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Prevalence Of Cost and Time Overruns and the Influence of Latent Variables on Construction Projects in South-South Nigeria

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ABSTRACT

The construction and enhancement of infrastructure play a crucial role in fostering economic growth and societal progress; however, cost overruns and scope creep frequently occur in both developed and developing nations. Project overrun is particularly pronounced in developing nations, where cost overruns can occasionally surpass 100% of the project's initial budget. The construction industry in Nigeria is specifically afflicted by these challenges, with the South-South states of Akwa Ibom, Bayelsa, and Rivers presenting particular contexts that require investigation. This article assesses the current prevalence of cost and time overruns in these states and examines the extent to which latent economic, human, technological, market, and political variables influence construction project outcomes. A descriptive survey design was adopted using a structured questionnaire administered to 317 construction stakeholders in Akwa Ibom (108), Bayelsa (96), and Rivers State (113). The population comprised 1,837 clients, consultants, and contractors. Krejcie and Morgan's sample size determination table was used to determine the sample. The questionnaire was validated by three experts, and a Cronbach's Alpha coefficient of 0.83 confirmed the instrument's reliability. A response rate of 76.34% (242 out of 317) was achieved. Data were analyzed using mean scores, standard deviation, frequency distribution tables, and One-Way ANOVA via IBM SPSS version 26. A criterion mean of 3.00 was adopted. The findings confirm that delays are a persistent issue in the construction industry, with an aggregate grand mean of 3.76 (SD = 0.41), indicating that respondents across the three states agreed that cost and time overruns are prevalent in construction projects. The item with the highest aggregate mean was that delays are a persistent issue in the construction industry (Mean = 3.84, SD = 1.08), with Akwa Ibom respondents strongly agreeing (Mean = 4.04). Cost overruns were found to be more frequent in large-scale construction projects (Mean = 3.85), and most construction projects were agreed to experience delays during execution (Mean = 3.82). The One-Way ANOVA for prevalence returned F = 2.141 and p-value = 0.120 at the 0.05 level of significance, confirming no statistically significant difference in respondents' perceptions across the three states. With respect to latent variables, economic-related findings revealed that 70% of participants believe inflation has a significant impact on construction costs, 65% indicate that changes in interest rates often affect project financing, and 75% rate local economic conditions as very influential on project timelines. On human-related variables, 70% of participants perceived the availability of skilled labour to very significantly affect project costs, while 75% rated team experience as having a major impact on project timelines. For technological variables, 89% believe project management software significantly improves both cost and time performance, and 97% rated technology adoption — including Building Information Modelling (BIM) and drones — as very important in meeting project deadlines. Regarding market-related variables, 90% of participants indicated that fluctuations in material costs significantly affect project budgets, while 50% perceived market competition as having a major influence on construction pricing strategies. On political variables, 77% of participants indicated that government regulations and policies significantly impact project timelines, and 65% rated political stability as having a major impact on construction project costs. The findings confirm that macroeconomic conditions, workforce quality, and technological adoption collectively shape project cost and time performance in Akwa Ibom, Bayelsa, and Rivers States. Addressing these latent drivers requires coordinated policy intervention, investment in human capital development, and wider adoption of modern

construction technologies, particularly in the Niger Delta region where these pressures are intensified by the unique socio-political and geographical context.

1. Introduction

The construction and enhancement of infrastructure play a crucial role in fostering economic growth and societal progress (P. Nwogu & Emedosi, 2024; P. C. Nwogu & Emedosi, 2024). However, it is unfortunate that cost overruns and scope creep frequently occur in infrastructure and construction initiatives. This issue is prevalent in both developed nations with sophisticated project delivery systems and developing countries that may utilize more basic methods. A comprehensive global survey encompassing twenty countries across five continents revealed that significant cost increases in construction and infrastructure projects are more common than not (Smith, 2014).

According to Negesa (2022), various challenges faced during the initiation, design, and execution stages lead to unforeseen overruns, which consequently impact the overall effectiveness of the projects. Memon, Khahro, Hussain and Javed (2023); Nwogu, Godson & Oduali (2025) asserts that the effectiveness of a construction project is assessed based on its completion speed, overall expenses, quality of execution, and whether there are any disputes. Consequently, time and cost have become essential indicators for evaluating the success of a project. If time and cost are the essential indicators, does lack of budgeting and scheduling constitute a true reflection of the causative factors of cost and time overrun?

“But don’t begin to build until you count the cost; for who would begin construction of a building without first calculating the cost to see if there is enough money to finish it”- Luke 14:28. Relying on the biblical injunction above, one will suggest every construction project must be delivered within the approved budget and time; especially when cost has been counted prior to post contract phase of the project. One question that has become a rhetorical mantra in the field of construction is: can a building project be satisfactorily executed and delivered on schedule and budget? Project cost and time overrun as we witness in our construction industry today suggest that the biblical reference was for a perfect system, environment and society devoid of inherent risk factors.

A comprehensive global survey encompassing twenty countries across five continents revealed that significant cost increases in construction and infrastructure projects are more common than not (Smith, 2014). Project overrun is particularly pronounced in developing nations, where cost overruns can occasionally surpass 100% of the project's initial budget (Agara, Oluwaseun & Toochukwu, 2022). Mac-Barango and Nwogu (2022) assert that realizing project objectives within the original budget and schedule is frequently more of a theoretical concept than a practical reality.

The construction industry in Nigeria is specifically afflicted by these challenges, with the South-South states of Akwa Ibom, Bayelsa, and Rivers presenting particular contexts that require investigation. This article assesses the current prevalence of cost and time overruns in these states and examines the extent to which latent economic, human, technological, market, and political variables influence construction project outcomes.

2. Literature Review

2.1 Global and National Prevalence of Overruns

Echeme et al. (2016) in their study on analysis of time and cost performance of construction projects in Rivers State, Nigeria, revealed that out of twenty-eight selected projects, only seven successfully adhered to the cost parameters, and all of the chosen projects experienced delays. Berihu et al. (2023) maintained that in water supply projects, the actual time overruns vary from 0% to 203% of the contracted duration, while cost overruns range from 0% to 25% of the contracted amount. The findings of Alhammadi, Al-Mohammad and Rahman (2024) indicate that 25 of 27 projects in Saudi Arabia — roughly 93% — encountered cost overruns, with most exceeding their budgets by between 5% and 10%. Abdulkadir et al. (2017) maintains that the most significant incidence rate of time overrun is observed at 21–40% of executed project durations, while the highest incidence rate of cost overrun is noted at 1–20%. Dosumu and Uwanyirigira (2023) found that cost and time overruns stand at 31% and 40.4% respectively.

2.2 Latent Variables Influencing Construction Project Outcomes

Latent variables in construction project outcomes encompass a range of economic, human, technological, market, and political dimensions. High inflation rates directly affect construction build-up rates; the inflation rate is on the rise, particularly in developing nations, and plays a crucial role in issues related to cost overruns (Ebekozien et al., 2024). In Nigeria, government budget deficits, the removal of fuel subsidies, increased value added tax and electricity tariffs, and insecurity are exacerbating the situation and causing high costs for project implementation. Changes in interest rates affect project financing for the majority of industry participants, while local economic conditions such as unemployment and GDP growth shape project timelines. The availability of skilled labour and the experience of project teams are key factors, since poor skills or lack of experience can lead to errors, rework, and increased costs. The adoption of modern project management software and technologies like Building Information Modelling (BIM) significantly improves both cost and time performance. Fluctuations in material costs and market competition affect project budgets and pricing decisions. Government regulations and political stability also affect timelines and costs, reflecting the broader role of policy and governance.

3. Methodology

A descriptive survey design was adopted using a structured questionnaire administered to 317 construction stakeholders in Akwa Ibom (108), Bayelsa (96), and Rivers State (113). The population comprised 1,837 clients, consultants, and contractors. Krejcie and Morgan's sample size determination table was used to determine the sample. The questionnaire was validated by three experts, and a Cronbach's Alpha coefficient of 0.83 confirmed the instrument's reliability. A response rate of 76.34% (242 out of 317) was achieved. Data were analyzed using mean scores, standard deviation, frequency distribution tables, and One-Way ANOVA via IBM SPSS version 26. A criterion mean of 3.00 was adopted.

4. Findings

The findings indicate that respondents generally agreed on the current state of cost and time overruns. The overall mean of 3.76 (SD = 0.41) shows agreement that project overruns remain common, and this is consistent with the assertions of Madhav et al. (2024) and Berihu et al. (2023), who maintain that project overrun is predominant and that most building construction projects are faced with these challenges. The one-way ANOVA for the prevalence items returned F = 2.141 and p-value = 0.120, confirming no significant difference across states. The near-unanimous recognition of inflation (70%), technology importance (97%), and material cost fluctuations (90%) as influential variables underscores the pervasive nature of these external and structural pressures on construction projects in the Niger Delta. The finding on skilled labor availability (71% 'Very significant') and team experience (70% 'Major impact') aligns with evidence from other Nigerian construction studies, reinforcing the argument that human capital deficiencies remain a structural bottleneck in project delivery. Combining these latent variable findings, it is clear that macroeconomic conditions, workforce quality, and technological adoption collectively shape project cost and time performance in Akwa Ibom, Bayelsa, and Rivers States.

Table 1: Questionnaire Responses

S/N	Stakeholders	Distributed	Returned	% Returned
1	Clients	54	38	11.99%
2	Consultants	214	172	54.26%
3	Contractors	49	32	10.09%
	Total	317	242	76.34%

Source: Research Data, 2026

The table 4.1 is an indication of the questionnaire distributed and retrieved from the respondents. A total of 317 copies of questionnaire were sent out to various project stakeholders which include: Consultants (Quantity Survyors, Engineers, Architects and Builders), Clients and Contractors. Out of the number of questionnaire distributed, 242 copies constituting 76.34% were retrieved from the respondents which is satisfactory.

Table 2: State of practice of Respondents

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Akwa Ibom	77	32	32	32
	Bayelsa	92	38	38	70
	Rivers State	73	30	30	100.0
	Total	242	100.0	100.0	

Source: Research Data, 2026

The table 4.2 shows the distribution across states which indicates that Bayelsa state accounts for 38% of the participants, followed closely by Akwa Ibom state with 32%, and Rivers state with 30%. This suggests a relatively even spread of participants across these three states, with Akwa Ibom having a slight majority.

Table 4.3: Stakeholder's role in the construction industry

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Client	39	16	16	16
	Consultant	171	71	71	87
	Contractor	32	13	13	100.0
	Total	242	100.0	100.0	

Source: Research Data, 2026

Table 4.3 depicts stakeholders' role in the construction industry and are distributed such that Consultants (Quantity Surveyors, Engineers, Architects and Builders) represent the largest group at 71%, followed by Client at 16%, and Contractor at 13%. Clients and contractors constitute the smallest proportion at 16% and 13% respectively. This indicates a strong representation of consultants within the sample.

Table 4.4: Nature of construction project handled

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Residential	136	56	56	56
	commercial	106	44	44	100
	Total	242	100.0	100.0	

Source: Research Data, 2026

Table 4.4 illustrates the nature of construction projects handled by the respondents; this indicates that residential buildings are the most common, accounting for 56% of projects. Commercial buildings follow at 44%. This suggests a slight emphasis on residential construction among the participants.

Table 4.5: Summary of Mean and Standard Deviation of the Current Prevalence of Cost and Time Overruns

S/N	Items	Akwa Ibom (N=78)			Bayelsa (N=93)			Rivers (N=71)			Aggregate (N=242)		
		Mean	SD	RMK	Mean	SD	RMK	Mean	SD	RMK	Mean	SD	RMK
1	Many construction projects are completed later than scheduled time.	3.96	0.96	A	3.61	1.15	A	3.65	1.17	A	3.74	1.11	A
2	Project budgets are frequently exceeded before completion.	3.69	1.21	A	3.56	1.22	A	3.69	1.27	A	3.64	1.23	A
3	Time overruns occur regularly in public construction projects.	3.91	1.03	A	3.84	1.14	A	3.59	1.24	A	3.79	1.14	A
4	Time overruns occur regularly in private sector funded construction projects.	3.74	1.22	A	3.73	1.10	A	3.80	1.06	A	3.76	1.13	A
5	Most construction projects experience delays during execution.	3.90	1.05	A	3.84	1.35	A	3.72	1.04	A	3.82	1.17	A
6	Cost overruns are more frequent in large-scale construction projects.	3.81	1.12	A	3.81	1.05	A	3.94	1.25	A	3.85	1.13	A
7	Construction projects rarely finish within the initial budget estimate.	3.60	1.14	A	3.54	1.13	A	3.75	1.18	A	3.62	1.15	A
8	Delays are a persistent issue in the construction industry.	4.04	1.00	SA	3.71	1.08	A	3.79	1.16	A	3.84	1.08	A
	Grand Mean	3.83	0.39	A	3.70	0.41	A	3.74	0.42	A	3.76	0.41	A

Key: SA = Strongly Agreed, A = Agreed, N = Neutral, D = Disagreed, SD = Strongly Disagreed.

Source: Research Data, 2026

From table 4.5, the grand mean on the current prevalence of cost and time overruns was 3.83 (SD = 0.39) for Akwa Ibom, 3.70 (SD = 0.41) for Bayelsa, and 3.74 (SD = 0.42) for Rivers State, with an aggregate mean of 3.76 (SD = 0.41). This indicates that respondents across the three states agreed that cost and time overruns are prevalent in construction projects. The item with the highest aggregate mean was Item 8 — delays are a persistent issue in the construction industry (Mean = 3.84, SD = 1.08) — with Akwa Ibom respondents strongly agreeing (Mean = 4.04, SA). Items 6 and 5 closely followed, with means of 3.85 and 3.82 respectively, indicating that cost overruns are more frequent in large-scale projects and that most projects experience delays during execution. Items 3 and 4 show agreement that time overruns occur regularly in both public and private sector funded construction projects. The

item with the lowest aggregate mean was Item 7 (Mean = 3.62), which still reflected agreement that construction projects rarely finish within initial budget estimates.

Table 4.6: One-Way ANOVA — Extent of Cost and Time Overruns

Sources	Sum of Squares	df	Mean Square	F	p-value
Between Groups	0.711	2	0.356	2.141	0.120
Within Groups	39.717	239	0.166		
Total	40.428	241			

H01: There is no significant difference in the mean responses of respondents on the extent of cost and time overruns in building construction projects in Akwa Ibom, Bayelsa, and Rivers States. The result shows F = 2.141 and p-value = 0.120. The null hypothesis was retained at the 0.05 level of significance, indicating that agreement on the level of overruns stays steady across all three states.

Influence of Latent Variables

Items relating to latent variables were analyzed using frequency distribution. The findings on economic, human, technological, market, and political variables are reported as follows.

Economic-Related Variables:

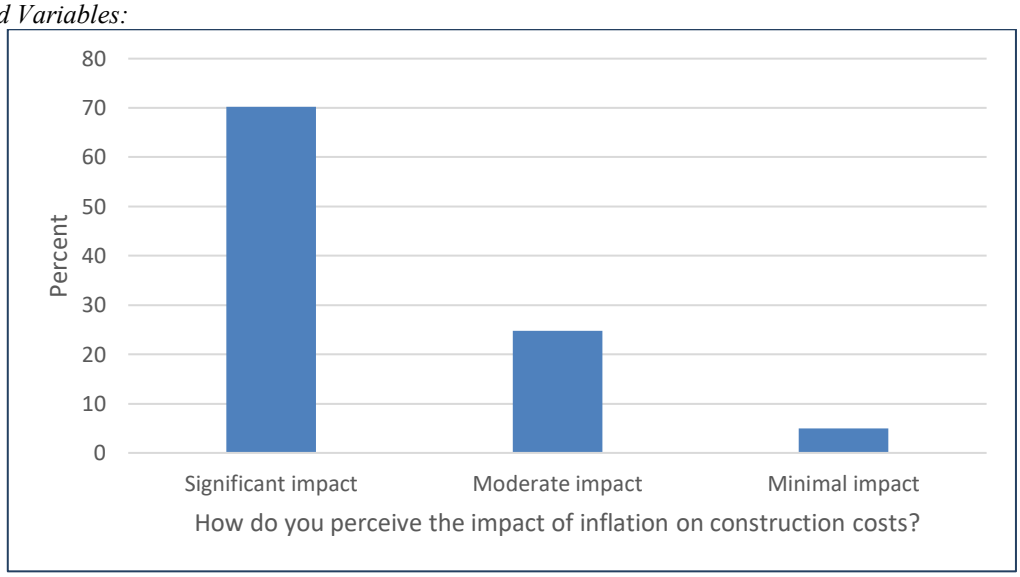

Figure 1: Impact of inflation on construction costs. Source: Research Data, 2026

The perception of inflation's impact on construction costs shows that 70% of participants believe it has a significant impact, while 25% perceive a moderate impact. Only 5% believe it has a minimal impact. This indicates a strong consensus that inflation significantly affects construction costs.

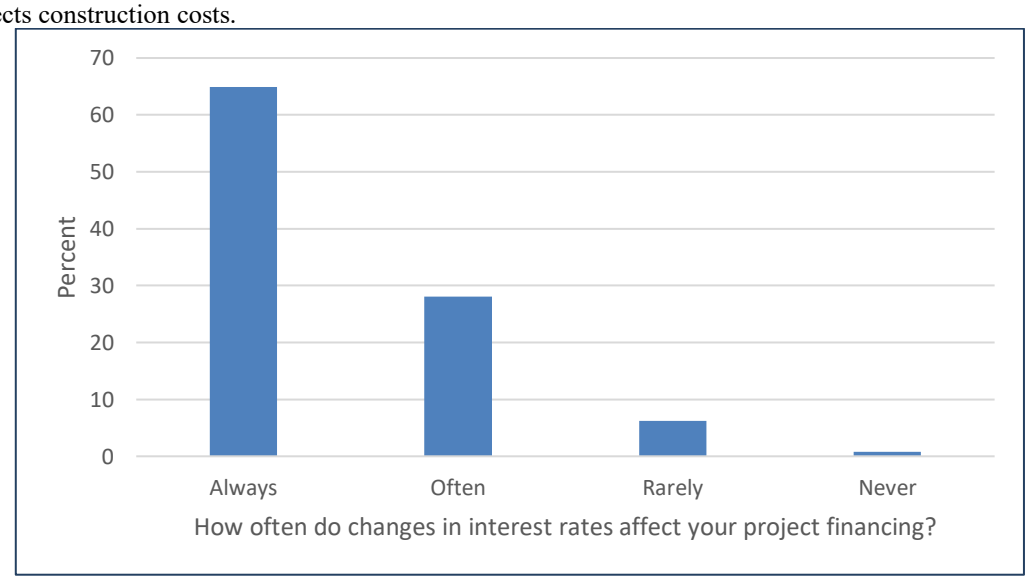

Figure 2: Changes in interest rates. Source: Research Data, 2026

Regarding how often changes in interest rates affect project financing, 65% of participants state "Often," and 28% state "Always." Only 7% report "Rarely," and none report "Never." This suggests that changes in interest rates frequently or always impact project financing for the majority of participants.

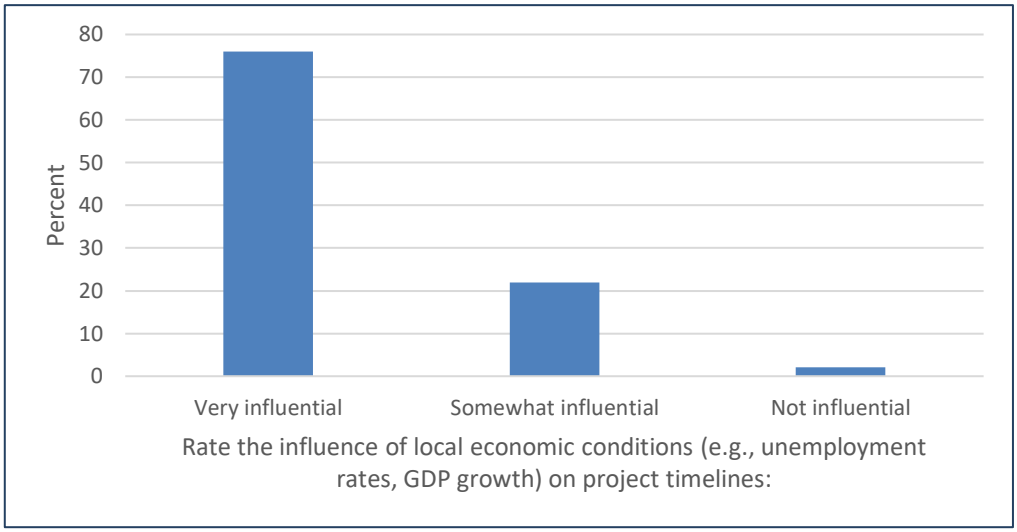

Figure 3: Local economic conditions (e.g., unemployment rates, GDP growth) on project timelines.

The influence of local economic conditions on project timelines is rated as "Very influential" by 75% of participants, and "Somewhat influential" by 22%. Only 3% consider it "Not influential." This indicates that local economic conditions are largely seen as having a significant influence on project timelines.

Human-Related Variables:

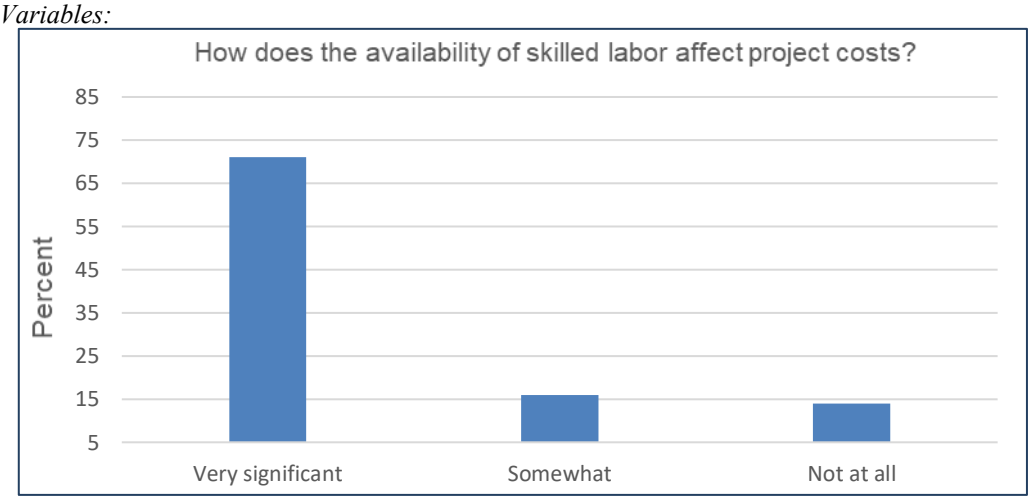

Figure 4: Availability of skilled labor affect project costs. Source: Research Data, 2026

The availability of skilled labor is perceived to "Very significantly" affect project costs by 70% of participants, and "Somewhat" by 16%. Only 14% believe it does "Not at all" affect costs. This suggests that the availability of skilled labor is a considerable factor influencing project costs for a majority.

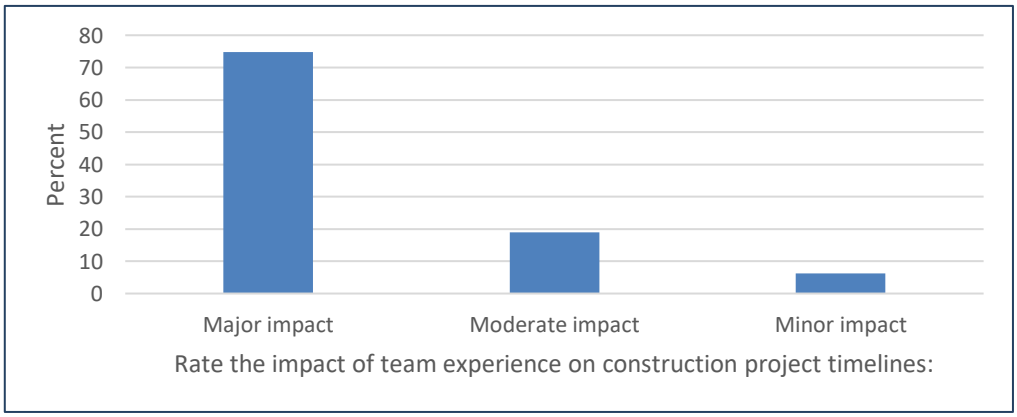

Figure 5: Impact of team experience on construction project timelines. Source: Research Data, 2026

The impact of team experience on construction project timelines is rated as having a "Major impact" by 75% of participants, and a "Moderate impact" by 18%. Only 7% perceive a "Minor impact." This indicates a strong belief that team experience significantly influences project timelines.

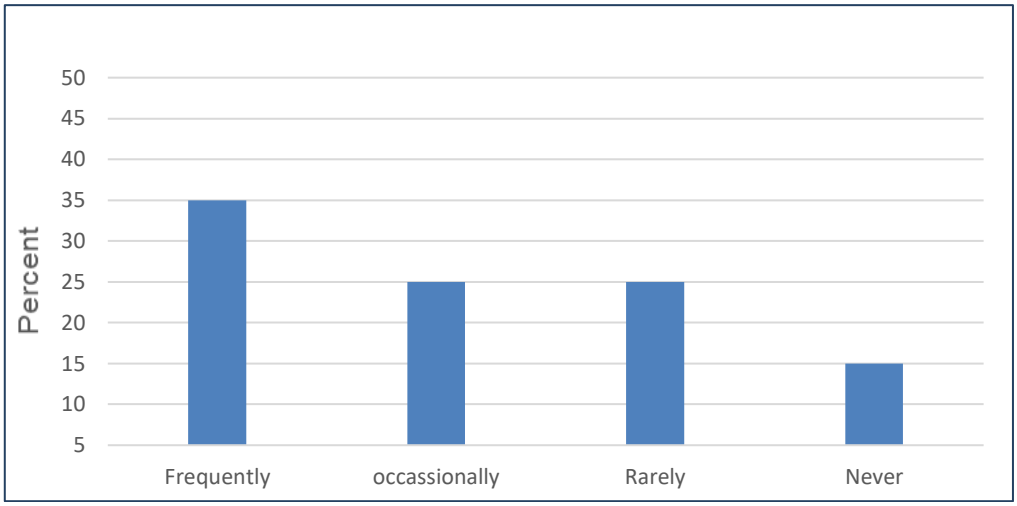

Figure 6: Labor disputes affect your project timelines. Source: Research Data, 2026

The frequency with which labor disputes affect project timelines shows that 35% report "Frequently," and 25% report "Occasionally." "Rarely" accounts for 25%, and "Never" accounts for 15%. This suggests a mixed experience, with a notable portion experiencing frequent or occasional labor disputes.

Technological-Related Variables:

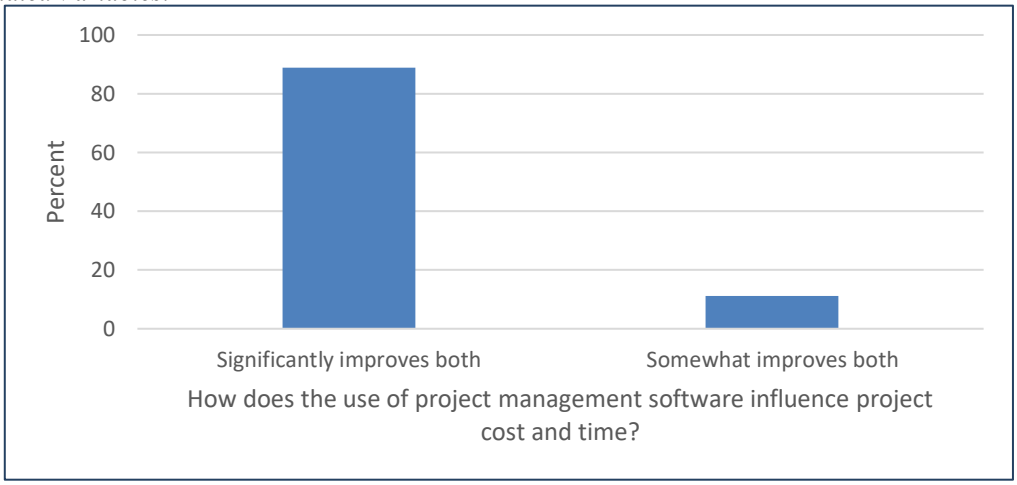

Figure 7: Project management software influence project cost and time. Source: Research Data, 2026

The influence of project management software on project cost and time indicates that 89% believe it "Significantly improves both," while 11% believe it "Somewhat improves both." This suggests a strong positive perception of project management software's impact on both cost and time efficiency.

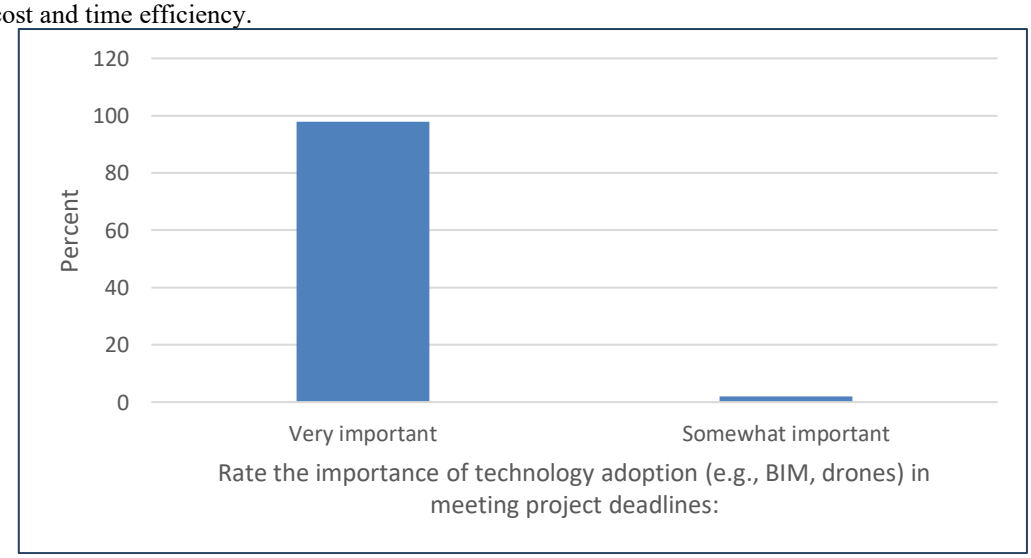

Figure 8: Importance of technology adoption (e.g., BIM, drones) in meeting project deadlines. Source: Research Data, 2026

The importance of technology adoption in meeting project deadlines is rated as "Very important" by 97% of participants, and "Somewhat important" by 3%. This highlights a strong recognition of the critical role of technology in achieving project deadlines.

Market-Related Variables:

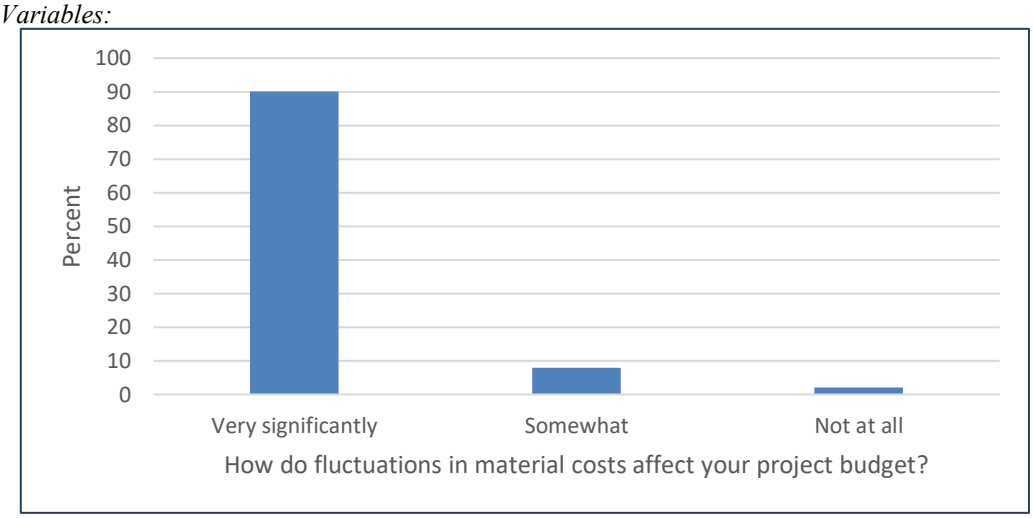

Figure 9: Fluctuations in material costs affect your project budget. Source: Research Data, 2026

Fluctuations in material costs are perceived to "Very significantly" affect project budgets by 90% of participants, and "Somewhat" by 7%. Only 3% believe they do "Not at all" affect budgets. This indicates that material cost fluctuations are a major concern for project budgets.

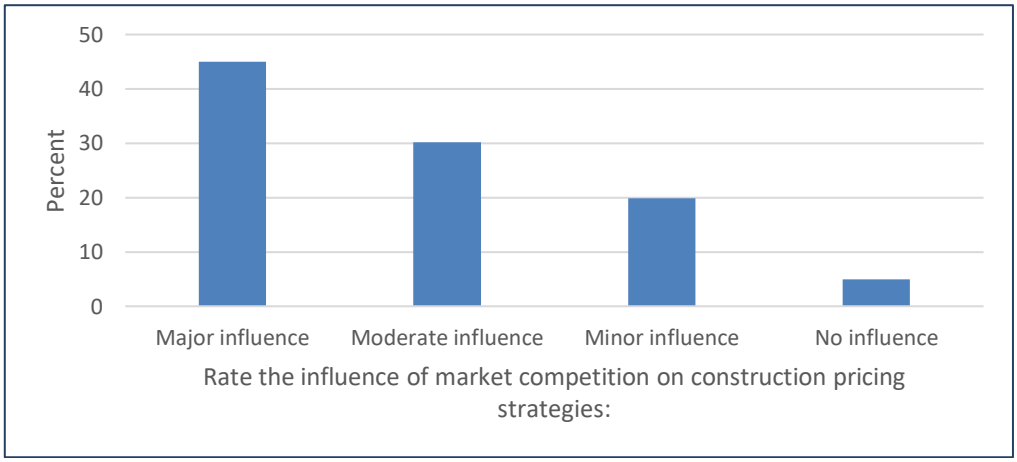

Figure 10: Market competition on construction pricing strategies. Source: Research Data, 2026

From figure 10, the influence of market competition on construction pricing strategies shows that 50% perceive a "Major influence," and 30% perceive a "Moderate influence." "Minor influence" accounts for 10%, and "No influence" accounts for 10%. This suggests that market competition plays a significant role in shaping pricing strategies.

Political-Related Variables:

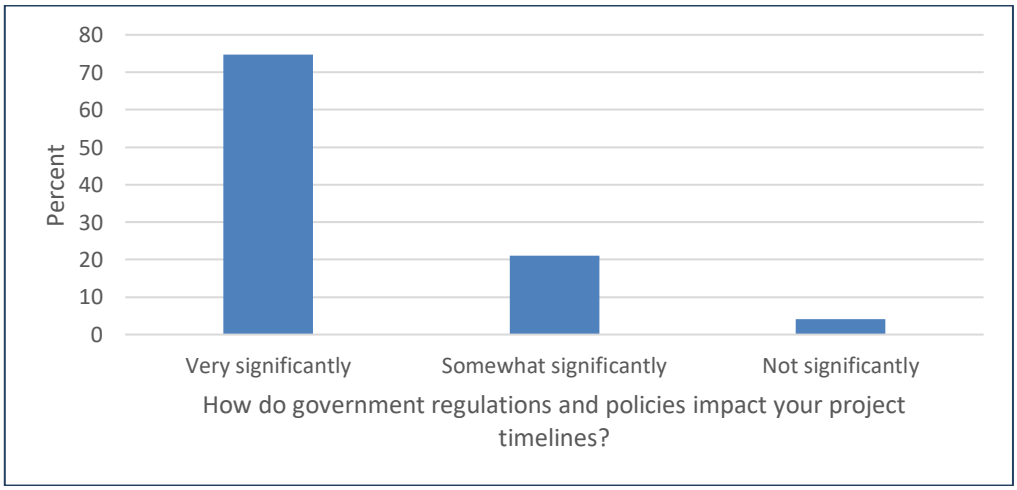

Figure 11: Government regulations and policies impact your project timelines. Source: Research Data, 2026

Government regulations and policies are perceived to "Very significantly" impact project timelines by 77% of participants, and "Somewhat significantly" by 20%. Only 3% believe they do "Not significantly" impact timelines. This indicates that government regulations are largely seen as having a considerable impact on project timelines and budget.

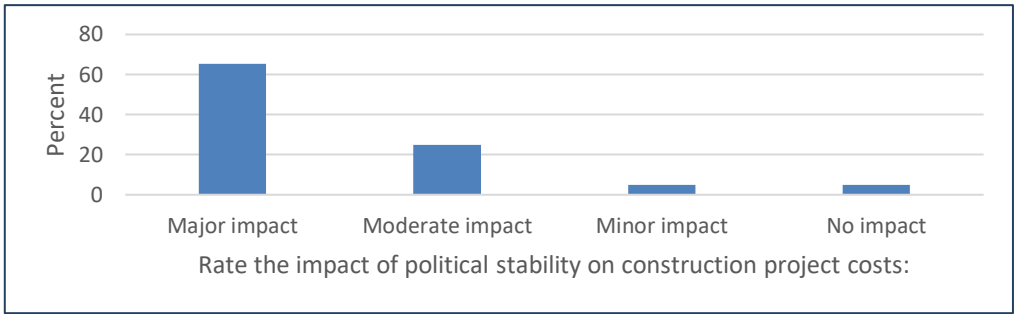

Figure 12: Political stability on construction project costs. Source: Research Data, 2026

The impact of political stability on construction project costs is rated as having a "Major impact" by 65% of participants, and a "Moderate impact" by 25%. "Minor impact" accounts for 4%, and "No impact" accounts for 6%. This suggests that political stability is considered a significant factor influencing construction p

5. Conclusion and Recommendations

This article assessed the current prevalence of cost and time overruns and the influence of latent variables on construction project outcomes in Akwa Ibom, Bayelsa, and Rivers States. The findings confirm that delays are a persistent issue in the construction industry, with cost overruns being more frequent in large-scale projects and time overruns regularly affecting both public and private sector construction. The one-way ANOVA confirmed no statistically significant difference in respondents' perceptions across the three states. Latent variables — including inflation, interest rate changes, skilled labour shortages, low technology adoption, material cost fluctuations, market competition, and political instability — significantly influence construction project cost and time outcomes in these states. Addressing these latent drivers requires coordinated policy intervention, investment in human capital development, and wider adoption of modern construction technologies, particularly in the Niger Delta region where these pressures are intensified by the unique socio-political and geographical context.

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