

The Role of Project Management Practices in Achieving Quality Delivery in Public Sector Projects

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ABSTRACT

The impact of project management practices in achieving quality delivery in public sector projects is the target focus of research scholars. This trend of study is subjected to an investigation of the role of project management practices in achieving quality delivery in public sector projects, particularly within Bayelsa State, Nigeria. Thus, the presentation of this paper is one of such using SPSS software for the data analysis. This study involves the collection of empirical data, primarily through a structured Likert-scale questionnaire. The methodological approach adopted was a descriptive survey design, within a quantitative research framework. To examine the influence of the independent variables on the dependent variable, Multiple Regression Analysis (MRA) was employed. The findings from the data analysis reveal a substantial 75% correlation between the independent and dependent variables, accompanied by a coefficient of determination (R-squared) of 0.563, or 56.3%. In addition, the analysis yielded a highly statistically significant p-value ($p < 0.001$). These results collectively depicts that the predictive model, involving six independent variables such as project planning, resource management, risk management, monitoring/evaluation, stakeholder engagement, and the utilization of project management tools/methodologies, is highly significant in predicting the role of project management practices in achieving quality delivery in public sector projects.

Keywords: Quality Delivery, Project Management, Public Sector, Project Planning, SPSS

INTRODUCTION

Project success or effective implementation is typically evaluated based on three primary factors: time, cost, and quality of delivery, collectively known as the triple constraint. These elements function as Key Performance Indicators (KPIs). To ascertain whether a project has been successfully executed, one must refer back to its initial objectives concerning time, cost, and quality, and measure the degree to which each was achieved (Ocharo and Kimutai, 2018). Ocharo and Kimutai (2018) further noted that public sector project execution often lacks clear guiding policies to streamline processes and encourage potential suppliers. For instance, current regulations tend to discourage supplier development and collaborative efforts, largely due to the short-term orientation of many public entities. Additionally, the protracted payment procedures for supplied goods and completed services significantly elevate procurement risks. Ensuring the satisfactory provision of public goods and services to citizens consistently presents a challenge. It is evident that many governments do not operate optimally in fulfilling their service delivery mandates, owing to various underlying reasons. Mc Lennan (2009) describes a state-controlled system for delivering goods and services where political dynamics fundamentally shape the power relationship between the government, its populace, and the economy. This viewpoint supports Mbecke's (2014) assertion regarding the inherent limitations of public services in delivering goods and services, often due to insufficient expertise and political biases. Mbecke (2014) advocates for the adoption or adaptation of successful management practices from the private sector into public administration. He argues that traditional public service management methods proved inadequate and that incorporating business management models

could offer a viable solution. He emphasized the necessity for public services to operate like private enterprises, thereby highlighting the potential efficacy of this management transfer approach (Mbecke, 2014). To enhance the quality of service delivery, public sector projects require effective management. Consequently, this paper intends to investigate how proficient public sector project management can contribute to improved quality outcomes in selected government agencies within Bayelsa State and Delta State, Nigeria. To achieve enhanced quality delivery through project management in public sector initiatives, this study considers six crucial performance indicators: project planning, resource management, risk management, monitoring and evaluation, stakeholder engagement, and the utilization of project management tools and methodologies.

MATERIALS

The empirical phase of this investigation centered on data acquisition, for which a structured survey instrument served as the principal method. This tool was selected due to its inherent versatility, which not only facilitates respondent comprehension but also enables the corroboration of provided information. The questionnaire's formulation was meticulously aligned with the research's overarching objectives, specific inquiries, and guiding propositions, thereby ensuring the elicitation of germane and precise data from participants. To enhance both lucidity and consistency in responses, the instrument incorporated closed-format questions, specifically designed to obtain succinct and unambiguous answers. A four-point Likert-type scale was employed for the quantification of responses, spanning from a high of 4 (Strongly Agree) to a low of 1 (Strongly Disagree). Respondents were explicitly directed to denote their degree of concurrence with each statement. Regarding the operationalization of study constructs, the independent variable, 'project management within public sector initiatives,' was evaluated by examining its constituent elements, as previously delineated.

RESEARCH METHODS

This investigation employed a descriptive survey research design, situated within a quantitative methodological framework. This approach was deemed appropriate for exploring the amelioration of quality outcomes, as it facilitates the systematic acquisition of uniform data through structured survey instruments. Such a methodology enables the procurement of quantifiable data from a substantial sample, thereby supporting the generalizability of findings to the broader target population. To ensure adequate representation of project management practices across the designated area, a purposive sampling technique was utilized for the selection of study sites. This non-probability method was considered apposite given the research objectives, which necessitated the inclusion of governmental agencies and departments within Bayelsa and Delta States of Nigeria particularly pertinent to public sector project management. The selection criteria encompassed balanced geographical distribution, institutional diversity and specialization, documented contributions to relevant academic and practical discourse, operational accessibility, availability of robust data infrastructure, and pre-existing organizational affiliations that could expedite data collection. These parameters guaranteed that the chosen entities not only covered the geographical expanse but also exhibited operational characteristics directly relevant to the inquiry. Consequently, eighteen governmental bodies and departments were selected from Bayelsa State, alongside one from Delta State of Nigeria, yielding a combined total of nineteen institutions specializing in technical and engineering-related domains. These organizations constitute the primary geographical and organizational nexus of the study, strategically chosen to enhance the salience, profundity, and applicability of the research outcomes. The integration of a descriptive survey design with purposive site selection thus established a comprehensive methodological foundation for investigating factors contributing to improved quality delivery within public sector project management initiatives.

Study Population

The target population for this study comprised all personnel employed within nineteen carefully selected public sector organizations and departments located across Bayelsa and Delta States of Nigeria. These entities were deliberately chosen to ensure both geographical representation and institutional relevance to the study's objectives. The total population amounted to 284 individuals. This figure represents the complete staff complement within each designated institution and formed the basis for determining the study's sample size. The

comprehensive inclusion of staff from all identified agencies and departments ensures that the investigation captures a diverse and representative spectrum of organizations engaged in project management activities.

Sample Size Determination

The optimal sample size for the current investigation was computed using Taro Yamane's equation, a widely recognized formula (Adam, 2020) acknowledged for its appropriateness in determining sample numbers from a finite population.

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

Where:

n = Sample size

N = Population size (284)

e = Level of precision or allowable error (0.05)

1 = Constant

Given that;

$N = 240$, $e = 0.05$

Substituting the corresponding values into (1) gives:

Assuming a 5% or 0.05 level of significance, the sample size can be calculated thus:

$$n = \frac{284}{1 + 284(0.05)^2}$$

$$n = \frac{284}{1 + 284(0.0025)}$$

$$n = \frac{284}{1.71}$$

$$n = 166.08$$

$$n \cong 166$$

Hence, the sample size is 166 respondents.

The percentage of the structured questionnaires sampled and received was determined using the equation presented below:

$$\% \text{ Retrieval} = \frac{\text{Structured questionnaire retrieved}}{\text{Structured questionnaires administred}} \times 100\% \quad 2$$

$$\% \text{ Retrieval} = \frac{123}{166} \times 100\%$$

$$\% \text{ Retrieval} = 74.1\%$$

The percentage retrieval depict that the number of structured questionnaires are reasonable enough to carry on with the analysis.

Reliability of the Instrument

The internal reliability of the measurement instrument was ascertained through the application of Cronbach's Alpha coefficient, utilizing the Statistical Package for the Social Sciences (SPSS). This particular statistic was purposefully chosen due to its recognized efficacy in precisely evaluating the internal homogeneity among the constituent elements of the survey. A pre-specified threshold of 0.70 was adopted to delineate an acceptable level for the reliability coefficient. Consequently, components exhibiting a Cronbach's Alpha score below 0.70 were deemed to possess insufficient internal consistency, whereas those reaching or exceeding this benchmark were considered to display a satisfactory level of reliability. The findings pertaining to the instrument's internal consistency are enumerated in Table 1.

Table 1: Cronbach's Alpha Reliability Test Results

Variable	Number of Items	Cronbach's Alpha (α)
Project Planning	3	0.815
Resource Management	3	0.798
Risk Management	2	0.811
Monitoring and Evaluation	3	0.791
Stakeholder Engagement	3	0.824
Use of Project Management Tools/Materials	2	0.810
Quality Delivery in Public Sector Projects	4	0.776

Source: SPSS output, 2025 the research instrument is reliable because the Cronbach's Alpha is 82.7%.

Data Analysis Approach

The present investigation utilized Multiple Regression Analysis (MRA) to ascertain the influence of the predictor variables on the response variable. All statistical computations were executed employing version 23.0 of the Statistical Package for the Social Sciences (SPSS). Subsequently, thorough diagnostic assessments were undertaken to validate the integrity and reliability of the obtained findings. The linear relationship inherent in the MRA framework, which quantifies the magnitude of the association between the outcome variable and the explanatory variables, is formally expressed by the equation presented below:

$$y = f(x_1, x_2, \dots, x_n) \quad 3$$

$$y = \beta_0 + \beta_1 x_1 + \beta_2 x_2 + \beta_3 x_3 + \beta_4 x_4 + \beta_5 x_5 + \beta_6 x_6 + \dots + \epsilon \quad 4$$

Where:

y = the response variable

$x_1, x_2, \dots, x_n$ = the predictor variables

β_0 = the intercept or constant term

$\beta_1, \beta_2, \dots, \beta_n$ = the regression coefficients for each predictor variable

ϵ = the error term

RESULTS AND DISCUSSION

Multiple Regression Analysis (MRA) was conducted to investigate the hypothesized relationships between the independent and dependent variables.

Hypothesis

Ho: There is no statistically significant relationship between the independent variables and the dependent variable.

Table 2: Shows the Variables Entered/Removed

Model	Variables Entered	Removed	Method
	Use_of_Project_Management_Tools_Methods, Stakeholder_Engagement, Project_Planning, Risk_Management, Resouce_Management, Monitoring_and_Evaluation		Enter

Dependent variable Quality_Delivery_in_Public_Sector_Projects

Source: SPSS output 2025

Table 2 illustrates that the independent variables incorporated into the analysis comprise the utilization of project management methodologies and instruments, stakeholder involvement, project planning activities, risk management strategies, resource allocation and control, and performance monitoring and evaluation. Conversely, the sole dependent variable under investigation is the attainment of quality deliverables within public sector initiatives, a structural arrangement that affirms the application of Multiple Regression Analysis.

Table 3: Shows the Model Summary

Model	R	R Squared	Adjusted R Squared	Sts Error of the Estimate	Durbin Watson
1	0.750	0.563	0.540	0.34129	1.847

Source: SPSS output 2025

The correlation coefficient (R) indicates a robust positive linear relationship between the explanatory variables and the outcome variable, registering a value of 0.750. This magnitude signifies a substantial degree of association between the constructs under investigation. Subsequently, the coefficient of determination (R-squared) illustrates that 0.563, or 56.3%, of the total variability within the response variable can be elucidated or explained by the specified predictor variables.

Table 4: Shows the ANOVA

Model	Sum of Squares	df	Mean Square	F	Sig
1. Multiple Regression	17.403	6	2.901	24.902	0.000
Residual	13.511	116	0.116		
Total	30.915	122			

Source: SPSS output 2025

The ANOVA table serves to evaluate the overall efficacy of the model by determining its statistical significance. Specifically, it assesses whether the model, which incorporates six explanatory variables, provides a superior fit compared to a null model based solely on the grand mean. The obtained p-value of 0.000 is considerably less than the chosen significance level of 0.005. This outcome signifies that the model, comprising the six predictor variables, is a statistically significant determinant of the dependent variable, "quality delivery in public sector projects." Consequently, a demonstrable statistical association exists between the independent variables and the response variable. Therefore, the null hypothesis (H_0), which postulates no significant relationship between the independent and dependent variables, is decisively rejected. This finding confirms the overall utility and validity of the proposed model.

Table 5: Shows the Coefficients

Model (Constant)	Unstandardized Coefficient β	95% confidence Interval	
		Min Bound	Max Bound
Project _ Planning	-.122	-.745	.502
Resource _ Management	.165	.032	.297
Risk _ Management	.080	-.102	.263
Monitoring _ and _ Evaluation	.224	.117	.370
Stakeholder _ Engagement	.141	-.077	.358
Use _ of _ Project _ Management _ Tools _	.156	.029	.283
Methods	.227	.108	.347

Source: SPSS Output 2025

This table shows us how the model works. Recall that our model is

$$y = \beta_0 + \beta_1x_1 + \beta_2x_2 + \beta_3x_3 + \beta_4x_4 + \beta_5x_5 + \beta_6x_6 + \dots + \epsilon \quad 4$$

This implies that

$$y = -.122 + .165x_1 + .080x_2 + .244x_3 + .141x_4 + .156x_5 + .227x_6$$

The analytical model indicates that several factors significantly influence the quality of public sector project delivery. Specifically:

- * Each unit increment in “project planning” is associated with a statistically significant enhancement of 0.165 in project quality.

- * A one-unit increase in “resource management” correlates with a notable improvement of 0.080 in the calibre of project outcomes.
- * Furthermore, an additional unit in “risk management” practices leads to a substantial augmentation of 0.244 in delivery quality.
- * Similarly, a one-unit advancement in “monitoring and evaluation” corresponds to a significant gain of 0.141 in project quality.
- * Heightened “stakeholder engagement, measured by a one-unit rise, significantly elevates project delivery quality by 0.156.
- * Lastly, each unit increase in the application of “project management tools and methods” contributes significantly to a 0.227 improvement in the overall quality of public sector project outputs.

CONCLUSION

The findings from the data analysis unequivocally demonstrate a statistically significant nexus between the independent variables (components of project management in public sector projects) and the dependent variable (enhanced quality delivery). The multiple regression analysis further revealed that each independent variable significantly contributes to quality delivery. Specifically, a one-unit increase in project planning yielded a 0.165 unit augmentation in quality delivery, resource management contributed 0.080, risk management 0.244, monitoring and evaluation 0.141, stakeholder engagement 0.156, and the utilization of project management tools/methods 0.227, all demonstrating significant positive impacts on quality delivery in public sector projects.

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