical assessment and risk monitoring they improve their performance. Kendall (2020) found out that preliminary studies in different approaches but mainly focusing on suggest commercial projects which is most important in preliminary and business plan.

Table 9: Coefficients of technical requirements and performance of construction projects

	Unstandardized Coefficients		Standardized Coefficients		
Model	B	Std. Error	Beta	T	Sig.
1 (Constant)	2.553	.585		4.367	0.000
Technical requirements	0.352	.142	.298	2.477	0.016

Source: Primary data (2021).

The findings in Table 9 proved the positive effect of technical requirements to performance of construction projects in Gatuna border; Rwanda because the calculated coefficients are positive and significant. The simple regression analysis also confirms the positive and significant contribution also due to the fact that all calculated p values are lesser than 0.05 and the multiple regression model, $Y = \beta 0 + \beta 2x2 + \beta 3x3 + \alpha$ which turns into multiple regression model with Y= 2.553+0.352 technical requirements +α.
Thus, when technical requirements are held constant performance of construction project among beneficiaries in Rwanda will be 2.553. Unit of technical requirements will lead to 0.352 performance of construction project among beneficiaries in Rwanda.
$H0_2$: There is no significant contribution of technical requirements on performance of construction projects in Gatuna One Stop Border Post p=0.016 is less than 0.05 hence we reject null hypothesis and conclude that there is significant contribution of technical requirements on performance of construction projects among beneficiaries in Gatuna One Stop Border Post Rwanda.

Table 10: Correlation between technical requirements and performance of construction projects

Correlations

		Performance of construction projects	Technical requirements
Performance of construction projects	Pearson Correlation	1	.009
	Sig. (2-tailed)		.942
	N	65	65
Technical requirements	Pearson Correlation	.009	1
	Sig. (2-tailed)	.942	
	N	65	65

Source: Primary data (2021).

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The study investigated the relationship between technical requirements and performance of construction projects basing on independent variable. The results in the table 10, investigated that there is a significance high degree of positive correlation between technical requirements and performance where Pearson coefficient of correlation states the correlation (r) of 0.009 with the p-value=0.942>0.01. This means that technical requirements provides enough evidence that promote performance of construction project as indicated by beneficiaries. As stated in interview, it was shown that the more technical requirements fulfilled in projects the more their performance improved.

4.3 Risk technical requirements and performance of construction projects

Descriptive Statistics

This sub-section presents descriptive results on risk assessment variable. The respondents were required to state their level of agreement or otherwise with the statements relating to risk assessment. The scale used was as follows: SA - strongly disagree, D - disagree, N - neutral, A - agree, and SA - strongly agree. The results are shown in Table 11.

Table 11: Perception of beneficiaries on risk assessment contribution

Statements	SD		D		N		A		SA		Mean	Std
	F	%	F	%	F	%	F	%	F	%		
Effective risk identification improves project performance	5	7.7	1	1.5	3	4.6	9	13.9	47	72.3	4.75	0.51
Project risk assessment avoid disaster	1	1.5	3	4.6	5	7.7	32	49.2	24	36.9	4.24	0.72
Risk monitoring helps in reducing disasters in construction projects	5	7.7	7	10.8	12	18.5	12	18.5	29	44.6	3.81	1.32
Health and safety issues should be included in the budget during preliminary studies to minimize risks.	10	15.4	2	3.1	2	3.1	34	52.3	17	26.2	3.86	1.01
Risk assessment has great influence on project quality	3	4.6	11	16.9	11	16.9	15	23.1	25	38.5	3.73	1.26
Risk forecast influences project quality product	9	13.8	11	16.9	2	3.1	19	29.2	24	36.9	3.58	1.47

Source: Primary data (2021).

Key: SD: Strongly disagree, D: disagree, N: Neutral, A: Agree and SA: Strongly agree.

The table 11 indicates the perception provided by beneficiaries related to the contribution of risk assessment on performance of construction project; where 86.2 percent of beneficiaries agreed that Effective risk identification improves project at 4.75 of mean; 86.1percent of

beneficiaries agreed that performance Project risk assessment avoid disaster at 4.24 of mean ,78.5 percent of beneficiaries agreed that Health and safety issues should be included in the budget during preliminary studies to minimize risks. at 3.86 of mean; 66.1 percent of beneficiaries agreed that Risk forecast influences project quality product at 3.58 and 63.1 percent of beneficiaries agreed that Risk monitoring helps in reducing disasters in construction projects at 3.81 of mean as well as 61.6 percent of beneficiaries agreed that Risk assessment has great influence on project quality at 3.73 of mean.

According to the results indicated in the table 11; it is clear that, effective risk identification improves project ; as shown by the at 4.75 of mean. However; site engineers as well as site supervisors were given guided interview about the contribution of technical requirements on performance of construction projects, indicated that risk forecast to better performance of construction projects. They also added that, such technical assessment is not effectively done due to poor preliminary studies.

Basing on the perceptions of different respondents related to the contribution of technical assessment on performance of construction projects, the researcher made comparative interpretation where it was shown that respondents have the same perception on the contribution of technical assessment but different magnitude as shown in table 11 as well as interview given to site engineers and site supervisors. According to Rangarajan Committee (2018); released a report after conducting research about preliminary studies and revealed that risk assessment like risk forecast helps construction projects managers to be able to finish their construction timely at adequate cost.

Table 12: The R square of risk assessment and performance of construction projects

					Change Statistics				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	R Square Change	F Change	df1	df2	Sig. F Change
1	.430[a]	.185	.141	.49132	.185	4.607	3	61	.006

Source: Primary data (2021).

The table 12 indicates the contribution of risk assessment on performance of construction projects. Where the findings presented that there is a high degree of correlation (r) of 0.430 and R square of 0.185.It means that risk assessment has high contribution on performance of construction projects at 18.5 percent.

Table 13: Analysis of variance (ANOVA) of risk assessment

ANOVA[a]

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	3.336	3	1.112	4.607	.006[b]
	Residual	14.725	61	.241		
	Total	18.062	64			

Source: Primary data (2021).

a. Dependent Variable: Effective risk identification improves project performance

b. Predictors: (Constant), Risk forecast influences project quality product, Project risk assessment avoids disasters, Risk assessment has great influence on project quality

The results in the table 13, show us the significance level with the p value of .006 < .05 which is less than 0.05. This means that the contribution of risk assessment on performance of

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construction projects is significant. Therefore, effective risk identification improves project performance as well as project assessment avoids disasters. This was enforced by site engineers and site supervisors in interview where they indicated that there is a positive change of performance construction projects due to effective risk identification as well as project risk assessment and added that more beneficiaries use effective risk identification improves their performance.

Table 14: Coefficients of risk assessment and performance of construction projects

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	T	Sig.
1	(Constant)	5.323	.433		12.290	0.000
	Risk assessment	-0.039	0.06	-0.006	-0.094	0.338

Source: Primary data (2021).

The findings in Table 14 proved the positive effect of risk assessment to performance of construction projects in Gatuna border; Rwanda because the calculated coefficients are positive and significant. The simple regression analysis also confirms the positive and significant contribution also due to the fact that all calculated p values are lesser than 0.05 and the multiple regression model, $Y = \beta 0 + \beta 2x2 + \beta 3x3 + \alpha$ which turns into multiple regression model with Y= 5.323+ (-0.039) risk assessment +α.
Thus, when risk assessment is held constant performance of construction project among beneficiaries in Rwanda will be 5.323. Unit of technical requirements will lead to -0.039 performance of construction project among beneficiaries in Rwanda.
$H0_3$: There is a significant contribution of risk assessment on performance of construction projects in Gatuna One Stop Border Post p=0.338 is greater than 0.05 hence we reject null hypothesis and conclude that there is no significant contribution of technical requirements on performance of construction projects among beneficiaries in Gatuna One Stop Border Post Rwanda. This was supported by Andrianaivo and Kpodar (2019); carried out a study entitled the impact of preliminary studies on development of construction projects in African countries during 1988-2007. The researcher revealed that preliminary studies have great influence on development of construction projects and confirm that risk forecast has a significant contribution to development of construction project.

Table 15: Correlation between risk assessment and performance of construction projects

		Performance of construction projects	Risk assessment
Performance of construction projects	Pearson Correlation	1	.026
	Sig. (2-tailed)		.839
	N	65	65
Risk assessment	Pearson Correlation	.026	1
	Sig. (2-tailed)	.839	
	N	65	65

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The study investigated the relationship between Risk assessment and performance of construction projects basing on independent variable. The results in the table 16, investigated that there is a significance low degree of positive correlation between Risk assessment and performance where Pearson coefficient of correlation states the correlation (r) of 0.026 with the p-value=0.839>0.01. This means that Risk assessment provides enough evidence that promote performance of construction project as indicated by beneficiaries. As stated in interview, it was shown that the more Risk assessment implemented well in projects the more their performance improved.

4.4 Hypothesis testing

$H0_{1:}$ There is no significant contribution of economic feasibility on the performance of construction projects in Gatuna One Stop Border.According to table 4.6, the results show that economic feasibility had p =0.085 >0.05 hence we reject this Hypothesis and conclude that economic feasibility has significant contribution on performance of construction projects among beneficiaries in Gatuna One Stop Border Post, Rwanda.

$H0_{2:}$ There is no significant contribution of technical requirements on the performance of construction projects in Gatuna One Stop Border. According to table 4.11, the results shows that technical requirements had p = 0.016 <0.05 hence we accept this Hypothesis and conclude that technical requirements have significant contribution on performance of construction projects among beneficiaries in Gatuna One Stop Border Post, Rwanda.

$H0_{3:}$ There is a significant contribution of risk assessment on performance of construction projects in Gatuna One Stop Border Post p=0.338 is greater than 0.05 hence we reject null hypothesis and conclude that there is no significant contribution of technical requirements on performance of construction projects among beneficiaries in Gatuna One Stop Border Post Rwanda.

5.1 Conclusion

In conclusion, to answer the indicated research hypotheses which were mentioned basing on the three specific research objectives, the conclusion was drawn regarding to the analysis of the findings presented in chapter four. The first research hypothesis of this research that was presented, was "There is no significant contribution of economic feasibility on the performance of construction projects in Gatuna One Stop Border Post" p=0.085 is greater than 0.05 hence we reject null hypothesis and conclude that there is significant contribution of economic feasibility on performance of construction projects among beneficiaries in Gatuna One Stop Border Post ,Rwanda.

The conclusion was also drawn basing on the second research hypothesis of this study which was "there is no significant contribution of technical requirements on performance of construction projects in Gatuna One Stop Border Post" p=0.016 is less than 0.05 hence we reject null hypothesis and conclude that there is significant contribution of technical requirements on performance of construction projects among beneficiaries in Gatuna One Stop Border Post Rwanda.

Basing on the third research hypothesis of this study which was "there is a significant contribution of risk assessment on performance of construction projects in Gatuna One Stop Border Post"p=0.338 is greater than 0.05 hence we reject null hypothesis and conclude that there is no significant contribution of technical requirements on performance of construction projects among beneficiaries in Gatuna One Stop Border Post Rwanda.

5.2 Recommendations

Basing on the findings of this study and the presented conclusion, the following recommendations were addressed to ministry of infrastructure and national budget planners. Ministry of infrastructure, should provide both financial facilities and master plan to construction projects, so that they can build different buildings accordingly.

National budget planners should make effective set up that should enhance performance of construction projects to make up effective implementation of preliminary studies in Gatuna One Stop Border Post Rwanda.

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References

Abou-Zeid, A., Bushraa, A., & Ezzat, M. (2007). Overview *of preliminary study procedures for public construction projects in Arab countries*. Engineering Srienres,

Kendall J., K. (2020). *Construction Risk Management: Identifying and Managing Project Risks. Commercial Construction Projects | Construct Connect.*

Mayuri H. (2019). *Preliminary Analysis: Meaning, Importance, Report, Types, Process, Objectives and Advantages Business.*

Merrie B. and Andrew B. (2014). *Project initiation – Project management. BC Open Textbooks* – Open Textbooks Adapted and Created by BC Faculty.

Munns, A. K.,& Bjeirmi, B. F. (1996) *The role of project management in achieving project success. International Journal of Project Management.* 14(2), 81-87.

Nor H. Md Ghazali.K (2016). *A Reliability and Validity of an Instrument to Evaluate the School-Based Assessment System:* A Pilot Study. ERIC - Education Resources Information Center.

Ryanee P. (2016). *How to Determine the Validity and Reliability of an Instrument*. Miami University Blogs.

Scott. B. (2020). *Importance of project schedule and cost control in project management.*

Simplilearn H. (2012). *What is preliminary study and its importance in project management*.

Sterman, J.D. (2000) *Business dynamics, systems thinking and modeling for a complex world.* McGraw-Hill, Boston

World Bank. (2012). *Deepening Regional Trade Integration in Goods and Services.* Documents & Reports