

IMPACT OF DELAY ON BUILDING PROJECT (CASE STUDY OF EDO STATE, SOUTH-SOUTH, NIGERIA)

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ABSTRACT

Delay is one of the biggest problems often experienced on construction project sites. Delays can instigate negative effects such as increased costs, loss of productivity and revenue many lawsuits between owners and contractors and contract termination. The aim of this paper is to investigate the causes and effects of delay on building construction project delivery time. Random sampling technique was used in this study. Population sample of 120 was used in this work. A total sample of sixty-five (65) was deployed. A structured questionnaire in Likert scale was used in data collection. There are many factors impact building project that are delayed negatively, however in some of identified factors includes: time overrun, cost overrun, arbitration, wastage and under- utilization of man-power and resources, abandonment of building project, litigation, loss of interest by stakeholders, blacklisting by authorities and decline in reputation. The factors that causes delay of building project would be observed to prevent the aforementioned impact the delay may cause on building projects.

Keywords *Delay, Construction, Delivery, Construction, Effects.*

INTRODUCTION

The Nigerian construction industry is facing an acute and endemic delay problem. 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. Delay manifest in construction projects when parties involved in project contribute to the non-performance of planned and scheduled activities within the planned time and it is a major setback in the construction industry in Nigeria. In construction, the word "delay" refers to something

happening at a later time than planned, expected, specified in a contract or beyond the date that the parties agreed upon for the delivery of a project (Pickavance, 2005). Lo, Fung and Tung (2006) define delay as the slowing down of work without stopping construction entirely and that can lead to time overrun either beyond the contract date or beyond the date that the parties have agreed upon for the delivery of the project. Dissanayaka & Kumaraswamy , 2008 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. Uncontrolled delay may generate various unexpected negative effects on the projects such as conflicts, claims, abandonment and litigation between the parties involved in building projects which therefore incur additional cost.

Odeyinka & Yusif , 1997 have shown that seven out of ten projects surveyed in Nigeria suffered delays in their execution. In Nigeria, public projects tend to suffer delay and time overrun more than private projects. Although the contract parties agreed upon the extra time and cost associated with delay because normal practices usually allow a percentage of the project cost as a contingency allowance in the contract price but in many cases there were problems between the owner and contractor as to whether the contractor was entitled to claim the extra cost. 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 study seeks to identify and assess the impact of delay on building projects in Edo State, Nigeria with the aim of improving construction performance in delivery time.

LITERATURE REVIEW

Building projects involves complex sequence of interrelated activities which requires allocation and assembling of resources of materials, machines, manpower and money with management expertise to evolve projects at a price over a period of time. Many studies have attempted to identify the causes that put construction projects behind planned schedule.

Mansfield, Ugwu, & Doran, 1994 studied the causes of delay and cost overrun in construction projects in Nigeria. The results showed that the most important factors are financing and payment for completed works, poor contract management, changes in site conditions, shortage of material, and improper planning. Odeh & Battaineh, 2002 investigated delay causes in large construction projects in Jordan, the causes identified included design changes, poor labour productivity, and inadequate planning. Toor & Ogunlana , 2008 studied construction delays in Thailand. They found that the problems faced by the construction industry in developing economies like Thailand could be: (a) shortages or inadequacies in industry infrastructure (mainly supply of resources); (b) caused by clients and consultants and (c) caused by contractor's incompetence/inadequacies.

Odeyinka & Yusif , 1997 have addressed the causes of delays in building projects in Nigeria. They classified the causes of delay as project participants and extraneous factors. Client-related delays included variation in orders, slow decision-making and cash flow problems. Contractor-related delays identified were: financial difficulties, material management problems, planning and scheduling problems, inadequate site inspection, equipment management problems and shortage of manpower. Extraneous causes of delay identified were: inclement weather, acts of nature, labour disputes and strikes.

Furthermore, delay has been recognized to affect project performance negatively. Most researchers agree that delay has a negative impact on construction performance. Sambasivan & Soon, 2007 agree that the effect of delay on project performance are time and cost overrun, disputes, litigation and total abandonment of project. Tumi , Omran , & Pakir , 2009 assessed the impact of delay in construction projects in Libya to be (i) loss of interest by stakeholders (ii) blacklist by authorities (iii) waste of money and time (iv) decline in reputation.

RESEARCH METHODOLOGY

A survey research was adopted using structured questionnaire distributed to construction practitioners (Architect, Builders,

Engineers and Quantity Surveyors) in Edo State, Nigeria. Benin City was chosen as the study area because it is the commercial area and can boast of highest concentration of construction professionals. The questionnaire was divided into three parts namely: background of the respondents, causes of delay in building projects in Edo state and the impact of delay in construction projects. Owing to the absence of reliable register of construction practitioners, a non-random purposive sampling techniques was used to distribute the questionnaires and respondents were requested to base their response on current on-going or past construction projects. A total of 120 questionnaires were distributed to professionals working in Edo state, Nigeria. To elicit the degree of impact of delay, respondents were asked to rate on the Five-Likert scale from no influence (1) to very high influence (5). Responses to the questionnaire were then analyzed using the relative importance index.

DATA ANALYSIS AND DISCUSSION OF FINDINGS

Analysis of respondents' characteristics

The respondents consist of built environment professionals such as Architects, Engineers, Builders and Quantity Surveyors. For convenience, respondents were grouped into organizational roles in the construction industry such as clients, consultants and contractors. The analysis of the respondents' characteristics is shown in table 1 below which shows average response rate of 54%.

A total of 65 valid responses were returned indicating 15 clients, 30 contractors and 20 consultants.

TABLE 1: QUESTIONNAIRE DISTRIBUTION/RESPONDENTS' ANALYSIS

Role	Number sent	Number received	Response rate (%)
Client	25	15	60
Contractor	60	30	50
Consultant	35	20	57
Total	120	65	54

The Professions of the respondents are quantity surveyors (26.1%), Builders (36.9%), civil engineer (16.9%), and Architects (20%),

Interestingly, 63% of the entire respondents have less than 10years experience and 34% have over 10years experience in the construction industry. Also, all respondents have tertiary education.

Data analysis procedure

The reliability statistics to validate the data instrument shows a Cronbach's Alpha (α) test score of 0.855. Reliability is low when Cronbach α is less than 0.3 and it cannot be accepted. Reliability is high when Cronbach α is more than 0.7 where it indicates inner consistency of indices table is high and acceptable. In the structured part of the questionnaire, the respondents were asked to rank the degree of influence of 12 delay factors drawn from literature using 5-point Likert scale (ranged from 1 (no influence) to 5 (very high influence). The data generated were assessed to generate the relative importance index of the various delay factors and impact of delay of building construction projects in Edo state. The relative importance index (RII) for each factor was calculated using the following formula:

$$RII = \frac{5n_1 + 4n_2 + 3n_3 + 2n_4 + 1n_5}{5(n_1 + n_2 + n_3 + n_4 + n_5)}$$

Ranking of the factors under consideration is based on the RII value of the factor. The factor with the highest RII value is ranked first and so on. Interpretation of the RII value is as follows:

$RII < 0.60$ factor assessed to have low influence

$0.60 \leq RII < 0.80$ factors assessed to have high influence

$RII \geq 0.80$ critical factor assessed to have very high influence

Table 2: Data on the causes of delay on building projects

The table below shows the selected causes of delay on building projects as indicated by the respondents who are professionals in the built environment using the selected scale ratings.

S/ N	Delay factors	Clients RII	Rank	Contractors RII	Contractors ranks	Consultants RII	Consultants rank	Overall mean	Overall rank	
1.	Cash problem during construction	0.95	1	0.73	10	0.68	12	0.79	6	High influence
2.	Delay in contractors progress payment by client	0.84	4	0.73	10	0.75	10	0.77	10	High influence
3.	Shortage of construc. materials	0.80	5	0.83	3	0.72	11	0.78	8	High influence
4.	Inaccurate time estimation	0.80	5	0.76	7	0.79	9	0.78	8	High influence
5.	Contractor financing problems	0.79	7	0.79	4	0.84	6	0.81	4	Very high influence
6.	Legal dispute	0.76	9	0.84	2	0.86	3	0.82	2	Very high influence
7.	Conflict between contractor and consultant	0.68	11	0.76	7	0.86	3	0.76	11	High influence
8.	Delay in delivery of materials on site	0.87	2	0.69	12	0.87	2	0.81	4	Very high influence
9.	Design change	0.78	8	0.90	1	0.83	7	0.84	1	Very high influence
10.	Bureaucracy in government agencies	0.71	10	0.79	4	0.88	1	0.79	6	High influence
11.	Fluctuation in prices of building materials	0.68	12	0.77	6	0.80	8	0.75	12	High influence
12.	Bad weather	0.86	3	0.75	9	0.85	5	0.82	2	Very high influence

Table 3: Data on impact of delay on building projects

The table below shows the selected impact of delay on building projects as indicated by the respondents who are professionals in the built environment using the selected scale ratings.

S/N	Effects of delay	Clients RII	Rank	Contractors RII	Contractors ranks	Consultants RII	Consultants rank	Overall mean	Overall rank	
1.	Time overrun	0.89	2	0.77	8	0.92	1	0.86	2	Very high influence
2.	Cost overrun	0.95	1	0.79	6	0.79	4	0.84	3	Very high influence
3.	Arbitration	0.71	9	0.87	3	0.86	7	0.81	5	Very high influence
4.	Wastage and under-utilization of man-power and resources	0.79	4	0.77	8	0.82	8	0.79	6	high influence
5.	Abandonment of building project	0.77	6	0.85	4	0.84	5	0.82	4	Very high influence
6.	Dispute between parties involved	0.85	3	0.91	1	0.86	1	0.87	1	Very high influence
7.	Litigation	0.76	7	0.83	5	0.78	8	0.79	6	high influence
8.	Loss of interest by stakeholders	0.73	8	0.85	4	0.83	6	0.80	6	Very high influence
9.	Blacklist by authorities	0.85	3	0.78	7	0.91	2	0.85	3	Very high influence
10.	Decline in reputation	0.84	5	0.88	2	0.75	10	0.82	5	Very high influence

DISCUSSION OF FINDINGS

46.2% of the respondents work in contracting organizations, 23.1% and 30.7% of the respondents work in clients and consultants’ organization respectively. 26.1 % of the respondents are quantity surveyors, 36.9% are Builders, 16.9% are civil engineers, Architects made up 20%.

Table 2 is the descriptive statistics showing the means/ranking of the 12 delay factors assessed based on three groups of respondents identified in Edo state, Nigeria. While the mean item

scores show a high level of agreement between the three groups in the ranking of delay factors and the effects of delay on building construction projects in Edo state, statistical test to confirm whether the agreements are significant is required. Consequently, the spearman's rank correlation statistic of mean scores shows a high correlation of 0.82 for contractors and consultants. This implies that there is a significant agreement among the two respondents tested (contractors and consultants) in the ranking of the impact of delay on building construction projects in Edo state, Nigeria.

Table 3 shows that dispute between parties involved ranked the highest with the overall mean index score of 0.87. Dispute among parties involved can induce litigation and arbitration and if the decision of the arbitration panel is not acceptable to either parties involved, this can lead to big time legal battle which can truncate the progress of work. While time overrun ranked second with mean index score of 0.86. time is every phase of life is really essential, when a contract is done and the date is given, the effect of delay really affect time. Time affects every other factor, the increase in final cost, more money has to be spent. Cost overrun which is ranked fourth with a mean index score of 0.84, an increase in cost might lead to abandonment of building project which is ranked fifth with a mean index score of 0.82. Delay will always cause wastage and under-utilization of men-power and resources, tying down of client capital due to non-completion of the project is scored with a mean index score value of 0.79 because the client cannot get his money back which could lead to loss of interest, blacklisting by authorities and decline in reputation.

CONCLUSION/RECOMMENDATION

The outcome of analysis from this study can be said to be of great relevance to the construction Industry in Edo state. Majority of the respondents are fully involved in the construction industry with years of construction experience, meaning that the respondents have wealth of knowledge and could supply the necessary information on the question sent out in the questionnaires.

There are many factors that induce delay on construction projects, however in this study the factors are limited to 12 factors

causing delay and 10 factors of the impact of delay and they were ranked according to the mean index score. The critical factors identified in this study of the impact of building construction project in Edo state are; time overrun, arbitration, wastage and under-utilization of manpower, abandonment of building project, dispute between parties involved, litigation, loss of interest by stakeholders, blacklisting by authority and decline in reputation. Time is factor that is very essential in all activities that has to be carried out, in the contract document a specific time phase is given for delivery of project and if the time is being exceeded more money is often spent which could lead to increase in final cost of project and also wastage and under-utilization of manpower and resources. The client's capital has to be withheld due to non-completion of the project which could result into dispute, litigation and arbitration among the workers and management. Also delay can lead to reduced profit for builder, abandonment of building project by the client, decline in company's reputation, blacklisting by authorities and loss of interest by stakeholders.

It is recommended that adequate preparation should be given to the pre and post contract planning of project before actual commencement of work on site. This should start with reliable cost estimation to guide the client in financial preparation and funding arrangement for the project in advance before the actual commencement of site work. Also, public client should source project fund in advance before actual work commencement. This will reduce drastically the delay suffered by contractors before receiving interim certificate payment.

Also it is important to engage the services of an experienced contractor with financial capability, equipment and skilled labour necessary for effective project procurement and delivery and all project stakeholders should work together and ensure that all disputes are mitigated during the construction period so as to avoid prolonging the planned executing time during the litigation process. All stakeholders should ensure that proper planning must be done to cater for unforeseen events that may prolong the construction period, increase cost and cause damage to property and injury to project participants. Such risks should be transferred to competent stakeholders like insurance companies

so as to help reduce the effect of costs in the event of delay occurrence.

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