Effect of Contract Management on Performance of Roads Projects: A Case of Nyabihu District, Rwanda (2019-2022)

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Abstract

The general objective of this research was to examine the effect of contract management on performance of roads projects in Nyabihu District. Specifically, the study guided by the following objectives: To establish the effect of contract planning on performance of roads projects in Nyabihu District, assess the effect of contract negotiation on performance of roads projects in Nyabihu District, establish the effect of contract execution on the performance of roads projects in Nyabihu-District, and examine the effect of contract monitoring and evaluation of the performance of roads projects in Nyabihu District. This study based on Agency theory, Resource Dependence Theory, and Institutional Theory. The study was descriptive designed, correlative designed, qualitative designed, quantitative designed, and primary and secondary data-based designed. The total population of this study was 146 individuals including 134 staff of Nyabihu District (local government) who are active participants of the projects both users and developers, 4 contractors, 4 top administrators and 2 policy makers from MINALOC on Rehabilitation, Upgrading and Multi-year Maintenance Works of Indicative Feeder Roads in Nyabihu District, (Lot I and Lot II), Rehabilitation of Vuga-Kiramira-Gaharawe road and Construction of Mukamira-Kabashumba road. Thus, the target population was 146 individuals. The sample size determined by the help of Yamane formulae. Researcher used simple random to select 107 respondents into groups based on each employee department. To collect main data, Researcher used a questionnaire and predetermined interview questions, and to compile secondary data, Researcher did a paper search means documentary technique. The researcher used SPSS (Statistical Package for Social Scientists, version 20) findings to make sense of things like frequency, percentage, mean, and standard deviation. The findings on multiple regression coefficient show that contract Planning has $\beta_1=0.350$, p-value of $0.000<0.05$ indicates that there is statistically significant influence of contract planning on the performance of the roads projects in Nyabihu District. On contract negotiation, $\beta_2=0730$, p-value of $0.000<0.05$ indicates that there is statistically significant influence of contract negotiation on the performance of the construction project in Nyabihu District. Also, for contract Execution, $\beta_3=0.474$, p-value of $0.005<0.05$ indicates that there is statistically significant influence of contract execution on the performance of roads projects in Nyabihu District. Lastly, for contract Monitoring and Evaluation, $\beta_4=0.319$, p-value of $0.002<0.05$ indicates that there is statistically significant influence of contract Monitoring and Evaluation on the performance of roads projects in Nyabihu District. Top administrators should

invest in strengthening contract management practices across all phases. Contractors should adopt a collaborative approach in contract negotiations, focusing on compliance and reputation.

Key words: *Contract Management, Contract Planning, Contract Negotiation, Contract Execution, Contract Monitoring, Evaluation, and Performance of Roads Projects.*

1. Introduction

All over the world, construction sector is changing very quickly. Companies and government which don't adapt to the complication of this sector will not survive to the current and future problems. The construction project is very composite in its nature because it involves a number of parties who are the project owner, project contractors, project consultants, regulators, and community. Construction sector have a key part in the development and success of the society (Irazirikana, 2018). Construction industry in Rwanda has significant importance to the social – economic development of country since it is source of employment to the skilled, semi-skilled and unskilled people. Road construction facilitate the easy access to the markets, stimulating agricultural production, hospital construction, schools' construction, airport construction and hydropower construction contribute to the improvement of population welfare. Construction industry contributes significantly towards the country's gross domestic production and the sector also provide employment to the country's work force more than 50% of the employment so created are in the unskilled labor market, resulting in capacity building (Sibomana, 2018).

Amanya (2021) identified and analyzed the sources of delays for some selected road construction projects in Kigali city. Delays were found to cause 45 % of time overruns, 33.33 % cost overruns, 21.67 % disputes, 0 %of litigations, and road project abandonment, while 50 percent of schedule change, 25% of inadequate payment, 15% of errors and damages, and 10% of construction claims were the major effects of road construction project delays, according to the findings.

Rwanda, similar to numerous African nations, has undertaken an ambitious endeavor in infrastructure development aimed at boosting economic growth and enhancing the well-being of its population. In Nyabihu District, roads projects are integral to this development, encompassing critical sectors such as road construction, water supply, and public facilities. While these projects hold great promise, they often face challenges that impede their successful completion and performance. One of the key challenges is the efficacy of contract management, which can significantly influence project outcomes. The poor performance of roads projects in Nyabihu District can be attributed to various factors, including delays, cost overruns, and suboptimal quality. These issues not only hinder the intended benefits of the projects but also impose financial burdens on the government and project stakeholders. Inadequate contract management practices are suspected to be a root cause of these problems.

Although roads projects play a crucial role in the development of regions, there is a clear absence of research that specifically delves into the impact of contract management on project performance in Nyabihu District, Rwanda. While global studies on contract management and project performance are available, there's a significant lack of research tailored to this specific area. This gap emphasizes the necessity for a thorough investigation into how contract management practices affect project performance in Nyabihu District, with the goal of providing solutions that are relevant to the unique challenges faced in this region. In this regard, this study seeks to address this critical research gap by examining the impact of contract planning, negotiation, execution, and monitoring and evaluation on the performance of roads projects in Nyabihu District, Rwanda.

1.1. Objectives of the study

The general objective of this research was to examine the effect of contract management on performance of roads projects in Nyabihu District

Specifically, this study attempted to:

i. To establish the effect of contract planning on performance of roads projects in Nyabihu District.
ii. To assess the effect of contract negotiation on performance of roads projects in Nyabihu District.
iii. To establish the effect of contract execution on the performance of roads projects in Nyabihu District.
iv. To examine the effect of contract monitoring and evaluation of the performance of roads projects in Nyabihu District.

1.2. Research hypotheses

The following were the research hypotheses that were used in order to achieve its objectives

Ho_1: There is no significance effect of contract planning on performance of roads projects in Nyabihu District.

Ho_2: There is no significance effect of contract negotiation on performance of roads projects in Nyabihu District.

Ho_3: There is no significance effect of contract execution on performance of roads projects in Nyabihu District.

Ho_4: There is no significance effect of contract monitoring and evaluation of the performance of roads projects in Nyabihu District.

2. Literature review

2.1. Theoretical framework

A theoretical framework refers to a widespread set of assumptions or interrelated ideas based on theories or a reasoned set of propositions derived from and supported by data or evidence and phenomena accounted for or explained (Sindiga *et al*., 2019). The study was pegged on agency theory, institutional theory, and resource dependence theory.

2.1.1. Agency theory

Agency theory, proposed by Stephen Ross and Barry Mitnick in the 1960s (Fayezi, O'Loughlin & Zutshi, 2020), offers a natural fit with supply chain management. This theory centers on occasions where one party, the principal, delegates some powers of decision-making to a second party, the agent, to act on its behalf. An agency relationship is a contract-based relationship, and its assumption is that the agent will act in the principal's best interest. This theory is very relevant in the outsourcing practice of procurement management (Sindiga *et al*., 2019).

According to Kaaria (2020), when executing the tasks within the principal-agent relationship, the agent must choose courses of action that stand to be beneficial for both the principal and the agent. Since these outcomes can be either negative or positive for each of the actors, the chosen action of the agent affects the welfare of both; therefore, the principal-agent relationship is often forged because the agent possesses a greater abundance of the needed skills, abilities, and time to perform the desired activities.

Arrowsmith (2018), however, points out that there are several problems for the principal in governing the relationship with the agent, the first of which involves choosing an appropriate agent. Arrowsmith (2018) further states that problems occur in principal-agent relationships when agents act in a manner that only benefits them and not the principals. For example, authority to manage corporate entities may be delegated to top management by the shareholders. A chief executive officer may use his/her position as an agent to acquire another firm to increase his/her compensation through bonuses, regardless of the acquisition's potential to add value to the company through creating value, commonly practiced in international procurement processes through the practice of horizontal and vertical integration. Accordingly, principals must closely monitor their agents' decisions and create remuneration structures that reinforce desired activities and outcomes.

King'oo and Muli (2019) similarly indicates that delegation of authority from one firm to another is evident in supply chains. This results in conflicts of interest within traditional supply chains as the parties involved are forced to make a choice between courses of action that benefit their firm rather than one that benefits the chain as a whole. Managers, when faced with such situations, prefer the former option because their loyalty is to their home firm above all else. In the best value supply chains, these tensions are recognized and mitigated against.

A poor principal-agent relationship ends up with top management having low levels of commitment, which then translates into a strained relationship between the firms' suppliers and institutions. Implementation of procurement management practices that work against the prescribed procurement policies results in an inflated procurement budget, and at times the loss or misuse of procurement funds owing to instances where there is a conflict of interest amongst the agents and the firms they represent. According to Lavassani and Movahedi (2018), the best value supply chains implement reward structures and encourage cultural competitiveness to ensure all participants' interests are aligned. The ripple effect of this action results in the parties involved avoiding the temptation to take advantage of other supply chain members. Such supply chain members also recognize that due to the fact that the supply chains tend to be chronological in nature, this unique aspect makes them agents in some links and principals in others. For this reason, an agent being opportunistic in their capacity can be detrimental and even lead to punishment by other firms within the supply chain (Lavassani & Movahedi, 2018).

The tenets of agency theory offer a natural fit with the challenges of supplier management and specifically, the management of supply chain quality. In the management of supplier quality, buyers in agency relations face numerous problems because by their nature, buyers expect suppliers to provide the best quality and thereby improve the quality of the end products and/or services for the market. However, suppliers may be reluctant to invest significantly in quality, more so if they feel that buyers are getting all the benefits. Such differences between buyers and suppliers will result in either party being more consumed with self-interests (Ofori & Appiah-Nimo, 2022). This theory is, therefore, relevant to this study and will be beneficial in grounding the performance of civil engineering in Nyabihu District in relation to the influence on their operations of contract management.

2.1.2. Resource Dependence Theory

Resource Dependence Theory (RDT), as developed by Jeffrey Pfeffer and Gerald Salancik in 1981, centers on how firms rely on other firms for inputs such as goods, raw materials, services, and other operational requirements concerning how firms can benefit from better handling of

such relationships. According to Hazen et al. (2021), the theory proposes that in the supply chain, member firms should be independent and collaborate to elevate performance gains in the long run rather than pursuing short-term benefits at the expense of others. According to the theory, dependency among firms arises due to the need to sustain growth that requires optimal use of resources provided by other organizations. Firms must depend on outside parties for resources to compete favorably, and the dependency with other entities must be managed carefully to ensure sustainable development (Hazen *et al.*, 2021).

Resource Dependence Theory (RDT) explains how an organization's operations are affected by external resources. This theory proclaims that to remain operational, an organization must have easy access to resources such as up-to-date technology, finances, a skilled labor force, and raw materials to deliver goods and services to its customers/clientele to survive. RDT offers an extraneous view as to why situations involving the acquisition or merging of one organization with another may be on the rise. The assumption is that more resources are available to the new corporate entity when organizations join forces with other similar or complementary organizations (Haleblian, 2019). According to Kariuki and Wabala (2021), the desire to manage interdependence with producers of inputs or output buyers by integrating them or diversifying operations to decrease organizational dependence explains why a company might want to enter into a merger.

Supply Chain Management (SCM) is vital in achieving operational efficiency because it affects the realization of organizational goals and objectives as well as the effective resource utilization. An organization needs resources that are considered to come from the environment of the organizations. The RDT reasons that, as with any environment, other organizations also depend on the same resources within the same environment. Competing organizations are deemed to only be competition for financial resources, a skilled labor force, movable and immovable assets, and other resources that businesses would require to carry on their business according to the traditional resource dependence theory. However, the customer, being the main source of the revenue stream, remains the desirable resource, and although all resources play a major role in this case with regards to the generation of profits, the key resource remains the customer (Carter & Rogers, 2018).

In ideal supply chains, firms try to avoid becoming overly dependent on other firms for fear of being taken advantage of (Zhu, 2018). These same firms, however, strive to make other firms dependent on them and thus creating a position of strength within the supply chain. Best value supply chains work in contrast to this notion by recognizing that taking advantage of resource dependencies results in unplanned and severe outcomes. A case in point is how many aerospace manufacturers in the recent past had plotted to make their parts suppliers highly dependent on them, and then went ahead to use the same leverage they had on the suppliers to reduce the suppliers' margins. This situation eventually led to some suppliers bypassing the manufacturers and selling spare parts to end-users directly, which resulted in the dramatic drop in the manufacturers' fortunes (Rosetti and Choi, 2019). Value supply chain dependencies from this perspective should be applied to generate joint forbearance and reliance, but not to stimulate exploitation of an organization within a supply chain. Therefore, this theory is relevant to this study and it will be beneficial in grounding the influence of contract management on the performance of civil engineering in Nyabihu District.

2.1.3. Institutional Theory

The Institutional Theory, as described by Hofer (2011), was developed by Powell and DiMaggio (2013) and reviewed by Scott in 1995. This theory emphasizes how subtle and evolving environmental pressures impact a firm's activities. In the long run, the overall effect of these evolving environmental pressures is that all end up becoming identical as a function of isomorphism over the years (Hofer, 2019) since new entrants are somewhat compelled to adhere to the structures that their predecessors put in place even if it does nothing to enhance their operations.

The old institutionalization theory is hinged on legalism, structuralism, holism, history, as well as normative analysis. These characteristics of old institutionalism are briefly described as follows: legalism, which is concerned with law and governance; structuralism, whereby it is deemed that structure is very important and determines behavior; holism, whereby institutions are to be examined as co-dependent parts instead of investigating the parts as being distinct independent parts of the system; historical, where attention to the institutional system is considered over time; and, normative analysis where institutional behaviors are based on the facts, values, and norms. Moreover, the separation of value, facts, and norms is not acceptable (Peters, 2015).

According to Movahedi (2019), the new institutional theory has been illustrated as an open system perspective in contrast to the rational system. The open system view of supply chain encourages attention to the role of the environment in the behavior of the organization, its components, and its members. From the institutional theory perspective, supply chain management should pursue two main goals, the first being to monitor the environment for collaborative opportunities, and the second being the identification of the best practices in the industry and comparing the organizational operation with best practices, for continuous improvement. Shibin (2020) observed that the institutional theory plays a major role in shaping an organization's strategy associated with supply chain management such as the organizations' choices of technology adoption or even supply chain collaboration. However, since organizations are all monitoring their environment and trying to adopt the best practices, organizations becoming homogeneous as an effect of isomorphism over time is easy to anticipate (Hazen *et al*., 2021).

Qian et al. (2022) also point out that the theory examines the influence of external factors in the adoption of organizational practices in companies. Industrial guidelines and best practices have been heavily relied upon in traditional supply chains to serve as a model for supply chain management activities. The concern about how companies address external factors has turned institutional theory into a major research direction to explain practices related to the environment. An example of an external environment for companies is government agencies that can influence an organization's actions by formulating policies, fines, regulations, and barriers to trade, etc. (Ball & Craig, 2018).

Use of the Institutional theory to examine the various elements of procurement owing to its the regulatory perspective that requires the observance of laws and regulations with expediency as the basis for compliance. The normative perspective of the theory lays emphasis on standards (how things should be done) with the value system and social obligation (idealism) being the main basis for compliance. PPDA Authority governs the procurement practice in Kenya through the statutes laid down such as the regulations, the PPDA Act (2017). All practitioners

and providers as well as other stakeholders are required to comply with these legal provisions, both in principle and in practice. Theoretically, institutions are a composition of cultural-cognitive and regulative elements which validate its existence when combined with its core activities as well as resources available to them. Negash and Lemma (2020) further affirms that any institution's foundation is regulatory, normative, and cultural-cognitive in nature, in which case regulatory refers to rules and laws and other enforcement mechanisms, the normative elements include norms and values whereas cultural-cognitive are the shared beliefs and understanding. Institutional theory asserts that if organizations observed the international procurement regulations, they would be assured of competitiveness in bids, transparent processes, and professionalism in the procurement process (Andrew, 2018). Therefore, this theory is relevant to this study and it will be beneficial in relating the influence of contract management on the performance of roads projects in Nyabihu District.
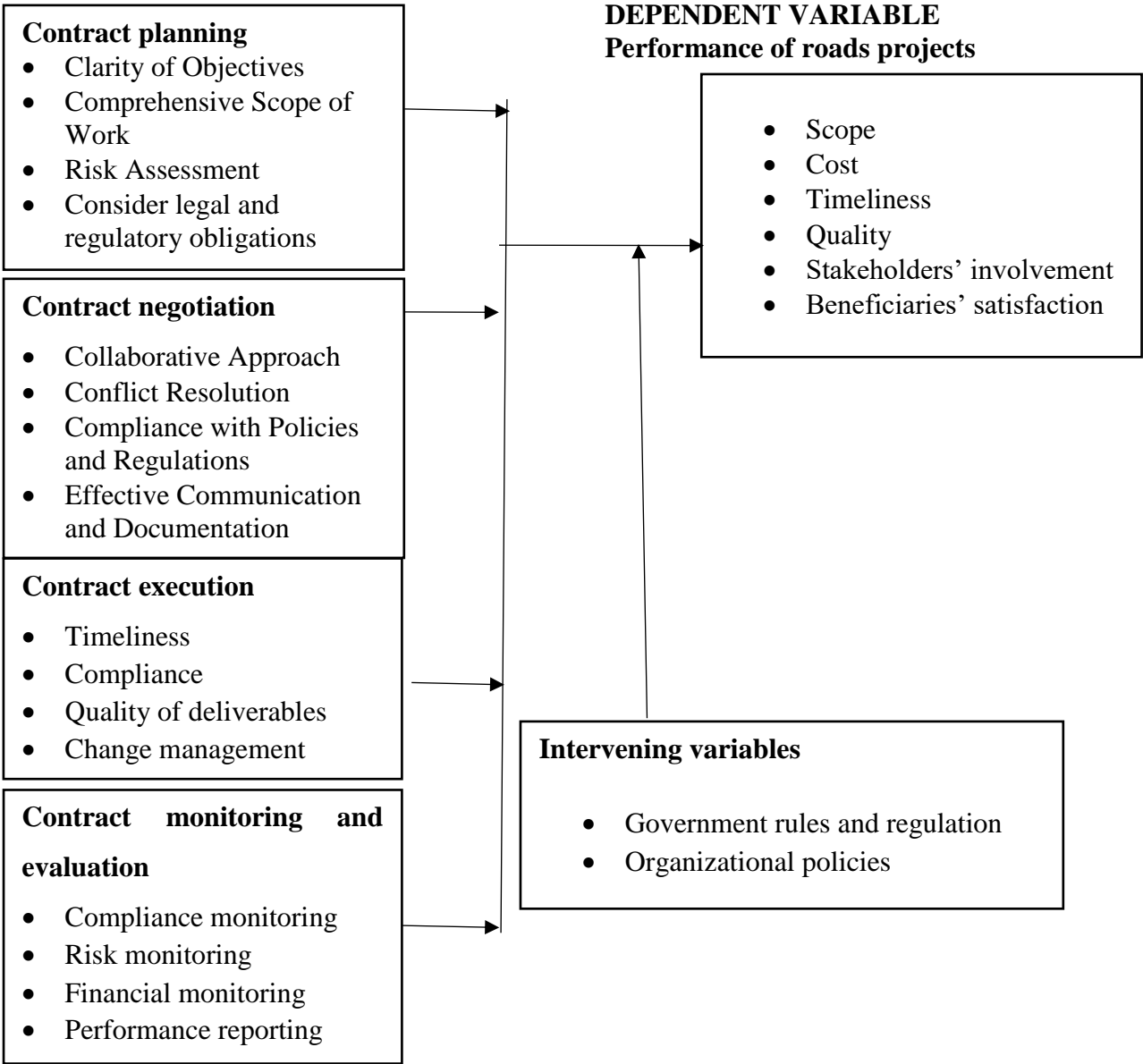
2.1. Conceptual framework

The conceptual framework is a way that helps the researcher differentiate the main variables included in the research topic, like independent, dependent variables, and moderating variables.

INDEPENDENT VARIABLE

Contract Management

Figure 1. Conceptual frame work
Source: Researcher, 2023.

3. Research methodology
3.1. Research Design
The researcher conducted both descriptive and correlational studies, also quantitative and qualitative approach applied in this study to provide a more comprehensive and well-rounded understanding of the research topic.

3.2. Target population
The total population of this study was 146 individuals including 134 staff of Nyabihu District (local government) who are active participants of the projects both users and developers, 4

contractors, 4 top administrators and 2 policy makers from MINALOC on Rehabilitation, Indicative Feeder Roads in the Nyabihu District and Maintained Over Multiple Years (Lot I and Lot II), Rehabilitation of Vuga-Kiramira-Gaharawe road and Construction of Mukamira-Kabashumba road.

3.3. Sample Size

In addition, the study used the following formula proposed by using Yamane (1973) to determine the sample size because that is too large waste scarce resources and could expose more participants than necessary to any related risk.

Using Yamane formulae:

$$n = \frac{N}{(1+N)\,e^2}$$

Where:

n = sample size

N = the population size

e = the acceptable sampling error (5%) at 95% confidence level

Thus; n = 146 (1+146) $(0.05)^2$

n=107

3.4. Data Collection Methods and instruments

Both primary and secondary data (qualitative and quantitative) were obtained.

The questionnaire consisted of only closed-ended questions. The closed- ended questionnaire is adopted because the response options for a closed-ended question are exhaustive and mutually exclusive. A closed-ended questionnaire was administered with aid of research assistants. The questionnaire was administered to top administrators and the staff in Nyabihu District.

The interview guide was used to collect the data. Interviews were person to person verbal communication in which one person or a group of people was interviewed at a time. Interviews were personal interviews and were conducted with 2 top administrators, 2 contractors and 1 policemakers from MINALOC.

The documentary review check list was used for purposes of reviewing documentary data. Documentary data were obtained through the use of published and unpublished documents. Various publications, magazines, newspapers, reports, contract school manuals, historical documents and other sources of published information from the contract were reviewed by the researcher. Booker (2020) maintains that secondary data can be helpful in the research design of subsequent primary research and can provide a baseline with which the collected primary data results can be compared to other methods.

3.5 Data Analysis Techniques

Data were analyzed Using computer software called Statistical Package for Social Scientists (SPSS). The study conducted a multiple regression analysis to test the relationship between independent variables and dependent variable. The regression equation was:

$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \varepsilon$

Whereby Y= Performance of roads projects

X_1= Contract planning

X_2= Contract negotiation

X_3= Contract execution

X_4= Contract monitoring and evaluation

β_1, β_2, β_3, and β_4 are coefficients of determination

ε is the error term.

4. Research findings

This chapter covers the interpretation and presentation of the findings. Five (5) respondents were targeted for interviews, of which three (3) were successfully interviewed (^60%); while a total of 102 questionnaires were given out and 90 questionnaires were completed and returned. This gave a response rate of 88.2%. This response rate was considered satisfactory. Pearson correlation coefficient measures the extent to which, as one variable increases, the other variable tends to increase, without requiring that increase to be represented by a linear relationship. The study conducted a multiple regression analysis to test the relationship between independent variables and dependent variable.

4.1 Correlation analysis

Correlation between contract management and Performance of roads projects in Nyabihu District. Correlation analysis using Pearson's Product Moment technique was done to establish the relationship between the various dimensions of contract management and performance of civil engineering projects. The values obtained from the correlation analysis ranged between +1 and -1. In this regard, +1 implied perfect positive correlation, while -1 implied perfect negative correlation.

Table 1. Correlational matrix between independent and dependent variables

		Contract planning	Contract negotiation	Contract execution	Contract monitoring and evaluation	Performance of roads projects
Contract planning	Pearson Correlation	1	.792**	.757**	.646**	.799**
	Sig. (2-tailed)		.000	.000	.000	.000
	N	90	90	90	90	90
Contract negotiation	Pearson Correlation	.792**	1	.919**	.727**	.827**
	Sig. (2-tailed)	.000		.000	.000	.000
	N	90	90	90	90	90
Contract execution	Pearson Correlation	.757**	.919**	1	.790**	.739**
	Sig. (2-tailed)	.000	.000		.000	.000
	N	90	90	90	90	90
Contract monitoring and evaluation	Pearson Correlation	.646**	.727**	.790**	1	.705**
	Sig. (2-tailed)	.000	.000	.000		.000
	N	90	90	90	90	90
Performance of roads projects	Pearson Correlation	.799**	.827**	.739**	.705**	1
	Sig. (2-tailed)	.000	.000	.000	.000	
	N	90	90	90	90	90

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

The correlation analysis in table 1 shows significant positive relationships between several dimensions of contract management and the performance of roads projects in Nyabihu District.

The Pearson correlation coefficient between "Contract planning and Performance of roads projects " was 0.799, with p=0.000 < 0.05, indicating a strong significant relationship between effective contract planning and better performance of roads projects in Nyabihu District. The Pearson correlation coefficient between "Contract execution and Performance of roads projects

" was 0.739, with p=0,000 < 0.05, indicating a strong significant relationship between effective contract execution and improved performance of roads projects in Nyabihu District. The Pearson correlation coefficient between "Contract negotiation and Performance of roads projects " was 0.827, with p=0.000 < 0.05, indicating a strong significant relationship between effective contract negotiation and enhanced performance of roads projects in Nyabihu District. The Pearson correlation coefficient between "Contract monitoring and evaluation vs Performance of roads projects " was 0.705, with p=0.000 < 0.05, highlighting a strong significant relationship between robust contract monitoring and evaluation and superior performance of roads projects in Nyabihu District.

The findings are supported by Opgenorth *et al.* (2018) emphasis on the significance of effective contract management in achieving objectives and expectations while prioritizing value for money. Opgenorth *et al.* insights align with the strong positive correlations found in the study between contract management dimensions and roads projects performance in Nyabihu District, emphasizing the importance of strong contract planning, execution, negotiation, and monitoring in achieving superior project outcomes.

4.2 Regression analysis

Regression analysis is a statistical technique used to model the relationship between a dependent variable and one or more independent variables. The primary goal of regression analysis is to understand and quantify the impact of one or more independent variables on the dependent variable.

Table 2: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.880[a]	.774	.763	.34199

a. Predictors: (Constant), Contract monitoring and evaluation, Contract planning, Contract negotiation, Contract execution

In Table 2, the model summary provides information about the regression model's performance. The R Square value, which is 0.774, represents the proportion of variance in the dependent variable (roads projects performance in Nyabihu District) that is explained by the combination of predictor variables (Contract monitoring and evaluation, Contract planning, Contract negotiation, and Contract execution). In this case, approximately 77.4% of the variability in roads projects performance in Nyabihu District can be accounted for by these predictor variables. This indicates that the selected predictors collectively have a strong influence on roads projects performance in Nyabihu District. The Adjusted R Square, at 0.763, considers the number of predictors in the model and provides a more conservative estimate of the model's goodness of fit.

The findings are in line with Athumani's (2018) emphasis on the significance of influencial contract management. Athumani highlights the importance of managing contracts to ensure compliance-with terms and conditions while meeting project objectives. The study's results, demonstrating the close relationship between contract management and roads projects performance in Nyabihu District, reinforce the relevance of contract-management practices highlighted by Athumani.

Table 3: ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
	Regression	34.052	4	8.513	72.788	.000[b]
1	Residual	9.941	85	.117		
	Total	43.993	89			

a. Dependent Variable: Performance of roads projects
b. Predictors: (Constant), Contract monitoring and evaluation, Contract planning, Contract negotiation, Contract execution

The ANOVA results in Table 3 show an F-statistic of 72.788, with a significance level (Sig.) of .000. The small p-value (Sig. < 0.05) indicates that the regression model is statistically significant. This means that the combination of predictor variables (Contract monitoring and evaluation, Contract planning, Contract negotiation, Contract execution) significantly influences the performance of the roads projects in Nyabihu District.

The findings are consistent with Trepe's (2019) emphasis on the significance of contract management. Trepe highlights the importance of effectively managing contracts to ensure compliance with terms and conditions, monitor changes, and accommodate deviations. This reinforces the idea that successful contract management is essential for project success, aligning with the study's results regarding the impact of predictor variables on roads projects performance in Nyabihu District.

Table 4: Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.290	.215		1.350	.181
	Contract planning	.350	.082	.368	4.295	.000
	Contract negotiation	.730	.143	.722	5.115	.000
	Contract execution	.474	.166	.420	2.860	.005
	Contract monitoring and evaluation	.319	.099	.274	3.232	.002

a. Dependent Variable: Performance of roads projects

The regression equation was:

Performance of roads projects = 0.290 + 0.350 Contract planning + 0.730 Contract negotiation + 0.474 Contract execution + 0.319 Contract monitoring and evaluation + 0.215

The coefficients presented in Table 4 provide observations into the individual contributions of each predictor variable (Contract planning, Contract negotiation, Contract execution, Contract monitoring and evaluation) to Performance of roads projects in Nyabihu District.

Constant is 0.290. This coefficient indicates that, holding all other variables constant, the constant term is associated with a change of 0.290 units in the performance of the roads projects in Nyabihu District. Specifically, on contract Planning, the unstandardized coefficient is 0.350. This coefficient indicates that, holding all other variables constant, a one-unit increase in contract planning is associated with an increase of 0.350 units in the performance of the roads projects in Nyabihu District. The p-value of 0.000<0.05 indicates that this relationship is statistically significant. For contract Negotiation, the unstandardized coefficient is 0.730. This coefficient indicates that, holding all other variables constant, a one-unit increase in contract negotiation is associated with an increase of 0.730 units in the performance of the roads projects in Nyabihu District. The p-value of 0.000<0.05 indicates that this relationship is statistically significant. Also, for contract Execution, the unstandardized coefficient is 0.474. This

coefficient indicates that, holding all other variables constant, a one-unit increase in contract execution is associated with an increase of 0.474 units in the performance of the roads projects in Nyabihu District. The p-value of 0.005<0.05 shows that this relationship is statistically significant. Lastly, for contract Monitoring and Evaluation, the unstandardized coefficient is 0.319. This coefficient indicates that, holding all other variables constant, a one-unit increase in contract monitoring and evaluation is associated with an increase of 0.319 units in the performance of the roads projects in Nyabihu District. The p-value of 0.002<0.05 indicates that this relationship is statistically significant.

The findings align with Selman's (2018) emphasis on the pivotal role of contract management in business relationships, where organizations rely on their suppliers to meet the agreed-upon terms, and suppliers trust that they will receive the agreed compensation. The study's results demonstrate the significance of contract planning, negotiation, execution, and monitoring and evaluation in influencing the performance of roads projects in Nyabihu District, reinforcing the critical importance of effective contract management in achieving successful project outcomes.

4.3 Hypotheses results

The results in Table 4 indicate a significant impact of contract planning, negotiation, execution, and monitoring and evaluation on the performance of roads projects in Nyabihu District. The null hypotheses (Ho_1, Ho_2, Ho_3, and Ho_4) were rejected as the p-values (0.000, 0.000, 0.005, and 0.002, respectively) were all less than the significance level of 0.05. This implies that contract planning, negotiation, execution, and monitoring and evaluation all have a statistically significant effect on project performance. The findings indicate the importance of these contract management aspects in achieving successful roads projects in Nyabihu District.

5. Conclusion

The general objective of this research was to examine the effect of contract management on performance of roads projects in Nyabihu District. Specifically, the study guided by the following objectives: To establish the effect of contract planning on performance of roads projects in Nyabihu District, assess the effect of contract negotiation on performance of roads projects in Nyabihu District, establish the effect of contract execution on the performance of roads projects in Nyabihu District, and examine the effect of contract monitoring and evaluation of the performance of roads projects in Nyabihu District. In Nyabihu District, roads projects benefit from effective contract management practices. Contract planning, negotiation, execution, and monitoring and evaluation exhibit strong positive agreement among respondents, indicating their significance in project success. Pearson correlation coefficients reveal strong relationships between each of these contract management phases and project performance. Heterogeneity in responses is evident, but the consensus remains positive, emphasizing the importance of well-implemented contract management in achieving superior performance in civil engineering projects. The results indicated a significant impact of contract planning, negotiation, execution, and monitoring and evaluation on the performance of roads projects in Nyabihu District.

6. Recommendations

This study makes the following recommendations:

Nyabihu District should emphasize the importance of executing roads projects in a timely manner while maintaining or exceeding quality expectations. Effective change management processes should be implemented during execution to adapt to evolving project needs.

Administrative staff involved in roads projects in Nyabihu District should actively participate in the contract management process, particularly during the monitoring and evaluation phase.

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