Professionals' Perspective About Significant Factors Causing Cost And Time Overrun In Nigerian Building Projects.

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Abstract—**Cost and time duration plays a vital role as an important criterion in determining the success or otherwise of construction projects and are of high interest to those who are involved in the construction industry. Despite that cost and time overrun remain a serious issues affecting Nigerian construction projects that need to be found a lasting solution. the study aimed at comparative study on the significant factors causing cost and time overrun in Nigeria and Uk practice. Descriptive and explorative design adopted and the study target professionals within Bauchi and Gombe state, Nigeria. One-hundred questionnaires administered to the respondent through purposive sampling and 72% retrieved which represent seventy-two respondents. The data analyzed in SPSS Using descriptive and inferential statistics. The spearman's rank correlation coefficient computed as (r = .874) shown the degrees of association among the respondents are positive and strong. Study accept the null hypothesis with (p= .327) that there is no significance difference of mean scores among the respondent. The major finding revealed the top significant factors of cost and time overrun as Design changes, Lack of proper training and experience of PM, Financing and payment for completed works, Project fraud and corruption, Non-performance of subcontractors and Inaccurate evaluation of projects time/duration. Moreover, the result found some similarities with the result in UK practice. Study recommend developing mitigation measures against Lack of proper training and experience of PM, Financing and payment for completed works, Project fraud and corruption and at the same times assessing their effectiveness together with the ones developed in UK.**

Keywords—Time Overrun, Cost Overrun, Significant Factors, Mitigation Measures, Nigeria and UK.

1. INTRODUCTION

The basis of any contract formation between the client and contractor is the budgeted cost and the estimated time duration of projects. These variables are the twin imperative of a project's sponsor in a construction projects, and they are also important in assessing the success or viability of a construction projects (Ogunsemi & Jagboro, 2006). The project may not be regarded as a successful endeavor until it satisfies the cost, time, and quality limitations applied to it (Mahamid, 2012). The importance of cost and time control is widely recognized by construction professionals in practice (Olawale & Sun, 2010).

Cost and time duration plays a vital role as an important criterion in determining the success or otherwise of construction projects and are of high interest to those who are involved in the construction industry (Aftab, 2010). Furthermore, maintaining steady cost and duration on construction projects had been an issue of serious concern, both to the client and project contractors (Ismail et al., 2012). In addition, the deviation of these variables sometimes result due to some factors affecting the estimated budget cost and duration of projects. These might be probably given the nature and complexity of the construction works as asserted by Mohammed in 2001 stating that, the complexity of the construction industry due to different stakeholders' involvement makes it differ from other industry. This complexity gives rise mostly to an unwanted situation like variations with their attached effects. The more variation in a project, the greater the likelihood that they become time-consuming and costly in construction projects, as cited by Sunday (2010). In addition in the work titled "Time-cost modeling for building projects in Nigeria, Ogunsemi, and Jagboron (2006) noted that one of the most serious problems the Nigeria construction industry faced is the project time and cost overrun With attendant consequence of completing projects at sums higher than the initial sum and exceed their scheduled time. Furthermore, there are many factors that make the budgeted cost and time duration to be significant problems apparently affecting the execution of projects mainly in terms of finishing projects behind the scheduled time and estimated cost (Aiyeten et al. 2012). Moreover, these problems lead to many studies that tried to identify various causes and factors affecting cost and time control. Therefore, the study aimed at comparative study on the significant factors causing cost and time overrun in Nigerian and Uk practice. In addition the study was build up base on the factors identified by

Olawale and Sun (2010). The hypothesis developed for the study is;

H0: There is no significance difference of mean scores among the respondents on the significant factors causing cost and time overrun in Nigerian practice.

H1: There is significance difference of mean scores among the respondents on the significant factors causing cost and time overrun in Nigerian practice.

2. REVIEW OF PERTINENT LITERETURE

2.1 Time And Cost Perspective In Construction Projects.

According to Bolaji (2014) a vital section specified in the construction contract is the construction duration, which is established prior to bidding and it deduced from the client's brief, derived by the construction planner from available project information, derived from the critical path in which durations for items of work or activity in sequence cannot be reduced. According to Newcombe (1990) in John et al, (2015), assert that, there exists global criticism of the construction industry's failure to execute projects on time. The concept of cost in executing building projects entails every constituent of cost incurred in relation to that particular project right from the inception to practical completion and occupation stage. Throughout the construction process of building projects, cost is seen as one of the major considerations for success (John et al, 2015).

2.2 Time and Cost Overrun

These twins' issues dominate and generate interest among researchers globally in trying to curtail these challenges especially in Nigerian construction industry. According to Samuel and Akpokodje, (2015) opined the issue as search for "viral cure" among the research to cure cost and time overrun.

Time overrun defined as the time lapse between the agreed completion date and the actual date of completion (Elinwa and Joshua 2001 in Nuruddeen et al, 2014). Construction industry faces a serious problem of lengthy delays in public and private projects. The prevalence of delays in completion of construction projects can have far reaching implications on the client, contractor, and consultants in particular and the construction industry in general (Nuruddeen, Nura & Gambo, 2014). Research findings also point to the fact that contractors in Nigeria hardly complete projects within the planned durations (Bustani and Izam, 1999). According to Izam and Bustani (2001), the extent of delay in building projects is usually between 155.58-516.22%. Aso Bustani (1999), have similarly indicated that building projects in Nigeria overrun their initial durations by between 115-300% and this generally generate doubt in most clients regarding the effectiveness of planned contract durations. Whereas, Cost overrun refer to as difference between actual cost of a project and its Cost limit. It occurs when the resultant cost target of a project exceed its cost limits where Cost limit of a project refers to the maximum expenditure that the client is prepared to incur on a completed building project while cost target refers to the recommended expenditure for each element of a project (Jackson & Steven, 2001).

2.3 Significant Factors Causing Cost and Time Overrun

There are many factors significantly causing deviation of projects cost and time from the budget schedule, which in turns resulted into either cost overrun or time overrun. There are many studies trying to identify the causes of time and cost overrun but in turn the result seems to be related and overlapping one another. In harmonizing outcomes, Olawale and Sun (2010) carried out a comparative study and comes up with more than sixty factors from global perspectives. After sorting out the related and overlapping factors, twenty factors identified as significant factors of cost and time overrun and subsequently subjected them for assessment by construction professionals. The outcome of the study revealed the top five factors inhibiting time and cost control in construction practice as design changes, risks and uncertainties; inaccurate evaluation of project time/duration; complexity of works and; non-performance of subcontractors. In addition, mitigation measures for those factors were developed base on each factor.

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, Land acquisition problem, Change in scope of work, Poor bidding, Irregular flow of finance, Delay in payment of work done, Deficiencies in management, Delay in decision by Client/ Architect, Lack of coordination between different parties involved, And further developed general mitigation measures for all the factors.

3. METHODOLOGY

Descriptive and explorative design approach adopted using survey study and search of literature. The study target construction professionals within Bauchi and Gombe state in North – eastern Nigeria. A purposive sampling techniques use in selecting the respondents from the population within the study area. One-hundred questionnaires were self administered to the respondent and 72% retrieved which represent seventy-two respondents. The data obtained were analysed using SPSS version 20 Using descriptive statistics such as mean scores, frequency, percentages and inferential statistics such as spearman correlation for test of agreement and paired sample t- test for significance test to answer the developed hypothesis of the study.

4. DISCUSSION OF RESULTS

To achieve the aim of the study, the analysis carried out under the following sub headings;

4.1 Demographic Information of Respondents

Table 1.0 shows the demographic information of the respondents depicting their professional specialization, years of experience and qualification obtained. The demographic information of respondents is paramount to the researcher why because it vindicate the characteristic of the respondent in which their strength and weakness would be determine to justify the outcome of the study.

TABLE 1. QUALIFICATION

		Frequency	Percent	Valid Percent	Cumulative Percent
	PHD	4	5.6	5.6	5.6
	MSC	38	52.8	52.8	58.3
	PGD	2	2.8	2.8	61.1
Valid	BSC	16	22.2	22.2	83.3
	OTHERS	12	16.7	16.7	100.0
	Total	72	100.0	100.0	

Source; Author, 2015

From above Table 1.0 depicts the qualification of the respondents in which majority of the respondent posses Msc with 53% representing 38 respondent, 22% representing 16 respondent have Bsc as their qualification as shown above, these vindicate that the respondent have a strength educational background to responses to the study objectives and give a reasonable answer.

TABLE 2. RESPONDENTS' PROFESSION

		Frequency	Percent	Valid Percent	Cumulative Percent
	ARCHITECT	14	19.4	19.4	19.4
	BUILDERS	19	26.4	26.4	45.8
Valid	QUNATITY SURVEYORS	31	43.1	43.1	88.9
	CIVIL ENGR	8	11.1	11.1	100.0
	Total	72	100.0	100.0	

Source: Author, 2015

The Table 2.0 above shows the professional specialization of the respondents within the study area in which the Quantity surveyor are the majority with 43% representing 31 respondents while Builders follow with 26% representing 19 respondents.

Therefore, since Quantity surveyors are more concern with cost aspects of the projects while Builders in the production and executing of work especially duration time, these depicts that the study reached the majority of the respondent that have the conscious of time and cost in a projects.

TABLE 3. YEARS OF EXPERIENCE

		Frequency	Percent	Valid Percent	Cumulative Percent
	OVER 10yrs	26	36.1	36.1	36.1
Valid	5 to 10	30	41.7	41.7	77.8
	1 to 5	16	22.2	22.2	100.0
	Total	72	100.0	100.0	

Source: author, 2015

Table 3.0 above shows the years of experience of the respondent with (5- 10)years, over 10years and (1-5) years as first, second and third respectively.

4.2 Respondents' Test of Association

This research used Spearman's rank correlation coefficient (ρ) to test its respondent's level of association (test of agreement) between the ranks scored on time overrun and cost overrun factors among respondents. The spearman's rank correlation coefficient is used when two or more variables to be correlated are measured in the ordinal scale (Sambo, 2008 in Inuwa, 2014). The variables measured are all in ordinal scales. These variables were the respondents' rankings of factors identify the top significant ones causing cost and time overrun in Nigerian practice. The spearman's rank correlation coefficient computed as ($r = .874$) These results revealed that the degrees of association among the respondents are positive and strong. This implied that the respondents are in agreement in their opinions about this study.

4.3 Testing Hypothesis

The study used paired samples t- test to test the developed hypothesis. According to pallant, (2011) paired-samples t-test (also referred to as repeated measures) is used when you have only one group of people and you collect data from them on two different occasions or under two different conditions.

4.3.1 Decision rule:

H0: There is no significance difference of mean scores among the respondents on the significant factors causing cost and time overrun in Nigerian practice.

H1: There is significance difference of mean scores among the respondents on the significance factors causing cost and time overrun in Nigerian practice.

According to pallant, (2011) if Sig. (2-tailed) that is (p) value is less than .05, you can conclude that there

is a significant difference between your two scores. But otherwise there is no significant difference between your two scores. From the result obtained, the (p) value is (.327) which is greater than the specied value of (p) .05, therefore we accepted the null hypothesis that, there is no significance difference of mean scores among the respondents on the significant factors causing cost and time overrun in Nigerian practice.

4.4 Significant Factors Causing Cost and Time Overrun.

From Table 4.0 below the respondent assess the level of important of the factors in causing cost and time overrun using a likert scale of four point with not important as "1", less important as "2", important as "3" and very important as "4" under two different condition on cost overrun and time overrun. The aimed is to identify the top ten significant factors of cost overrun, time overrun and the common factors within cost and time overrun respectively.

The top ten significant factors of time overrun as perceived by the respondents are; Contract and specification interpretation disagreement, Discrepancies in contract documentation, Financing and payment for completed works, Design changes, Inaccurate evaluation of projects time/duration, Lack of proper training and experience of PM, Project fraud and corruption, Complexity of works, Unpredictable weather conditions, Non-performance of subcontractors and nominated suppliers. While the top ten significant factors of cost overrun in Nigerian practice are Inflation of prices, Financing and payment for completed works, Design changes, Fluctuation of currency/exchange rate, Lack of proper training and experience of PM, Project fraud and corruption, Conflict between project parties, Non-performance of subcontractors and nominated suppliers, Inaccurate evaluation of projects time/duration, Unstable interest rate respectively.

By comparison, the top significant factors that are common in causing both time and cost overrun in Nigerian practice identified as follow;

 ➢ Design changes
 ➢ Lack of proper training and experience of PM
 ➢ Financing and payment for completed works
 ➢ Project fraud and corruption
 ➢ Non-performance of subcontractors and nominated suppliers
 ➢ Inaccurate evaluation of projects time/duration,

By comparison with the result obtained in Nigerian practice with UK practice as revealed by Olawale and Sun (2010) the factors in UK are design changes, risks and uncertainties; inaccurate evaluation of project time/duration; complexity of works and; non-performance of subcontractors. Study shown that only design change, Non-performance of subcontractors/nominated suppliers and inaccurate

evaluation of projects time/duration are similar among the top factors both in Nigeria and in UK practice.

The result confirmed the opinion of (Chang, 2002 in Olawale & Sun, 2010) who argued that it is difficult to separate the reasons causing overrun into that of cost and schedule concluding that the reasons for cost increases are normally also the reasons for time extensions. The study affirmed the finding of Olawale and Sun (2010), Salim and Ashish, (2015) and Samuel and Akpokodje (2015) respectively.

Table 4. Ranking of Significant Factors of Cost And Time Overrun in Nigerian Practice.

Variables factors	Time overrun factors		Cost overrun factors	
	Mean	ranking	Mean	ranking
Inflation of prices	3.0833	12	3.5278	1
Fluctuation of currency/exchange rate	2.5556	18	3.3611	4
Unstable government policies	2.9444	15	2.8611	14
Weak regulation and control	2.6389	17	2.5833	19
Unpredictable weather conditions	3.1389	9	2.6389	18
Dependency on imported materials	2.6944	16	2.7222	16
Low skilled manpower	2.9722	13	2.7500	15
Risk and uncertainty associated with projects	2.9444	14	3.0833	12
Unstable interest rate	2.4167	19	3.1667	10
Lack of proper training and experience of PM	3.3889	6	3.3333	5
Lack of appropriate software	2.4167	20	2.5278	20
Inaccurate evaluation of projects time/duration	3.5000	5	3.1944	9
Non-performance of subcontractors and nominated suppliers	3.1389	10	3.1944	8
Project fraud and corruption	3.2222	7	3.3333	6
Design changes	3.5278	4	3.5278	3
Financing and payment for completed works	3.6111	3	3.5278	2
Complexity of works	3.1944	8	3.1250	11
Discrepancies in contract documentation	3.8611	2	2.8958	13
Contract and specification interpretation disagreement	3.9167	1	2.7083	17
Conflict between project parties	3.0833	11	3.2292	7

Source: Author, 2015.

CONCLUSION AND RECOMMENDATION.

Study aimed at comparative analysis on significant factors of cost and time overrun in UK and Nigerian practice. Descriptive and explorative design adopted and data obtained analyses in SPSS. Therefore, the study conclude that despite the differences in location there exist some similarities in the findings globally in construction industry, the study revealed the top significant factors of both cost and time overrun in Nigeria practice as Design changes, Lack of proper training and experience of PM, Financing and payment for completed works, Project fraud and corruption, Non-performance of subcontractors/nominated suppliers and Inaccurate evaluation of projects time/duration respectively. Only the three factors found to be similar with UK practice includes design change, inaccurate evaluation of projects time/duration and Non-performance of subcontractors/ nominated suppliers. However, complexity of work happened to be among the top ten factors of time overrun therefore it is partially included.

Based on findings, the study recommends the followings in order to control the issue of cost and time overrun to the bearest minimum if not eliminated at all;

➢ All the mitigation measures developed by Olawale and Sun, (2010) on the top inhibiting factors of cost and time control should be assessed across the various part of Nigeria in order to determining their level of effectiveness in Nigerian practice.

➢ Further study should be carried out to developed mitigation measures against Lack of proper training and experience of PM, Financing and payment for completed works, Project fraud and corruption and at the same times assessing their effectiveness.

➢ Government, professional bodies and construction professionals in building industry should incorporate and implement those measures prior to assessing their effectiveness in Nigerian practice.

Reference

Aftab, H. M., Ismail, A. R., Mohd, R. A., Ade, A., Abdu, A. (2010) Factors Affecting Construction Cost in Mara Large Construction Project: Perspective of Project Management Consultant; International Journal of Sustainable Construction Engineering & Technology Vol 1, No 2.

Aiyetan, A. O., John J. S. & Winston S. (2012). A linear regression modeling of the relationship between initial estimated and final achieved construction time in South Africa

Bustani, S. A. and Izam, Y. D. (1999): Predictive Duration Models for Building Construction Project in Nigerian, Journal of Environmental Science, University of Jos, Nigeria. Vol.3, No.2. Pp131-135.

Bustani, S. A. (2001): An Investigation into the Causes of Delay in Public Construction Project in Nigeria, ATBU Journal of Environmental Technology. Abubakar Tafawa Balewa University, Bauchi.Nigeria. Vol. 1, No. 1. Pp83-88.

Bolaji F. J. (2014). Essentials For A Successful Administration Of Construction Projects; A Contractor's Quantity Surveyor's Perspective. A Paper Delivered At A One – Day Seminar Of The Nigerian Institute Of Quantity Surveyors, Lagos State Chapter At Cmd, Shangisha Magodo, Lagos.

Inuwa, I. I. (2014). Project Planning In Construction Procurement: The Case of Nigerian Indigenous Contractors. Nairobi-Kenya: PhD Thesis: Jomo Kenyatta University of Agriculture and Technology.

Ismail A. R, Ade A., Aftab H. M., & Abdul A. (2012). Time and Cost Performance in Construction Projects in Southern and Central Regions of Peninsular Malaysia. International Journal of Advances in Applied Sciences (IJAAS) Vol.1, No.1

Jackson, O. and Steven, O (2001) "Management of cost overrun in selected building construction project in Ilorin," Review of Business and Finance, vol. 3, 2001.

John E. I., Abdullateef A. S. and Abdulganiyu A. O. (2015). A Study of Time and Cost Relationship of Private Building Projects in Abuja; International Journal of Construction Engineering and Management 2015, 4(1): 26-34.

Mahamid, I. (2012). Effects of project's physical characteristics on cost deviation in road construction; Civil Engineering Department, Hail University, Hail, Saudi Arabia

Nuruddeen U., Nuru G and Gambo I. (2014). The Effect of Time and Cost on Public Building Construction in the North-Eastern Nigeria; International Journal of Emerging Technology and Advanced Engineering, (ISSN 2250-2459, ISO 9001:2008 Certified Journal, Volume 4, Issue 9, September 2014)

Olawale, Y., and Sun M. (2010). "Cost and time control of construction projects: Inhibiting factors and mitigating measures in practice." Construction Management and Economics, 28 (5), 509 – 526.

Ogunsemi, D.R and Jagboro, G.O (2006) Time-cost model for building Projects in Nigeria. Journal of Construction Management and Economics.24, 253-258.

Pallant, J. (2001). *SPSS Survival Manual: A Step by Step to Data Analysis Using SPSS.* New South Wales: Allen & Unwin.

Samuel1, E. I and Akpokodje I. O. (2015). Iterating a Stationary Cause of Cost Overruns in Construction Project; International Journal of Construction Engineering and Management 4(2): 52-59

Salim S. M., Ashish P. W. (2015). A Study of Factors Caused for Time & Cost Overruns in Construction Project & their Remedial Measures; *Int. Journal of Engineering Research and Applications* www.ijera.com *ISSN : 2248-9622, Vol. 5, Issue 1, (Part -6) January 2015, pp.48-53.*