

# To Identity Principal Causes Of Construction Delay

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**Abstract** Construction delays are matchless one in every of the greatest issues construction companies are facing now a day. The research are depend on the questionnaires survey conducted to identify and find out the relative importance index of the important factors contributing to construction delay in construction project. to determine principal causes of construction delay and their importance depend upon the owner ,consultant and contractor so that chances of construction delay in constructions fields are minimize and reduce the various effects on different project in this study 83 dissimilar factors of Construction delay were selected after the past review of research paper are affected by causes of construction delay if anybody doesn't knows which are the main factors that causes delay then they cannot be succeeded. The project investigated in this study included residential building, office building projects and large and small construction work in town. In this research the project team members i.e. owner, contractor, consultant, Engineers and architecture etc. are taken for questionnaire survey to obtain the delay factors and research to identify the principal causes and effects of delay in construction field

**Keywords** construction Survey, Relative importance index (RII), effect of delay, and causes of delay.

## Introduction

In construction delay could be defined as the time overruns either beyond completion date and time given to the contractors and given to the parties for delivery. 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 shortages of labors, unqualified work force, ineffective planning and scheduling of project by contractors experiences and rent able space. In some cases, to the contractor, delay means shortages of labors, late of procurement of material, difficulties in financing project by contractor , delay in progress

payment by owner ,late in reviewing and approving design documents by owner shortages of labors late procurement of material and higher material costs, and due to labor cost increases. Completing projects is an indicator of efficiency, but the construction process is subject to many variables and unpredictable factors, which result from many sources. These sources include the performance of parties, resources availability, environmental conditions, involvement of other parties, and contractual relations. However it is rarely happen that a project is completed within the to mention particularly time delay on construction projects are a universal phenomenon they are almost accompanied by cost and time over run construction delay have an adverse effect on parties ( owner , contractor and consultant it is necessary to define the actual causes of delay in construction project.

## Objectives of the study

The main objectives of this study include the following:

- To pin point the causes of delays in construction field in India
- To pin point the approaches for solving the problems regarding delay
- To minimize and reduce the effect of delay in construction field

## Literature review

Many project experience extensive delay and thereby exceed initial time and cost estimates .in addition to imparting the economic feasibility of capital project ,extensive delay provide a fertile ground for costly dispute and claims by Abdalla M. odeh and hussien T. battaineh [1]. Delays occur commonly in construction projects. Assessing the impact of delay is sometimes a contentious issue. Several delay analysis methods are available but no one method can be universally used over another in all situations. The selection of the

proper analysis method depends upon a variety of factors including information available, time of analysis, capabilities of the methodology, and time, funds and effort allocated to the analysis by David Arditi [2]. A survey on time performance of different types of construction projects in Saudi Arabia was conducted to determine the causes of delay and their importance according to each of the project participants, i.e., the owner, consultant and the contractor. by Sadi A. Assaf Sadiq Al-Hejji [3]. The construction industry is a major player in the economy, generating both, employment and wealth. However many projects experience extensive delays and thereby exceed initial time and cost estimates. A host of causes of construction delays in residential projects were identified and classified according to Drewin's Open Conversion System. by G. Sweis, R. Swies, A. Abu Hamed, A. Shboul [4]. Delayed completion of a construction project is often caused by a complex interaction of a combination of events, some of which are the contractor's risks and others are the project owner's. The apportionment of the liability to give effect to the risk allocation has therefore been a matter of great controversy. Many delay analysis methodologies have been developed over the years for performing this task.. by Issaka Ndekugri; Nuhu Braimah; and Rod Gameson [5]. Schedule delays frequently occur in construction projects. Many methods have been developed and used to analyze and measure the schedule delay of construction projects. Selecting a suitable analysis methodology is a major task for resolving the schedule delay claims encountered by Jyh-Bin Yang and Chih-Kuei Kao [6]. This article critically discusses different explanations for the performance problems exhibited by many megaprojects, and examines the proposed governance solutions. It proposes a three-fold typology of explanations and solutions by examining authors' epistemological assumptions about decision-maker cognition and about decision-maker views on the nature of the future. It argues that despite important differences in their epistemological orientation, these explanations share an acceptance of the notion of actor farsightedness. It concludes that this encourages them to focus on governance in megaprojects, made forms of organization designed ex ante, and to ignore governing in megaprojects, spontaneous micro-processes of organizing emerging ex post. Identification of this gap adds support to calls by projects-as-practice researchers for a broadening of research to encompass the actuality of projects by Jon Sanderson [7]. Delays are unique one in every of the

largest issues construction companies are facing today. Delays will result in several negative effects like lawsuits between house owners and contractors, exaggerated, prices, loss of productivity and revenue, and contract termination. Albeit varied studies are thought of into the causes touching delays, these studies rarely discuss common and general causes of delays in construction comes. by Desai Megha, Dr. Bhatt Rajiv [8]. The time for performance of a project is usually of the essence to the employer and the contractor. This has made it quite imperative for contracting parties to analyse project delays for purposes of making right decisions on potential time and/or cost compensation claims. Over the years, existing delay analysis techniques (DATs) for aiding this decision-making have been helpful but have not succeeded in curbing the high incidence of disputes associated with delay claims resolutions. by Nuhu Braimah [9]. Building construction projects in Uganda's construction industry are experiencing a wide spread of delays. The purpose of this study was to assess the factors causing delays and their effects on building construction projects in Uganda. by L. Muhwezi, J. Acai, G. Otim [10].

#### **Data collection through field survey**

The questionnaires were given to the selected firm which are related to the construction field for collecting the necessary data i.e. project manager, site engineer, owner government employee and architect engineer in questionnaires they given opinion to tick marks for ranking 1 to 5 very low, low, medium, high and very high. In this study is to confirm the findings of the literature review surveys were conducted to find the extent and the factors causing time over runs in construction projects the analysis of survey is done by Relative Importance Index (RII) method for the survey a questionnaire consists of 83 factors which were identified from the literature review. These factors are grouped into nine different categories: consultant ,contractor, design equipment, external related, labour, material, material, owner related The questionnaire was sent to the owners, contractors, consultants, site engineer and architect engineer who are actively associated with the construction activities and possessing sufficient experience in the field of construction.. The respondents were asked to give their opinion regarding the extent of time-over Unipart one. Many of the respondents are leading construction, consultancy and government organizations. Only experts holding senior positions in the organizations were approached for answering the questionnaire. The

experts were made to understand that their responses any particular project whether it was highly successful or highly destructive. The questionnaires were designed in a manner that will help in the preservation of sincerity and consistency in the data. The study was made to every respondent individually. The respondents were specifically reminded of the importance of observing consistency in their answers when point wise comparison was made. They were made to understand that their responses should not be biased toward any particularly. The data received in the questionnaire was analysed by Relative Importance Index (RII) method

To determine the relative importance of Sum of weights

$$(W_1 + W_2 + W_3 + \dots + W_n) / A \times N$$

Where W = weights given to each factor significant.

A= highest weight (i.e.5inthis case).

N=total number of respondent

**Causes construction delay**

S. no	Owners	Contractors	Consultants
1	Shortage of labours	Delay in progress payments by owner	Type of project bidding and award
2	Unqualified work force	Late in reviewing and approving design documents by owner	Shortage of labour
3	Ineffective planning and scheduling of project by contractor	Change orders by owner during construction	Delay in progress payments by owner
4	Low productivity level of labours	Delays in producing design documents	Ineffective planning and scheduling of project by contractor
5	Hot weather effect on construction activities	Late in reviewing and approving design documents by consultant	Change orders by owner during construction
6	Conflicts encountered with subcontractors schedule in project execution	Difficulties in financing project by contractor	Low productivity level of labours
7	Poor site management and supervision by contractor	Mistakes and discrepancies in design documents	Difficulties in financing project by contractor

8	Inadequate contractors experience	Late procurement of materials	Poor site management and supervision by contractor
9	Effects of subsurface conditions soil existing of utilities	Inflexibility (rigidity) of consultant	Poor qualification of the contractors technical staff
10	Change orders by owner during construction	Slowness in decision making process by owner	Delay in material delivery

**Survey methodology**

the scope of research included large public project roads and large private building the questionnaire was distributed to owner, contractor and consultants representing the different specialization of contactor and consultant and owner related to different field of each specializations is proportional to the distribution of the factors cause of delay the sample size were selected randomly factors causes of delay and number of respondent scoring the respondent were asked to express their perception of relative importance index of each of 83 causes of delay either very low, low, medium, high and very high the questionnaire was personally handed over to respondents important points factors causing construction delay.

**Consultant related factors**

The consultant are mainly concerned with technical factors such as inadequate contractors experience, delay causes by subcontractors and improper planning while contractor are more concerned with managerial and operational factors such as lack of experience of consultant in construction projects, Conflicts between consultant and design engineer, Delay in approving major changes in the scope of work by Consultant Delay in performing inspection and testing, Inaccurate site investigation ,inadequate project management assistance, late in reviewing and approving design documents, and poor communication and coordination with other parties

**Contractor related factors**

Inadequate contractor experience was the most important factor this can be attributed to the contract awarding procedure where more projects are awarded to the lowest bidder moreover local contractor , through a risky or dangerous are being awarded large and difficult project in which they have little experience such as frequent change of subcontractors, inadequate contractor experience, inappropriate construction methods, incompetent

project team, ineffective project planning and scheduling, obsolete technology, poor communication and coordination with other parties, poor site management and supervision, rework due to errors and unreliable subcontractors etc.

#### **Design related factor**

the design related delay are very important such as complexity of project design, design changes by owner or his agent during construction, design errors made by designers, insufficient data collection and survey before design, lack of experience of design team in construction projects, mistakes and delays in producing design documents, misunderstanding of owner's requirements by design engineer, poor use of advanced engineering design software and unclear and inadequate details in drawings.

#### **Equipment related factors**

The contractors of equipment availability and failure indicate problems associated with Equipment allocation problem, frequent equipment breakdowns, improper equipment, inadequate modern equipment, and Low efficiency of equipment, Shortage of equipment and slow mobilization of equipment.

#### **External related factors**

all parties are familiar with these factors and are able to deal with effectively without causes any delay such as accidents during construction, changes in government regulations and laws, conflict, war, and public enemy, delay in obtaining permits from municipality, delay in performing final inspection and certification by a 3 party, delay in providing services from utilities (water, electricity) global financial crisis, loss of time by traffic control and restriction at job site, natural disasters (flood, hurricane, earthquake), price fluctuations, problem with neighbours, slow site clearance, unexpected surface & subsurface conditions soil and unfavourable weather conditions

#### **Labor related factors**

the labor related factors are Absenteeism, Low motivation and morale of labor, Low productivity of labor, Personal conflicts among labor, Shortage of labor, Slow mobilization labor, Strike and Unqualified inadequate experienced labor.

#### **Material related factors**

The quality of material was among the least important causes because most of the available material is local with little variation such as Changes in material

types and specifications during construction, Damage of sorted materials, Delay in manufacturing materials, Escalation of material prices, Late delivery of materials, Poor procurement of construction materials, Poor quality of construction materials, Shortage of construction materials and Unreliable suppliers.

#### **Owner related factors**

The owner related factors such as Change orders, Conflicts between joint-ownership, Delay in approving design documents, Delay in progress payments, Delay in site delivery, Improper project feasibility study, Lack of capable representative, Lack of experience of owner in construction projects, Lack of incentives for contractor to finish ahead of scheduled, Poor communication and coordination with other parties Slowness in decision making and Suspension of work by owner.

#### **Discussion and conclusion**

According to contractors, labor productivity was the most important delay factor, poor site management and supervision by contractors and inadequate contractor experience the top most important factors delay caused by subcontractors, slow decision making by owner, delay in progress payments by owner, late procurement of material mistakes and discrepancies in design documents improper planning and labor productivity delay are costly and claim, impair the feasibility for project owner and retard development of construction industry.

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