



Original Article

Project Management Practices and Construction Firms' Performance: A Case of Rwandan Construction Contractors

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Project Performance*

Many construction projects in Rwanda suffer from poor planning, as project managers often overlook critical details from the project's inception to its completion. Even minor oversight can significantly impact performance. This article examined the impact of Construction Project Management Practices on firm performance, focusing on Rwandan construction contractors. Specifically, it evaluated the influence of project planning, implementation, monitoring & control, and communication on project outcomes. Using primary quantitative data collected via a survey questionnaire, the researcher applied the Snowball Sampling technique to target 140 engineers, project managers, firm owners, and staff, with 137 responses received. Data were analysed using descriptive and inferential statistics through multiple linear regression in SPSS 25.0. Findings revealed strong positive and highly significant correlations between each project management practice and performance: planning, implementation, monitoring & control, and communication all demonstrated notable effects. The overall multiple correlation was strong ($R = 0.796$), with the regression model showing that these four variables explained 63.4% of performance variance, leaving 36.6% attributable to other unstudied factors. Despite some correct planning, implementation often fell short of owner expectations, monitoring & control lacked adherence to timelines, and communication was sometimes inaccurate or irrelevant. These deficiencies hindered overall project success. The researcher concluded that each stage of project management substantially affects performance, especially when poorly executed. The researcher recommended that contractors' management, project managers, and other practitioners ensure comprehensive stakeholder consultation, accurate communication, and joint planning and implementation. Furthermore, future research should investigate the remaining 36.6% of unexplained performance factors to enhance technical, financial, and schedule outcomes in Rwandan construction projects.

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INTRODUCTION

In the global views of trending technologies and emerging economies, the construction sector has grown increasingly demanding and cutthroat. Building companies are always looking for ways to boost output, accomplish integration, and maintain their competitive edge. Project management is an approach to problem-solving that incorporates planning strategies and procedures akin to applied mathematics and optimisation theory (Abbasi & Jaafari, 2022).

In recent decades, the construction projects noted several construction project performance issues and target variations. The difficulty of project scheduling under resource constraints has been a root cause of construction project performance failures in managing projects. To achieve the best possible result in terms of an objective function, such as minimising project completion time, delay, and execution costs, RCPSp refers to the scheduling of project activities with consideration for resource limitations and precedence relationships among those activities (Farnaz B., 2021).

According to Hicks et al. (2022), the resources for construction projects can be a broad term made of financial resources, human resources, and material

resources, which encompasses construction materials, technological resources, and knowledge resources that can enhance sustainable practices (Hicks et al., 2022). Many performance issues have been seen in the industry for many years; these include a lack of coordination and communication, poor quality, safety concerns, delays, cost overruns, and community unhappiness.

The cross-border studies conducted worldwide on project management and performance stimulating factors showed that the project performance depends more on the management practices applied. Zwikael (2021) conducted a study on Variation in project management practices across borders and revealed that two elements, such as performance orientation and gender egalitarianism, influenced the methods used in project management. The adoption of project management practices has been significantly impacted negatively by gender equality and significantly positively by performance-oriented. Executives and project team leaders should utilise this understanding to predict how those two global characteristics would affect the innate tendencies of project team members in different nations, among other practical ramifications.

In Africa, specifically the South Africa in which the construction industry has grown a lot, the issues of project management practices are impeded by employees' resistance to switching from conventional to green practices, a lack of knowledge about green building techniques and technologies, a lack of accurate cost data or information, a lack of government involvement, the complexity of laws and rules pertaining to sustainable and green building, the high cost of green building materials, and the increased risk of construction delays (Mashwama, Thwala & Aigbavboa, 2020). It was recommended via the studies that to benefit the government, end users, and the country's construction industry, the South African government should take a leading role in implementing sustainable construction project management in public buildings.

Tukundane & Yang (2024) conducted a study on Uganda's building and construction industry to evaluate the project control practice levels that Uganda's building and construction industry within Kampala uses to gauge how project management techniques affect businesses' productivity. They showed that Standard control procedures from essential project control tasks, such as planning, monitoring, analyzing, and reporting, can assess the performance of the project by considering factors such as prompt information availability and encouragement, report representation and cost-value comparison application, project schedule formulation, project feasibility validation, budgeting for each activity, key project route definition, team budget awareness, realistic target setting, and subcontractor consultation. The study concluded that planning is the most important project control activity carried out in Uganda's building and construction sector (Tukundane & Yang, 2024).

In Rwanda, the construction industry contributes more than 7% to the Nominal GDP. The construction projects in Rwanda encounter

numerous non-technical challenges that have led to project delays and so far, poor performance. Large projects involving a high degree of complexity need a project manager or leader with experience, building power plants, strong leadership qualities, and the capacity to overcome challenges encountered along the way (Nurianna et al. 2020).

The RDB report (2023) revealed that Rwanda's construction sector is a key driver of the country's economic growth. The sector has been experiencing significant growth in recent years, with a contribution of 21% to GDP in 2022 and an estimated contribution of 23% in 2023 (RDB, 2023). According to the Rwandan Construction Industry Status Report (2023), the construction projects are vital to the nation's economic structure, but they face significant obstacles from subpar performance caused primarily by bad management practices (RCI, 2023). The construction sector is sensitive to subpar project performance because of its complicated nature, inadequate project management practices and inappropriate standards have been major issues for the construction sector.

The roles and duties that are not defined can result in duplication of work, missed deadlines, and stagnation in execution and monitoring to track progress can make it difficult to identify and address problems early on, where the scope creep can quickly eat away at resources and lead to missed deadlines (Azlina et al., 2023). This highlights the fact that inadequate project execution is a widespread issue that accentuates the deplorable aspects of several nations, Rwanda included. Inadequate and poor change management can disrupt workflows and demoralise the team. The stakeholder's dissatisfaction with the lack of buy-in can create hurdles and roadblocks. The other external factors, such as economic downturns or supply chain disruptions, can disrupt the project's performance. Changes in project costs are a significant problem for both developed and developing nations. Since projects are rarely

finished within budget, this requires substantial attention to improve the performance of construction cost management.

The construction industry in Rwanda is suffering a gap resulting from a lack of studies in the literature showing construction techniques in line with technological trends, which remain the root causes of failure of those projects. This study was conducted to assess the effect of project management practices on the performance of construction projects in Rwanda, focusing on construction projects undertaken by Rwandan Construction Contractors (2020-2024), to specifically assess the effect of project planning, implementation process, monitoring & control, and project communication on the performance of construction projects from contractors of Rwanda.

LITERATURE REVIEW

Project planning: The project planning is the crucial step that brings any project to life successfully. It is an iterative approach that needs to be revisited and adapted as the project progresses in circumstances change. This is essentially a roadmap that guides from the initial idea to completion, outlining the scope, resources, schedules, and timeline needed to achieve the project goals (Perrier, 2021).

Project implementation process: The project implementation process is a dynamic process with various challenges and opportunities. Its smooth and successful delivery depends on having a well-defined plan, skilled professionals, and effective communication. It is the phase transforming plans into reality, tangible outcomes through moving stages of pre-Construction, construction, and post-construction (Quoc et al., 2020).

Project monitoring & Control: Project monitoring refers to the process of overseeing and tracking the project's progress, quality, and adherence to relevant standards and regulations in line with the

plan to minimise risks (Ernest et al., 2019). Project control processes referred to the identification and correction of deviations and gaps by taking corrective Actions to implement solutions to address deviations and get the project back on track (Pico & Wayne, 2023).

Project Communication: According to Martin (2019), Communication is a key tool in any organisation to perform and maintain the organisational team together at the right time and place. Effective communication is a two-way street indicated by both the delivery of messages and the reception of messages.

Firm performance: The performance of a construction firm refers to the degree to which a project meets its objectives. It's essentially a measure of how well a project is progressing towards its goals within the set constraints of time, cost, and scope. The project's performance derives from factors of project management tools, best practices, and the managerial team (Thawatthai et al., 2019).

The researcher was guided by the following baseline theories related to the study to understand, explain, and make predictions.

Action Theory: Frese and Sabini (1985) argued that the action Theory is the action process of Goal setting and choosing between conflicting objectives, direction, including future event forecasting, plan generation, decision-making over which plan to choose from a variety of options, plan execution and monitoring, and the feedback process are the first five aspects. It was in line with project implementation as a process of executing a planned goal, and the direction of the project to deliver a product, service, or result. Both involve a series of actions and show how individuals and project managers make decisions throughout the project lifecycle.

Resource-based View theory: Wernerfelt (1984) argued that organisations have resources helping them gain a competitive edge, and some of these resources result in better long-term performance, and are valuable, rare, Inimitable, and non-substitutable (VRIN). The theory is intertwined with project monitoring & control as a process of measuring project performance against the project plan to identify variances and take corrective action as needed to posit a firm's competitive advantage from a unique bundle(VRIN) of resources and capabilities.

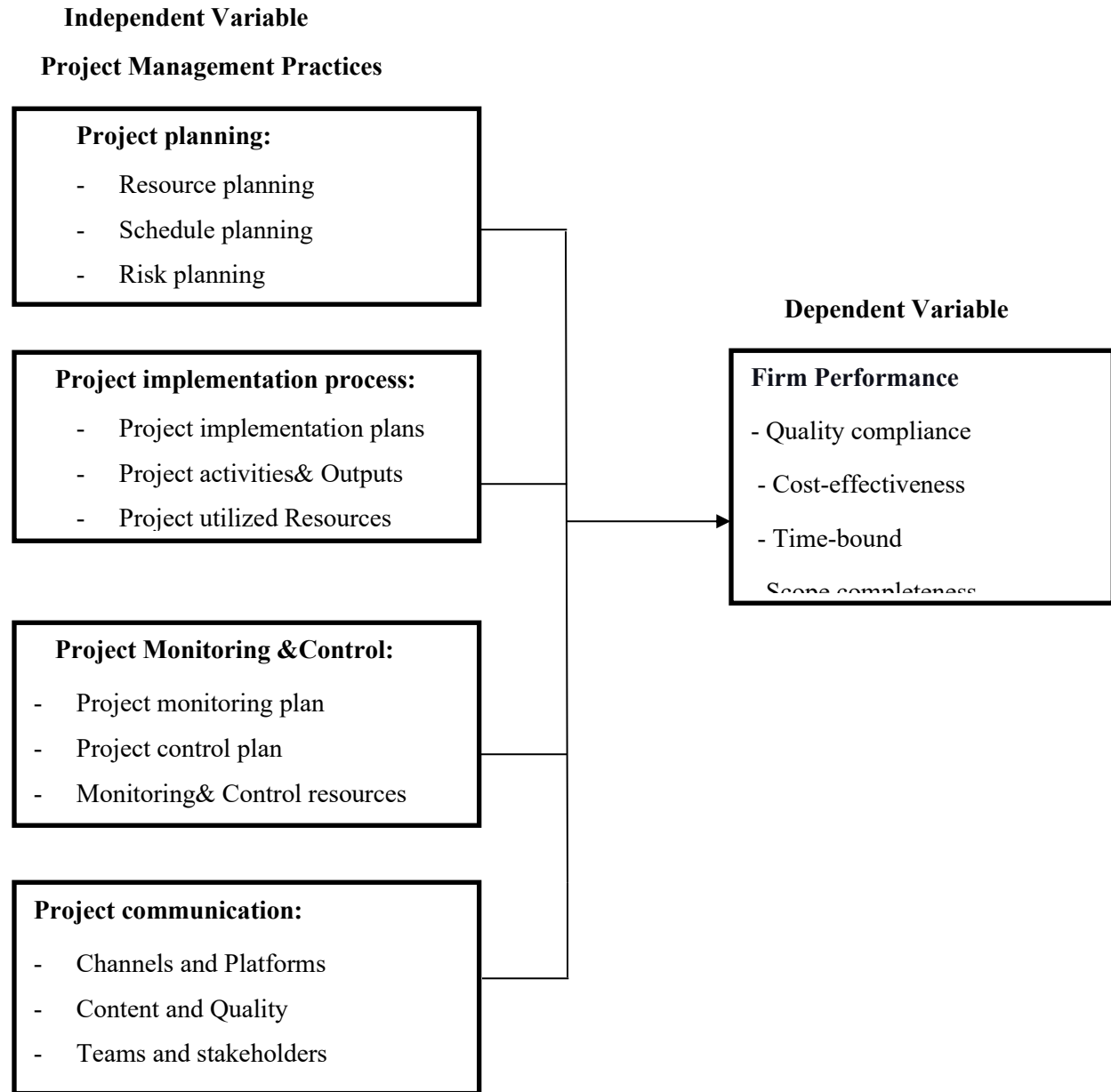
Resource Dependence Theory: Pfeffer (1970) stated that Resource Dependency Theory is the study of how an organisation's external resources impact its behaviour. It suggests that organisations are dependent on external resources, eventually coming from the surroundings of an organisation. It is intertwined with Project Planning, ensuring that projects have the necessary resources to achieve their objectives for organisations to secure their own

survival, after figuring out how to take advantage of these resources.

Stakeholder's Theory: Freeman (1984) highlighted a Stakeholder theory to focus on parties like workers, clients, suppliers, financiers, communities, political parties, governmental entities, trade associations, and unions involved in a project, and the implications of contentious relationships between stakeholders and organisations. This goes with Project Communication seeking to understand stakeholders' needs and expectations, building trust and relationships, managing expectations, identifying and addressing issues early for satisfaction and maintenance of relationships.

Conceptual Framework

The independent variables of this study were project planning, implementation process, monitoring& control, and communication, which influenced the project performance as shown in the detailed diagram below:



Source: Researcher Conceptualisation, 2024-2025.

MATERIALS AND METHODS

Research Design

This refers to plans and procedures for research that span the decisions from broad assumptions to detailed methods of data collection and analysis (Creswell, 2019). The researcher used quantitative research methods, mainly descriptive and inferential analyses, to analyse numerical data. The descriptive analysis was used to understand

statistical means and deviations of participants' views on each objective, and the inferential analysis was used to study correlation and the level of significance of research variables, and test hypotheses using the ANOVA test. Primary Data were collected using structured survey questionnaires distributed to 140 participants met via a census technique and stratified sampling. Data was analysed using SPSS, version 25.0.

Tools and Techniques

The structured survey questionnaire was designed to capture necessary data in line with the research objectives. An equidistant Likert scale was used by respondents to rate the degree of their agreement or disagreement with the existence of the facts, with Strongly Disagree (SD) corresponding to 1, Disagree (D) to 2, Neutral (N) to 3, Agree (A) to 4, and Strongly Agree (SA) to 5. The respondents were reached using census and stratified sampling techniques.

Descriptive and Inferential Analysis

According to Bryman and Bell (2002), the process of analysing data includes all the steps involved in evaluating and compiling data to draw trustworthy conclusions. Before coding and analysis, the gathered data have undergone cleaning and editing. Number codes spanning from a point scale of 1 to 5 were developed using the Likert scales, which were primarily used in the closed-ended questions.

This served to illustrate the work of the study's constructions that were put to the test. The quantitative analysis was applied using a statistical model through both descriptive and inferential statistics, where descriptive statistics were applied to determine means & standard deviations using SPSS version 25.0.

Descriptive Analysis

The descriptive statistical analysis was performed by calculating the Mean and standard deviations (Std Dev.) of the respondents' views on each specific objective to ensure an easy understanding and decisions on the respondents' agreement or

disagreement with the fact of how risk management practices were practised in projects undertaken by Construction Contractors. The following equidistant guide for Mean & std Dev, was considered for the decision making.

- $1.0 \leq \mu \leq 1.8$: Very low mean: The fact is not apparent.
- $1.9 \leq \mu \leq 2.6$: Low mean: The fact appears less.
- $2.7 \leq \mu \leq 3.4$: Neutrality.
- $3.5 \leq \mu \leq 4.2$: High mean: The fact appears more.
- $4.3 \leq \mu \leq 5.0$: Very high mean: Strong evidence of the existence of the fact.
- $\text{Std} \leq 0.5$: homogeneity of responses and closeness to the mean.
- $\text{Std} > 0.5$: heterogeneity of responses & dispersion from the mean.

Inferential Analysis

The inferential statistical analysis was applied to analyse the correlation, significance, and regression characteristics of the variables and the regression model of the study. The tests of Normality were conducted to verify the normal distribution of the data, allowing the researcher to decide on the suitable test between parametric and non-parametric tests for inferential analysis. The multiple linear regression model was elaborated to investigate how independent variables affect the dependent variable. The multiple linear regression model in the form below was developed:

$$Y = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \varepsilon \text{ with:}$$

Y = Construction Project Performance (CPP).

α = The Y-intercept.

β = The x-intercept.

x_1 = Project Planning (PP).

x_2 = Project Implementation (PI).

x_3 = Project Monitoring & Control (RMo).

x_4 = Project Communication (PC).

ε = error term

Using this model $Y = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \varepsilon$ to generate $CPP = \alpha + \beta_1 PP + \beta_2 PI + \beta_3 PMo + \beta_4 PC + \varepsilon$, the researcher has performed the regression analysis to determine the α and β coefficients, the coefficients of estimates, where β showed the increase/variation of dependent variable (PP) once independent variable (PP, RP, RMo and RMi) increases by one unit.

The α coefficient was used to show how constant the dependent variable remains when all independent variables are equal to zero. The regression analysis was also performed on the model $CPP = \alpha + \beta_1 PP + \beta_2 PI + \beta_3 PMo + \beta_4 PC + \varepsilon$, to generate Beta and t-values, through SPSS version 25.0, to interpret which independent variable is more contributing to the dependent variable, etc.

The inferential analysis through the ANOVA test was also performed to study the significance level of study variables, using a P-value of 0.05 to measure and decide how significant a variable is, and interpretations showed that if the $p\text{-value} \leq 0.05$, there is significance, and if the $p\text{-value} > 0.05$, there is no significance.

RESULTS

Statistical analyses on respondents' perceptions and views of the facts of how the researcher selected project management practices have affected the performance of construction projects in Rwandan Construction Contractors were presented.

Descriptive Analysis Results

Table 1: Respondents' Perceptions on Project Planning

Project Planning	N	Mean	Std
-The project financial plan was well elaborated	137	4.21	1.19
-The project human resource plan was effectively elaborated.	137	4.15	1.11
-The project schedule plan was well-elaborated	137	4.17	1.15
-The communication plan was correctly elaborated.	137	2.60	1.03
-Project material resources were well planned.	137	3.97	1.36
Overall statistics	137	3.82	1.16

Source: Field Data, 2025.

Table 1 confirmed that the Project financial plan, Project human resource plan, Project schedule plan, and Project material resources, were well planned with respective means of 4.21, 4.15, 4.17 and 3.97 (high to very high means) showing the existence of the fact of project planning done at Rwandan Construction Contractors, with standard deviation (Std) from 1.11 to 1.36 greater than 0.5, meaning that there was a close variation of respondents views. The results also showed that the communication plan was not correctly elaborated, with a low mean of 2.60, confirming that the fact appears less, with a standard deviation of 1.03 > 0.5, meaning that there was variability of responses, dispersed from the mean.

The overall results presented an aggregated mean score of 3.82 and a standard deviation of 1.16, respectively. A high mean score evidencing the existence of the fact, reflecting a generally positive view of respondents, confirming the planning conducted at Rwandan Construction Contractors to influence performance.

The results are supported by Akinola (2019), who ascertained that construction teams and stakeholders will be able to improve the performance of their projects by reevaluating their project planning endeavours and methods, considering the identified factors influencing project planning and implementation.

Table 2: Respondents' Perceptions on Project Implementation

Project Implementation Process	N	Mean	Std
-The project was implemented as planned.	137	2.49	1.18
-The project was implemented by meeting quality expectations.	137	4.15	1.11
-Project was implemented differently from the plan with some changes.	137	4.27	.93
-Project characteristics and specifications changed during the implementation.	137	4.15	1.11
-Overall, projects implemented met all the needs and expectations of owners.	137	2.61	1.10
Overall statistics	137	3.70	1.11

Source: Field data, 2025.

The results of Table 2 confirmed that the project was implemented by meeting quality expectations, the Project was implemented differently from the plan with some changes, and Project characteristics and specifications changed during the implementation, with high mean of 4.15, 4.27 and 4.15 evidencing the high existence of implementation of project with Standard deviation from 0.93 to 1.11, greater than 0.5, evidencing the heterogeneity of views from respondents but close to the mean.

On the other hand, it was shown that the Project was implemented as planned, and overall projects implemented met all needs and expectations of owners, as stated by a low mean of 2.49 and 2.61 (fact appears less), with a standard deviation from

1.10 to 1.18, greater than 0.5, showing the variation of respondents' views but close to the mean.

The overall results presented an aggregated mean score of 3.70 and Std of 1.11, respectively. A high mean evidences the existence of the fact, reflecting a generally positive view of respondents, confirming the good implementation of projects conducted at Rwandan Construction Contractors to influence performance.

The results are supported by Kahvandi et al. (2019), who assert that the construction sector worldwide spends enormous sums of money due to poor planning and work; however, it requires attention during construction project implementation.

Table 3: Respondents' Perceptions on Project Monitoring& Control

Project Monitoring& Control	N	Mean	Std
The project monitoring plan was respected to avoid any variance between the plan and execution.	137	4.26	1.12
-A control plan was elaborated & executed to comply with any variances identified.	137	4.35	.91
-Project monitoring reports were elaborated & communicated for quick control.	137	4.11	1.20
-Monitoring supervisory team verified plans and gaps between the plan & execution of the project.	137	4.04	1.18
-The monitoring supervisory team inspected correct budget use to minimise the gap and avoid cost overruns.	137	2.56	1.09
-The monitoring supervisory team respected the monitoring timeline& direct communication to avoid delays.	137	2.55	1.24
Overall statistics	137	3.65	1.12

Source: Field data, 2025.

The results of Table 3 confirmed that the inspection of the budget and respect for monitoring timeline and communication were not correctly performed at Rwandan Construction Contractors, stated by low mean of 2.55 and 2.56, evidence that the facts appear less. It was also shown that tasks related to respecting the monitoring plan, elaboration & execution of the control plan, monitoring reports elaboration, and verification of plans were confirmed to be correctly conducted at Rwandan Construction Contractors, confirmed by very high means of 4.26, 4.35, 4.11 and 4.04, evidencing the high existence of the monitoring and control in projects under Rwandan Construction Contractors.

The overall results showed an aggregate mean score of 3.65 with Std=1.12, confirming the existence of the fact reflecting a generally positive view of respondents on monitoring and control activities conducted at Rwandan Construction Contractors to influence performance. The results are supported by Pico & Wayne (2023) who argued that that project monitoring and control identify the project deviations by analyzing variances from the plan and diagnose the root causes of any issues and take corrective Action to implement solutions to address deviations and get the project back on track and could involve adjusting the schedule, revising the budget, reallocating resources, or taking other corrective measures.

Table 4: Respondents' Perceptions on Project Communication

Project Communication	N	Mean	Std
- Project activities are correctly reported to all project stakeholders.	137	4.46	.90
-Project communication channels were respected as they were planned	137	2.70	1.05
-Project communication guidelines are correctly respected as planned.	137	2.91	1.23
-Information was well conveyed& communicated confidentially.	137	4.02	1.17
Overall statistics	137	3.52	1.08

Source: Field data, 2025.

The results of Table 4 confirmed that Project activities are correctly reported to all project stakeholders and Information was well conveyed&

communicated confidentially, evidenced by very high means of 4.46 and 4.02 with Std of 0.90 to 1.17, respectively, confirming the existence of the

fact that communication was correctly done in the project undertaken by Rwandan Construction Contractors the variability of responses close to the mean.

On the other hand, the results presented that Project communication channels and guidelines were not correctly respected as planned, as indicated by low means of 2.70 and 2.91, meaning that the facts appear less (more disagreements). The overall results showed an aggregate mean score of 3.52 (high mean) with Std=1.08, confirming the existence of the fact, reflecting a general positive view of respondents on communication activities correctly done in the project undertaken by Rwandan Construction Contractors to influence performance.

The results are supported by Uwera & Dushimimana, (2025), who revealed that effective communication between the project manager, team members, and all external stakeholders is a crucial and central tool to all meaningful collaboration and

teamwork that keeps a whole project organization moving categorically done through written, verbal, non-verbal, and visual communication that conveys the information effectively to various project stakeholders.

Inferential Analysis Results

The inferential analysis was conducted to analyse the correlation between independent and dependent variables, the significance level of the variables of the study, and the regression coefficients. To conduct the inferential analysis, a test of Normality was pre-conducted under the Kolmogorov-Smirnov(K-S) test, chosen for a population of 137 greater than 50, and several variables with more than 3, to select the suitable test to use for inferential analysis, among the parametric and non-parametric tests.

The results of the K-S test showed a p-value of $0.073 \geq 0.05$; hence, the data were normally distributed, and therefore, the ANOVA test is suitable for inferential analysis.

Table 5: Correlation Analysis

		Correlations				
		X ₁	X ₂	X ₃	X ₄	Y
Project Planning(X1)	Pearson Correlation	1	.800**	.928**	.769**	.772**
	Sig. (2-tailed)		.000	.000	.000	.000
	N	137	137	137	137	137
Project Implementation process(x2)	Pearson Correlation	.800**	1	.867**	.772**	.720**
	Sig. (2-tailed)	.000		.000	.000	.000
	N	137	137	137	137	137
Project monitoring & control(x3)	Pearson Correlation	.928**	.867**	1	.771**	.833**
	Sig. (2-tailed)	.000	.000		.000	.000
	N	137	137	137	137	137
Project Communication (x4)	Pearson Correlation	.769**	.772**	.771**	1	.708**
	Sig. (2-tailed)	.000	.000	.000		.000
	N	137	137	137	137	137
Project Performance(Y)	Pearson Correlation	.772**	.720**	.833**	.708**	1
	Sig. (2-tailed)	.000	.000	.000	.000	
	N	137	137	137	137	137

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

Table 5 showed individual Pearson correlation coefficients between variables of the study, and that:

- There was a strong positive correlation, $R=0.772$, between project planning and performance,
- There was a strong positive correlation, $R=0.720$, between implementation process & performance,
- There was a strong positive correlation, $R=0.833$ between monitoring& Control& performance,
- There was a strong positive correlation, $R=0.708$, between project communication/performance.

Table 6: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.796 ^a	.634	.627	.144

a. Predictors: (Constant), Project Planning, project implementation, project monitoring& Control, and project communication

Table 6 shows the quantity of variance that is explained by the predictor variables. The first statistic, $R=0.796^a$, is the overall model correlation coefficient between all the predictor variables and the dependent variable and indicates that there is a strong positive correlation of variance shared by the independent variables and the dependent variables.

The value, R Square describes a goodness of fit as amount of variance explained by a given set of predictor variables and its value in this model is 0.634 or 63.4% of contribution of the independent variables in the dependent variable to mean that there is a good fitness of the model to data and that 36.6% remaining is the influence of other factors unstudied in this study.

Table 7: Significance of Independent Variables

ANOVA ^a						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	7.158	4	1.789	85.190	.000 ^b
	Residual	4.133	133	.021		
	Total	11.291	137			

a. Dependent Variable: Project Performance

b. Predictors: (Constant), Project planning, implementation, monitoring & control, and communication

Table 7 above indicates the F-statistic calculated at 5% to be 85.190, greater than the F-critical of 1.789 (Mean Square), further confirming the p-value of

$0.000 \leq 0.05$, that the model is statistically significant, and this implies that the model fits the predicted study variables.

Table 8: Regression Coefficients

Model		Coefficients ^a				
		Unstandardized Coefficients		Standardized Coefficients	t	p-value
		B	Std. Error	Beta		
1	(Constant)	.267	.044		6.068	.000
	Project planning (x ₁)	.123	.048	.163	2.562	.011
	Project implementation process(x ₂)	.160	.054	.202	2.963	.003
	Project monitoring &Control(x ₃)	.300	.056	.362	5.357	.000
	Project Communication(x ₄)	.136	.042	.196	3.238	.001

a. Dependent Variable: Project performance

Table 7 evidenced that $Y=0.267+0.123X_1 + 0.160X_2 + 0.300X_3 + 0.136X_4+\varepsilon$ was developed, where y=project performance and X₁ to X₄ represent respective independent variables of study, with the coefficient of estimates of 0.123 for planning, 0.160 for implementation, 0.300 for monitoring & control, and 0.136 for communication. These coefficients of estimation mean that:

- When all variables are fixed to zero, the value of Y is constant and equals 0.267,

- When project planning increases by one unit, project performance increases by 0.123,
- When project implementation increases by one unit, project performance increases by 0.160,
- When project monitoring &Control increases by one unit, project performance increases by 0.300,
- When project communication increases by one unit, project performance increases by 0.136.

Table 9: Hypotheses Testing Results

Hypothesis Testing Results					
Research Hypotheses	Beta	t	p-value	Decision	
Ho1: There is no significant effect of project planning on the performance of construction projects.	.163	2.562	.011	H _{o1} , rejected since $p \leq 0.05$	
Ho2: There is no significant effect of implementation process on the performance of construction projects	.202	2.963	.003	H _{o2} , rejected since $p \leq 0.05$	
Ho3: There is no significant effect of monitoring & control on the performance of construction project.	.362	5.357	.000	H _{o3} , rejected since $p \leq 0.05$	
Ho4: There is no significant effect of project communication on the performance of the construction project.	.196	3.238	.001	H _{o4} , rejected since $p \leq 0.05$	

The null hypothesis one (**Ho₁**) was rejected, since $p - value = 0.011 \leq 0.05$, implying that there is a significant effect of project planning on the performance of a construction project, and showed that project planning occupies the fourth level of

influencing the project performance, since $\beta_1 = 0.163, t = 2.562$.

The null hypothesis two (**Ho₂**) was rejected since $p - value = 0.003 \leq 0.05$, implying that there is a significant effect of the implementation process on the performance of a construction project, and

confirmed that the project implementation process occupies the third level of influencing project performance since $\beta_2 = 0.202, t = 2.963$ &).

The null hypothesis three (**H₀₃**) was rejected since $p - value = 0.000 \leq 0.05$, implying that there is a significant effect of monitoring & Control on the performance of a construction project, and confirmed that project monitoring & control occupies the first level of influencing project performance since $\beta_3 = 0.362, t = 5.357$.

The null hypothesis four (**H₀₄**) was rejected since $p - value = 0.001 \leq 0.05$, confirming that there is a significant effect of project communication on the performance of the construction projects, and confirmed that the project communication occupies the second level of influencing the project performance since $\beta_4 = 0.196, t = 3.238$.

CONCLUSIONS

The findings of this study revealed that there is a strong positive correlation and significant effect of project planning, implementation process, monitoring& control, communication, and performance of construction projects. In addition, effective planning affects effective implementation as well as the performance of construction projects in Rwanda. The study concluded that construction projects from Rwandan Construction Contractors were correctly planned but left gaps in implementation, gaps in monitoring, and gaps in communication to project stakeholders to help mutual understanding by all project team and stakeholders before and during project implementation.

Besides, the study revealed that projects have not met owners' expectations, and monitoring was not done on time, which resulted in project delays. Finally, the study also concludes that, usually, as project communication affects the project performance more, it is not correctly done in projects undertaken by Rwandan Construction

Contractors. Therefore, the project under Rwandan Construction Contractors has met technical and managerial constraints that hindered the project's performance from being achieved.

RECOMMENDATIONS

Based on the findings that project planning, implementation, monitoring& control, as well as communication, have a strong and significant positive correlation on project performance, the researcher has recommended Rwandan Construction Contractors and other project planners say that there should be clear and specific project stakeholders 'consultation during planning to avoid gaps and enhance the project's technical, financial, and schedule performance.

Rwandan Construction Contractors and other project management teams of various institutions, public and private firms, to implement their project, referring to the plan, with clear and full involvement from planning up to the closure phase.

Rwandan Construction Contractors and project managers should ensure that all projects have powerful and skilled project teams and stakeholders to be sure they contribute to successful implementation and achieve performance. Project owners and team members need to strengthen communication and improve attitude before, during, and after the project.

Further research on factors other than selected and studied project management practices that have contributed to the performance of construction projects undertaken by Rwandan Construction Contractors.

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