



An Assessment of Delays in Construction Projects in Ibadan, Oyo State, Nigeria

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Abstract – *The study assessed major factors and mitigating measures of delays in construction projects in Ibadan, Nigeria. This is with a view to ensuring timely project delivery without unreasonably exceeding project estimated cost. Data were obtained using questionnaire survey administered on 25 Architects, 24 Quantity surveyors, 29 Engineers and 22 Builder in 38 consulting firms, 42 contracting firms, and 20 client organizations by purposive sampling technique. Data were analyzed using descriptive and inferential statistical methods. Based on the mean value criterion, improper planning ranked the first factor of delays with a mean score of 5.0. Ineffective communication ranked second with a mean score of 4.7. Poor contract management and client’s financial difficulties are the third factors of delays having a mean score of 3.8. Shortage of material supply and slow decision making ranked fourth. The next important factors are cash-flow problems during construction and fluctuation in material prices, which ranked fifth. Measures to mitigate delays were ranked according to their level of significance: effective risk management ranked first, proper planning and proper payment from client ranked second, quick preparation of insurance claims and good scheduling programme, ranked third, utilization of standard package for tender ranked fourth, mobilizing resources at the right time and proper computation of financial damages ranked fifth. The paper therefore concluded that this phenomenon would continue unless management actions are taken to control these causes within the planned element of the design and construction works. Thus, the paper recommended proper planning practice, coordination, and effective contract management.*

Keywords: *Causes, Construction, Delay, Project Delivery, Ibadan, Nigeria.*

1.0 Introduction

Delay on construction projects is a universal phenomenon. It is almost always accompanied by cost and time overruns. It is generally acknowledged as the most common, costly, complex and risky problem encountered in construction projects. (Ahmed, Azhar, Castillo, & Kappagantula, 2002). Faridi and El-Sayagh (2006) further stated that construction delay is considered one of the most recurring problems in the construction industry. Delays adversely impact on project stakeholders including owners, design professionals, construction professionals, users and others. The key objectives of construction projects are time, cost, quality and safety. These objectives are jeopardized by delays. In the construction industry, the aim of project control is to ensure the project finishes on time, within budget and achieving other project objectives. It is a complex task undertaken by project managers in practice, which involves constantly measuring progress; evaluating plans; and taking corrective actions when required. (Kerzner, 2003, cited in Olawale & Sun, 2010). Timely project completion is an indicator of efficiency, but the construction process is subject to many variables and unpredictable factors, which result from many sources. The sources are the performance of the parties, resources availability, environmental conditions, involvement of other parties, and contractual relations, and the completion of a project within the specified time is rare (Assaf & Al-Hejji, 2006).

The top variables causing only cost overruns were revealed as price fluctuation, inaccurate estimates, delays and additional work. Kumaraswamy and Chan (1997) conducted a more extensive study in Hong Kong. Their study revealed the top causes of construction delays from the contractors’ point of view as delays in design information, long waiting time for approval of drawings, poor site management and supervision,

mistakes and discrepancies in design documents. Ogunlana (1995) cited in Mohammed & Isah (2012) researched on the method for computing activity delays and assessing their contributions to project delay. The method consisted of a set of equations, which could be easily coded into a computer program that would allow speedy access to project delay information and activity contributions. Similarly, Divakar and Subramanian (2009) presented a paper on method for computing activity delays and assessing their contributions to project delay. The method consisted of a set of equations, which could be easily coded into a computer program that would allow speedy access to project delay information and activity contributions.

Delay has been a subject that has attracted the attention of intellectuals and construction professionals due to its numerous causative factors and adverse effects on construction time and cost. The information available is distinct and ubiquitous. In spite of such inevitability of such study, causes of delay differ from one project to another because of the complexities that may arise from site conditions, procurement practice and client's requirement. Delay occurs in every construction project and the significance of this delay varies considerably from project to project. The actual frequency and magnitude of these factors is not known, which has proven to be a serious and very expensive problem for the construction industry. On this note, the study determines to identify the major causes of delays in construction projects in Ibadan, through a survey and recommend few mitigating measure.

2.0 A Review of Construction Project Delay

Delay is a rampant phenomenon in construction projects. This is not synonymous to suspension or stoppage of work as may be directed to the contractor by a form from the client. Delay is the slowing down of work without stopping construction entirely, which 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 (Lo, Fung & Tung, 2006). It usually shows up as additional days of work or as a delayed commencement of an activity (Stumpf, 2000, cited in Ali, Smith, Pitt & Choon, 2012). Delays give rise to disruption of work and loss of productivity, late completion of project increased time related costs, and third party claims and abandonment or termination of contract. It is a project slipping over its planned schedule and is considered as common problem in construction projects. To the owner, delay means loss of revenue through lack of production facilities and rent-able space or a dependence on present facilities, it leads to social inconvenience, which affects a country's national growth rate (Khoshgoftar, Abu Bakar & Osman, 2010).

There have been numerous studies on the identification of factors and causes of construction delays in the past and present, worldwide. Mansfield, Ugwu, and Doran, (1994) researched on the causes of delay and cost overruns in Nigerian construction projects and found out that the most important variables causing construction delays and cost overruns are poor contract management, financing and payment of completed works, changes in site conditions, shortage of materials, imported materials and plant items, design changes, subcontractors and nominated suppliers. Sambasivan and Soon (2007) stated that about 17.3% of government contract projects in Malaysia were considered sick, which means they were delayed by more than three months or abandoned completely. Owolabi, Amusan, Oloke, Tunji, Owolabi, Peter and Omuh (2014) identified 15 factors causing delay and they were ranked according to the mean index score. The factors include: 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 contractor's insolvency, variations. Also, project management problem, 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 strike. Kumaraswamy and Chan (1997) surveyed the causes of construction delays in Hong Kong as seen by clients, contractors and consultants, and examined the factors affecting productivity. The survey revealed differences in perceptions of the relative significance of factors between the three groups, indicative of their experiences, possible prejudices and lack of effective communication. Assaf *et al.* (2006) studied the causes of delay in large building construction projects in Saudi Arabia. The most important causes of delay included approval of shop drawings, delays in payments to contractors and the resulting cash-flow problems during construction, design changes, conflicts in work schedules of

subcontractors, slow decision making and executive bureaucracy in the owners' organizations, design errors, labour shortage and inadequate labour skills. However, the study conducted by Maura *et al.* (2007) on the time and cost overrun in Portugees and discovered that design errors; client liability; project specification and direct change order by the client are the major factors that cause the time and cost overrun. Abdullah and Battaineh (2002) evaluated the progress reports of 164 building and 28 highway projects constructed during the period 1996-1999 in Jordan. The results indicate that delays are extensive: the average ratio of actual completion time to the planned contract duration is 160.5% for road projects and 120.3% for building projects. Al-Momani (2000) conducted a quantitative analysis of construction delays by examining the records of 130 public building projects constructed in Jordan during the period of 1990-1997. The researcher presented regression models of the relationship between actual and planned project duration for different types of building facilities. The analysis also included the reported frequencies of time extensions for the different causes of delays. The researcher concluded that the main causes of delay in construction projects relate to designers, user changes, weather, site conditions, late deliveries, economic conditions, and increase in quantities. Financial difficulties faced by the contractor and too many change orders by the owner are the leading causes of construction delay. Severe weather conditions and changes in government regulations and laws were also other causes of delay identified (Aziz, 2013). Delays are common in various construction projects and cause considerable losses to project parties. Aziz (2013) identified the common results of delays as follows: late completion of project, increased cost, the disruption of work, loss of productivity, third party claims, disputes and abandonment or termination of contracts as the common results of delay.

2.1 Classification of construction project delay

There are different categories of delays in construction identified in the literature. Specifically, Mohammed *et al.* (2012) classified construction delay as follows:

2.1.1 Inexcusable delay (Non- Excusable delay)

This is caused solely by the contractor or its suppliers. The contractor is generally not entitled to relief and must either make up the lost time through acceleration or compensate the owner. This compensation may come about through either liquidated damages or actual damages, provided there is no liquidated damages clause in the contract. Liquidated damages are generally expressed as a daily rate that is based on a forecast of costs the owner is likely to incur in the event of late completion by the contractor.

2.1.2 Excusable delay

This can be categorized into non-compensable delay and compensable delay. Non-compensable delay is caused by third parties or incidents beyond the control of both the owner and the contractor. Example typically includes acts of God, unusual weather, strikes, fires, acts of government in its sovereign capacity, etc. In this case, the contractor is normally entitled to a time extension but no compensation for delay damages. Compensable delay is caused by the owner or the owner's agents. An example of this would be the late release of drawings from the owner's architect. An excusable, compensable delay usually leads to a schedule extension and exposes the owner to financial damages claimed by the contractor. In this case, the contractor incurs additional indirect costs for both extended field office and home office overhead and unabsorbed home office overhead. According to Menesi (2007), excusable delay consists of compensable and non-compensable delays. Compensable delay occurs when the owner is the major cause of the delay. It is unforeseeable and beyond the contractor's control. Examples include changes in the scope of work and the owner's failure to grant site access. When neither the owner nor the contractor is responsible for the delay, it is called excusable-non-compensable delay. Examples include severe weather and acts of God.

Inexcusable delay occurs when the contractor is responsible for the cause of the delay. It is foreseeable and within the contractor's control (Menesi 2007). Examples of such type of delay are failure to coordinate work, too few workers and low productivity.

Concurrent delay is commonly used to describe circumstances where different causes of delay overlap during a period of time or schedule window. As such, concurrent delay could occur during a window if a delay that was caused by the owner is on the same activity path or parallel activity path as a delay that was caused by the contractor (Richard, 2017). It is also a form of delay where excusable and inexcusable delay happens at the same time (Arditi & Robinson, 1995). For example, if no work is possible on a site for a week not only because of exceptionally inclement weather, but also because the contractor has a shortage of labour, and the failure to work during that week is likely to delay the works beyond completion date by one week, a concurrent delay has occurred.

3.0 Mitigation Measures of Delays in Construction Projects

To minimize time delays and cost overruns Koushki, Al-Rashid and Kartam (2007) recommended the following: (i) ensure adequate finance, (ii) perform proper preconstruction planning on tasks and resources (iii) allocate sufficient time & money for the design phase (iv) hire an independent, supervising engineer (iv) select a competent consultant and reliable contractor. Hoai, Lee and Lee (2008), concluded that most causes of delay and cost overrun of construction project relate to human and management problems and hence improving the ability of managers and engineers may mitigate cost overrun. Monitoring gives early warning of the possibility of contractor’s delays and helps in anticipating the consequences of changes that may be needed (Abdul-Rahman & Berawi, 2002). Olawale & Sun (2010) identified 90 measures to mitigate the effect of the top five leading project cost and time control inhibitors and classified them under preventive measures, predictive measures, corrective measures and organizational measures. They concluded that although external factors are generally difficult to control or even beyond the control of project managers, the frequency of their occurrence is generally low. On the other hand, internal factors are persistent and require constant control. Al-Mutairi (2017) concluded that periodic evaluation/audit is mandatory to ensure timely and precise implementation of the mitigation measures. Decision making at the right time is important especially with a fast-track project in preventing delays because the concept of using fast-tracking can be applied to traditional contract projects whereby construction starts prior to completion of the design/contract document (Ahuja *et al.*, 1994). It is important that general management keep track of project progress to reduce the possibility of delay occurrence or identify it at early stages. Construction planning has to be a much more decentralized activity to cope with the inherently uncertain nature of task duration.

4.0 Research Methodology

Data for the study was gathered through a questionnaire survey on targeted construction professionals; 25 Architects, 24 Quantity surveyors, 29 Engineers, 22 Builders in consulting, contracting and client organisations. The distribution of respondents’ organization was purposively sampled comprising 38 consulting firms, 42 contracting firms and 20 Client organizations. Therefore, a total of one hundred (100) copies of questionnaire were distributed to respondents, out of which eighty-seven (87) were returned representing 87% response rate. This is adequate enough considering assertion that the result of a survey would be considered as biased and of little value if the return rate were lower than 30-40% (Ojo, 2001). Descriptive statistical technique such mean and standard Deviation and the results were ranked accordingly.

Table 1 Distribution of Respondent’s type of Organisation and professional background

S/ N o	Firm	Professional Background			
		Architect	Engineer	Builder	Total

				Quantity Surveyor				
a	Consulting			10	13	7	8	38
b	Contracting			11	6	15	10	42
c	Client			4	5	7	4	20
d	Total			25	24	29	22	100

4.0 Data Analysis and Discussion of Results

Table 2: Factors Responsible for delays in construction projects in the city of Ibadan

S/No	Factors	Rank	Mean Score	Standard Deviation
A	Improper planning	1	5.0	0.3
b	Ineffective communication	2	4.7	0.4
c	Poor contract management.	3	3.8	0.4
d	Client’s financial difficulties	3	3.8	0.4
e	Shortage of material supply	4	3.7	0.5
f	Slow decision making	4	3.7	0.5
g	Cash-flow problems during construction	5	3.6	0.9
h	Fluctuation in material prices	5	3.6	0.9
i	Loss of Productivity	6	3.5	0.8
j	Mismanagement by the contractor (Financial, Supplier Support, Sub-Contractor)	6	3.5	0.7
k	Executive bureaucracy in the owners' organizations	7	3.4	0.8
l	Changes in client’s requirement	7	3.4	0.5
m	Changes in Site Conditions	8	3.3	0.8
n	Unrealistic contract duration	8	3.3	0.5
o	Inadequate consultant experience	9	3.2	0.7
p	Delayed payment for completed works	9	3.2	0.7
q	Conflicts in work schedules of subcontractors	10	3.1	1.0

The above table outlined factors responsible for delays in construction projects and were rated according to their levels of importance. Based on the mean value criterion, improper planning ranked as the first factor of delay in construction projects with a mean score of 5.0. Ineffective communication ranked the second factor responsible for delays with a mean score of 4.7, this finding corroborated the submission of (Frimpong, Oluwoye & Crawford, 2003; Mohammed, *et al.*, 2012). Kumaraswamy and Chan (1997) also found out that ineffective communication was an important factor causing delays in Hong Kong among the owners, contractors and consultants. Poor contract management and Client’s financial difficulties were the third factors responsible for delays having a mean score of 3.8. Mansfield *et al.* (1994) identified poor contract management as one of the most important variables responsible for delays while Alade, Lawal, Omonori and Olowookere (2016) identified client’s financial difficulties as the third cause of delay in their study in Akure, Ondo State which is in line with the findings of this research in Ibadan. Similarly, Owolabi

et al. (2014) asserted that lack of funds to finance the project to completion ranked the first factor that induce delays.

Shortage of material supply and slow decision making ranked forth factors of delays in construction projects in the study area with a mean score of 3.7. *Owolabi et al.* (2014) ranked slow decision making as the second factor responsible for delay. This indicates the essence of quick decision making in contract administration. Cash-flow problems during construction and fluctuation in material prices ranked the fifth position amongst the factors responsible for delays which is in line with the findings of (*Aziz, 2013*). *Alade et al.* (2016) also found out that escalation of material prices as an important factor of delays in their study.

Other factors responsible for delays as found out by the study with their respective mean scores as shown on table 2.0 are; loss of productivity, mismanagement by the contractor (Financial, Supplier Support, Sub-Contractor), executive bureaucracy in the owners' organizations, changes in client's requirement, changes in site conditions, unrealistic contract duration, inadequate consultant experience, delayed payment for completed works and conflicts in work schedules of subcontractors.

Table 3: Mitigation measures of delays in construction projects in the city of Ibadan

S/No	Measures of Mitigation	Rank	Mean Score	Standard Deviation
a	Effective risk management	1	4.9	0.33
b	Proper planning	2	4.7	0.67
c	Timely payment from client	2	4.7	0.48
d	Quick preparation of insurance claims	3	4.2	0.58
e	Good scheduling programme	3	4.2	0.41
f	Utilization of standardized package for tender	4	3.5	0.50
g	Mobilizing resources at the right time	5	3.3	0.48
h	Proper computation of financial damages		3.3	0.48

Table 3 showed that effective risk management ranked first as a mitigating measure of delays in construction projects with a mean score of 4.9. Proper planning and timely payment from client ranked second as a mitigating measure of delay with a mean score of 4.7. *Abdelnaser, Peter, Mahmood, Hussin, and Aziz, (2005)* asserted that proper planning is critical to avoiding delays. Quick preparation of insurance claims and good programme scheduling ranked third having a mean score of 4.2. Utilization of standardized package for tender ranked fourth having a mean score of 3.5. This is supported by *Al Mutairi (2017)* as one of the control measures of delay. Mobilizing resources at the right time and proper computation of financial damages ranked fifth with a mean score of 3.3. This showed that the identified mitigation measures would have significant impacts in reducing delays to a barest minimum should they be borne in mind right from the inception of construction projects. It is essential that stakeholders in construction (contractor, consultants) put in place the above measures at the early stage so as to avoid or at worse minimize delays.

5.0 Conclusion and Recommendations

Construction delay is a critical function in construction projects. It is one of the major bottlenecks suffered by most construction projects in Ibadan. As it were, delays do not just occur in construction projects, rather there are reasons traceable to delay in construction projects. Among several factors responsible for delays identified in the study are improper planning, ineffective communication, poor contract, client's financial difficulties, shortage of material supply, slow decision making, cash-flow problems during construction, fluctuation in material prices, loss of productivity e.t.c. Other factors responsible for delays as found out by the study with their respective mean scores as shown on table 1.0 are; loss of productivity, mismanagement by the contractor (Financial, Supplier Support, Sub-Contractor), executive bureaucracy in the owners' organizations, changes in client's requirement, changes in site conditions, unrealistic contract duration, inadequate consultant experience, delayed payment for completed works and conflicts in work schedules

of subcontractors. Delay in project affects the time performance of project. Late completion of project, increased cost, the disruption of work, loss of productivity, third party claims, disputes and abandonment or termination of contracts as the common results of delay

Rather than the project getting completed as initially planned, there is always a need for more time for construction process such that connotes in poor time performance of project. Delay therefore had to be mitigated in construction of all types, thereby eradicating such effect as overruns in time, cost of project, while performance is attained in project in the long run. In practice, this phenomenon is expected to continue unless management actions are taken to control these causes within the planned element of the design and construction works.

Having assessed the major factors responsible for delays in construction projects in Ibadan, the following recommendations are made.

- i. Proper planning practice, coordination, and change of control procedures is required from the initial stage of the project with proper risk management procedure so as to avoid delays
- ii. Effective communication is very important among the stakeholders in construction projects right from pre contract to construction and post contract stages of construction.
- iii. Effective contract management should also be taken into consideration as it has significant impact on project finance (both client and contractor), project supervision and at the end timely project delivery.

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