

TEAM COHESIVENESS AND PERFORMANCE OF PUBLIC INFRASTRUCTURAL PROJECTS IN RWANDA: A CASE STUDY OF THE RWANDA URBAN DEVELOPMENT PROJECT II

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Abstract

The study was carried out on Second Rwanda Urban Development Project (RUDP II) as case study. The study specifically sought to determine the effect of clear procedures, team leadership and team relationships on performance of the RUDP II. Descriptive research design was used within this study, and the study population comprised 132 employees working in RUDP II in different categories as public sector and private sector. Using stratified sampling technique, a sample size of 99 respondents was established through calculations carried out using Slovin's Formula. Descriptive research design and correlation analysis were utilized to assess the data and results generalized for the entire population; multiple regression used to test hypotheses. To compute and analyse the data in this study, the statistical product for service solution version 27 was used. Correlation analysis showed that there is a strong positive and significant relationship between clear procedure and performance ($r=0.993$ and $\text{sig}=.000<0.01$) level of significance. The multiple regression analysis revealed that clear procedures accounted for 98.5% of the performance in RUDP II. Correlation analysis showed that there is a strong positive and significant relationship between team leadership and performance ($r=0.950$ and $\text{sig}=.000<0.01$) level of significance. The multiple regression analysis revealed that team leadership contribute 90.3% of the performance in RUDP II. Correlation analysis showed a strong positive and significance relationship between team relationship and performance ($r= 0.966$ and $\text{sig}=.000<0.01$) level of significance. The multiple regressions revealed that team relationship contributes 93.3% of the performance in RUDP II. The study concluded that there were significant and positive effects between Team cohesiveness and project performance of RUDP II. The study suggested investing in leadership training programs and establishing clear delegation processes for RUDP II. To address communication barriers, it recommends implementing advanced tools like project management software and mobile apps and establishing centralized information systems for real-time collaboration and quick updates.

Keywords: *Clear Procedures, Team Cohesiveness, Team Leadership, Team Relationships and Performance*

Introduction

Public infrastructure projects play a pivotal role in a country's growth by stimulating employment and bolstering the economy. These projects require skilled professionals and labourers to ensure timely and within-budget completion. The complexity of such endeavours necessitates collective knowledge and skillsets, as highlighted by Martin and White (2023). This has prompted global researchers to examine the impact of teamwork on project success.

Internationally, studies by Malik et al. (2021) underscore that highly effective teams establish robust working relationships and achieve superior outcomes by minimizing conflicts. Collaborative teamwork not only ensures current project alignment but also prepares structures to meet future demands effectively. Zhang and Hao (2022) emphasize the critical role of teamwork in Chinese organizational restructuring, emphasizing its relevance across management, service delivery, problem-solving, and project execution, especially within the construction industry.

Regionally, Udofot, Boston, and Oluseyi (2022) identify gaps in team integration within Nigeria's construction sector, citing challenges like organizational disarray, communication failures, and inadequate participation. They stress the need for cohesive solutions to enhance team integration and performance. Similarly, in East Africa, Njoki and Samson (2022) emphasize the indispensable role of a skilled workforce in project success, noting that the commitment and capabilities of project personnel significantly determine outcomes.

In Rwanda, Shema and Hategekimana (2022) assert that the construction sector relies on diverse specialists collaborating to deliver successful building projects. Effective communication, well-defined goals, and cohesive team dynamics are pivotal to achieving project success in this context. However, despite the increased focus on infrastructure development in Rwanda, exemplified by initiatives like the Second Rwanda Urban Development Project (RUDP II), significant challenges persist, primarily stemming from heightened risk and uncertainty (Ndungutse, 2021).

The auditor general's report (OAG, 2023) underscores these challenges, revealing 37 delayed contracts across 28 governmental bodies and projects, amounting to Frw 201,017,126,883. This report identifies delays in planned infrastructure construction due to secondary cities' failure to implement alternative urbanization strategies, with only one out of 13 planned infrastructure pieces completed by 2021-2022. Notably, 33% of RUDP II projects in Kigali City faced delays, and 52% exceeded their budgetary allocations. Contributing factors include a lack of team cohesion, shortages in skilled labor, and the inadequacy of competent contractors (Shema & Hategekimana, 2022).

Despite Rwanda's strides in infrastructure development, these challenges persist and underscore the need for effective management strategies and systematic approaches. As infrastructure projects become increasingly complex, the demand for efficient team management solutions intensifies, exacerbated by ongoing shortages in expertise (Musili & Nyang'au, 2022). Effective project delivery requires meticulous planning that anticipates long-term needs, navigates unpredictabilities, and mitigates a diverse array of risks (Malik et al., 2021).

Recognizing the critical role of teamwork in project success, Wang et al. (2021) argue that clearly defined goals and comprehensive understanding among team members significantly enhance project outcomes. Effective leadership plays a pivotal role in persuading teams to embrace change and collaborate effectively amid challenging work environments. Thus, understanding and assessing team cohesion and its impact on the performance of infrastructural projects in Rwanda, particularly through the lens of the Second Rwanda Urban Development Project (RUDP II), becomes imperative.

The existing literature has employed various methodologies, yet few studies have comprehensively explored the relationship between team cohesion factors and conflict resolution patterns within infrastructure projects. This study aims to fill this gap by examining the interplay between team cohesion and project performance within the context of RUDP II. By focusing on this landmark project in Kigali, the study aims to elucidate how team dynamics influence project outcomes and identify strategies to optimize team performance and project success in Rwandan infrastructure development initiatives.

Objectives of the Study

General Objective

The main objective of this study was to assess the team cohesiveness and the performance of Public infrastructural projects in Rwanda, specifically in the Second Rwanda Urban Development Project.

Specific Objectives

- (i) To determine the effect of clear procedures on the performance of the Second Rwanda Urban Development Project.
- (ii) To assess the influence of team leadership on the performance of the Second Rwanda Urban Development Project.
- (iii) To analyze the contribution of team relationships on the performance of the Second Rwanda Urban Development Project.

Methods and material

This study employs a descriptive research approach to explore the influence of team cohesion on project performance within the Second Rwanda Urban Development Project (RUDP II). It prioritizes logical problem-solving in gathering insights from a diverse array of stakeholders involved in the project. The study's population comprises 132 individuals drawn from various roles within RUDP II. This includes administrative and financial staff, consultants, architects, engineers, project managers, and contractors. Their involvement is crucial for understanding how team dynamics affect project outcomes in this large-scale infrastructure initiative.

A sample size of 99 respondents was determined using Slovin's Formula with a 5% margin of error. Stratified sampling ensures representation across different roles, enhancing the study's ability to capture a broad spectrum of perspectives. Primary data will be collected through self-structured questionnaires utilizing a Likert scale. This approach will gauge stakeholders' perceptions on team cohesion and project success. Complementing this primary data, desk research will involve reviewing reports and documentation related to RUDP II, providing additional context and supporting data.

Quantitative data analysis will involve descriptive statistics such as means and standard deviations to interpret respondents' views on project performance and team cohesion. Pearson correlation will explore relationships between variables, while multiple linear regression will test hypotheses on how team cohesion influences project outcomes. Before full-scale data collection, a pilot study with 20 participants will refine questionnaire clarity and ensure the instrument's validity. Content validity of the research instrument will be ensured through expert validation in project management, while internal consistency of questionnaire items will be assessed using Cronbach's Alpha coefficient.

Data analysis will be conducted using Statistical Product & Service Solutions (SPSS) version 27.0. This will include techniques like descriptive statistics, correlation analysis, and multiple regression to interpret findings and derive insights into the relationship between team cohesion and project performance within RUDP II. Ethical considerations will guide the study, including obtaining informed consent, ensuring voluntary participation, maintaining anonymity and confidentiality, and respecting participants' rights throughout the research process.

Results

View on Clear procedures in RUDP II

The study sought to examine the effect of clear procedures in RUDP II. The responses from the respondents were logged on a five-point Likert scale anchored by Strongly Disagree (1), Disagree (2), Neutral (3), Agree (4) and Strongly Agree (5). The respondents were questioned if they agreed or disagreed with the statements and findings are presented in the table 4.2.

Table 1: View on Clear procedures in RUDP II

Statement on Clear Procedures	M	SD
N=99		
The staff involved in this project have specific, clear, and accepted procedures	4.19	0.44
Clear procedures direct the team member's attention and action in RUDP II	4.13	0.48
As procedures are settled, the team focus their efforts on getting the job done	3.77	0.53
Team members in RUDP II interactively operationalize the team goals and thus gain confidence in the team and the objectives it established	3.39	0.62
Higher teamwork quality enhance the team's ability to achieve its set goals	4.13	0.48
While working in a group, we develop a competitive attitude or approach towards our work	4.14	0.44
Overall Mean	3.99	

Source: Primary Data (2024)

In relation to clear procedures used in RUDP II, the results from the table 1, indicate that most respondents (46%) strongly agreed that staff involved in this project have specific, clear, and accepted procedures, as shown by high mean score of 4.19 with standard deviation of 0.44 which implies homogeneity responses. The results from the table 4.2, indicate that most respondents 45% strongly agreed that Clear procedures direct the team member's attention and action in RUDP II, as shown by high mean score of 4.13 with standard deviation of 0.48 which implies homogeneity responses. The results from the table 4.2, indicate also that 37% of respondents strongly agreed that as procedures are settled, the team focus their efforts on getting the job done, as shown by moderate mean score of 3.77 with standard deviation of 0.53 which implies heterogeneity responses.

The results from the table 4.2, indicate that most of respondents 41% agreed that team members in RUDP II interactively operationalize the team goals and thus gain confidence in the team and the objectives it established, as shown by moderate mean score of 3.39 with standard deviation of 0.62 which implies heterogeneity responses. The results from the table 4.2, indicate that most of respondents 45% agreed that Higher teamwork quality enhance the team's ability to achieve its set goals, as shown by high mean score of 4.13 with standard deviation of 0.44 which implies homogeneity responses. Finally, findings from the table 4.2, indicate that 57% of respondents strongly agreed that while working in a group, we develop a competitive attitude or approach towards our work, as indicated by high mean score of 4.14 with standard deviation of 0.44 which implies homogeneity responses.

The overall mean of respondents on the statements regarding to clear procedures used in RUDP II was at high extent with the average mean of 3.95, which is interpreted as a high mean, and implies that there is strong evidence of existing of fact.

Views on Team Leadership in RUDP II

The study sought to assess perception of respondents on the Team Leadership in RUDP II, the respondents were questioned if they agreed or disagreed with the statements with regard to Team Leadership. The findings were presented in the table 4.3.

Table 2: Team Leadership in RUDP II

Statement on Team Leadership	M	SD
N=99		
Team leaders in RUDP II possess all the necessary skills of project managers	3.67	0.58
Our leaders have a clear understanding of the Client's brief and are mindful to the business and cultural aspects of the company	3.43	0.61
Team leaders have sufficient knowledge on construction documentation and dissemination	3.33	0.67
Leaders in RUDP II also possess certain human skills in coping with stresses, establishing good relationships among team members and inducing a harmonious working atmosphere	3.05	0.73
The team leader has always the support from RUDP II Management	3.43	0.61
The team leaders apply adequate delegation of authority to help speed up decision making and implementation	2.74	0.7
Overall Mean	3.27	

Source: Primary Data (2024)

In relation to Team Leadership used in RUDP II, the results from the table 2, indicate that most respondents (48%) agreed that Team leaders in RUDP II possess all the necessary skills of project managers, as shown by moderate mean score of 3.67 with standard deviation of 0.58 which implies heterogeneity responses. The results from the table 4.3, indicate that most respondents 41% agreed that their leaders have a clear understanding of the Client's brief and are mindful to the business and cultural aspects of the company, as shown by moderate mean score of 3.43 with standard deviation of 0.61 which implies heterogeneity responses. The results from the table 4.3, indicate also that 39% of respondents agreed that Team leaders have sufficient knowledge on construction documentation and dissemination, as shown by moderate mean score of 3.33 with standard deviation of 0.67 which implies heterogeneity responses.

The results from the table 4.3, indicate that most of respondents 31% agreed that leaders in RUDP II also possess certain human skills in coping with stresses, establishing good relationships among team members and inducing a harmonious working atmosphere, as shown by moderate mean score of 3.05 with standard deviation of 0.73 which implies heterogeneity responses. The results from the table 4.3, indicate that most of respondents 41% agreed that the team leader has always the support from RUDP II Management, as shown by high mean score of 3.43 with standard deviation of 0.61 which implies heterogeneity responses. However, findings from the table 4.3, indicate that most respondents (31%) disagreed that the team leaders apply adequate delegation of authority to help speed up decision making and implementation, as indicated by low mean score of 2.74 with standard deviation of 0.74 which implies heterogeneity responses.

The overall mean of respondents on the statements regarding to team leadership in RUDP II was at moderate extent with the average mean of 3.27, which is interpreted as a moderate mean, and implies that there is moderate evidence of existing of fact.

Views on Team Relationship in RUDP II

The study sought to assess perception of respondents on the Team Relationship and project performance of RUDP II. The respondents were questioned if agreed or disagreed with the statements with regard to Team Relationship within RUDP II. The findings were presented in the following table 3.

Table 3: Views on Team Relationship in RUDP II

Statement on Team Relationship	M	SD
N=99		
Resources transmission are regarded as a major component in our network structure	4.30	0.43
Our teamwork enables communication to flow in a free manner	4.19	0.45
We encounter difficult to communicate within the phases of construction.	4.12	0.47
Effective communication is very important and fundamental in project management since we have to work together to achieve project goals	4.45	0.41
Effective communication is assured in RUDP II as the involved parties in the project belong to different professional backgrounds	4.44	0.41
Overall Mean	4.30	

Source: Primary Data (2024)

In relation to Team Relationship in RUDP II, the results from Table 3, indicate that 55% of respondents strongly agreed that Resources transmission are regarded as a major component in our network structure, as shown by high mean score of 4.30 with standard deviation of 0.43 which implies that there is very high evidence of existing fact and homogeneity responses. The results from the Table 4, indicate that 32% of respondents strongly agreed that teamwork enables communication to flow in a free manner, as shown by high mean score of 4.19 with standard deviation of 0.45 which implies that there is high evidence of existing fact and homogeneity responses. The results from the Table 4, indicate that the majority 47% of respondents agreed that they encounter difficult to communicate within the phases of construction, as shown by very high mean score of 4.12 with standard deviation of 0.47 which implies that there is very high evidence of existing fact and homogeneity responses.

The results from the table 4.4, indicate that 70% of respondents strongly agreed that Effective communication is very important and fundamental in project management since they have to work together to achieve project goals, as shown by high mean score of 4.45 with standard deviation of 0.41 which implies that there is high evidence of existing fact and homogeneity responses.

Finally, findings from the table 4.4, indicate that 62% of respondents strongly agreed that Effective communication is assured in RUDP II as the involved parties in the project belong to different professional backgrounds, as indicated by high mean score of 4.44 with standard deviation of 0.41 which implies that there is evidence of existing fact and heterogeneity responses.

Briefly, the overall mean of respondents on the statements regarding to Team Relationship used in RUDP II was at high extent with the average mean of 4.30, which is interpreted as a very high mean, and implies that there is strong evidence of existing of the fact.

Views on the Project performance in RUDP II

The study sought to assess perception of respondents on the project performance in RUDP II as measured by Scope, Cost and Timeliness. The respondents were asked whether agreed or disagreed with the statements regarding project performance, and the results were presented in the table

Table 4: Views on the Project performance of RUDP II

Statement on Performance	M	SD
N=99		
Scope		

Team cohesiveness allow us to save the user time so that minimal man-hours are required to carry a specified task.	4.38	0.45
Teams have the potential to create positive synergy thanks to Team cohesiveness	3.82	0.52
Team cohesiveness allows an easy follow up of the Project team to ensure the good project implementation	3.91	0.49
Improved teamwork in RUDP II projects leads to more job satisfaction for the project's participants	4.45	0.41
Team cohesion in RUDP II increase the creativity to a great extent	4.44	0.41
Cost		
We frequently spend a lot of money on the inputs.	4.04	0.48
We use our resources efficiently due to team cohesion in RUDP II	4.00	0.48
Due to team cohesiveness, we confront a problem together and typically bond more closely and feel a strong sense of commitment and belonging	3.72	0.59
Our team cohesion enables us to produce high quality products and services at the lowest possible cost	3.67	0.58
Thanks to team cohesion, we make use of the project's expected overall cost.	3.43	0.61
All team members have access to the same information and work together to achieve the same goals	3.33	0.67
Timeliness		
Team cohesiveness in RUDP II helps this project to be completed on time.	3.66	0.64
Thanks to the team cohesion there is delivery of activities on time.	3.99	0.51
Team cohesion increases the total productivity within the RUDP II Project	4.03	0.49
As team cohesion go on increasing in RUDP II, the knowledge of the team also increases	4.19	0.45
In RUDP II, every action of yours needs approval from everyone else in the group which generates delays.	4.12	0.47
We are always reviewing, evaluating, and improving processes in order to maximize efficiency, thanks to teamwork	4.45	0.41
Overall Mean	3.95	

Source: Primary Data (2024)

In referring to the scope performance of RUDP II, results in table 4, indicated that most of respondents 53% strongly agreed that Team cohesiveness allow us to save the user time so that minimal man-hours are required to carry a specified task, as indicated by high mean score of 4.38 and standard deviation of 0.45. Also, most respondents 42% agreed that Teams have the potential to create positive synergy thanks to Team cohesiveness ($M=3.82$, $SD=0.52$). Also, most respondents 40% agreed that Team cohesiveness allows an easy follow up of the Project team to ensure the good project implementation ($M=3.91$, $SD=0.49$). Most respondents 70% strongly agreed that Improved teamwork in RUDP II projects leads to more job satisfaction for the project's participants ($M=4.45$, $SD=0.41$). Also, most respondents 62% strongly agreed that Team cohesion in RUDP II increase the creativity to a great extent ($M=4.45$, $SD=0.41$).

Considering cost performance, the results from the table 4.5 show that most of respondents 44% strongly agreed that they frequently spend a lot of money on the inputs ($M=4.04$, $SD=0.48$). Also, most respondents 41% agreed that they use resources efficiently due to team cohesion in RUDP II ($M=4.00$, $SD=0.48$). Also, most respondents 35% agreed that Due to team cohesiveness, they confront a problem together and typically bond more closely and feel a strong sense of commitment and belonging ($M=3.72$, $SD=0.59$). Most respondents 48% agreed that team cohesion enables them to produce high quality products and services at the lowest possible cost ($M=3.67$, $SD=0.58$). Also, most respondents 41% agreed that thanks to team cohesion, we make use of the project's expected overall cost ($M=3.43$, $SD=0.61$). Most respondents 39% agreed that All team members have access to the same information and work together to achieve the same goals ($M=3.33$, $SD=0.67$).

Considering timeliness in RUDP II, the results from the table 4.5 show that most of respondents 37% strongly agreed that Team cohesiveness in RUDP II helps this project to be completed on time. ($M=3.66$, $SD=0.64$). Also, most respondents 37% agreed that Thanks to the team cohesion there is delivery of activities on time. ($M=3.99$, $SD=0.51$). Also, most respondents 39% strongly agreed that Team cohesion increases the total productivity within the RUDP II Project ($M=4.03$, $SD=0.49$). Most respondents 49% agreed that as team cohesion go on increasing in RUDP II, the knowledge of the team also increases ($M=4.19$, $SD=0.45$). Also, most respondents 47% agreed that In RUDP II, every action of yours needs approval from everyone else in the group, which generate delays ($M=4.12$, $SD=0.47$). Most respondents 70% strongly agreed that We are always reviewing, evaluating, and improving processes in order to maximize efficiency, thanks to teamwork ($M=4.45$, $SD=0.41$).

Briefly, the overall mean of respondents on the statements regarding to project performance of RUDP II was at high extent with the average mean of 3.98, which is interpreted as a high mean, and implies that there is strong evidence of existing of fact that project performance of RUDP II has been improved at very high extents.

Inferential statistics

The study used inferential statistics such as correlation analysis and multiple regression to determine the effect of the team leadership on the performance of the Second Rwanda Urban Development Project, to assess the influence of team relationships on the performance of the Second Rwanda Urban Development Project, and to analyze the contribution of clear procedures on the performance of the Second Rwanda Urban Development Project. Based on the results from regression analysis, the study can show the effect of each predictor such as Clear procedures, Team Leadership, and Team Relationship on the project performance of RUDP II.

Correlations Analysis

The correlation is one of the most common and most useful statistics. Linear correlation coefficient, measures the strength and the direction of association between the study variables was assessed using Pearson coefficient of correlation. The Pearson's coefficient of correlation ranges between +1 to -1. A zero (0) coefficient indicates that there is no association between the two variables. A coefficient value of greater than 0 indicates a positive relationship between the variables and hence an increase in the value of one variable leads to an increase in the other values of the other variable and the converse is true. A value less than 0 indicate a negative association between the variables that is as the values of one variable increases the values of the other variable decreases (Lohrey, 2014).

The study sought to determine the correlation between the predictors of the independent variable team cohesiveness (clear procedures, team leadership, team relationship) and the dependent variable project performance. To calculate the correlation (strength) between the study variables and their findings the Survey Data used the Pearson's coefficient of correlation (r). The findings are presented in table 4.6.

Table 5: Correlation analysis between Team cohesiveness and Project performance

		Clear Procedure s	Team Leadershi p	Team Relationshi p	Performanc e
Clear Procedures	Pearson				
	Correlation		1		
	Sig. (2-tailed)				
	N		99		
Team Leadership	Pearson				
	Correlation	.244**		1	
	Sig. (2-tailed)	.000			

	N	99	99	
Team Relationship	Pearson Correlation	.266**	.261**	1
	Sig. (2-tailed)	.000	.000	
	N	99	99	99
Performance	Pearson Correlation	.993**	.950**	.966**
	Sig. (2-tailed)	.000	.000	.000
	N	99	99	99

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

The results of the study in Table 5 show that there is a strong positive and significant relationship between clear procedure and performance ($r=0.993$ and $\text{sig}=.000<0.01$) level of significance. There is also a strong positive and significant relationship between team leadership and performance ($r=0.950$ and $\text{sig}=.000<0.01$) level of significance. And finally, the results in Table 5 reveal a strong positive and significance relationship between team relationship and performance ($r= 0.966$ and $\text{sig}=.000<0.01$) level of significance. Thus, this implies that team cohesiveness plays a positive and significant effect on project performance in RUDP II.

The results of this current research are supported by the results of the study of Mohsin and Mwikya (2022) sought to understand the relationship between organisational success and the development of collaboration at Kenya's Tile and Carpet Centre (T&C).. The inferential findings on the relationship between collaboration growth and organisational performance demonstrate that there was a significant relationship between the two ($t=7.522$, $p0.05$) and that there was a substantial positive correlation ($R=0.623$, $R^2=0.389$). The study demonstrated and offered evidence that organizational success depends on the recognition of interdependence within teams and how important it is for team members to understand their responsibilities and strive to achieve corporate goals, thereby having a beneficial influence on organizational performance.

Multiple Regression

This section consists of regression analysis. The section was meant to achieve both general and specific objectives in establishing the relationships that exists between the study variables. The Statistical Product and service solution version 27 was used to code, enter and compute the measurements of the multiple regressions for the study.

Diagnostics Test of the Regression Model

After running the regression model, post-estimation tests were conducted to ensure that the model was a good fit and the estimates received from the model were efficient and reliable. This study satisfactorily performed conditional diagnostics statistical tests. The study tested for multicollinearity

Multicollinearity is the undesirable situation where the correlations among the independent variables are strong. Variance Inflation Factor (VIF) was used to assess multicollinearity in the multiple regression models. Zikmund, Babin, Carr and Griffin (2013) mentioned when there are two or more variables have a Variance Inflation Factor (VIF) of 5 and above, amongst them one should be removed from the regression analysis as this shows multicollinearity. Thus, in a study, if two or more variables have a Variance Inflation Factor of 5 or more than that one of them must be removed out if the same.

Table 6: Test for Multicollinearity

Model	Collinearity Statistics	
	Tolerance	VIF
Clear procedures	0.785	1.375
Team Leadership	0.802	1.028
Team Relationship	0.775	1.718

Source: Primary Data (2024)

Table 6, indicated that all the independent variables were not highly correlated with each other as indicated by the Variance Inflation Factors (VIF) of below five. Since all 3 variables has VIF which is less than 5 indicating that there is no multicollinearity. Therefore, all variable of predictors will be included in the model.

Effect of the clear procedures on the performance of the RUDP II

The study determined the regression analysis to demonstrate the relationship between the independent variables and the dependent variable. Specifically, the regression analysis provides the effect of clear procedures (CP) on performance in RUDP II at a 5% significance level. This section, therefore, provides the model summary, analysis of variance, and regression coefficients.

Table 7: Model Summary of clear procedures on Performance of RUDP II

Model	R	R Square	Adjusted R square	Std Error of the estimate
1	.993a	0.985	0.985	0.13312

a. Predictors: (Constant), clear procedures

From the study findings, it is notable that coefficient of determination R square value is 0.985. The study results imply that clear procedures accounted for 98.5% of the performance in RUDP II as represented by the R². This means that other factors not studied in this research contribute 1.5% to the performance of RUDP II. Therefore, further research should be conducted to investigate the other factors (1.5 percent) that influence performance of RUDP II.

Table 8: ANOVA of the effect of clear procedures on Performance of RUDP II

Model		Sum of squares	df	Mean square	F	Sig.
1	Regression	116.475	1	116.475	6572.905	.000b
	Residual	1.719	97	0.018		
Total		118.194	98			

a. Dependent Variable: Performance

b. Predictors: (Constant), clear procedures

The analysis of variance was used to examine whether the regression model was a good fit for the data. The F-calculated was 6572.905 and was greater than the F-critical and the p-value was 0.000, which was less than the significance level (0.05). Therefore, the model is considered to be a good fit for the data and hence it implies that clear procedures have significant effect on the performance in RUDP II.

Table 9: Regression coefficients of clear procedures and Performance

Model		Unstandardized Coef.		Standardized coef.	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	0.162	0.049		3.341	0.001
	CP	0.962	0.012	0.993	81.073	0.000

a. Dependent Variable: Performance

According to the regression equation established, taking all factors into account clear procedures constant at zero, the performance of RUDP II was 0.162.

The findings from the table 9, revealed that clear procedures have significance positive effect on performance of RUDP II as indicated by $\beta_1 = 0.993$, p value = $0.000 < 0.05$, $t = 81.073$. The

implication is that an increase of 1 unit in clear procedures would lead to an increase in performance of RUDP II by 0.993 units.

The results are supported by the results of the study of Wang et al. (2021) aimed to identify the broad elements influencing the effectiveness of cooperation in China's BIM-based collaborative design and to look into the important factors and their relationships. The findings showed that the teamwork environment is the most important component, followed by the learning capacity of the collaborators, the cohesiveness of the workspace, the functionality of software, and the characteristics and organisation of the design task.

Influence of team Leadership on the performance of the RUDP II

The study determined the regression analysis to demonstrate the relationship between the independent variables and the dependent variable. Specifically, the regression analysis provides the effect of team leadership (TL) on performance in RUDP II at a 5% significance level. This section, therefore, provides the model summary, analysis of variance, and regression coefficients.

Table 10: Model Summary of team leadership on Performance of RUDP II

Model	R	R Square	Adjusted R square	Std Error of the estimate
2	.950a	0.903	0.902	0.34356

a. Predictors: (Constant), team leadership

From the study findings, it is notable that coefficient of determination R² value is 0.903. The study results imply that team leadership contribute 90.3% of the performance in RUDP II as represented by the R². This means that other factors not studied in this research contribute 9.7% to the performance of RUDP II. Therefore, further research should be conducted to investigate the other factors (9.7 percent) that influence performance of RUDP II.

Table 11: ANOVA of the effect of team leadership on Performance of RUDP II

Model		Sum of squares	df	Mean square	F	Sig.
2	Regression	106.745	1	106.745	904.382	.000b
	Residual	11.449	97	0.118		
	Total	118.194	98			

a. Dependent Variable: Performance

b. Predictors: (Constant), team leadership

The analysis of variance was used to examine whether the regression model was a good fit for the data. The F-calculated was 904.382 and was greater than the F-critical and the p-value as 0.000, which was less than the significance level (0.05). Therefore, the model is considered to be a good fit for the data and hence it implies that team leadership has a significant influence on the performance in RUDP II.

Table 12: Regression coefficients of team leadership and Performance

Model	Unstandardized Coef.		Standardized coef.	t	Sig.
	B	Std. Error	Beta		
2 (Constant)	1.330	0.094		14.179	.000
TL	0.801	0.027	0.950	30.073	.000

a. Dependent Variable: Performance

According to the regression equation established, taking all factors into account team leadership constant at zero, the performance of RUDP II was 1.330.

The findings from the table 12, revealed that team leadership have significance positive effect on performance of RUDP II as indicated by $\beta_1 = 0.950$, p value = $0.000 < 0.05$, $t = 30.073$. The implication is that an increase of 1 unit in team leadership would lead to an increase in performance of RUDP II by 0.950 units.

The results are supported by the results of the study of Inganda and Mulyungi (2022), using a case study from Fair Construction Ltd., looked at the impact of leadership styles on project performance in Rwanda. The study found that autocratic leadership in road projects leads to high turnover, strained relationships, low staff morale, and lack of commitment. A study recommends using transformative and democratic leadership styles, as 67% of respondents under 40 prefer freedom under project management. Senior staff should have a postgraduate diploma in project management before starting construction projects.

Effect of Team Relationship on Performance in RUDP II

The study determined the regression analysis to demonstrate the relationship between the independent variables and the dependent variable. Specifically, the regression analysis provides the effect of team relationship (TR) on performance in RUDP II at a 5% significance level. This section, therefore, provides the model summary, analysis of variance, and regression coefficients.

Table 4.14: Model Summary of team relationship on Performance of RUDP II

Model	R	R Square	Adjusted R square	Std Error of the estimate
3	.966a	0.933	0.933	0.28475

a. Predictors: (Constant), team relationship

From the study findings, it is notable that coefficient of determination R² value is 0.933. The study results imply that team relationship contribute 93.3% of the performance in RUDP II as represented by the R². This means that other factors not studied in this research contribute 6.7% to the performance of RUDP II. Therefore, further research should be conducted to investigate the other factors (6.7 percent) that influence performance of RUDP II.

Table 4.15: ANOVA of the effect of team relationship on Performance of RUDP II

Model		Sum of squares	df	Mean square	F	Sig.
3	Regression	110.329	1	110.329	1360.674	.000b
	Residual	7.865	97	0.081		
	Total	118.194	98			

a. Dependent Variable: Performance

b. Predictors: (Constant), team relationship

The analysis of variance was used to examine whether the regression model was a good fit for the data. The F-calculated was 1360.674 and was greater than the F-critical and the p-value was 0.000, which was less than the significance level (0.05). Therefore, the model is considered to be a good fit for the data and hence it implies that team relationship has a significant influence on the performance in RUDP II.

Table 15: Regression coefficients of team relationship and Performance

Model		Unstandardized		Standardized	t	Sig.
		Coef.		coef.		
		B	Std. Error	Beta		
3	(Constant)	0.893	0.134		6.645	.000
	TR	1.124	0.030	0.966	36.887	.000

a. Dependent Variable: Performance

According to the regression equation established, taking all factors into account team relationship constant at zero, the performance of RUDP II was 0.893.

The findings from the table 15 revealed that team relationship have significance positive effect on performance of RUDP II as indicated by $\beta_1 = 0.966$, $p \text{ value} = 0.000 < 0.05$, $t = 36.887$. The implication is that an increase of 1 unit in team relationship would lead to an increase in performance of RUDP II by 0.966 units.

The results are in the same line with the study by Buthelezi and Zondo (2022) who impact of team cohesion on the operational effectiveness of cooperative members in South Africa, and found that team cohesion affects cooperative members' operational performance in South Africa.

Effect of Team cohesiveness on Performance in RUDP II

The study determined the regression analysis to demonstrate the relationship between team cohesiveness and the performance in RUDP II. Specifically, the regression analysis provides the effect of clear procedures, team leadership, and team relationship on performance in RUDP II at a 5% significance level. This section, therefore, provides the model summary, analysis of variance, and regression coefficients.

Table 16: Model Summary of the effect of team cohesiveness on performance of RUDP II

Model	R	R Square	Adjusted R square	Std Error of the estimate
1	.996a	0.991	0.991	0.10459

a. Predictors: (Constant), X1= CP, X2= TL, X3= TR.

The coefficient of determination was denoted by the R-squared which provides explanations to the total variations in the dependent variables due to the changes in the value of the dependent variables. The results in table shows that, the R-squared value was 0.991, which indicate that nearly 99.1% of the total variations of performance of RUDP II can be attributed to the changes in the value of the independent variables (clear procedures, team leadership, and team relationship) captured by the study model and at confidence level of 95%.

Table 17: ANOVA of the effect of team cohesiveness on performance of RUDP II

Model		Sum of squares	df	Mean square	F	Sig.
1	Regression	117.154	3	39.051	3569.876	.000b
	Residual	1.039	95	0.011		
	Total	118.194	98			

a. Dependent Variable: performance

b. Predictors: (Constant), X1=CP, X2= TL, X3= TR

The research study determined that all the variables were significant at their significance level which was lower than 0.05. The predictor variables were regressed against performance of RUDP II. The overall model was significant because calculated F-Statistic of 3569.876 and also because p-value calculated =0.000 is less than critical p-value=0.05 level of significant. This finding shows that the study model is significant and can be applied for the purposes of making predictions at 5% level of significance. Therefore, this implies that the variables: clear procedures, team leadership, and team relationship are good predictors of performance of RUDP II.

Table 18: Regression coefficients of the effect of team cohesiveness on performance in RUDP II.

Model	Unstandardized Coef.		Standardized coef.	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	0.028	0.063		-0.450	0.654
CP	0.420	0.070	0.433	5.979	0.000
TL	0.227	0.031	0.270	7.339	0.000
TR	0.367	0.055	0.316	6.737	0.000

a. Dependent Variable: performance

$$Y_3 = \beta_0 + \beta_1 x_1 + \beta_2 x_2 + \beta_3 x_3 + e$$

The regression results revealed that Clear procedures has significance positive effect on performance in RUDP II as indicated by $\beta_1 = 0.433$, p-value=0.000<0.05, t=5.979. The implication is that an increase of 1 unit in clear procedures would lead to an increase in on performance of RUDP II by 0.433 units.

The regression results revealed that team leadership has significance positive effect on performance in RUDP II as shown by $\beta_2 = 0.270$, p=0.000<0.05, t=7.339. This shows that when there is an increase of 1 unit in team leadership would lead to an increase in performance in RUDP II by 0.270 units.

The regression results revealed that team relationship have significance positive effect on performance in RUDP II as indicated by $\beta_3 = 0.316$, p-value=0.000<0.05, t= 6.737. The implication is that an increase of one unit in team relationship will increase performance in RUDP II by 0.316 units..

Conclusion

This study delved into the impact of team cohesiveness, guided by Tuchman's team stages model and Lean Construction theory, on the project performance of RUDP II. It identified significant positive effects of clear procedures, team leadership, and team relationships on project outcomes. However, challenges such as inadequate delegation and communication difficulties were noted, suggesting the need for targeted interventions like leadership training and advanced communication tools. Future research should expand to include comparative analyses with private sector projects and explore additional variables influencing team cohesiveness and project performance. By bridging theoretical insights with empirical findings, this study offers actionable recommendations to enhance project efficiency, team dynamics, and overall success in similar project management contexts.

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