



EFFECT OF MONITORING AND EVALUATION PRACTICES ON CONSTRUCTION PROJECTS' TIME 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 (time) 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 time. The hypotheses were tested and the test revealed that M & E Practices have significant impact on construction project time. The study revealed that a unit increase in X_1 , X_2 , X_3 and X_4 causes Y (Project delivery defined by time, to increase by -0.107, 0.132, -0.136 and 0.235 respectively. The study concluded that M & E practices have significant impact on construction project time in the study area. The study recommended that there should be a shift from the traditional approach of monitoring and evaluation to the modern approach of use of software in monitoring and evaluation of construction projects. The study further recommended 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.

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 or concluded 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 of project 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 Bureau of Statistics (2019), Construction contributed 6.17% to nominal GDP in the first quarter of 2019, higher than the 4.13% contribution a year earlier, and the 5.03% contributed in the fourth quarter of 2018.

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) in developing 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 project time 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 monitoring and evaluation tools/parameters in the construction industry in the study area; and

- ii. examine the effect of monitoring and evaluation practices on construction projects time in the study area.

Study Hypothesis: H₀₁: planning process, technical expertise, stakeholder involvement and management participation have no significant impact on construction projects delivery (time).

LITERATURE REVIEW

Construction Project Monitoring and Evaluation

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. Performance reports provide information on the project's performance with regard to scope, schedule, cost, resources, quality, and risk, which can be used as inputs to other processes. Monitoring and evaluating of projects can be of great importance to various players including project sponsors as it would ensure similar projects are replicated elsewhere as witnessed in various projects undertaken by the financial sector which revolve around a few areas (Kessler and Tanburn, 2014). Magondu (2012) noted that financial availability is the main resource in any functional organization as far as other resources such as human are concerned.

Monitoring and Evaluation Practices

Monitoring and evaluation is increasingly becoming an essential program management tool. 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. All these various definitions depict monitoring as an ongoing process mainly based on the set targets, planned activities in the course of the planning stage of work. It aids in keeping the work on track, and can let the management know whether things are not running as expected in the course of undertaking the project. If done in a proper manner, it is an instrumental tool for good project management, and offers a suitable evaluation base. It allows one to ascertain if the project resources are enough and whether they are properly utilized, whether the capacity is adequate and suitable, and whether one is doing as planned. 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, time as 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). It is then important to ensure that the management along with the donor agencies apprehend and are overly focused to these overheads and are committed to implement the recommendations arising from monitoring and evaluation (Dyason, 2010). 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). It is equally essential that the implementers of the program accept responsibility for the used processes, are dedicated to them, and feel vested to convince other stakeholders of their support along with their benefits in the long run. Monitoring and evaluation practices is not a practice that can be safely left to ad consultants from the "head office" (Ober, 2012), as several stakeholders as possible should be involved both in implementing and steering the monitoring and evaluation. The requirement is that there should be notable effort at an initiative's inception in the course of identifying who the main target groups will be during implementation, and understanding the anticipated outcomes that are desired for each group. Besides that, apart from improving quality as well as the likelihood of sustainability, this method creates awareness and also helps in building capacity (Khan, 2013).

Project monitoring and evaluation should bring a way of considering goals achievement. Over time, this help to meet community's priority needs. 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 (Time)

Project Management Body of Knowledge (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 are required 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).

Monitoring and Evaluation tools in the construction industry

A study by Muriungi (2015) conducted on '*The Role of Participatory Monitoring and Evaluation Programs among Government Corporations: A Case of Ewaso Ng'iro North Development Authority, Kenya*', pointed out that the questionnaire is a major tool used when carrying out Monitoring and Evaluation activities. He opined that this tool is effective and aim at collecting relevant data. Also a study conducted by Kimweli (2013) which sought to find out the role of monitoring and evaluation practices to the success of donor funded food security projects implemented in Kibwezi district for the last ten years showed that the community was not involved in the development of M & E tools and had no knowledge of the existence of such tools. Onjure & Wanyoike (2016) conducted a study on '*Use of Monitoring Tools, Quality of field data collection methods, Degree of Analytical Skills required, Project Team Effort, Contract Management & Project Performance*' used Survey and Multivariate Regression Analysis and the findings revealed that quality of field data collection method has the most significant influence on the performance of national government



construction projects in Uasin Gishu County. They further pointed out the following as monitoring tools:

- i. Monitoring project plan, actual plan, actual work, and work complete value to see if the project is on track
- ii. Tracking of variance from specific plans
- iii. Performance review
- iv. Project Management Analysis
- v. Use of software, including estimation and planning, scheduling, cost control and budget management, resource allocation, collaboration software, communication, quality management and documentation or administration system.

A research carried out by Ika et al. (2010) established that project success was insensitive to the level of project planning efforts but on the other hand ascertained that a significant correlation does exist between the use of monitoring and evaluation practices and project profile, a success criterion which was an early pointer of project long-term impact. Ika et al. (2010) emphasizes that monitoring and evaluation is even more critical than planning in achievement of project success. Similarly, one of the components of the project management methodology whose main aim is to achieve project success is monitoring project progress (Chin, 2012). A study by Barasa (2014) on '*Influence of Monitoring and Evaluation Tools on Project Completion in Kenya: A Case of Constituency Development Fund Projects in Kakamega County, Kenya*' which used correlations and chi-square revealed that Monitoring and Evaluation tools have significant influence on Constituency Development Funds project completion in Kakamega County.

Relevance and effects of M & E practices on construction project time

A study conducted by Tong'l, Otieno and Osoro (2019) on '*Effects of Monitoring and Evaluation Process on the Performance of County Government Projects Kisii County, Kenya*' concluded that monitoring and evaluation planning positively affects performance of county government projects in Kisii County. They pointed out that Co-ordination, scope of monitoring and evaluation, tools and techniques and feasibility of data collection are some of the aspects of monitoring and evaluation planning that greatly affect performance of county government projects in Kisii county in terms of completing the projects within scheduled time. The study conducted by Nwagu and Iravo (2015) on '*How Monitoring and Evaluation Affects the Outcome of Constituency Development Fund Projects in Kenya: A Case Study of Projects in Gatanga Constituency*' revealed that the frequencies at which project supervisors conduct site visits and meetings and prepare interim valuations and financial statements are significant to project outcomes/success. The study further revealed that a relatively strong relationship exists between the two variables (monitoring and project success) and concluded that project monitoring affects positively project success.

Implementation of monitoring and evaluation seeks to guarantee ultimate project success through the achievement of immediate project outcomes such as conformity to standards and the achievement of budget and time schedule as well as long-term objectives such as fit for purpose (impact). The collective achievement of all immediate outcomes indicates that M&E are effective and therefore the success of the project is achieved. (Papke-Shields et al., 2010; Chin, 2012; Ika et al., 2012). A study conducted by Idoro (2012) on '*Influence of the Monitoring and Control Strategies of Indigenous and Expatriate Nigerian Contractors on Project Outcome*' made use of survey and spearman correlation. The results of the study showed that the



frequency at which site visits are conducted significantly influences the percentage cost overrun to the initial contract sum; however, it has no influence on the percentage of time overrun to the initial contract period of projects executed by indigenous contractors. Similarly, it has no significant influence on the percentages of time overrun to the initial contract period and cost overrun to the initial contract sum of projects executed by expatriate contractors. These results indicate that the number of times that the contractors conduct site visits can reduce the cost overrun of projects executed by indigenous contractors but cannot reduce the time overrun of their projects and the cost and time overruns of projects executed by expatriate contractors. Hwang and Lim (2013) studied projects performance in relation to its Monitoring and evaluating practices, fund management, activity scheduling and quality performance. He concluded that this relationship management could result to the success of the project at hand.

METHODOLOGY

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 such a 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 as renovation of some existing ones.

The population of this study is made up 106 construction professionals 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.

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

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:

$$\begin{aligned} n &= \frac{661}{1 + 661(0.05)^2} \\ &= \frac{661}{2.6525} \\ &= 249.20 \\ &= 250 \text{ respondents} \end{aligned}$$

To assign the sample size of 250 to the two categories of respondents, Bourley's proportional allocation formula was used

$$n_b = \frac{n(n)}{N}$$

Where : n_b = 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:

$$Y = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + e,$$

Where:

Y = Project Time



α = Constant term,
 β = Beta
 Coefficients, X_1 =
 Planning process,
 X_2 = Management participation
 X_3 = Technical
 expertise
 X_4 = 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

The table above 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 showing that 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.

Monitoring and Evaluation tools/parameters in the construction industry in the study area. (Level of awareness)

S/N	M &E tools/parameters	Mean	Rank
i.	Traditional Approach (Site progress reports, site meetings)	5.52	1st
ii.	Performance Reviews	4.96	2nd
iii.	Field Inspection Reporting System (FIRS)	4.37	3rd
iv.	Baseline Survey (a study that involves analyzing the Prevailing situation in order to discover where to start a project).	3.73	4th
v.	Capacity Building	3.54	5th
vi.	M&E budgetary allocation	3.39	6th
vii.	Software for scheduling, monitoring and evaluation	2.48	7th

The table above shows that respondents are aware and are making use of M &E tools/ parameters in the construction industry in the study area. Traditional Approach (Site progress



reports, site meetings) was ranked 1st with a mean value of 5.52 on the level of awareness M &E tools/ parameters. This was followed by "Performance Reviews" ranked 2nd with a mean value of 4.96 and also followed by "Field Inspection Reporting System (FIRS)" ranked 3rd with a mean value of 4.37. Ranked 6th and 7th respectively are "M&E budgetary allocation" and "Software for scheduling, monitoring and evaluation" with mean values of 3.39 and 2.48.

Level/Rate of use of M &E tools/ parameters in the construction industry in the study area.

S/N	M &E tools/parameters	Mean	Rank
i.	Traditional Approach (Site progress reports, site meetings).	4.68	1st
ii.	Baseline Survey (a study that involves analyzing the Prevailing situation in order to discover where to start a project	4.01	2nd
iii.	Performance Reviews	4.00	3rd
iv.	Field Inspection Reporting System (FIRS)	3.92	4th
v.	Capacity Building	3.83	5th
vi.	M&E budgetary allocation	3.79	6th
vii.	Software for scheduling, monitoring and evaluation	3.74	7th

The table shows that the rate of use of the "Traditional Approach (Site progress reports, site meetings", baseline Survey and Performance Reviews as M&E tools/parameters are very high in the study area ranked 1st, 2nd and 3rd respectively with mean values of 4.68, 4.01 and 4.00. Ranked 6th and 7th respectively as revealed by the study are "M&E budgetary allocation" and "Software for scheduling, monitoring and evaluation" with mean values of 3.79 and 3.74.

Model Summary 1

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.550 ^a	.303	.215	.30701

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

b. Dependent Variable: project time

Table 4.8 shows that there is a strong positive relationship between monitoring and evaluation practices and project time with an R value of 0.550.

The table further shows M &E Practices accounted for 30.3%, 47.8% of the variation in the dependent variable: Project time ($R^2 = 0.303$). Other factors that may affect the dependent variable are outside the scope of this research work.

b. Dependent Variable: project time

ANOVA^b

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1.308	4	.327	3.470	.018 ^a
	Residual	3.016	32	.094		
	Total	4.324	36			

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

From the ANOVA table, P (sig.)-value = 0.018 which is less than 0.05, Decision: Reject H_0

Coefficients^a 1



Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	.340	1.581		.215	.831
Planning Process	-.107	.139	-.134	-.769	.447
Management Participation	.132	.104	.193	1.267	.214
Technical Expertise	-.136	.110	-.195	-1.239	.224
Stakeholders' Involvement	.235	.092	.435	2.542	.016

a. Dependent Variable: project_time

From the table of coefficients above, Regression model for project time is

$$Y = 0.340 - 0.107X_1 + 0.132X_2 - 0.136X_3 + 0.235X_4$$

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 -0.107, 0.132, -0.136 and 0.235 respectively.

HYPOTHESES

Hypothesis 1

H_0 : planning process, technical expertise, stakeholder involvement and management participation have no significant impact on construction project time.

Level of significance (α) = 5% (i. e. 0.05), since P-value = 0.018

Reject H_0 : therefore, M & E Practices (planning process, technical expertise, stakeholder involvement and management participation) have significant impact on construction project time.

Regression equations

1. For project time

$$Y_1 = 0.340 - 0.107X_1 + 0.132X_2 - 0.136X_3 + 0.235X_4$$

CONCLUSION

The study examined the effect of monitoring and evaluation practices on construction projects delivery Time) in Osun State. The study revealed that M&E practices ensure successful and timely delivery of construction projects and enhances compliance/ adherence to specifications. The study also revealed that M &E tools/ parameters used in the construction industry in the study area are traditional Approach (Site progress reports, site meetings), Performance Reviews and Field Inspection Reporting System (FIRS). The study further revealed that the level of awareness and use of M&E budgetary allocation and Software for scheduling, monitoring and evaluation as tools for monitoring and evaluation is very low. The study also revealed that there is a strong positive relationship between monitoring and evaluation practices and project time ($R=0.550$)

The test of hypothesis also revealed that monitoring and evaluation Practices have significant impact on construction project time. In conclusion, the research has shown that M & E practices have significant impact on construction project time in the study area.

RECOMMENDATIONS

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

- i. Stakeholders in the construction industry should be encouraged to use the available tools/ parameters of monitoring and evaluation practices in the construction industry. This can be achieved through organized seminar/workshop for stakeholders in the construction industry.
- ii. There should be a shift from the traditional approach of monitoring and evaluation to the modern approach of use of



software in monitoring and evaluation of construction projects.

- iii. Management of construction projects should ensure effective use of lessons learned in different projects for future decision making and improved project delivery (time).
- iv. Construction project staff should be trained in order to equip them with technical expertise necessary to carry out monitoring and evaluation.

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