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EFFECT OF MONITORING AND EVALUATION PRACTICES ON CONSTRUCTION PROJECTS' COST IN OSUN STATE

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ABSTRACT
Construction project monitoring and evaluation is a vital component of project management. The paper examined the effect of monitoring and evaluation practices on construction projects delivery (cost) in Osun State. Questionnaires were designed to meet the research objectives and to test its hypotheses and were administered to construction professionals working with the state government in the ministry of works as well as construction professionals working with contractors that handled/ (were handling) construction projects in the state. The questionnaires were analyzed using descriptive and inferential statistics and deductions derived from the analysis. The results showed that there is a strong positive relationship between monitoring and evaluation practices and project cost. The hypotheses were tested and the test revealed that M & E Practices have significant impact on construction project cost. The study revealed that a unit increase in X1, X2, X3 and X4 causes Y (Project delivery defined by cost, to increase by -0.047, 0.062, 0.036 and 0.206 respectively. The study concluded that M & E practices have significant impact on construction project cost in the study area. The study recommended that construction projects staff should be trained in order to equip them with technical expertise necessary to carry out monitoring and evaluation to ensure timely completion of construction projects. The study further recommended that construction stakeholders' feedback should be well captured and analyzed for implementation of effective monitoring and evaluation

Keywords: ***Monitoring, Evaluation, Monitoring and Evaluation practices, Construction, Projects***

INTRODUCTION
Monitoring and evaluation (M&E) is described as a process that assists project managers in improving performance and achieving results. According to United Nations Development Programme (2012) the goal of M&E is to improve current and future management of outputs, outcomes and impact. Williams (2000) asserts that monitoring provides management and the main stakeholders of a development intervention with indications of the extent of progress and achievement of expected results and progress with respect to the use of allocated funds. Monitoring provides essential inputs for evaluation and therefore constitutes part of the overall evaluation procedure.

Evaluation is an organized and objective assessment of an ongoing orconcluded policy, program/project, its design, execution and results. According to Ballard (2010), monitoring and evaluation is a process that helps program implementers make informed decisions regarding program operations, service delivery and program effectiveness, using objective evidence. Monitoring and evaluation (M&E) should be an integral part of any construction project development process, unfortunately in most cases it is brought into the development planning process as a contingent element. Dialo and Thuillter (2010) pointed out that project monitoring and evaluation is even more critical than planning in achievement ofproject success. The construction industry plays a very significant role in the socio-economic development of any nation. In most countries, construction activity constitutes 6-9% of the gross domestic product (GDP) and more than

half of the fixed capital formation as infrastructure and public utilities required for economic development (Chitkara, 2009; Alade, Lawal, Omonori and Olowokere, 2016). In Nigeria, the construction industry is one of the main targets of government budget, in terms of government development programs. According to National Buerau of Statistics (2022), Construction contributed 10.16% to nominalGDP in the fourth quarter of 2022, higher than the 9.99% contribution a year earlier, and higher than the 9.50% contributed to the fourth quarter of 2022.

The client's need from the contractor is value for money, best quality work (product) with minimum or considerable cost at a required duration (timely delivery), which can be seen as the common criteria for a successful construction project. The traditional performance indicators in the construction industry are completion time, cost and quality control. The perception of failure and success of projects is usually based on personal indices and the experience of the project manager and it is not uncommon that two project managers would assess the performance of the same project but using the same data differently. The disparity of judgment is mainly due to the lack of a clear and consistent monitoring and evaluation procedures and methodology. There are many occasions where the project is under budget and progressing as schedule, yet it is considered a failure by upper management because of low quality and safety performance records. According to Charles and Humam (2015) indeveloping countries, lack of monitoring and evaluation capacity continues to cause non-sustainable outcome of the projects.

Aim and Objectives

The aim of the study was to assess the effect of monitoring and evaluation practices on construction projects' cost with a view to making stakeholders in the construction industry know the indispensability of monitoring and evaluation practices. The specific objectives of the study were to:

i. assess the roles of monitoring and evaluation **practices in construction projects delivery** in the study area; and
ii. examine the effect of monitoring and evaluation practices on construction projects' cost in the study area.

Study Hypothesis: $H_0$1: planning process, technical expertise, stakeholder involvement and management participation have no significant impact on construction projects delivery (cost).

LITERATURE REVIEW

Construction Projects' Monitoring and Evaluation Practices

Project Management Body of Knowledge (2001) explains that monitoring and control of construction project work is "the process of tracking, reviewing, and regulating the progress to meet the performance objectives defined in the project management plan". It further explains that monitoring includes status reporting, progress measurement, and forecasting. According to Dyason (2010), Monitoring is the collection along with the analysis of information regarding a given program or intervention; and evaluation is an assessment whose focus is to answer questions relating to a program or an intervention.

Evaluation is more about the results/outcomes and impact of the project. It is usually a periodic assessment of changes in the predetermined results that relates to the program or the interventions of a project (Goyder, 2009). It helps the project manager to arrive at decisions on the project's destiny, and to determine if the project has attained the set goals and objectives.

Monitoring and Evaluation practices ensures that the project/program results at the levels of impact, outcome, output, process along with input can be quantified so as to offer a framework for accountability and in assisting in making informed decision at program and policy levels. Though monitoring and evaluation practices implementation have substantial cost, timeas well as human

resource implications, they are very vital for successful projects and should not be overlooked at the beginning of the process (Khan, 2013).

Those involved in the process understand the importance of evaluation (Chaplowe, & Cousins, 2015). It is important that the project implementers recognize the methods and the thinking that is based on monitoring and evaluation techniques used (Ober, 2012). Project monitoring and evaluation should bring a way of considering goals achievement. Shenhar (2011) noted that community engagement and strengthening of local capacities that are applied throughout the programme cycle. That meant the community should be involved in a direct manner in the identification of their own needs, defining the objectives of the programme, implementing the activities and monitoring and evaluating the programme. Human resources management are very critical in project management. Particularly, they are essential for an effective monitoring and evaluation. The technical capacity and organizational know-how in carrying out evaluations, the value and participation of its human resources in the process of decision making as well as their motivation in executing the decision arrived at can significantly have an effect on the evaluation (Vanessa, 2016) Estimation of Financial resources done during planning for implementation of monitoring and evaluation (Dyason, 2010). A key aspect of planning for monitoring and evaluation is to approximate the costs, staffing, and other resources that are required for monitoring and evaluation work. It is essential for monitoring and evaluation specialists to weigh in on monitoring and evaluation budget needs at the project design phase so that funds are distributed to the implementation of key monitoring and evaluation tasks (Ahsan and Gunawan, 2010).

Construction Project Delivery (Cost)

PMBOK (2001) explains that project success (delivery) is measured by product and project quality, timeliness, budget compliance, and degree of customer satisfaction. Ling, Low, Wang and Lim (2009) as cited by Charles and Humam (2015) also assessed Scope management, Time management, Cost management, Quality management, Risk management, Human resource management, Procurement management, and Integration management in relation to project success where he established that there were significant associations.

Construction Project delivery is a process of using specific project management techniques to oversee the planning, design, and of course, the construction of a project from start to finish with the aim of handing over the construction project to time, cost, quality and users satisfaction.Monitoring and evaluation is regarded as a core tool when it comes to enhancing project management quality, considering that in the short run and in the medium term, the management of complex projects will entail corresponding strategies from the financial view point, that arerequired to adhere to the criteria of effectiveness, sustainability along with durability (Dobrea et al., 2010). The activity of monitoring supports both the project managers and staff in understanding whether the projects are progressing as predetermined (Houston, 2008). Therefore, monitoring offers the background for minimizing time along with cost overruns, while at the same time ensuring that the required standards of quality are attained in the implementation of the project. On the same note, evaluation is a tool for assisting project planners and developers in assessing the extent to which the projects have attained the objectives that are set forth in the documents related to the project (Crawford and Bryce, 2013).

The Roles of monitoring and evaluation practices in construction projects delivery

A study that was conducted by Singh, Chandurkar, & Dutt, (2017) highlighted that monitoring and evaluation was the major driving factor in development projects. The objective of this study was to determine the effect of monitoring and evaluation on development projects. However, the recommendation that was given in this study was that the management should provide full support and should fully engage themselves in the monitoring and evaluation process as this will help them in coming up with sound and well-informed decisions.

Mackay & World Bank. (2007) conducted a study in Washington, which indicated that planning for monitoring and evaluation was critical in enhancing better project performance on government projects.
Barasa (2014) conducted a study on '*Strategic Plan, Logical Framework, Budget, Stakeholder's Analysis & Construction Project Delivery in Kenya*' used Survey, Correlation and Multivariate Regression Analysis. The findings showed that Monitoring & Evaluation tools have influence on project delivery. Stakeholder's analysis had the most significant influence on project delivery followed by Strategic plan, Budget and Logical framework. The results showed significant correlation between monitoring and evaluation tools and project completion.

Also, Shihemi (2016) conducted a study on *Budgetary Allocation, Baseline Survey, Performance Reviews, Capacity Building & Project Performance* using Survey, Correlation, ANOVA, Multivariate analysis where ANOVA confirmed the importance of Baseline Survey to the performance of construction projects. Budgetary allocation has a significant positive relationship with project performance.

A study done by Vittal (2008) indicates technology awareness is important in project monitoring and controlling due to greater challenges in today's technology-enabled project, this is especially where technological tools are used in project management practices, This study helped to analyze fundamental connections between technical expertise and project performance. Subsequently, understand the indulgent function of expertise to the project team in cultivating enhanced project performance. The findings to this study were that project teams equipped with the right technical skills linked to project performance. The study demonstration that it is difficult to disassociate the use of technology with project performance and the absence of such relation induced project performance, being a technical expert in monitoring and evaluating a project can play a main role in supporting project team in handling projects effectively and efficiently.

Wayne (2010) noted that it is important to involve stakeholder participation when designing monitoring and evaluation tools. A multi-sectoral method, including delegating some work to stakeholders, enhances learning, strengthen ownership and encourages transparency among the actors involved. This is especially important when deliberating the purpose of monitoring and evaluation and how the information is used, analyzed and affects ongoing project planning (Wayne, 2010).

METHODOLOGY

This section of the study focused on the method and procedure of gathering data for the study. The researcher presented here the method or research design, study area, population, sample size and sampling technique, questionnaire design, method of data collection and analysis as well as model specification.

By observing the research title from various perceptions, and to avoid any likely controversies and discrepancies in the collecting data; Architects, Quantity Surveyors, Builders and Engineers in the Ministry of works and contracting firms were the professionals selected for this study. The research design used for this study is survey design. In carrying out the survey, the major instrument of data collection for the study was the questionnaire which was structured in sucha manner that allowed the respondents to easily fill in their responses without difficulty as well as personal interview. The study was carried out in Osun State in which the projects in the
State to which monitoring and evaluation practices were applied comprises construction of new roads, rehabilitation of existing roads, construction of various new public buildings as well asrenovation of some existing ones. The population of this study is made up 106 constructionprofessionals engaged in the service of the State and 555 construction professionals in

the construction companies and organizations, making a total of 661. The procedure that was adopted for selecting respondents for this research was purposive sampling. The sample size for this study was the representation of the population to be studied. The sample size for this study was determined using Yamane (1967) formula.

$n = N/1 + N(e)^2$

n = the sample size; N = size of the population, e = level of precision (or limit of tolerable error) i.e 0.05 or 95% confidence level.

With a population of 661 respondents: n = 661

$1 + 661 (0.05)^2 = 661 / 2.6525 = 249.20 = 250$ respondents

To assign the sample size of 250 to the two categories of respondents, Bourley's proportional allocation formula was used $nb = n(n)/N$

Where : nb = Bourley's Proportional Allocation Formula, *n*=Population allocated to respondent groups, ,n = Total sample size, N =Population of the study 40 respondents was selected for construction professionals in the ministry of works while 210 respondents was selected from the contracting firms and organizations. Regression analysis which is a statistical model was used in this study to establish relationship between Monitoring and Evaluation practices and project time. The study used following regression model:

$Y = \alpha + \beta 1X1 + \beta 2X2 + \beta 3X3 + \beta 4X4 + e$,

Where: Y = Project Cost α =Constant term, β=Beta

Coefficients, X1= Planning process, X2=Management participation X3=Technical expertise

X4=stakeholders' involvement, e = Error term.

RESULTS AND DISCUSSION

234 of the 250 distributed questionnaires were returned representing 93.6% of the total questionnaires distributed.

Demographic Characteristics of Respondents

Demographic features	Categories	Frequency	Percentage
Profession	Architects	18	7.7
	Quantity Surveyors	50	21.4
	Civil/Structural Engineers	56	23.9
	Builders	36	15.4
	Electrical/Mech. Engineers	42	17.9
	Others	32	13.7
	Total	234	100
Educational Qualification	PhD	0	0
	MSc/M.Tech	82	35.0
	PGD	28	12.0
	B.Sc/B.Tech	76	32.5
	HND	42	17.9
	OND	6	2.6
	Total	234	100
Years of experience	< 5years	28	12.0
	5-10years	84	35.9
	11-15years	64	27.4
	16-20years	14	6.0
	Over 20years	44	18.8
	Total	234	100

Source: Researcher's field Survey, 2022

The table also shows that 23.9% of the respondents were Civil/Structural Engineers, 21.4% were Quantity Surveyors, 15.4% were Builders, and 17.9% were Electrical/Mechanical Engineers while 7.7% of the respondents were Architects. This shows a balanced distribution of the Professionals in the construction industry. The table also shows that 35% of the respondents hold a Masters degree while 32.5% hold BSc/B.Tech, 17.9% hold HND while 12% hold Post Graduate Diploma Certificate and only 2.6% of the respondents hold National Diploma Certificate. This shows the respondents were well educated. 35.9% of the respondents had spent between 5 to 10 years in the construction industry, 27.4% had spent between 11 to 15 years, and 18.8% had spent well over 20 years while only 12% had spent less than 5 years in the construction industry. This shows that the respondents had requisite experience in the construction industry.

Roles of Monitoring and Evaluation (M&E) practices in projects delivery

Roles of M & E practices	Mean	Rank
M&E practices ensure successful and timely Delivery of Construction Projects.	5.47	1st
M&E practices enhances compliance/adherence to specifications	5.43	2nd
M&E practices from inception stage of a project can effectively keep the project within budget.	5.17	3rd
M&E practices minimizes Project Risk	5.11	4th
M&E practices can also aid in promoting greater transparency and accountability within Organizations and governments.	4.61	5th
M&E practices leads to Cost effective Project implementation.	4.37	6th
M&E practices can provide a highly Cost-Effective impact on development policies.	3.00	7th
M&E practices assist the reformulation of objectives, policies and strategies when necessary in projects.	2.84	8th

Source: Researcher's fieldwork, 2022

The table shows the roles played by monitoring and evaluation practices in construction project delivery in the study area. “M&E practices ensure successful and timely delivery of construction projects” was ranked 1st with a mean value of 5.47 followed by “M&E practices enhances compliance/ adherence to specifications” was ranked 2nd with a mean value of 5.43. Ranked 8th as revealed from the study is the fact that “M&E practices assist the reformulation of objectives, policies and strategies when necessary in projects”

Effect of monitoring and evaluation practices on construction project delivery in the study area

S/N	M &E practices	Mean	Remark
i.	Planning process	3.50	High
ii.	Management Participation	3.00	High
iii.	Technical Expertise	3.00	High
iv.	Stakeholders' Involvement	3.73	High

Source: Researcher's Fieldwork, 2022

The study revealed that the effect of monitoring and evaluation practices is high on construction projects delivery with the four variables: Planning process, management participation, technical expertise and stakeholders' involvement each having a high mean value of 3.50, 3.00, 3.00 and 3.00 respectively.

Descriptive Statistics

	Mean	Std. Deviation	N
Project_time	.8649	.34658	37
Planning Process	5.2432	.43496	37
Management Participation	7.5405	.50523	37
Technical Expertise	7.5946	.49774	37
Stakeholders' Involvement	4.7568	.64141	37

The table presents the descriptive statistics results. Mean is the average value of the series which is obtained by dividing the total value of the series by the number of observations. The above table showed that the mean score for the independent variables: Planning Process, Management Participation, Technical Expertise and Stakeholders' Involvement are 5.2432, 7.5405, 7.5946 and 4.7568 respectively.
Standard deviation is a measure of spread or dispersion in the series. From the table, the standard deviation for planning process, management participation, technical expertise and stakeholders' involvement are 0.435, 0.505, 0.498 and 0.641 respectively.

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.692[a]	.478	.413	.17563

a. Predictors: (Constant), Stakeholders' Involvement, Management Participation, Technical Expertise, Planning Process
b. Dependent Variable: project_cost

The table shows that there is a strong positive relationship between monitoring and evaluation practices and project cost with an R value of 0.692.
The table further shows M &E Practices accounted for 47.8% of the variation in the dependent variable: Project cost (R^2=0.478). Other factors that may affect the dependent variable are outside the scope of this research work.

ANOVA[b]

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	.905	4	.226	7.333	.000[a]
	Residual	.987	32	.031		
	Total	1.892	36			

a. Predictors: (Constant), Stakeholders' Involvement, Management Participation, Technical Expertise, Planning Process

b. Dependent Variable: project_cost

From the ANOVA Table, P (sig.)-value = 0.000 which is less than 0.05,
Decision: Reject Ho

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	-.523	.905		-.578	.567
	Planning Process	-.047	.079	-.090	-.599	.554
	Management Participation	.062	.060	.136	1.036	.308
	Technical Expertise	.036	.063	.078	.570	.573
	Stakeholders' Involvement	.206	.053	.576	3.895	.000

a. Dependent Variable: Project_cost

From the Table of coefficients above, Regression model for project cost is
$Y = -0.523 - 0.047X_1 + 0.062X_2 + 0.036X_3 + 0.206X_4$
The regression model shows that a unit increase in X_1, X_2, X_3 and X_4 causes Y (Project delivery defined by project cost) to increase by -0.047, 0.062, 0.036 and 0.206 respectively.

HYPOTHESES

H_0: planning process, technical expertise, stakeholder involvement and management participation have no significant impact on construction project cost.
Level of significance (α) = 5% (i. e. 0.05), since P-value = 0.000
Reject Ho: therefore, M & E Practices (planning process, technical expertise, stakeholder involvement and management participation) have significant impact on construction project cost.

CONCLUSION

The study examined the effect of monitoring and evaluation practices on construction projects delivery (cost) in Osun state. The study revealed that M&E practices ensure successful and timely delivery of construction projects and enhances compliance/ adherence to specifications.
Furthermore, the study revealed that the effect of monitoring and evaluation practices (Planning process, management participation, technical expertise and stakeholders' involvement) is high on construction projects delivery defined by cost.
The study also revealed that there is a strong positive relationship between monitoring and evaluation practices and project cost (R=0.692).
The test of hypothesis also revealed that monitoring and evaluation Practices (planning process, technical expertise, stakeholder involvement and management participation) have significant impact on construction project cost

Recommendations

In view of the findings and conclusion of the research, the following are suggested recommendations deduced from the study:

i. Enough budgetary provision should be made for monitoring and evaluation of construction projects during the planning stage.
ii. The project plans should contain the Monitoring and Evaluation planning process.
iii. Management of construction projects should ensure effective use of lessons learned in different projects for future decision making and improved project delivery.
iv. Construction project staff should be trained in order to equip them with technical expertise necessary to carry out monitoring and evaluation.
v. Construction stakeholders' feedback should be well captured and analyzed for implementation of effective monitoring and evaluation.

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