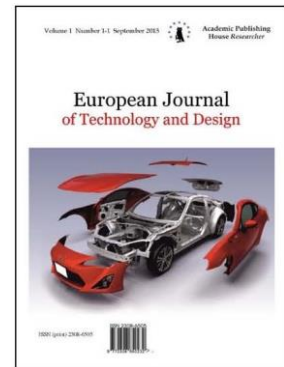


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The Upshot of Time Overrun in Building Project

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Abstract

The effect of time overrun in building construction projects was assessed with the view of finding the possible ways of mitigating the effects of time overrun in construction project.

A quantitative research method was adopted and data were collected by means of questionnaires. Research findings indicates that the time factor that have impact on construction project delivery include poor budgeting system, lack of proper cash flow, poor resource utilization, improper time schedule plan, unnecessary delays, poor management of time. The view of contractors regarding time in construction is experiencing a positive change from factors that require less concern or factors needed for reference purpose to those factors that determine the success of a project, factors that help in avoiding liquidated damages and the major factors to be considered in the preparation and submission of tender. The research also indicates that various relationships exist between construction project time and cost depending on the perspective in which it is viewed and value considered, relationship ranging from a trade-off to direct professional relationship all explain how related cost and time are in construction projects.

Keywords: building construction, construction project, industry.

1. Introduction

The strength and versatility of a construction industry provides a great portion of national economy and measured as an indispensable component through which physical development is achieved (Dakhil, 2013). Better project performance leads to better construction industry. Cost, time and quality are the key variables used to measure the performance of the project. The negative effect of time overrun is not limited just to the construction sector but also influence the overall economy of a country. Time overrun is defined as “a condition where a construction project does not complete within the designed time period”. It happens when the work of contract does not complete in its prescribed time. Time overrun is a most common incident which occurs nearly in all the projects related to the construction industry (DeVol et al., 1999).

One of the basic goals of construction industry practitioners is to achieve timely completion of projects within stipulated budget and required quality as each day of time overrun in the completion of any project has direct impact on the cost of project (Ullah, 2020). In order to manage and control construction projects, there are various procurements strategies being adopted. Most popular strategies include traditional, management, integrated services and in-house teams (Dakhi, 2013). Construction industry is one of the most complex, fragmented industries referred as schedule and resource driven. In construction industry timely completion of

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project is a major criterion of project success (Dakhi, 2013). Time overrun is any delay beyond the baseline construction schedule. Minimizing time and cost is the main goal in managing a construction project. However, time delay frequently occurs in all phases of a construction project and consequently increases project total duration (Toğan, Eirgash, 2019). Very rarely projects are completed on time (Dakhi, 2013). This leads to pay serious attention to control construction time as each day of delay contributes a significant amount of revenue which is hardly recovered. Hence, a number of studies have been conducted to identify the factors causing time overrun.

The most important factors causing time overrun are design changes, poor labor productivity, inadequate planning, and resource shortages. Through a comparative study of causes of time overruns in construction projects in Hong Kong (Kamalirad et al., 2017).

In Malaysian, traditional lump sum system, design and build/turnkey system and Construction Project Management/Contract Management are commonly adopted in procurement strategies (Memon et al., 2011). However, literature shows that in spite of adopting various management practices, construction projects in many countries are still facing problem of time overrun which needs very serious attention. Malaysian construction industry is also facing the same problem of time overrun. To avoid this issue, very first and most important step is to identify and understand the causes and factors responsible for that. Hence, this study was carried out to identify the major cause of time overrun in Malaysian construction industry. However, this study was focusing on management procurement projects only and the respondents were personnel from Project management consultants.

In Ghana, studies in groundwater project and illustrated that owners, contractors and consultants ranked poor contractor management, monthly payment difficulties from agencies, material procurement, poor technical performances and escalation of material prices as major factors that can cause time overrun (Chileshe et al., 2011). Similarly (Mansfield et al., 1994) showed that the most significant factors affecting construction schedules were financing and payment for completed works, poor contract management, changes in site conditions, shortage of materials, and improper planning (Jurf, Beheiry, 2012). According to some studies 70 % of projects experienced time overrun (Ameah, Osegbo, 2011). The average time delay ranges from 10 % to 30 % of the original duration of the project. The study identified 6 main causes including change order, delay in progress payment, ineffective planning and scheduling of project by contractor, poor site management and supervision by contractor, Shortage of labours and Difficulties in financing project by contractor as most critical factors responsible for this time overrun. Delayed payment was found to be the number one cause of schedule delays in the Zambian road construction industry followed by protracted financial processes in client organizations, financial difficulties that accompany the delayed release of funds by client organizations, contract modification, material procurement and changes in drawings, staffing problems, equipment unavailability, poor supervision, construction mistakes, poor coordination on site and changes in specifications (Ameah, Osegbo, 2011). Unforeseen site conditions were found most prominent cause of schedule delay affecting total project duration and cost of project.

Time overruns is one of the biggest problems often experienced on construction project sites. Time overrun can instigate negative effects such as increased costs, loss of productivity and revenue many lawsuits between owners and contractors and contract termination. There are many factors that induce time delay on construction projects, however in some of identified factors includes: lack of funds to finance the project to completion, changes in drawings, lack of effective communication among the parties involved, lack of adequate information from consultants, slow decision making and contractors insolvency, variations among others. Also project management problems such as mistake and discrepancies in contract document, equipment availability and failure, mistakes during construction, bad weather, fluctuation in prices of building materials, inappropriate overall organizational structure linking to the project and labour are among the factors that could be observed and could be a clue to preventing time overrun on construction sites.. Abdullah (Toğan, Eirgash, 2019).

Construction industry in Nigeria is faced with a lot of problems, among which is delay in project execution. It has been researched, that delay is a major setback in the construction industry in Nigeria. The problem of delays in the construction industry is a global phenomenon. In Nigeria, it was observed that the performance of the construction industry in terms of time was poor (Adekunle, Ajibola, 2015). Ugochukwu, Stanley and Onyekwena (2014) have shown that seven out

of ten projects surveyed in Nigeria suffered delays in their execution. They also studied delays in Hong Kong construction industry. They emphasized that timely delivery of projects within budget and to the level of quality standard specified by the client is an index of successful project delivery. Failure to achieve targeted time, budgeted cost and specified quality result in various unexpected negative effects on the projects. Normally, when the projects are delayed, they are either extended or accelerated and therefore, incur additional cost. The normal practices usually allow a percentage of the project cost as a contingency allowance in the contract price and this allowance is usually based on judgment. Although the contract parties agreed upon the extra time and cost associated with delay, in many cases there were problems between the owner and contractor as to whether the contractor was entitled to claim the extra cost. Such situations, usually involved questioning the facts, causal factors and contract interpretation. Therefore, delays in construction projects give rise to dissatisfaction to all the parties involved and the main role of the project manager is to make sure that the projects are completed within the budgeted time and cost.

The effect of construction time overrun may lead to project abandonment, delaying project which can equally affect the economic status of that country. Also if the resources are adequately harnessed, issues that pertains to time overrun would not arise which could result to variations and claims. Some firms rely on claim as a result of variation incurred during the course of the project execution and afterward evaluate their profit after incurring necessary and unnecessary time on a project.

Improper time assessment can also cause additional time in the form of delay which results in poor utilization of resources, increasing social and economic time and affect the overall delivery time. Most contractors are not using the appropriate resources to execute building project. Also, lack of mobilization of the resources needed within the approved time frame cause delay to the contracts (Doloi et al., 2012). Project management involves managing the resources, worker, machines, money, materials and method used. Some projects are effectively and efficiently managed while others are managed, incurring much delay and time overrun (Doloi et al., 2012). Assessing construction project time is critical in today's market driven economy. This relationship between construction project and time is called time trade off decision, which has been investigated extensively in the construction management literature. Decisions in time trade are complex and require selection of appropriate construction method for each project task.

Effects such as delays, additional time and adversarial relationship among parties are identified as the effects of time overrun, in light of this these research work tends to investigate the effects of time overrun in construction to identifying factors of time overrun in building construction project in Nigeria.

2. Materials and methods

Research design

A quantitative research method was adopted and data were collected by means of questionnaire. Survey designs are suitable when results are intended to be generalized to a wider population as in this research. Likewise, questionnaire has the ability to enhance objectivity in response and to minimize respondents' bias. It will also provide higher response rates that cannot otherwise be achieved with qualitative methods especially when studies are geographically widespread as the current research.

Study population

The study population of 95 was adopted from the work of Ahmad Sani (2016) in his work title an assessment the readiness of Nigerian construction professionals in the adoption of Building Information Modeling (BIM) technology.

Sample size and sampling technique

The sampling technique adopted for this study was the random sampling technique.

For the purpose of this study, Cochran's (1977) formula was used to determine the sample size. Cochran (1977) developed a formula for calculating sample size when the population is infinite or very large (Alhaji, 2020).

The sample size of the population based on the formula above is therefore 95 construction professionals.

Sources of data collection

In this research questionnaires were used to collect necessary information so as to provide answers to the research question. Close-ended questions are to be used in the questionnaire.

Primary data was collected using questionnaires administered to the target respondents. Primary data collection will involve a close-ended question in the questionnaire. The questionnaires were administered personally. This approach is chosen because it is affordable, time saving and allows for in-depth data collection as it fosters high rates of personal responses.

On the other hand, secondary data was collected from extant publications and researches. Thus, such data was gathered from; government releases, editorial in newspapers, newsletters, published, non-published dissertations and conference papers, and books.

Method of data analysis

Descriptive statistical methods would be adopted in the analysis of data. Data obtained from the field was process and analyzed using statistical packages for social science (SPSS) which will consists careful tabulation, coding, and descriptive statistics, to get a clear picture.

3. Results

Table 1. Breakdown of Administered Questionnaires

Number. Distributed	95
Number Retrieved	44
Percentage Response	46.32 %

From [Table 1](#) above, it can be explained that out of 95 questionnaires distributed, 44 which amounts to 46.32 % were properly filled and returned. Based on the assertion of Moser and Kalton (1971), the result of a survey could be considered significant if the response rate is not lower than 30-40 %. Therefore, the percentage of the returned questionnaires is adequate for analysis.

Table 2. Years of experience

S/N	Level qualification	Frequency	Percentage
1	Diploma	9	20.5
2	Degree	18	40.9
3	Masters	14	31.8
4	PHD	3	6.8
5	Total	44	100

From [Table 2](#) 20.5 % have diploma, 40.9 % have degree, 14 % have masters and 6.8 % are PHD holders. Therefore responses received are up to the required standard because they are received from professionals with a recommendable qualification on the required field of study.

Table 3. Current Job

S/No	Profession	Frequency	Percentage
1	Architect	11	33.3
2	Engineer	9	30.0
3	Builders	3	10.0
4	Quantity surveyor	5	16.7
5	Others	3	10.0
6	Total	44	100

Table above shows that 33.3 % of the respondents are architects, 30.0 % are engineers, 10.0 % are builders, 16.7 % are quantity surveyors and 10.0 % comprises of other different professionals. This indicates that the responses obtained are from professionals on the required field.

Table 4. Years of Experience

S/N	Years of experience	Frequency	Percentage
1	1-5	7	15.9
2	6-10	16	36.4
3	11-15	8	18.2
4	16-20	8	18.2
5	More than 20	5	11.4
6	Total	44	100

Table 4, shows that 15.9 % of the respondents have years of experience between 1-5 years, 36.4 % have 6-10 years, 18.2 % have 11-15 years, again 18.2 % have 16-20 years and 11.45 have more than 20 years. From the table above it can be deduced that the responses is from professionals with the required years of experience in the construction industry.

Table 5. Organization Type

S/NO	Type of organization	Frequency	Percentage
1	Client	13	29.5
2	Contractor	22	50.0
3	Consultant	9	20.5
4	Total	44	100.0

From Table 5, 29.5 % of the respondents are of client organization type, 50.0 % are contractor's organization and 20.5 % are consultancy firms.

Table 6. Contract Amount

S/NO	Amount in naira	Frequency	Percentage
1	Less than 10 million	6	13.6
2	10-50 million	14	31.8
3	60-100 million	12	27.3
4	Above 100 million	12	27.3
5	Total	44	100

Table 5, show that 13.6 % of the respondents are into the project of less than 10 million naira, 31.8 % are into contract of between 10-50 million, 27.3 % are into contract of 60-100 million naira and 27.3 % are above 100 million naira.

4. Conclusion and recommendations

In view of the objectives of the research, it can be deduced that;

1. The time factor that have impact on construction project delivery include poor budgeting system, lack of proper cash flow, poor resource utilization, improper time schedule plan, unnecessary delays, poor management of time.

2. The view of contractors regarding time in construction is experiencing a positive change from factors that require less concern or factors needed for reference purpose to those factors that determine the success of a project, factors that help in avoiding liquidated damages and the major factors to be considered in the preparation and submission of tender.

3. Various relationship exist between construction project time and cost depending on the perspective in which it is viewed and value considered, relationship ranging from a trade-off to direct professional relationship all explain how related cost and time are in construction project.

Based on this study, some recommendations are given as follows:

(a) Appropriate funding levels should always be determined at the planning stage of the project so that regular payment should be paid to contractors for work done.

(b) In order to improve contractors managerial skills there is need for continues work

training program for personnel in the construction industry to update their knowledge and be familiar with project management techniques and processes as this assist in the proper and efficient management of time.

(c) Effective and efficient material procedure system should be established within projects as material procurement has the potential to cause major delays to construction projects.

(d) There should be adequate contingency allowance in order to cover increase in material cost due to inflation and employers or owners of the project should allow more time and funds for the study phases of projects.

(e) Contractors should regularly try to identify and bring to the attention of the client to project risk such as an ill-defined scope in the early stages (tender clarification meetings) of a project etc. and project managers must agree that delays or impact which cause extension of time and or increase in cost are a frequent occurrence in project construction.

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