

EFFECTIVENESS OF MITIGATING MEASURES AGAINST INACCURATE EVALUATION OF PROJECTS DURATION IN GOMBE AND BAUCHI STATES, NIGERIA

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Abstract

Projects duration plays a vital role as an important criterion in determining the success of building construction projects. Despite that, inaccurate evaluations of projects duration inhibit professionals to effectively control this variable resulting to serious issues as cost and time overruns and delay that need to found a lasting solution. The study objective was to assess the professional perspectives on the effectiveness of mitigating measures against inaccurate evaluation of projects duration in Nigeria. The study is based on descriptive and explorative design through the use of survey approach and literature search. 127-sample size determined based on the population of 190 construction professionals identified within the study area. Questionnaire used as an instrument in collecting data and 71 questionnaires retrieved which translate to response rate of 56% and the data analyse using descriptive and inferential statistics. Major findings shows the top effective mitigating measures as; Ensuring the project planner trained well in the construction process (MS=3.9437) and Preparation of the project program with input from the construction teams with vast experience (MS=3.9296) respectively. Moreover, Study conclude that, there is no significant variation among construction professionals' perception and that the qualifications characteristics of respondents contributes significantly to the effectiveness of mitigating measures in practice.

Key Word: *Cost, Project duration, Inaccurate evaluation, Inhibiting factors, Professionals.*

Introduction

The basis of any contract formation between the client and contractor in public building construction is the budgeted cost and duration of projects. In addition, success with respect to delivery of a construction project referred to as the extent to which projects completed

within the estimated cost and prescribed duration (Aiyetan *et al.*, 2012; Odeh and Battaineh, 2002 and Owolabi *et al.*, 2014). Unfortunately, construction firms has been experiencing poor time and cost performance, delays, cost and time overruns that is being experience globally and becoming more critical in Nigerian

construction industry. Moreover, one of the major attributes to the issues in view is inaccurate evaluation of projects duration, so these calls for identifying measures as well as assessing its effectiveness from professional perspective in public building construction projects. Furthermore, these is evident within the industry as the researchers' believe that many factors make the budgeted cost and duration to be significant problems apparently affecting the execution of projects mainly in terms of finishing projects behind the scheduled time and estimated cost resulting to poor time and cost performance, delay and disputes despite the availability of various control techniques and project control software. (Aiyeten *et al.*, 2012; Aftab *et al.*, 2013; Anigbogu *et al.*, 2007; Inuwa, 2014; Olawale and Sun, 2010).

In trying to overcome these problems previous studies identified the various inhibiting factors of cost and time control notable are; Olawale and Sun (2010) revealed the top five factors inhibiting time and cost control in construction practice as design changes, risks and uncertainties; inaccurate evaluation of project duration; complexity of works and; non-performance of subcontractors. Another contribution in 2015, Salim and Ashish opined that time and cost overruns of any project are mainly due to; inaccurate estimate of time and cost, Faulty design and Land acquisition problem. In addition, Abdulkadir *et al.*, (2015) revealed out the top inhibiting factors of cost and time control in Nigerian practice as Design changes, Lack of proper training/experience of project manager and Inaccurate evaluation of projects duration. For the purpose of this study and base on the

reviewed of significant factors from the work of (Olawale and Sun, 2010; Salim and Ashish, 2015; Abdulkadir *et al.*, 2015 and Samuel and Akpokodje, 2015) the study considered only the Inaccurate evaluation of projects duration.

Furthermore, duration of projects needs to be accurately estimated and evaluate to achieve the client objectives. According to Olawale and Sun (2010) the main reason why inaccurate evaluation of project duration emerged as one of a leading factors inhibiting effective project cost and time control is that, project time are often evaluated without any scientific basis but quite often programs are drawn up on gut feeling. In addition, Olawale and Sun (2010) using qualitative approach through interview of professionals perspectives' developed ten mitigating measures against inaccurate evaluation of projects duration in an effort to curtail the issues of time overrun in building construction projects but the study failed to assess how effective these measures are in practice. On that reasons, it call for determining the effectiveness of that measures so as to have an empirical evidence for adopting it by construction professionals in building projects of Nigeria. Therefore, this study adopted those measures in order to evaluate their effectiveness from professionals' perspectives and served as an attempt to extend the works of Olawale and Sun (2010) as recommended. Therefore, the main purpose of the study is to evaluate the effectiveness of mitigation measures against inaccurate evaluation of projects duration in building construction projects of Nigeria. Therefore, based on that, the study intends to answer these questions as;

- i. What are the levels of effectiveness of mitigating measures against

- inaccurate evaluation of projects duration in Nigeria.
- ii. How does the perception of Construction managers differ in their mean scored on effectiveness of mitigating measures against inaccurate evaluation of projects duration along professionals' background in Nigeria?
 - iii. Which of the professional characteristics contributes significantly to the effectiveness of mitigating measures against inaccurate evaluation of projects duration in Nigeria?

Methodology

This study adopted quantitative approach using survey method, while utilizing descriptive and explorative design study. The study area is Bauchi and Gombe States, Nigeria. These states were chosen because of high rates of construction activities, high number of construction professionals and relatively peaceful as compared with the other states (Usman *et al.*, 2012; Inuwa, 2014). The population are the building professionals that are either practicing as construction managers in contracting firms or consultant firm. The study adopted the approach of using published tables of Krejcie and Morgan (1970), 127-sample size determined for the study based on the population of 190

professionals based on the available information from their respective professionals' bodies. Questionnaire used as an instrument in collecting data from the respondents and Purposive sampling used in administering the questionnaire to the respondents and the study recorded an overall questionnaire response rate of 56% which indicate an unbiased and significant value (Moser and Kalton (1971) in Usman *et al.*, 2012). Data on the level of effectiveness of mitigation measures against inaccurate evaluation of projects duration were measured on a five point likert scale. This study accordingly used the following descriptive statistics: percentages/frequencies, means, inferential statistics for answering the research question using SPSS tool.

Results and Discussion

Demographic Background of the Respondents

The study depicts the characteristics profiles of the respondent and the results shows that majority of the respondents obtained qualification at postgraduate levels. The construction managers have atleast 5years working experience within construction industry. In addition, Builders and Quantity surveyors constitutes the majorities among the respondents and more than 50% of respondent have years of experience above 5years as shown in Table 1 below;

Table 1: Demographic Information of Respondents

QUALIFICATION OF RESPONDENTS		
	Frequency	Percent (%)
HND	4	5.6
BSC	19	26.8
PGD	10	14.1
MSC	26	36.6
PHD	12	16.9
Total	71	100.0
PROFESSIONS OF RESPONDENTS		
	Frequency	Percent
Architects	22	31.0
Builders	30	42.3
Quantity Surveyors	19	26.8
Total	71	100
YEARS OF EXPERIENCE OF RESPONDENTS		
	Frequency	Percent
OVER 10years	22	31.0
5-10years	25	35.2
1-5 years	24	33.8
Total	71	100

Levels of Effectiveness of the Mitigation Measures

To answer the research question one which seek to determine the levels of effectiveness of the mitigation measures for inaccurate evaluation of projects duration. Study used the mean calibration proposed by (Hassanain, (2008); Najib *et al.* (2011) adapted by Musa, 2015) as illustrated in Table 2 below;

Table 2: Mean Calibration Methods for determining the level of effectiveness of mitigating measures against Inaccurate Evaluation of Projects Duration

	Very Effective	Effective	Average	Ineffective	Very ineffective
Mean score	4.5 – 5	3.5 - 4.49	2.5 – 3.49	1.5 – 2.49	Less than 1.5

Source: (Hassanain, (2008); Najib *et al.* (2011) in Musa, 2015)

The findings in Table 3 below revealed that out of the 10 mitigating measures for inaccurate evaluation of projects duration only one measure were found to be average while nine other measures found to be effective in mitigating inaccurate evaluation of projects duration as significant factors of cost and time overrun in Nigerian practice. The mean scores recorded is in range of (3.9437 – 3.4648), these revealed that all the respondents’

assessments were above a score of three points in Likert scale of five points with low values of standard deviation. These shows that, the respondents’ acknowledged and agreed that mitigation measures developed against inaccurate evaluation of projects duration are effective in construction projects of Nigerian practice. Therefore, the top effective mitigation measures for inaccurate evaluation of projects duration

as revealed by construction professionals are as follows;

- i. Ensuring the project planner trained well in the construction process (MS=3.9437).
- ii. Preparation of the project program with input from the construction teams (MS=3.9296)
- iii. Developing the project program of works using experienced planners that have appreciation of the various construction disciplines (MS=3.7606)

This result agree and supports the finding of Olawale and Sun (2010) on the mitigation measures of design change and also confirmed the assertion of

Soheil *et al.*, 2002 in Olawale and Sun (2010) which indicates that the professional perspectives globally are almost the same in construction projects issues. The implication of these findings shows that those measures are effective can be adopted by the professionals in Nigeria. Therefore, unless professionals in construction industry adopt these mitigation measures especially providing adequate training to project planner and incorporating inputs from design teams as well as developing an effective program of work by experience planner, the stakeholders cannot effectively mitigate the issue of inaccurate evaluation of projects duration in construction projects of Nigeria.

Table 3: Level of Effectiveness of Mitigating Measures against Inaccurate Evaluation of Projects Duration

Variables measures	N	Sum	Mean	SD	Level of effectiveness
Ensuring the project planner trained well in the construction process.	71	280.00	3.9437	1.08084	Effective
Preparation of the project programme with input from the construction site management	71	279.00	3.9296	.76203	Effective
Making sure the programme is built up from the first principle using metrics of how long typical activities take rather than using assessment only	71	246.00	3.4648	.87556	Average
Educating and advising client on alternative if an unachievable/unrealistic project timescale is stipulated	71	264.00	3.7183	.75938	Effective
Having the courage to refuse unrealistic project timescale by clients unwilling to yield to professional advice.	71	254.00	3.5775	.98070	Effective
Developing the project programme of works using experienced planners that have appreciation of the various construction disciplines	71	267.00	3.7606	.88584	Effective
Conducting a process mapping exercise to validate the time allocated to a project	71	257.00	3.6197	1.01933	Effective
Ensuring enough time allocated during tender planning for the proper development of the project programme.	71	266.00	3.7465	1.05178	Effective

Making sure when possible that the programme is developed by or in conjunction with someone that is experienced in the relevant type of project	71	256.00	3.6056	1.02091	Effective
Swiftly informing the relevant project parties if unforeseen circumstances affect the programme/lead-in times	71	262.00	3.6901	1.06357	Effective

Anova Test Result for Equality of Mean Differences among Construction Professionals

In order to answer research question two, one way Anova-test conducted to determine whether there is a significant variation in mean scored by construction manager along professionals' background on effectiveness of mitigating measures against inaccurate evaluation of projects duration. Referring to Table 4, a one way Anova test conducted to compare the scores among respondents on

effectiveness of mitigating measures on inaccurate evaluation of projects duration of construction managers. It revealed no significant difference in scores among the respondents, with more than 95% of p value, greater than the specified value .05, therefore the null hypothesis accepted. This shows a consistency agreement among the construction professionals on the effectiveness of the mitigating measures against inaccurate evaluation of project duration in Nigerian practice

Table 4: One Way ANOVA Test Result for Equality of Mean Differences among Construction Professionals

		Sum of Squares	Mean Square	F	Sig. @0.05
Ensuring the project planner trained well in the construction process.	Between Groups	2.718	1.359	1.169	0.317
	Within Groups	79.057	1.163		
Preparation of the project programme with input from the construction site management/production team	Between Groups	1.795	.897	1.571	0.215
	Within Groups	38.853	.571		
Making sure the programme is built up from the first principle using metrics of how long typical activities take rather than using assessment only	Between Groups	1.361	.681	.885	0.417
	Within Groups	52.300	.769		
Educating and advising client on alternative if an unachievable/unrealistic project timescale is stipulated	Between Groups	1.434	.717	1.252	0.292
	Within Groups	38.932	.573		
Having the courage to refuse unrealistic project timescale by clients unwilling to yield to professional advice.	Between Groups	.661	.331	.337	0.715
	Within Groups	66.663	.980		
Developing the project programme of works using experienced planners that have appreciation of the various construction disciplines	Between Groups	5.312	2.656	3.640	0.031
	Within Groups	49.617	.730		
Conducting a process mapping exercise	Between Groups	1.129	.564	.536	0.588

to validate the time allocated to a project	Within Groups	71.604	1.053		
Ensuring enough time allocated during tender planning for the proper development of the project programme.	Between Groups	1.980	.990	.892	0.414
	Within Groups	75.456	1.110		
Making sure when possible that the programme is developed by or in conjunction with someone that is experienced in the relevant type of project	Between Groups	2.374	1.187	1.143	0.325
		70.584	1.038		
	Within Groups				
Swiftly informing the relevant project parties if unforeseen circumstances affect the programme/lead-in times	Between Groups	3.815	1.907	1.721	0.187
	Within Groups	75.369	1.108		

Professional Characteristics Contribution on Effectiveness of Mitigating Measures

In order to answer research question three which seeks to determine which professional characteristic contribute significantly on the effectiveness of mitigating measures against inaccurate evaluation of projects duration in building projects, the study used multiple regression in answering the research question. Referring to Table 5 below, looking at beta value under standardized coefficients, the variables with highest

value are qualification of professionals (b=0.229) and professions of respondents (b=0.185) This means that these variables makes the strongest contribution to explaining the dependent variable. Moreover, from the result with sig. P-value 0.05 which is equal to specified value means that, qualification of the professionals significantly contributes to the effectiveness of mitigating measures against inaccurate evaluation of projects duration while the other have p value above 0.05 respectively.

Table 5: Result for Regression Analysis for Research Question Three

		Coefficients ^a				
		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
Model		B	Std. Error	Beta		
1	(Constant)	34.717	3.257		10.661	.000
	QUALIFICATION OF RESPONDENTS	-1.164	.601	-.229	-1.938	.050
	PROFESSION OF RESPONDENTS	1.479	.948	.185	1.560	.124
	YEARS OF EXPERIENCE	.492	.948	.065	.519	.606
	ROLES OF RESPONDENTS	1.612	1.541	.131	1.046	.299

a. Dependent Variable: Effectiveness of Inaccurate Evaluation of Project Duration Mitigation Measures

Conclusion

This study used quantitative design method using literature search and questionnaires survey approach to achieve the stated objectives. Moreover, The study conclude that there is no significant variation among the respondent on the level of effectiveness of the mitigating measure against inaccurate evaluation of projects duration and that the qualification of respondent contribute significantly in determining its effectiveness. Therefore, the developed measures are all effective and can be used in construction projects of Gombe and Bauchi States, Nigeria. Finally, study recommends that, the professionals should adopt and implement the mitigating measures developed by Olawale and Sun (2010) so as to curtail the issue of inaccurate evaluation of projects duration in Nigerian practice and for future study, there is need to investigate the challenges of professionals in implementing these mitigating measures against inaccurate evaluation of projects duration in Nigeria.

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