

Research Article

Factors Influencing the Efficiency of Construction Projects in Jimma Zone, Jimma, Oromia, Ethiopia

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Abstract

The construction sector plays a crucial role in the Ethiopian economy, making a substantial contribution to economic growth. However, various challenges have been identified as impacting the performance and growth of the Ethiopian construction industry. Projects in the Jimma Zone face numerous issues related to cost, time, and quality. This study aimed to evaluate how factors like resource management, stakeholder management, procurement management, and quality management influence project performance in the Jimma Zone. Data was collected through a structured questionnaire distributed to employees of Jimma Zone Employers and Contractors. A total of 62 questionnaires were distributed, with an 80.65% response rate, providing sufficient data for statistical analysis. Findings were presented using charts and tables. Quality management challenges included the absence of a quality management system and insufficient management commitment. Regression analysis indicated that resource and stakeholder management factors significantly influenced project cost and time performance, while quality management factors had a positive but not significant impact. Resource, stakeholder, and quality-related factors significantly influenced project quality performance, whereas procurement management factors did not have a significant impact. The study suggests that focusing on resource and stakeholder management could enhance project performance in the Jimma Zone.

Keywords

Project, Project Performance, Construction Industry, Ethiopia

1. Introduction

The construction industry is inherently complex due to the involvement of various parties such as clients, contractors, consultants, stakeholders, regulators, and others. It plays a crucial role in the socio-economic development of a country, impacting all economic activities directly and indirectly [1]. Approximately one-tenth of the global economy is dedicated to constructing and operating homes and offices, consuming significant resources like wood, minerals, water, and energy [2].

In Ethiopia, the construction sector significantly contributes to the GDP, showing higher growth rates compared to the overall GDP growth. Investments in infrastructure projects like roads, airports, and housing units have been on the rise. Governments aim to enhance living standards through development programs, which are achieved through well-organized projects [3]. Cost management in construction projects has been a critical concern for clients and contractors

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due to deviations from initial cost plans.

Large companies invest heavily in research and development to optimize production processes and product features. The impact of poor quality on pricing, organizational earnings, and overall improvement is well recognized. Balancing cost and quality raises important considerations in cost accounting, quality control, maintenance, supply chain, safety, and health [4]. Time and cost overruns in infrastructure projects pose challenges to developing countries during implementation.

For successful project outcomes, skilled construction professionals should design and manage projects, while qualified contractors execute them based on their capabilities. Project success is measured by meeting goals in terms of contract duration, budget adherence, quality standards, and client satisfaction [5].

1.1. Problem of Statement

Ethiopia has experienced a rise in stalled projects due to inadequate project organization structures and ineffective leadership, as highlighted in studies [6-9]. Many researches indicate that project failures are often linked to performance issues. The construction projects in Jimma Zone specifically face challenges in terms of time, cost, and quality performance, leading to rework, high maintenance costs, and client dissatisfaction post-acceptance [10].

The poor performance of construction projects in Jimma Zone can be attributed to ineffective resource management, lack of stakeholder engagement mechanisms, inefficient procurement management, and inadequate quality control [12]. Various factors related to resource management, stakeholder engagement, procurement practices, and quality control contribute to project failures in terms of time and cost overruns, as well as quality issues [13]. Therefore, the focus of this study is to investigate the factors related to construction resources, stakeholder engagement, procurement practices, and quality management that lead to cost overruns, time delays, and quality deficiencies in construction projects within Jimma Zone.

1.2. Objective of the Study

1.2.1. General Objective

To investigate and rank the factors affecting the performance of construction projects in Jimma Zone.

1.2.2. Specific Objectives

- 1) To examine and rank the resource management related factors that affect project performance in Jimma Zone.
- 2) To determine and rank procurement management related factors that influence project performance in Jimma Zone.
- 3) To assess and rank quality management related factors that affect project performance in Jimma Zone.

2. Literature Review

The text provided covers various aspects related to project management in the context of construction projects. Here's a summary of the key points discussed:

- 1) Project and Construction Projects: A project is a temporary endeavor aimed at creating a unique product, service, or result. Construction projects involve the process of building structures like roads, bridges, dams, residential buildings, airports [6].

Construction contributes to economic development by generating output, creating employment, and fulfilling basic physical and social needs.

- 2) Critical Chain Project Management Theory:

- a. Critical Chain Project Management is based on the Theory of Constraints and focuses on improving project performance by addressing constraints [11].
- b. It aims to protect project durations and completion dates against task dependencies, variations, and uncertainties.
- c. By implementing this approach, projects can be completed on time, within a shorter duration, and without increasing operating expenses [12].

- 3) Performance Measurement Theory:

Performance indicators, measures, and measurement are essential in evaluating project effectiveness and efficiency. Performance measurement helps in continuous improvement and can be categorized into technical, commercial, and overall performance measurements.

Stakeholder interests and expectations need to be considered in performance measurement to ensure competitiveness and stakeholder satisfaction [14].

- 4) Stakeholder Theory:

- a. Stakeholder theory emphasizes the importance of various constituencies in influencing organizational operations.
- b. Stakeholders are defined as groups or individuals who can affect or are affected by a firm's objectives.
- c. Understanding stakeholder influence and how organizations respond to it is crucial for organizational success [15].

- 5) Implication of Time and Cost Overrun:

Time and cost certainties are crucial for construction clients, and delays and cost overruns can impact project performance and client satisfaction. Client satisfaction drives contractor performance evaluation and continuous improvement. Cost overruns can result from various factors such as inadequate project preparation, contract-related issues, and scope changes during implementation.

This information provides insights into the complexities of managing construction projects, the importance of stakeholder engagement, performance measurement, and the implications of time and cost overruns on project outcomes and client satisfaction.

3. Materials and Methods

3.1. Location of the Study Area

The project area is located in oromia regional state of jimma zone. Jimma is the largest and known city located in southwest oromia region, Ethiopia. It is a special zone of the Oromia Region and is surrounded by Jimma Zone. It has a latitude and longitude of 7°40'N 36°50'E. Jimma was reorganized administratively as a special Zone.

3.2. Research Design

The researcher employed descriptive and explanatory research methods, which assisted in outlining and clarifying the performance indicators and factors influencing construction project performance in Jimma Zone.

3.3. Data Sources

This research utilized both primary and secondary data sources. Primary data sources involved closed-ended questionnaires to gauge respondents' agreement levels on factors influencing project performance. Furthermore, data on the cost and time performance of 30 completed and ongoing road and building projects over 5 years was extracted from project contract documents and annual performance reports. Additionally, a review of various literature sources was conducted to identify the factors impacting construction project performance.

3.4. Target Population

The study targeted project managers, top managers, middle managers, lower managers, senior site engineers, and office engineers. The population consisted of 5 project managers, 30 office and site engineers, and 27 top, middle, and lower level managers, totaling 62 individuals.

Table 1. Sampling frame.

population Description	number	%
Project Manager	6	9.67%
Senior Office Engineer	14	22.58%
Senior Site Engineer	14	22.58%
Top Management	5	8.07%
Middle Manager	9	14.51%
Lower Level Manager	14	22.58%
Grand Total	62	100.00%

Source: From different Office

3.5. Sampling Procedure

Proportional purposive sampling procedure was applied in order to select sample from each category of respondent provides a simplified formula to calculate sample sizes.

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

Where

n is the sample size,

N is the population size,

e is the level of precision.

Given the total population of 62 and 95% level of significance (5% level of precision), the sample size is assumed to be 50 (80.641%) of the target population.

3.6. Methods of Data Analysis

Descriptive statistics elements like the Mean and Standard Deviation are employed in evaluating and prioritizing various factors influencing project performance. The analysis also incorporates graphs, tables, and other essential components for data examination. Moreover, the study examines the connection between the dependent variable (project performance) and independent variables, such as project resource management, procurement management, and quality management factors, expressed as a linear combination of these variables plus an error term. The multiple linear regression models are defined as:

$$Y = \beta_0 + \beta_1X_1 + \beta_2X_2 + \beta_3X_3 + \beta_4X_4 + \varepsilon$$

Where: Y= Project Performance

β_0 = Constant term

X1= Resource Management Related Factor

X2= Stakeholder Management Related Factor

X3= Procurement Management Related Factors

X4= Quality Management Related Factors

Where the β S are coefficients of independent variables, Xs are column vectors for the independent variables in this case; resource management related factor, stakeholder management related factor, procurement management related factors, and quality management related factors, while ϵ is a vector of errors of prediction. The error was assumed to be normally distributed with an expected value of zero and a common variance.

To do so, the study uses IBM SPSS 25 which was released

on August, 2017, is the most suitable for descriptive statistics and quantitative analysis.

4. Data Presentation, Analysis and Interpretation

4.1. Socio-Economic Characteristics

This chapter deals with discussions and results of the study. It is based on the information collected from survey. 62 questionnaires were distributed for employees working at Jimma Zone and 50 questionnaires were responded. The response rate is 80.64%, which is assumed to be sufficient for further analysis.

Table 2. Respondent Educational Level, Work Experience, and Job Position.

	Characteristics	N	(%)
Educational Level			
1	Degree	35	70%
2	Second degree and above	15	30%
	Total	50	100%
Work experience			
1	Below 5 year	12	24%
2	6 – 10 year	16	32%
3	11- 15 year	12	24%
4	Above 15 year	10	20%
	Total	50	100%

The table above displays the educational background, work experience, and job positions of the respondents. The majority (70%) held a first degree. Regarding work experience, most respondents fell within the 6 to 10-year range, suggesting that the majority of respondents were considered to be young.

4.2. Perceived Factors Affecting the Performance of Construction Projects

4.2.1. Perception on the Performance of Construction Projects

The respondents level perception towards the performance of construction projects is presented in the following table.

Table 3. Overall Performance of Construction Projects.

S.N	Project Performance	N	Mean	SD	Rank
1	The enterprise do not completes projects within the contract schedule (time)	50	4.74	0.55	1
2	The enterprise do not completes projects as per the contract cost	50	4.47	0.64	2
3	Projects are not completed and transferred to client without defects.	50	4.39	0.57	3
4	There is no client and user satisfaction with construction product of the enterprise	50	4.18	0.93	4

S.N	Project Performance	N	Mean	SD	Rank
	overall mean score	50	4.44	0.67	

Source: Survey Data (2018)

Table 3 shows that most respondents (mean =4.74 and SD=0.55) agree that the Jimma Zone is unable to complete projects within the contract schedule. Likewise, most of the respondents (mean= 4.47 and SD= 0.64) agreed on the view that the Jimma Zone do not complete its projects as per the contracted cost. There is also an agreement among respondents as there is transfer of projects to clients with defects and as there is dissatisfaction among the client and user with the completed projects. Overall, most Respondents agreed that the performance of projects in terms of time, cost, and quality (which is measured defect and client satisfaction) is poor.

4.2.2. Perceived Resource Management Related Factors

Table 4 illustrates the respondents' perceptions regarding resource management factors impacting project performance. Cash flow and financial challenges faced by the Jimma Zone were ranked highest by respondents, with a mean of 4.64 and SD of 0.67. This is primarily due to the impact of cash flow on project budget and cost performance. The finding aligns with highlighting the significance of cash flow in evaluating cost performance throughout a project.

Table 4. Perceived Resource Management Related Factors.

S.N	Resource management Related Factor	N	Mean	SD	Rank
1	There is cash flow and financial difficulties faced by the enterprise.	50	4.64	0.67	1
2	There is a price escalation of construction material in the market.	50	4.56	0.64	2
3	There is material wastage on projects	50	4.48	0.6	3
4	There is breakdown and failure of construction equipment in the enterprise.	50	4.47	0.66	4
5	There are change in material types and specification during construction	50	4.45	0.69	5
6	There is no adequate availability of construction material in the market.	50	4.38	0.65	6
7	There is payment delay by project owner	50	3.97	1.13	7
8	There is lack adequate Health and safety for employees at project site	50	3.92	0.91	8
9	There is lack of productivity of labors in the project	50	3.9	1.14	9
10	There is unavailability of construction equipment and spare part in the enterprise	50	3.84	0.95	10
11	Project teams have no adequate skill and knowledge of supervision	50	3.73	0.86	11
12	There is lack of highly qualified and experienced personnel in the enterprise.	50	3.38	1.11	12
	Overall mean score		4.14		

The price escalation of construction materials in the market was identified as the second most critical factor, with a mean of 4.56 and SD of 0.64. This escalation affects contractors' liquidity and project profitability. Material wastage on projects was ranked third in importance, with a mean of 4.48 and SD of 0.60, impacting project performance.

Respondents also ranked failure of construction equipment and changes in material types and specifications during construction as the fourth and fifth most crucial factors affecting project performance, respectively. The unavailability of construction materials in the market was ranked sixth, with a

mean of 4.38 and SD of 0.65, directly impacting project performance, particularly in terms of time constraints.

Respondents also highlighted other factors such as payment delays by project owners, poor health and safety conditions for employees, low labor productivity, equipment and spare parts unavailability, inadequate skills and knowledge among project teams, and a shortage of qualified personnel in the Jimma Zone as key contributors to project performance issues.

4.2.3. Perceived Procurement Management Related Factors

Table 5 illustrates factors in procurement management that impact project performance. Respondents identified the primary factor as the absence of proficient and successful procurement planning, with a mean score of 4.56 and a standard deviation of 0.65. The deficiency in effective procurement planning has repercussions on project performance. This

finding aligns with who asserts that well-executed procurement planning adds value for stakeholders and enhances project performance. The second and third factors in procurement management, according to respondents in the Jimma Zone, were the lack of efficient procurement control and contract management mechanisms, with mean scores of 4.41 and 4.12 and standard deviations of 0.81 and 0.92, respectively.

Table 5. Perceived Procurement Management Related Factors.

S.N	Procurement Management Related Factors	N	Mean	SD	Rank
1	There is lack of an effective and efficient Procurement planning	50	4.56	0.65	1
2	There is lack of an effective procurement control mechanism in the Jimma Zone	50	4.41	0.81	2
3	There is lack of an effective and efficient contract management in the Jimma Zone.	50	4.12	0.92	3
	overall mean score		4.36		

Table 6. Perceived Stakeholder Management Related Factors.

S.N	Stake holder management related factor	N	Mean	SD	Rank
1	The enterprise do not identifies its stake holders property	50	3.88	0.99	1
2	The enterprise do not property understands area of stake holders interest	50	3.8	0.95	2
3	The enterprise do not assesses attributes	50	3.76	0.85	3
4	The enterprise do not evaluate the stake holder acceptability	50	3.52	0.93	4
5	The enterprise do not keep and promote good relationship with stakeholders	50	3.42	0.85	5
6	The enterprise do not formulate appropriate strategies to manage stakeholders	50	3.4	0.78	6
7	The enterprise do not predict stake holders actions for implementing strategies	50	3.3	0.93	7
8	The enterprise do not maintains among stakeholders	50	3.25	0.89	8
9	There I slack of stakeholders in decision making process in enterprise	50	3.22	1.02	9
10	The enterprise do not communicate with and engaging stake holders property	50	3.1	1.11	10
	Overall mean score	50	3.465	0.93	

The top-ranked concern identified by respondents in the Jimma Zone was the failure to assess stakeholders' attributes such as power, urgency, and proximity, with a mean score of 3.88 and a standard deviation of 0.99. Evaluating the power, urgency, legitimacy, and proximity of stakeholders is crucial for understanding their requirements. The quality of construction projects relies on various stake holders. The second highest-ranked issue was the lack of stakeholders' involvement in the decision-making process, with a mean score of 3.76 and a standard deviation of 0.85. The effective and efficient participation of project participants to enhance the overall quality of a project and increase its value significantly [12].

The third most critical factor identified by respondents was the absence of stakeholders' identification, with a mean score of 3.80 and a standard deviation of 0.95. Properly identifying stakeholders is essential as it addresses the question of which individuals or groups can influence project performance. This approach enables project managers to tailor their management strategies to different stakeholders, aligning with others [13].

Lastly, the lack of adequate and regular communication and engagement with stakeholders was ranked fourth by respondents as a factor affecting project performance. Effective communication is a vital success factor for projects, as it is essential for retaining the support and commitment of all

stakeholders.

Table 7. Perceived Quality Management Related Factors.

S.N	Project quality management related factor	N	Mean	SD	Rank
1	There is lack of an effective project quality planning assurance and controlling system in the enterprise	50	4.3	0.85	1
2	There is lack of management commitment and leadership towards quality in the enterprise	50	3.98	0.99	2
3	There is lack on an involvement of suppliers to enhance projects quality performance	50	3.82	1.1	3
4	The enterprise do not provides adequate training to enhance the quality of project performance	50	3.56	1.12	4
	Overall mean score	50	3.915	1.015	

The primary concern highlighted by respondents in the Jimma Zone was the absence of an effective quality planning, assurance, and control system, with a mean score of 4.3 and a standard deviation of 0.85, impacting project performance. Quality management in a construction company is not an isolated function but is interconnected with all operational and managerial processes of the construction project.

The second most significant issue identified by respondents was the lack of management commitment and leadership towards quality, with a mean score of 3.98 and a standard deviation of 0.99, affecting project performance. Additionally, discovered that top management commitment is the most crucial factor for the successful implementation of ISO 9000 standards.

4.3. Inferential Statistics

To conduct inferential analysis, regression, and correlation in SPSS, the mean scores of each item in the independent variable and dependent variable need to be computed first. Once these mean scores are calculated, regression analysis can be performed to assess the relationship between the independent and dependent variables. Correlation analysis can also be conducted to determine the strength and direction of the relationship between variables.

Regression analysis will provide insights into the model

fitness, analysis of variance, and regression coefficients, which are essential for understanding the relationships between variables and predicting outcomes.

It is important to note that the results of regression analysis will help determine the extent to which the independent variables (factors affecting project performance) influence the dependent variable (performance indicators). Correlation analysis, on the other hand, will reveal the strength and direction of the relationship between these variables.

Once the mean scores are computed and the regression and correlation analyses are conducted in SPSS, researchers can interpret the results to make informed decisions and recommendations based on the findings.

4.4. Correlation

The study findings were subjected to correlation analysis to determine the relationship between independent and dependent variable. The table shows the correlation between independent variable (resource, procurement, stakeholder, and quality management related factors and) and dependent variable (performance of projects). Pearson correlation coefficient is a measure of linear dependence between two variables: independent and dependent variable. The researcher correlated the factors influencing projects against projects performance. The results are provided in Table 8.

Table 8. Correlation relationship.

		Quality management	Resource management	Stakeholder management	Procurement management
Time performance	Pearson correlation	0.196	0.406	0.377	0.265
	Sig (2-tailed)	0.000	0.042	0.000	0.010

		Quality management	Resource management	Stakeholder management	Procurement management
Quality performance	N	50	50	50	50
	Pearson correlation	0.495	0.425	0.475	0.0401
	Sig (2-tailed)	0.000	0.000	0.000	0.000
Cost performance	N	50	50	50	50
	Pearson correlation	0.133	0.604	0.636	0.309
	Sig (2-tailed)	0.230	0.000	0.000	0.000
	N		50	50	50

*. Correlation is significant at the 0.05 level (2-tailed).

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

Correlation analysis results between resource, stakeholder, procurement and quality management related factors and time performance attained a positive correlation coefficient of 0.40, 0.37, 0.26, and 0.19 with a p-value of 0.0042, 0.000, 0.000, and 0.01 respectively. This was an indication that the result was significant at $\alpha=5\%$, and if resource, stakeholder, procurement and quality management is improved, it would improve projects performance in terms of time. Correlation analysis results between resource, stakeholder, procurement and quality management related factors and quality performance attained a positive correlation coefficient of 0.42, 0.47,

0.40, and 0.49 respectively with a p-value of 0.000. This was an indication that the result was significant at $\alpha=5\%$, and if resource, stakeholder, procurement and quality management is improved, it would improve projects quality performance.

Correlation analysis results between resource, stakeholder, procurement and quality management related factors and quality performance attained a positive correlation coefficient of 0.60, 0.63, 0.30, and 0.13 respectively with a p-value of 0.000. This was an indication that the result was significant at $\alpha=5\%$, and if resource, stakeholder, procurement and quality management is improved, it would improve projects cost performance.

Table 9. Regression result.

model	Parameter coefficients (B)	Standard error	t-value	Significance level (P)
(constant)	1.517	0.462	3.286	0.002
Resource management related factor	1.517	0.462	3.286	0.002
Procurement management related factor	0.234	0.134	2.038	0.045
Stakeholder management related factor	0.115	0.091	1.079	0.284
Quality management related factor	0.369	0.095	3.235	0.002
F statistics	0.109	0.076	1.11	0.271
R ² (R ² adj)	(4,77)=(13.647,0.00)			

The results of the linear regression analysis, as summarized in Table 9, indicate that the regression model can explain 43.1% of the variance in the dependent variable. This means that the independent variables included in the model account for 43.1% of the variability observed in the dependent variable. The model summary provides insights into how well the independent variables collectively predict the dependent variable and the overall strength of the relationship between them.

The results of the regression analysis indicate the following

relationships between management factors and project performance:

1) Cost Performance:

Resource management and stakeholder management related factors have a significant and positive influence on project cost performance. Procurement management related factors have a positive but not significant impact on cost performance. Quality management related factors do not have a significant influence on cost performance.

2) Time Performance:

Resource management and stakeholder management related factors significantly affect project time performance. Quality management related factors do not significantly influence time performance.

3) Quality Performance:

Resource management, stakeholder management, and quality management related factors significantly impact project quality performance. Procurement management related factors do not have a significant influence on quality performance.

The study findings align with previous research: Construction resource management is significantly related to cost performance. Stakeholder management is crucial for effective project implementation. Procurement planning and contract management can affect project performance. Quality management is linked to client satisfaction and time variance but may not significantly affect cost performance.

These results provide insights into the importance of various management factors in influencing different aspects of project performance, emphasizing the need for effective resource, stakeholder, procurement, and quality management practices to enhance overall project outcomes.

5. Conclusion and recommendations

5.1. Conclusion

Based on the objectives of the research and the conclusions drawn from the findings, the following key points can be highlighted:

- 1) Resource Management Related Factors: Cash flow issues, financial difficulties, material price escalation, material wastage, equipment breakdown, changes in material specifications, and material unavailability significantly influence project performance.
- 2) Procurement Management Related Factors: Inadequate procurement planning, lack of procurement control mechanisms, and ineffective contract management are crucial factors affecting project performance.
- 3) Stakeholder Management Related Factors: Lack of stakeholder attribute assessment, limited stakeholder involvement in decision-making, poor stakeholder identification, and ineffective stakeholder communication and engagement are significant factors impacting project performance.
- 4) Quality Management Related Factors: Absence of a robust quality management system and insufficient management commitment and leadership towards quality are key factors influencing project performance.
- 5) Regression Analysis Results: Resource, stakeholder, and procurement management factors significantly and positively affect project cost performance. Resource and stakeholder management factors have a significant positive impact on project time performance, while quality

and procurement management factors do not significantly influence time performance. Resource, stakeholder, and quality management factors significantly contribute to project quality performance, whereas procurement management factors do not have a significant impact on quality performance.

These conclusions underscore the importance of addressing resource, stakeholder, procurement, and quality management issues to enhance overall project performance. Effective management practices in these areas can lead to improved project outcomes and successful project delivery.

5.2. Recommendation

Based on the research findings, several recommendations can be proposed for the Jimma Zone to improve its performance in construction projects:

- 1) Resource Management: Utilize advance payments effectively to mitigate cash flow and financial issues. Incorporate business environment risks in cost estimation and allocate sufficient contingency allowances to address material price fluctuations. Implement measures to minimize material wastage and maintain a clean project site. Establish an efficient construction equipment management system to ensure equipment reliability. Review contract documents before project commencement to prevent changes in material types and specifications. Enhance resource planning and forecasting to prevent material shortages and enhance project performance.
- 2) *Stakeholder Management: Identify and manage project stakeholders effectively to prevent delays or failures. Establish mechanisms to manage various stakeholders involved in the projects.
- 3) Procurement Management: Implement a formal procurement planning mechanism to organize project work efficiently and optimize resource utilization. Develop a robust procurement control mechanism to reduce risks during project implementation and enhance the likelihood of achieving project objectives. Provide contract management training to employees engaged in contract management activities.
- 4) Quality Management: Adopt an appropriate quality management system to improve project performance and sustain competitiveness in the construction market. Ensure management commitment to quality and continuous quality improvement throughout the building process. Engage in the implementation process and demonstrate full commitment to quality management practices for successful outcomes.

By implementing these recommendations, the Jimma Zone can enhance its construction project performance, address key management challenges, and improve overall project outcomes. Effective resource, stakeholder, procurement, and quality management practices are essential

for achieving project success and meeting stakeholder expectations.

Abbreviations

GDP: Growth Development Plan
SD: Standard Deviation

Author Contributions

Bulcha Assefa: Formal Analysis, Methodology
Dubiwak Namera: Software

Data Availability Statement

All information provided to this publication is presented in the full document.

Conflicts of Interest

The authors declare no conflicts of interest.

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