

COST AND TIME OVERRUN IN BUILDING PROJECTS: PROFESSIONAL ATTITUDE AND INCIDENCE RATE IN PRACTICE

S. Abdulkadir 

Department of Building, Faculty of Environmental Technology,
Abubakar Tafawa Balewa University Bauchi, Nigeria
arabs4u@gmail.com

A. I. Muhammad

Department of Building, Faculty of Environmental Technology,
Abubakar Tafawa Balewa University Bauchi, Nigeria
maimisau@gmail.com

U. M. Gidado

Department of Building, Faculty of Environmental Technology,
Abubakar Tafawa Balewa University Bauchi, Nigeria
umgidado@gmail.com

U. Nuruddeen

Department of Building, Faculty of Environmental Technology,
Abubakar Tafawa Balewa University Bauchi, Nigeria

Abstract

The issue of time and cost overrun is experienced worldwide and becoming more critical in most public projects in developing countries especially in Nigeria. The purpose of this study is to explore the incidence rate and attitude toward mitigating cost and time overrun in building projects of Nigeria. Study used quantitative through survey method. Structured questionnaire administered to respondents using judgmental sampling technique. Data analyses using descriptive and inferential statistics. The major findings show that, the attitude in mitigating rate

of cost overrun by professionals is higher than the rate of time overrun. In addition, The cumulative percentage of cost and time overrun reported is 38.25% these shows a slight decreased of 5% as compared with previous findings. Moreover, Study concluded that, the professionals' attitudes toward mitigating cost and time overrun significantly improved and there exist a significant reduction in incidence rate in building projects of Nigeria. Study recommends that the construction professionals should adopt and implements the various mitigating measures developed in previous studies in order to curtail the issues in building projects.

Keywords: Attitude, Cost Overrun, Time Overrun, Professional And Mitigation Measures

INTRODUCTION

The construction industry is a very significant part of Nigeria economy and it remains a key player in the national economy (Okoye, Ngwu & Ugochukwu, 2015). However, the construction industry inevitably faces many challenges which today's construction manager needs to provide solutions to, some are new to the industry, and some are centuries old (Friedman, 2003). Moreover, the industry is associated with complexity of interdependencies and uncertainties (Hashim, Chileshe, & Baroudi, 2012), thereby making any prospect towards achieving the project objectives very blur. In addition, construction industry has been experiencing problem of completing projects at sums higher than the initial sum and duration. poor time and cost performance that lead to a significant amount of time and cost overrun, this chronic issues is experienced worldwide and becoming more critical in construction industry and is common on most public projects in developing countries especially in Nigeria (Aftab *et al*, 2013; Anigbogu *et al.*, 2007; Inuwa, 2014; Ogunsemi & Jagboron, 2006). Furthermore, reviewed of previous studies nortably (Aibinu & Jagboron, 2002; Inuwa, 2014; Kunya, 2006) it revealed that the problems of cost and time overrun still remains among the top issues in construction industry and generates researchers interest in determining the root causes and developing a mitigating measures to avoid or minimize the occurrence of cost and time overrun. Even though, some recent studies indicates a reduction in percentages of occurrence as compared with years back, so these show slight improvement in terms of minimizing the incidence of cost and time overrun in Nigerian practice. The questions that surround the minds of professional is does the construction professionals do control the cost and time overrun occurrence and to what level of incidence rate does cost and time overrun are in building projects?

Objectives of the Study

The study objectives are to;

- i. Determine the professional attitudes towards mitigating cost and time overrun in building projects of Nigeria.
- ii. To determine the existing incidence rate of cost and time overruns in building projects in Nigeria.

Hypotheses of the study

The study proposed two null hypotheses as follows;

- i. The professionals attitudes toward mitigating cost and time overrun in building projects do not significantly improved.
- ii. The incidence rate of cost and time overrun do not significantly reduced in building projects of Nigeria.

LITERATURE REVIEW

Time and Cost Overrun

The major effects and consequences of the inability of practitioners to handle project cost and time in construction projects is either cost overrun or time overrun. Time overrun defined as late completion of works as compared to the planned/ contract schedule (Assaf & Al-Hejji, 2006). It occurs when the progress of a contract falls behind its scheduled program. Whereas, Cost overrun refer to as difference between actual cost of a project and its Cost limit (Ahsan & Gunawan, 2010). 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). Therefore these twins' issues dominate and generate interest among researchers globally in trying to curtail these challenges especially in Nigerian construction industry. As per Samuel and Akpokodje (2015) there is much concern within the construction industry that time and cost overruns of construction projects are almost becoming a search for a "viral cure" considering amount of energy dissipated by researchers in search for the "cure" to cost overruns in construction projects.

Incidence Rate of Cost and Time Overrun

The incidence rate of construction cost and time overrun in Nigeria has become a source of concern to various stakeholders. It has become so alarming that one keeps on wondering and questioning the reliability of the estimates (Otali & Odesola, 2014). Moreover, many studies

pointed out the level of occurrence in terms of percentage notably (Aibinu & Jagboron, 2002) reported 17.3% for cost overrun and 92.64% as time overrun. Whereas Aftab et al., (2013) reported the rate of cost and time overrun as (5 - 10%) of contract sum and duration. Moreover, Inuwa (2014) revealed that Nigerian indigenous contractors experience high rate of cost and time overrun with cumulative average of 43.02%. In addition, Kunya (2006) and Otti (2012) observed that almost all projects in Nigeria completed at sum higher than the initial contract sums supported this and clients can hardly rely upon this initial contract sums. But the most interesting facts is the recent study conducted by John et al, (2015) which reported that, the level of time overrun in previous works was 51% while the average time overrun of 34% discovered in the study represents an improvement in the time-cost relationship for building projects. Thus, a reduction of 17% (51% minus 34%) implies an improvement in the management of the time-cost relationship.

METHODOLOGY

This study used quantitative approach using survey method, while utilizing both descriptive and exploratory survey with respects to the perception of professionals in contracting firms. The study area is Bauchi and Gombe States in North-eastern part of 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, Inuwa & Iro, 2012; Inuwa, 2014). The population are the core-building professionals that are practicing as construction managers in contracting firms. The study adopted the approach of using published tables of Krejcie and Morgan (1970) tables. The data collection method involves using questionnaires administration. The sample of 127 were selected for the study using judgmental sampling. Out of 127 respondents, only 71 questionnaires were retrieved recording an overall response rate of 56% which indicate an unbiased and significant value (Moser and Kalton (1971) in Usman, Inuwa & Iro, 2012). This study accordingly used descriptive statistics and then, non-parametric chi-square for testing hypothesis using SPSS tool.

RESULTS AND DISCUSSION

Attitudes toward Mitigating Cost and Time Overrun by Construction Professional

Objectives one aimed at assessing the attitudes toward mitigating cost and time overrun by construction professional in Nigerian practice. Data were collected using questionnaires from 71 respondents within the study area. The respondent were asked to tick the attitude rate of mitigating cost and time overrun using a Likert scale of five points as shown in the Table 2 below together with the analysis of data outcomes of the study.

Referring to Table 1 below, the result depicts the rate of professional attitudes toward mitigating cost and time overrun. The highest percentage attitudes recorded for cost overrun is 36.6% representing 26 respondents. Whereas, the study revealed out four respondents representing 5.6% that hardly ever control their projects cost overrun in construction works. The average mean value is 3.58. The highest percentage attitudes recorded for time overrun is 32.4% representing 23 respondents for sometimes with 3 respondents representing 4.2% indicate that hardly ever control their project time overrun during construction work. The finding indicates that the attitude of mitigating rate of cost overrun by professionals is higher than the rate of time overrun mitigating attitudes. These results vindicates that, construction professionals do prefer and pay more attention to projects cost more than projects duration. Furthermore, the findings are in line with the results of Olawale and Sun (2010) and affirm the opinion of (Sohail *et al*, 2002 in Olawale and Sun, 2010) which stated that construction professionals pays more attention to control projects cost than duration in constructions project. In addition, the study contradicts the findings of (Maduiké, 2012) which state that project cost control is negative and poorly implemented in Nigeria. Moreover, the outcome highlights the reasons behind the finding of Aibinu and Jagboron (2002) which reported that the rate of time overrun (92.64%) is higher than cost overrun (17.3%) for cost overrun in construction projects. Referring to Table 2 based on Pallant (2011), the results of the hypothesis with pvalue of 0.01, the study reject the null hypothesis and accepted the alternative hypothesis which shows that the professionals attitudes toward mitigating cost and time overrun in building projects do significantly improved.

Table 1. Cost and Time Overrun Control by Professionals

| Cost Overrun Mitigating Attitudes | | | | |
|--|---------------|-----------|------------|------------|
| s/no | | Frequency | Percentage | Mean value |
| 1 | HARDLY EVER | 4 | 5.6% | 3.58 |
| 2 | OCCASIONALLY | 9 | 12.7% | |
| 3 | SOMETIMES | 16 | 22.5% | |
| 4 | FREQUENTLY | 26 | 36.6% | |
| 5 | ALMOST ALWAYS | 16 | 22.5% | |
| Total | | 71 | 100.0 | |
| Time Overrun Mitigating Attitudes | | | | |
| 1 | HARDLY EVER | 3 | 4.2% | 3.45 |
| 2 | OCCASIONALLY | 15 | 21.1% | |
| 3 | SOMETIMES | 23 | 32.4% | |
| 4 | FREQUENTLY | 17 | 23.9% | |
| 5 | ALMOST ALWAYS | 13 | 18.4% | |
| Total | | 71 | 100.0 | |

Table 2. Test Statistics for hypothesis

| | Rate of Control | Incidence rate |
|-------------|---------------------|---------------------|
| Chi-Square | 26.732 ^a | 22.408 ^b |
| df | 8 | 7 |
| Asymp. Sig. | .001 | .003 |

Incidence Rate of Cost and Time Overruns in Building Projects

Objective two aimed at determining the existing incidence rate of cost and time overrun experienced by the constructional professionals in executing building projects. Data were collected using questionnaires from 71 respondents within the study area. The respondent were asked to tick the percentage rate of experienced incidence rate of cost and time overrun using scale of percentage propotional levels as indicate in Table 3 below.

Referring to Table 3 below, the highest recorded incidence rate of time overrun is (21-40)% of projects executed which represent 31 respondents while the average mean recorded is 36.42% whereas the highest recorded incidence rate of cost overrun is (1-20)% representing 22 respondents while the average mean recorded is 40.08%. Based on the average mean recorded, the results indicate that the rate of incidence rate on cost overrun is slightly higher than time overrun as experienced by the professionals. The Generally, the results confirm the finding of John et al., (2015) Which shows a 17% decline incidence rate of time overrun as compared with previous work. The results also disagree with (Aibinu & Jagboron, 2002) which reported that the incidence rate of time overrun is higher than cost overrun in construction projects. The cumulative percentage of cost and time overrun reported is 38.25% these shows a slight decreased of 5% as compared with previous finding of Inuwa, 2014 which reported a cumulative of 43.02%. Referring to Table 2 based on Pallant (2011), the results of the hypothesis with pvalue of 0.03, the study reject the null hypothesis and accepted the alternative hypothesis which shows that the incidence rate of cost and time overrun do significantly reduced in building projects of Nigeria.

Table 3. Incidence Rate of Cost and Time Overruns

| Incidence rates in (%) | X | Incidence rate of time overrun | | Mean value |
|------------------------|------|--------------------------------|--------|------------|
| | | Frequency | FX | |
| 1-20 % | 10.5 | 15 | 157.5 | 36.42% |
| 21-40 % | 30.5 | 31 | 945.5 | |
| 41-60 % | 50.5 | 16 | 808.0 | |
| 61-80 % | 70.5 | 7 | 493.5 | |
| 81-100 % | 90.5 | 2 | 181.0 | |
| Total | | 71 | 2585.5 | |

| Incidence rate in (%) | X | Incidence rates of cost overrun | | Mean value |
|-----------------------|------|---------------------------------|--------|------------|
| | | Frequency | FX | |
| 1-20 % | 10.5 | 22 | 231.0 | 40.08% |
| 21-40 % | 30.5 | 19 | 579.5 | |
| 41-60 % | 50.5 | 13 | 656.5 | |
| 61-80 % | 70.5 | 8 | 564.0 | |
| 81-100 % | 90.5 | 9 | 814.5 | |
| Total | | 71 | 2845.5 | 38.25% |

CONCLUSION

This study used quantitative design method using literature search and questionnaires survey approach to achieve the stated objectives. According to respondent opinions, the study concludes that cost and time overrun still exist in construction projects and generates researchers' interest globally to provide solution to the problems. In addition, the professional pays more attention to control project cost more than projects duration of construction projects in Nigeria.

RECOMMENDATIONS

The study recommends the following base on the outcomes of the study carried out as;

- i. Government and stakeholders in construction industry should compile the various studies carried out in cost and time overrun and comes up with the possible solution to the problems as well as enforcing it as policy in construction projects
- ii. Construction professionals should pay attentions and frequently control their projects cost and time in construction without giving priority to only one aspects of it.

LIMITATIONS OF THE STUDY

A major limitation of this research is that, it used a relatively small size of the respondent and some parts of the north eastern Nigeria. These limit the generalization of the finding beyond that area of the study as it does not cover others part of Nigeria. Furthermore, the approach used in the study is limited to quantitative using questionnaire.

REFERENCES

- Aibinu, A. A., & Jagboro, G. O. (2002). The effects of construction delays on project Delivery in Nigerian construction industry. *International Journal of Project Management* 20, 593–599
- Assaf, S. A., & Al-Hejji, S. (2006). Causes of delay in large construction projects. *International Journal of project management*, 24(4), 349-357.
- Ahsan, K., & Gunawan, I. (2010). Analysis of cost and schedule performance of international Development projects. *International Journal of Project Management*, 28(1), 68-78.

- Aftab H. M., Ismail A, Noor Y. Z, Ahmad & Tarmizi A. K., (2013). Web-based Risk Assessment Technique for Time and Cost Overrun (WRATTCO) – A Framework. International Conference on Innovation, Management and Technology Research, Malaysia 20,(5) 22 – 23
- Anigbogu, A. I., Achuenu, N. A., Anigbogu, A. & Kuroshi, P. A. (2007). Assessment of Consultants' Pre-Tender Cost And Duration Estimates Of Building Projects In Nigeria; Construction Focus, Journal Of Construction Management And Engineering
- Abdulkadir, S., Moh'd I. Y. & Abubakar, K. M. (2015). Professionals' Perspective About Significant Factors Causing Cost And Time Overrun In Nigerian Building Projects. Journal of Multidisciplinary Engineering Science and Technology: 2. (11), 45-53
- Friedman, K. (2003). Theory construction in design research: criteria: approaches, and Methods. Design studies, 24(6), 507-522.
- Hashim N. I, Chileshe, N & Baroudi, B. (2012) "Management Challenges Within Multiple Project Environments: Lessons for Developing Countries," Australasian Journal of Construction Economics and Building, Conference Series, 1(2), pp.21-31
- 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.
- John E. I., Abdullateef A. S. & 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.
- Jackson. O & Steven, O (2001) "Management of Cost Overrun in Selected Building Construction Project In Ilorin," Review Of Business And Finance.
- Kunya, S. U. (2006). Analysis and Prediction of Contract Variation Claim of Public Building Projects in North-Eastern Nigeria, Nigerian Journal of Construction Technology and Management. 7(1), pp 86-89.
- Maduiké, S. N., (2012). Cost Control Effects In The Nigerian Building Industry. Unpublished masters Thesis, Nnamdi Azikiwe University, Awka, Anambra State Nigeria
- Olawale, Y., & 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 & Jagboron, G.O (2006) Time-cost model for building Projects in Nigeria. Journal of Construction Management and Economics 24. (5) 253-258.
- Okoye, P. U., Ngwu, C. & Ugochukwu, S. C., (2015). Evaluation of management challenges Facing construction practice in Nigeria. International Journal of Application or Innovation in Engineering & Management 4. (1).
- Otti, V. I. (2012) Engineering Implication for Millennium development Goals in Revamping and Sustaining Nigeria Economy, International Journal of Engineering Research and Applications, 2(2), pp.1373-1377
- Otali, M. & Odesola, I. A. (2014). Effectiveness Evaluation of Contingency Sum as a Risk Management Tool for Construction Projects in Niger Delta, Nigeria. Ethiopian Journal of Environmental Studies and Management 7(6): 588-598.
- Pallant, J. (2011). SPSS Survival Manual: A Step by Step to Data Analysis Using SPSS. New South Wales: Allen & Unwin.
- Samuel, E. I & 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
- Usman, N. D., Inuwa, I. I., & Iro, A. I. (2012). The Influence of Unethical Professional Practices on the Management of Construction Projects in North Eastern States of Nigeria. International Journal of Economics Development Research and Investment, 3. (2), 124-129