Sustainable Practices Influencing Timely Delivery of Building Construction Project

Suleiman Shehu[1, *], Rabiu Shehu[2], Usman Aliyu[3]

[1]Department of Quantity Surveying, Abubakar Tafawa Balewa University, Bauchi State-Nigeria
[2]Civil Engineering and Construction Management, Heriot-Watt University, Edinburgh, Scotland-United Kingdom
[3]Department of Quantity Surveying, Federal Polytechnic Damaturu, Yobe State-Nigeria

*Corresponding Author: *suleimanshehu088@gmail.com*

Article History:

Received : 16-04-2023
Revised : 31-05-2023
Accepted : 03-06-2023

Abstract

It is no longer a contention as various scholars in the field of management and construction are in unison that the construction industry worldwide is a potent motivator that can induce the economic growth and development of any society. A key metric for evaluating the success of building projects around the world is timely delivery. According to earlier studies, building development projects in northern Nigeria encountered delivery schedule delays. To ensure efficiency in delivery time, this study adopts a survey that was created to evaluate sustainable practices impacting timely delivery of building construction project in Gombe state. Professionals who represented the clients, consultants, and contractors were given a total of 88 questionnaires at random, and the administration of the questionnaire received a response rate of 70.45%. The statistical software for social science was used to analyze the data and provide descriptive and inferential statistical metrics. The survey's results showed that more than 70% of respondents had experienced delays in timely delivery of 1–12 months at most. The most significant sustainable practices influencing timely delivery of building projects with high relative index are the employment of skilled and competent labour; availability of materials; periodic monitoring, controlling, and updating of the progress of work; availability of effective supervision and management of staff; and availability of materials. The sustainable practices were further classified into: the economic, management, and motivational policy strategies, with a 33.30% cause-effect increase on timely completion of building construction projects. These facts lead the study to the conclusion that the problem of delays in building construction projects is obviously inescapable. Hence, this study

recommends that: there should be concerted efforts in collaboration by various stakeholders involve in building construction project, and all necessary practices should be deployed towards improving timely delivery of building construction project.

Keywords: *construction project, management, practices, policies, sustainability, timely delivery*

1. INTRODUCTION

The building sector is a powerful motivator that may stimulate the economic growth and development of any society, according to numerous management and construction researchers, and this claim is no longer in dispute. Despite the availability of defined time management processes, poor project delivery, particularly completion on schedule, has continued to be a problem that causes conflict among construction stakeholders (Shehu et al., 2020). Additionally, the perception among most construction stakeholders, scholars, and the public in Africa was that the sector was not very open with regard to efficiency and effectiveness in project delivery (Shehu, 2021). A project's failure can and will likely arise from poor time management, thus the better it is managed, the more successful construction project will be delivered on time (PMI, 2017). For example, previous studies in Gombe state, North-Eastern Nigeria (Suleiman Shehu & Rabiu Shehu, 2022; Shehu et al., 2020; Shehu et al., 2019) all agreed that time overrun in building construction projects is still a problem that needs to be fixed in the construction industry. Shehu (2021) examined specific practices, nonetheless, as factors affecting the timely completion of building construction projects in Nigeria. The current work, however, seeks to further develop the study by analyzing how sustainable practices affect the timely completion of building construction projects. As a result, this study divided sustainable practices into three categories for economic, management, and motivational policies to examine their effects on the completion of building construction projects in Nigeria's state of Gombe, with a view to improving on delivering time.

The objectives the study set to achieved are:

i. To assess sustainable practices influencing timely delivery of building construction project.
ii. To evaluate the sustainable practices in to economic, managerial and motivational policies.
iii. To ascertain how the sustainable policy practices affects building construction projects delivery.

Hypotheses proposed for the study.

i. Economic, managerial and motivational policies have no significant effect on timely delivery of building construction project.
ii. The clients, consultants, and contractors do not generally agree on how sustainable practices affect the timely completion of building construction projects.

1.1. Study's Conceptual Framework

Figure 1 is the conceptual framework developed for the study. As shown, the figure has two components. The Independent Variable "IV" Sustainable practices: economic, management and motivational policies and the Dependent Variable "DV" Building construction project: Timely delivery. The framework hypothesizes that "sustainable practices" will efficiently improve on "timely delivery" of building construction project.

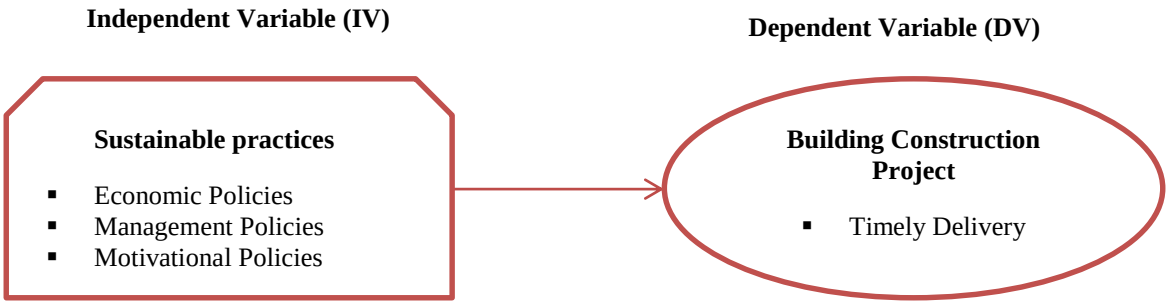

Figure.1 Study's Conceptual Framework

2. LITERATURE REVIEW

2.1. Project Time Management Concept

According to Shehu (2021), time management is one of many steps that must be taken to successfully complete a project. Due to persistently subpar performance, stakeholders have set the crucial aim of timely completion of buildings within predicted budget and agreed-upon quality requirements (Shehu & Shehu, 2022). The procedures needed to complete the project on time are included in project time management processes (PMI, 2013).

2.2. Sustainable Practices Influencing Timely Delivery

Shehu (2021) asserts that timely completion of building projects is a global concern, and that ideal methods ought to be put in place to lessen the effect this has on the success of the project. Time must be effectively managed through a range of pertinent procedures to resolve the necessary issues and support project completion.

2.2.1. *Economic policies*

If the construction equipment, materials, or tools needed for a particular task or schedule activity are not readily available where they are needed and when they are needed, productivity may be reduced. The timely completion of construction projects may also be significantly affected by poor supervision. According to Wambui et al. (2015), project equipment is essential, and

should influence performance by reducing costs, and promotes increased production. Effective materials management must be the project manager's top responsibility if they want to cut construction costs, boost productivity, deliver projects of high quality on schedule, and reduce labour costs (Donyavi & Flanagan, 2009). On their part, Alwi et al. (2001) assert that the effectiveness of site supervision has a significant impact on the general effectiveness and efficiency of construction projects.

"$H0_1$: Economic policies have no significant effect on timely delivery of building construction project."

2.2.2. Management policies

Management is focused with promoting improved productivity and efficiency among employees as well as the formal relationships between an organization's divisions, activities, and processes (Shehu et al., 2020; Kwok, 2014). Because they serve as the guiding principle for organizing, leading, coordinating, managing, and staffing in any organization, management policies are essential for the success of any project. According to Hussein (2013), the power behind the successful development of projects is a combination of top management commitment and the project team commitment. The project's performance and workflow will surely improve significantly when more skilled people are assigned (Othman et al. 2012). According to Bilau et al. (2015), when certified experienced artisans are involved, it tends to alleviate the worry of poor quality, low productivity, and late project completion, which frequently result in disputes, cost overruns, and schedule delays. According to Jack et al. (2016), project monitoring and control discovers errors, manages change, and offers input so that the plan can be updated and gradually elaborated.

"$H0_2$: Management policies have no significant effect on timely delivery of building construction project."

2.2.3. *Motivational policies*

Motivational policies are mainly concerned with determining both the internal or external factors capable of influencing individuals or organizational behaviors aimed at improving their overall productivity to achieve timely delivery of project. Workers are more motivated, according to Adjei (2009), when given the chance to use their own initiatives to complete difficult tasks. Andi (2004) divided work motivation theories into three categories: content, process, and contemporary theories. Maslow's hierarchy of needs and Herzberg theories of motivation have been the most frequently used content theories in work motivation studies involving construction

workers to date. In order to increase the likelihood that the desired behavior will be repeated, recognition of contribution is the act of receiving a favorable reward for good behavior, such as a salary raise or promotion, which is given as a result of positive behavior (Adjei, 2009). Exercise of power, might mean different things entirely depending on perceptions. However, punitive measures instituted on defaulting workers or team members may prove effective in order to instill discipline in general and guard against future negative behavior.

"$H0_3$: Motivational policies has no significant effect on timely delivery of building construction project"

2.3. Construction Project Delivery

According to all built environment researchers, the three main performance deliverables considered are timely completion, quality criteria, and completion within budget. Shehu (2021) adds that stakeholder satisfaction and anticipated returns on investment are also essential criteria for determining whether a construction project is successful or unsuccessful in general. According to Shehu et al. (2020), more than a third of big clients are dissatisfied with contractors' performance in several areas, including adherence to the specified price, timetable, fixing problems, and providing a final product of the required contractually agreed quality. On-time completion of construction projects within budgeted limits and in accordance with the owner-established quality standards is a sign of a successful project delivery. Every construction stakeholder, including the client, consultants, and contractors themselves, should be concerned with completing projects on time (Shehu & Shehu, 2022; Shehu et al., 2020).

3. METHODOLOGY

To elicit replies, the study uses a descriptive survey methodology. The instrument used to collect the data was a structured questionnaire. The foundation of all research projects is a literature review (Oso & Onen, 2011). To find and classify pertinent sustainable practices influencing the timely completion of building construction projects, a thorough literature analysis was conducted.

A likert-scale with a range of 1 to 6 (Completely Disagree to Completely Agree) was employed. The Likert scale is the scale that is most frequently used in survey research (Lodico et al., 2006; Shehu & Shehu, 2022). Professionals in the construction industry, including architects, quantity surveyors, builders, civil/service engineers, and project managers, were given the questionnaire. Others

include (Planners/Estate Managers, Land Surveyors, Business, and Accounting & Management), who are charged with carrying out the construction project's obligations on behalf of the clients, contractors, and consultants. Since managing our behaviours in connection to activities or tasks is the essence of time management, the notion has no real boundaries or monopolies in the professional world. One hundred and twelve (112) respondents in total were gathered from different locations in the study area. Consequently, the sample size was calculated using the Krejcie and Morgan (1970) table, and a total of 88 sample questionnaires were created and randomly distributed in three stratified sample locations of Nigeria's state of Gombe, as thus: Federal College of Education Technical ("FCET 23"), Federal University of Kashere ("FUK 30"), and Construction and consulting firms ("35"). Sixty-two (62) questionnaire surveys were correctly completed and returned for processing, which is a response rate of 70.45%. The formula used to calculate the response rate was taken from Shehu et al. (2020).

Utilizing Cronbach's coefficient Alpha, internal consistency reliability was reached utilizing the questionnaire instrument after it had been content-validated by specialists (Pallant, 2001). In the form of descriptive and inferential statistical measures, the data were examined using a statistical package for social science. As a result, to examine the study's goals and hypothesis, various methods like frequencies, percentages, regression, relative important index (RII), and Kendall's test were employed. Based on a formula created in a spreadsheet and modified from Kumar (2020), the RII of the influential sustainable practices was calculated, as thus,

$$\textbf{Relative Important Index (RII)} = \frac{\mathbf{1_{n1} + 2_{n2} + 3_{n3} + 4_{n4} + 5_{n5} + 6_{n6}}}{\mathbf{A} * (\mathbf{N})}$$

Where:
n_1 = Number of respondents that Completely Disagree
n_2 = Number of respondents that Slightly Disagree
n_3 = Number of respondents that Disagree
n_4 = Number of respondents that Agree
n_5 = Number of respondents that Slightly Agree
n_6 = Number of respondents that Completely Agree
A = The scale with the highest value, in this study "Completely Agree". Thus, 6 no.
N = Total of number respondents that participated in the study. Thus, 62 no.

4. RESULTS

Table.1 Reliability Test of Sustainable Policy Practices

Practices	No. of items	Cronbach's alpha (α)	Remark
Economic Policies	3	0.763	Accepted
Management Policies	6	0.839	Accepted
Motivational Policies	5	0.804	Accepted

Table 1 shows the reliability test results of the independent variables i.e. economic, management and motivational sustainable policy practices using internal consistency. Findings revealed that all the Alpha (α) values obtained for this study are greater than the recommended acceptable minimum value of 0.70 which are in agreement with Pallant (2001). Hence, they are all acceptable for this study.

4.1. Characteristics of the Respondents

According to the characteristics of the respondents as shown in Table 2, the majority of respondents, 38 (61.3%), have a degree or higher diploma, and 19 (30.6%) have a master's degree or post-graduate diploma, meaning that almost all of the respondents have the necessary academic credentials. Their evaluation is therefore accurate intellectually. Nearly all the relevant professions are represented in the area of specialization, with engineering and quantity surveying having 14 each (22.6%), architecture having 12 (19.4%), building construction professionals having 9 (14.5%), and project management having the lowest representation with 5 (8.1%). This demonstrates that the project management profession is not yet well-established and independent in Nigeria and that its functions are being carried out by qualified professionals who have the necessary training. Almost all of the respondents had the necessary years of work experience in the construction business, with 23 (37.1%) having 6-10 years of experience, 16 (25.8%) having 11–15 years, and 8 (12.9%) having more than 15 years. As a result, the respondents were qualified to take the survey, which increased the reliability of the findings. Regarding the nature of project operation, 24 (38.7%) were involved in project monitoring and supervision, which is primarily applied to professionals representing the client; 13 (21%) were involved in project execution, which is primarily applied to contractors; and 8 (12.9%) were involved in management and planning. However, 17 (27.4%) of the respondents were actively involved in the project's management, execution, monitoring,

or any combination of these. Twenty respondents (32%) were working for contractors, 18 (29%) were working for the consultants, and 24 (39%) were working for the clients. As a result, all the important parties are effectively represented. The clients' increased engagement may be related to the fact that they are the ones who suffered the effects of time overruns the most. All of the participants encountered delays in the extension of the completion time, with 26 (41.9%) reporting delays of 1-6 months, 23 (37.1%) reporting delays of 6-12 months, 6 (9.8%) reporting delays of 12-18 months, and 7 (11.3%) reporting delays of more than 18 months. As a result, in Gombe state, time overrun continues to be a significant problem with the delivery of building development projects.

Table.2 Characteristics of the Respondents

Categories	Features	Frequency (No)	Percentage (%)
Academic Qualifications	Certificate/ Diploma	2	3.2
	Degree/Higher National Diploma	38	61.3
	Masters/Post Graduate Diploma	19	30.6
	PhD	3	4.8
	Total	**62**	**100.0**
Area of Specialization	Architecture	12	19.4
	Engineering	14	22.6
	Quantity surveying	14	22.6
	Building	9	14.5
	Project Management	5	8.1
	Others	8	12.9
	Total	**62**	**100.0**
Years of working Experience	1-5 years	15	24.2
	6-10 years	23	37.1
	11-15 years	16	25.8
	More than 15 years	8	12.9
	Total	**62**	**100.0**
Nature of Project Operation	Planning and Management	8	12.9
	Execution	13	21.0
	Monitoring and Supervision	24	38.7
	Monitoring, supervision and Execution	5	8.0
	Planning, Monitoring and Supervision	6	9.7
	All operations	6	9.7
	Total	**62**	**100.0**
Category of Working Organization	Clients	24	39.0
	Consultants	18	29.0
	Contractors	20	32.0
	Total	**62**	**100.0**
Experienced Delay	Yes	62	**100.0**
Length of Delay	1-6 months	26	41.9
	6-12 months	23	37.1
	12-18 months	6	9.8
	More than 18 months	7	11.3
	Total	**62**	**100.0**

What are the sustainable practices influencing timely delivery of building construction project in Gombe State?

Table.3 Respondents Ratings on Sustainable Practices Influencing Timely Delivery

Influencing Practices	Disagreement (%)				Agreement (%)				Total (%)	Remark
	A1	A2	A3	**Sum**	B4	B5	B6	**Sum**		
By ensuring availability of plants, equipment and machineries		1.6	4.8	**6.4**	32.3	22.6	38.7	**93.6**	100	Accepted
By ensuring availability of materials	1.6		4.8	**6.4**	16.2	27.4	50.0	**93.6**	100	Accepted
By ensuring effective supervision and management of staff	3.2		4.8	**8.0**	14.5	30.6	46.8	**91.9**	100	Accepted
By ensuring commitment and providing good leadership direction		1.6	6.5	**8.1**	29.0	21.0	41.9	**91.9**	100	Accepted
By Setting timeline and project deadline	1.6		8.1	**9.7**	19.4	38.7	32.3	**90.4**	100	Accepted
By Setting specific goals for workers to achieve		1.6	6.5	**8.1**	21.0	38.7	32.3	**92.0**	100	Accepted
By conducting periodic monitoring, controlling and updating progress of work done			1.6	**1.6**	17.7	35.5	45.2	**98.4**	100	Accepted
By ensuring team integration		1.6	11.3	**12.9**	14.5	37.1	35.5	**87.1**	100	Accepted
By employment of skillful and competent workforce			4.8	**4.8**	9.7	27.4	58.1	**95.2**	100	Accepted
By ensuring job security for workers	1.6	3.2	4.8	**9.6**	29.0	29.0	32.3	**90.3**	100	Accepted
By ensuring a sense of belonging and identification with the project team		4.8	8.1	**12.9**	19.4	41.9	25.8	**87.1**	100	Accepted
By Providing opportunity for extending skills and experience through continuous learning and challenging tasks to workers		4.8	9.7	**14.5**	22.6	21.0	41.9	**85.5**	100	Accepted
By ensuring adequate recognition of workers contribution (Paying bonuses, over-time, issuing leave, giving awards etc.)		4.8	1.6	**6.4**	25.8	33.9	33.9	**93.6**	100	Accepted
By exercising power (punishment of defaulting workers and teams)	8.1	3.2	9.7	**21.0**	27.4	17.7	33.9	**79.0**	100	Accepted
Total				**9.31**				**90.69**	**100**	

A1-Completely Disagree, A2-Slightly Disagree, A3-Disagree, B4-Agree, B5- Slightly Agree, B6-completely Agree

Table 3 shows the respondents ratings on the level of agreement, the results revealed that all the sustainable practices influencing timely delivery of building construction projects were identified and accepted. Furthermore, 90.69% were in agreement while 9.31% disagreed. The most rated factors are: monitoring, controlling and updating progress of work done with 98.4% and employment of skillful workers with 95.2% while the least rated sustainable practice was exercising power i.e. punishment of defaulting workers with 79%. However, the results didn't reveal the most important practices influencing timely delivery.

How can the sustainable practices be grouped in to economic, management and motivational policies?

Table.4 Relative Importance of Sustainable Practices Influencing Timely Delivery

Sustainable Practices	**Client**		**Consultants**		**Contractors**		**Overall**	
	RII	**Rank**	**RII**	**Rank**	**RII**	**Rank**	**RII**	**Rank**
Economic Policies								
Availability of plants, equipment and machineries	0.778	11	0.806	11	0.883	3	0.820	8
Availability of materials	0.833	4	0.861	3	0.900	2	0.863	3
Effective supervision and management of staff	0.861	2	0.861	3	0.825	10	0.849	4
Management Policies								
Commitment and providing good leadership direction	0.813	6	0.815	8	0.850	7	0.825	5
Setting timelines and project deadline	0.826	5	0.796	12	0.825	10	0.817	9
Setting specific goals for workers to achieve	0.813	6	0.796	12	0.858	5	0.823	6
Periodic monitoring, controlling and updating the progress of work	0.840	3	0.907	2	0.883	3	0.874	2
Team integration	0.813	6	0.815	8	0.842	9	0.823	6
Employment of skillful and competent workforce	0.868	1	0.917	1	0.917	1	0.898	1
Motivational Policies								
Job security for workers	0.799	9	0.815	8	0.783	12	0.796	12
A sense of belonging and identification with the project team	0.778	11	0.833	5	0.775	13	0.793	13
Providing opportunity for extending skills and experience	0.792	10	0.778	14	0.858	5	0.809	11
Adequate recognition of workers contribution	0.778	11	0.833	5	0.850	7	0.817	9
Exercising power like penalizing defaulting workers and team members	0.646	14	0.833	5	0.775	13	0.742	14

Table 4 shows results of the relative important index of sustainable practices influencing timely delivery as grouped in to economic, management and motivational policies. Findings revealed that the clients were inclined to: employment of competent workers; supervision and management of staff; monitoring, controlling and updating progress of work as the three most importantly ranked influencing sustainable practices. The consultants were inclined to employment of skillful and competent workers; monitoring the progress of work done; supervision and staff management; and availability of materials as the most importantly ranked influencing sustainable practices. While the contractors were inclined to employing competent workforce; monitoring and controlling; availability of materials; plants, equipment and machineries as the most importantly ranked influencing sustainable practices.

However, the three categories of respondents ranked: Employment of skillful and competent workforce (RII/0.898) ranked as the "first" most important influencing sustainable practice; Periodic monitoring, controlling, and updating work progress (RII/0.874) was ranked as "second"; Availability of materials (RII/0.863) ranked as "third"; Effective supervision and management of staffs (RII/0.849) ranked as "fourth"; and Commitment and providing good leadership direction (RII/0.825) was ranked as the "fifth" most important sustainable practice influencing timely delivery of building construction project. While exercising power (RII/0.742); A sense of belonging and identification with the project team (RII/0.793); and Job security for workers (RII/0.796) were the least ranked by the respondents as fourteenth, thirteenth and the twelfth influencing sustainable practices respectively.

Table. 5 Group Performances of Sustainable Practices Influencing Timely Delivery

Factors	Mean Score	Std. Dev.	Rank
Economic policies			
By ensuring availability of plants, equipment and machineries	4.92	1.029	3rd
By ensuring availability of materials	5.18	1.048	1st
By ensuring effective supervision and management of staff	5.10	1.155	2nd
Management policies			
By ensuring commitment and providing good leadership direction	4.95	1.062	3rd
By Setting timeline and deadline for project	4.90	1.051	6th
By Setting specific goals for workers to achieve	4.94	0.973	4th
By conducting periodic monitoring, controlling and updating the progress of work done	5.24	0.803	2nd
By ensuring team integration	4.94	1.054	4th
By employment of skillful and competent workforce	5.39	0.856	1st

Motivational policies			
By ensuring job security for workers	4.77	1.151	3rd
By ensuring a sense of belonging and identification with the project team	4.76	1.082	4th
By Providing opportunity for extending skills and experience through continuous learning and challenging tasks	4.86	1.213	2nd
By ensuring adequate recognition of workers contribution (Paying bonuses, over-time, issuing leave, giving awards etc.)	4.90	1.051	1st
By exercising power like penalizing defaulting workers or team members	4.45	1.522	5th

Table 5, present the group performances of sustainable practices influencing construction project timely delivery. Findings from the results revealed that availability of materials (Mean Score "MS" 5.18/ Standard Deviation "SD" 1.048) and effective supervision and management of staff (MS 5.10/ SD 1.155) were the most favorable sustainable economic policies towards timely delivery of project having the highest mean scores respectively. Employment of skillful and competent workforce (MS 5.39/ SD 0.856); periodic monitoring, controlling and updating work progress (MS 5.24/ SD 0.803) and ensuring commitment and providing good leadership direction (MS 4.95/ SD 1.062) were the most favourable sustainable management policies having the highest mean scores respectively. The most favorable sustainable motivational policies most considered are: Providing adequate recognition and reward system for workers (MS 4.90/ SD 1.051); providing opportunity for extending skills via continuous learning and challenging tasks (MS 4.86/ SD 1.213); and by ensuring job security for workers (MS 4.77/ SD 1.151) having the highest mean scores as rated by the respondents respectively. However, the standard deviations in general have revealed the existence of a close agreement in the respondent's responses with 0.752 as the range.

To what extent does the sustainable policies affect timely delivery of building project?

Table.6 Regression Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.333[a]	.111	.096	1.02848

a. Predictors: (Constant), Sustainable policies

Table 6 shows the regression model summary of the study. Findings revealed that the model produced an R-Value of 0.333 and R-Square value of 0.111 which explains 11.1% of

the variance (0.111 x 100). As such this prediction is fair for this type of study considering that only fourteen factors were considered as well as other external factors not covered will account for the remaining variances.

Table.7 ANOVA[b] Test Statistics

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	7.905	1	7.905	7.473	.008[a]
	Residual	63.466	60	1.058		
	Total	71.371	61			

a. Predictors: (Constant), Sustainable Policies, b. Dependent Variable: Timely Delivery

Results of the ANOVA tests are shown in Table 7. It demonstrated the model's statistical acceptability. Economic, management, and motivational sustainable policy approaches are the independent variables in this model, which accounts for 7.905 changes while leaving 63.466 unaccounted for. Although it is less than the maximum P-value of 0.05, [F (1, 60) = 7.473] and is significant at 0.008. As a result, the variation that the model explains is significant and was not the result of chance. This outcome is far better than that of a study by Shehu and Shehu from the year 2022. The model for this study is statistically significant in forecasting how the influence of sustainable policy practices will affect the timely completion of building construction projects, according to the implication.

Table.8 Regression Coefficient Test

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	2.782	.909		3.060	.003
	Practices	.497	.182	.333	2.734	.008

Dependent Variable: Timely Delivery

The results of the regression coefficient test are shown in Table 8. The results showed that the influencing sustainable practices, such as economic, management, and motivational policies, will result in a 33.3% cause-effect increase on timely delivery of building construction projects, with a (Beta) value of 0.333 and is significant at 0.008, below the critical maximum value of 0.05, and t = 2.734. It follows that adhering to the prevailing

sustainable practices will lead to the timely completion of building construction projects in Gombe state, Nigeria.

5. TEST OF HYPOTHESES

H0₁: Economic policies have no significant effect on timely delivery of building project.

H0₂: Management policies have no significant effect on timely delivery of building project.

H0₃: Motivational policies have no significant effect on timely delivery of building project.

H0₄: There is no significant agreement amongst the client, consultants and contractors on practices influencing timely delivery of building construction project.

Economic, Management and Motivation policies have no significant effect on timely delivery of building construction project

Table.9 Effects of Policy Practices on Timely Delivery

Hypotheses	No. of Factors	Beta Coefficient	R^2	F	T	P-value	Remark
H0₁	3	0.384	0.148	10.390	3.223	0.002	Rejected
H0₂	6	0.317	0.100	6.686	2.586	0.012	Rejected
H0₃	5	0.196	0.038	2.401	1.550	0.126	Accepted

The correlations between the study variables' hypotheses are shown in Table 9. The hypothesis that economic policies have no significant effects on timely delivery is thus rejected because the results for economic policies showed a 0.002 P-value, which is less than the essential significance level of 0.05. For management policies with 0.012 P-value which is less than the critical significance level of 0.05, as such the hypothesis which postulates that management policies have no significant effect on timely delivery of building project is hereby rejected. However, it was agreed that motivational policies have no significant effects on timely delivery as its P-value 0.126 was greater than the minimum significance of 0.05 requirements. As such, the assumption which postulates that motivational policies have no significant effects on timely delivery of building construction project is here by accepted. Consequently, the null hypotheses for economic and management policy practices were disagreed upon and rejected in favour of the alternative hypothesis, while for motivational policy practices the null hypothesis was agreed upon and accepted.

H0₄: There is no significant agreement among the clients, consultants and contractors on sustainable practices influencing timely delivery of building construction project

Table.10 Respondents Level of Agreement on Responses

Respondents	N	Kendall's W[a]	Chi-Square	Df	Asymp. Sig.
Clients	24	0.107	33.461	13	0.001
Consultants	18	0.069	16.134	13	0.242
Contractors	20	0.085	22.186	13	0.053
Overall	62	0.60	48.697	13	**0.000**

a. Kendall's Coefficient of Concordance

Using Kendall's coefficient of concordance as the statistical metric, Table 10 determined the degree of agreement among the respondents—clients, consultants, and contractors in grading the policy practices. The results showed that the clients' responses were more consistent or in agreement, which is significant at 0.001 levels. While rating the sustainable policy practices, consultants and contractors did not agree. However, overall, it appears that the three categories of respondents have a high degree of agreement in their response ratings, which is significant at the minimum level threshold of 0.000 less than 0.05.

6. DISCUSSION OF FINDINGS

Based on this study's results, the findings are consistent with comparable studies by Memon et al. (2012), which found that 92% of the projects they examined had time overruns of at most 1–12 months in length. In this study, more than 70% of the respondents had such experiences. Additionally, Shehu and Shehu (2022) stated that 47.1% of their respondents had encountered a project completion time delay of 6 to 18 months. The respondents have identified and accepted all the sustainable practices influencing timely completion as proposed in this study as depicted in table 3 with high degree level in agreement.

In addition, the six foremost sustainable practices and the respondent's level of response agreement are: employment of skillful and competent workers, with 95.20% level of response agreement. The findings on the significance of hiring skilled workers for construction projects as a good policy practice to improve timely delivery of building projects are consistent with similar studies and concurred (Bilau et al. 2015), which state that where qualified skilled craftsmen are involved, it tends to eliminate the concern of poor quality, low productivity, late project completion which often results in conflicts, cost, and time overruns; it also agreed with findings on the importance of hiring skilled workers for

construction projects as a good policy practice to improve timely delivery of building.

The 98.40% degree of response agreement for periodic monitoring, managing, and updating of task progress. The findings of related studies by Muriti et al. (2017), who found that 62.50% of their respondents strongly agreed that close monitoring of the project progress could improve the schedule performance of the project, and that there exists a significant correlation between project monitoring and timely completion of the building project, support the importance of periodically monitoring project progress as a good sustainable policy practice to ensure timely delivery of the building project.

Availability of materials, with 93.60% response agreement; The findings were also in agreement with similar studies by Acharya et al. (2004) and Enshassi et al. (2009), respectively. Baldwin & Bordoli (2014) stated that 40% of the time lost on project sites can be attributed to poor management, lack of materials when needed, poor identification of materials, and inadequate storage. This study emphasizes the importance of material availability. With a response agreement of 91.90%, the staff is effectively supervised and managed.

The relevance of supervision and management of staff as a good sustainable practice to reduced delay in this study was in agreement with findings by Ugwu & Attah (2016) and Andi (2004) and as echoed by Alwi et al. (2001) were they opined that the quality of site supervision has a major influence on the overall performance and efficiency of construction projects.

Ensuring commitment and providing good leadership direction, with 91.90% in response agreement. Murithi et al., (2017) found that there is a strong correlation between project leadership and the timely completion of public construction projects; their findings concurred with those of Bhangale and Devalkar (2013) and Toor & Ofori, (2008) in their respective studies. This finding highlights the importance of providing good leadership and direction as a good sustainable practice.

Setting concrete objectives for employees to meet and team cohesion received, respectively, 90.40% and 87.10% of responses. According to comparable studies by Ugwu and Attah (2016), the practice of setting precise goals and fostering team integration are effective sustainable practices that would assure timely delivery of building projects. There is a high level of agreement among clients, consultants, and contractors in their response ratings on the sustainable practices influencing timely delivery of building construction

projects, which is significant. The findings are in line with studies by Enshassi et al. (2009), which conclude that, there exists a significant degree of agreement among the owners, consultants, and contractors.

7. CONCLUSION

This study evaluates how sustainable practices affect the timely completion of building construction projects in Nigeria's Gombe state. The outlined research problems were addressed, and the developed hypotheses were put to the test. The survey demonstrates that timely delivery of building construction projects within schedule is still a serious problem because, according to the respondents, 97.7% of them have encountered time overruns of no more than 6 to 12 months. All the sustainable practices suggested in this study that affect the timely completion of building construction projects were recognized, agreed upon, and divided into three categories: economic, managerial, and motivational policies.

The employment of skilled and competent workers, the availability of materials, the regular monitoring, controlling, and updating of work progress, the availability of effective staff supervision and management, ensuring commitment and providing good leadership direction, and the setting of specific goals for people to achieve are the most significant sustainable practices with high relative index. Building construction project timeliness was significantly impacted by sustainable economic and management practices. But in Gombe state, the importance of motivational policies like employment stability, rewards and penalties, a sense of belonging and opportunities for skill development is not so great when it comes to timely completion of building construction projects.

The degree of agreement between clients, consultants, and contractors in rating the sustainable policy practices as expressed in their responses was assessed using Kendall's coefficient of concordance, a non-parametric statistical test. The results of this study demonstrate that there is a highly significant degree of overall agreement between clients, consultants, and contractors in rating the practices influencing the timely completion of building construction projects. According to the framework established by this study, sustainable economic, management, and motivational policy practices are significant variables that can affect the timely completion of a building construction project in Nigeria’s Gombe state, with a cause-effect ratio that is increased by 33.3%. In light of this, the following suggestions are offered.

There is need for a concerted effort in collaboration by various stakeholders involve in building construction project.

The clients should carry out unscheduled inspection through effective monitoring, controlling and evaluation of work progress; they should also ensure that the contractors are adhering with the goals set out for the project such as completion time.

Contractors should ensure that only skilled, experienced and competent workers are employed and deployed during the building construction project.

The clients and contractors should ensure the availability of quality construction materials at all times.

The client should assign a committed and competent project manager with good leadership skills, the contractors and consultants should also provide a mechanism that will ensure adequate supervision of ongoing construction work at all times.

Finally, all necessary practices should be deployed in improving timely delivery of building construction project.

REFERENCES

Acharya, N. K., Kim, S., & Lee, Y. (2004). Factors Affecting Timely Completion of Construction Projects. *Proceedings of the Fifth Asia Pacific Industrial Engineering and Management Systems Conference.* APEMS.

Adjei, E.A.G. (2009). *Motivational Strategies to Improve Productivity in Construction Industry in Ghana.* A Published Master's Thesis, Kwame Nkrumah University of science and Technology Kumasi, Ghana.

Alwi, S., Keith, H., & Sharif, M. (2001). Effects of Quality Supervision on Rework in the Indonesian Context. *Asia Pacific Building and Construction Management Journal*, 6: 2-9.

Andi, S. (2004). Motivation Perception of Construction Workers and Their Supervisors in Indonesia. *International Symposium on Globalization and Construction. AIT Conference Centre*, 17-19 November, Page 195-204. Bangkok, Thailand.

Baldwin, A., & Bodorli, D. (2014). *A handbook for Construction planning and scheduling.* West Sussex: John Wiley & Sons Ltd.

Bhangale, P. P., & Devalkar, R. (2013). Study the Importance of Leadership in Construction Projects. *International Journal of Latest Trends in Engineering and Technology*, 2(3): 312-318.

Bilau, A. A., Ajagbe, M. A., & Kigbu, H. H. (2015). Review of Shortage of Skilled

Craftsmen in Small and Medium Construction Firms in Nigeria. *Journal of Environment and Earth Science*, 5(15): 98-110.

Donyavy, S., & Flanagan, R. (2009). The Impact of Effective Material Management on Construction Site Performance for Small and Medium Sized Construction Enterprises. *In: Dainty, A.R.J. (Ed) Proceeding 25th Annual ARCOM Conference, 7-9 September*, Page 11-9. Nottingham, UK: Association of Researchers in Construction Management.

Enshassi, A., Mohammed, S., & Abushaban, S. (2009). Factors Affecting the Performance of Construction Projects in the Gaza Strip. *Journal of Civil Engineering and Management*, 15(3): 269-280.

Hussein, B. (2013). Factors Influencing Project Success Criteria. *IEEE 7th, International Conference on Intelligent Data Acquisition and Advanced Computing Systems (IDAACS),* Paper presented at the 2013 *IEEE*. Page 566-571. Berlin-Germany.

Jack, L., Okeke, O. C., Okechukwu, S. I., & Akinola, A. O. (2016). Project Management: A System Approach to Planning, Implementation, Monitoring and Evaluation. *International Journal of Advanced Academic Research*, 2(11): 65-79.

Kumar, G. N. S. (2020, April 7). *How to Calculate Relative Important Index for Likert Scale Variables (YouTube Video).* New Delhi, Delhi, India.

Krejcie, R., & Morgan, D. W. (1970). *Determining Sample size for Research Activities: Educational and Psychological Measurement.*

Kwok, A. C. (2014). The Evolution of Management Theories: A Literature Review. *Nang Yan Business Journal*, 3(1): 28-40.

Lodico, M.G., Spaulding, D.T., & Voegtle, K.H. (2006). *Methods in Educational Research: From Theory to Practice.* Jossey-Bass a Wiley Imprint, San Francisco, CA, USA.

Memon, A. H., Abdul Rahman, I., & Abdul Azis, A. (2012). Time and Cost Performance in Construction Projects in Southern and Central Regions of Peninsular Malaysia. *International Journal of Advances in Applied Sciences*, 1(1): 45-52.

Murithi, S. H., Makokha, E. N., & Otieno, C. (2017). Factors Affecting Timely Completion of Public Construction Projects in Trans-Nzoia County. *International*

Journal of Scientific and Research Publications, 7(4): 404- 434.

Ogundipe, K. E., Olaniran, H. F., Ajao, A. M., & Ogunbayo, B. F. (2018). Assessing the Impact of Quality Supervision on Construction Operatives' Project Delivery in Nigeria. *International Journal of Civil Engineering and Technology*, 9(9): 426-439.

Oso, W. Y., & Onen, D. (2011). *Writing Research Proposal and Report: A Handbook for Beginning Researchers, Rsvd edn.* Nairobi-Kenya: The Jomo Kenyatta Foundation.

Othman, I., Idrus, A., & Napiah, M. (2012). Human Resource Management in the Construction of a Sustainable Development Project: Towards Successful Completion. *WIT Transactions on Ecology and the Environment, Vol. 162.* Page 169-180. Perak, Malaysia: Universiti Teknologi Petronas.

Pallant, J. (2001). *SPSS Survival Manual: A step by step guide to data analysis using SPSS for Windows* (Version 10). Allen & Unwin.

Project Management Institute (PMI). (2013). *A Guide to the Project Management Body of Knowledge (PMBOK Guide) 5th (Ed).* Newtown Square, PA 19073-3299 USA: Project Management Institute, Inc.

Project Management Institute (PMI). (2017). *Time Management.* Pennsylvania-USA: Project ManagementInstitute.

Toor, S., & Ofori, G. (2008). Leadership for Future Construction industry: Agenda for Authentic Leadership. *International Journal of Project Management*, 26(60): 620-630.

Shehu, S. (2021). A Review of Time Management Factors in Construction Project Delivery. *Journal of Project Management and Practice*, 1(2): 34-45

Shehu, S., Abdullahi, N.Z., Waziri, A.Y., & Shehu, R. (2019). Principles Influencing Adherence to Time Management in Construction Project in Gombe State, Northeastern Nigeria. *International Journal of Engineering Applied Sciences and Technology*, 4(5): 349-353.

Shehu, S., & Shehu, R. (2022). A Principle Framework for Determining Timely Completion of Building Projects in Public Tertiary Institutions in Bauchi and Gombe State, Nigeria. *Borneo Journal of Sciences & Technology*, 4(1): 80-90.

Shehu, S., Zadawa, A. N., Waziri, A. Y & Shehu, R. (2020). Adherence with the Processes of Time Management in

Construction Project Delivery in Nigeria. *Borneo Journal of Social Science & Humanities,* Doi: https://doi.org/10.35370/bjssh.2.1-08.

Ugwu, O. O., & Attah, I. O. (2016). An Appraisal of Construction Management Practice. *Nigerian Journal of Technology,* 35:754-760.

Wambui, D. N., Ombui, N., & Kagiri, A. (2015). Factors Affecting Completion of Road Construction Projects in Nairobi City County: Case Study of Kenya Urban Roads Authority (KURA). *International Journal of Scientific and Research,* 5: 525-547.