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Delay Causes and Importance of Corrective Actions on them

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Abstract - *Delay is a threat to the construction industry. It is one of the most common problems affecting the performance of the project in terms of time, cost and quality. Delay in any activity/milestone is required to be identified as early as possible. As soon delay has occurred, the reason behind delay will have to be identified so that the corrective action for reducing the impact of delay on subsequent activity/milestone can be reduced. This paper aims to outline delay causes and the importance of corrective action for delays so that the negative impact on project can be minimized.*

Key Words: Delay Causes, Delay analysis, Corrective Actions

1. INTRODUCTION

The construction industry is large, volatile, and requires tremendous capital outlays. Delays occur almost in every construction project and the impact of these delays varies considerably from project to project. In construction, delay could be defined as over run of time either beyond completion date specified in a contract, or beyond the date that the parties agreed upon for delivery of a project.

Activity delays can negatively affect several extent of construction-project performance. Delays can lengthen schedules, increase project costs, and endanger quality and safety. Delays are one of the most common problems that affect the competitiveness of construction companies and the interests of all stakeholders, including owners, designers, general contractors, subcontractors, users, and others. The delays in construction projects have significant financial and social impact to all parties involved in the projects.

Delays in the construction projects are attributed to men, materials, machinery, funds, decisions and also site design drawings, and reasons on account of force majeure.

The effect of delay in construction projects have to be minimized so that it does not affect further the project. Hence corrective actions for the delays occurred are very necessary. Corrective actions will reduce the impact of delay on project as well reduce the chances of further similar delays.

2. LITERATURE REVIEW

Ali S. Alnuaimi, and Mohammed A. Al Mohsin, [2013] [1], stated that delay in construction projects in Omen during 2007-2009 is more than 40% of the planned time. Owner who is highly concerned about delay in construction projects must study their projects in all stages. Developing countries have to develop a new strategy for management in construction projects taking into account the considerations of size, nature, cost, and importance of the project leading to minimize the delays in public construction projects.

B. Indhu, P. Ajai, [2014] [2], identified the main causes of delays:: delay in payment by the head office, frequent change of staffs, poor site management, improper management of the engineers, delay in supply of material and lack of manpower. Similarly the effects of these delays are: time overruns cost overrun, negative social impact, idling resources and disputes. Analysis of the responsibilities of delay causes suggests that teamwork is required to overcome delays and minimise the same.

Megha Desai, Rajiv Bhatt, [2013] [3], identified 59 causes of delay and categorised in 9 groups: project related, owner related, contractor related, design related, material related, equipment related, labour related and external factors. Labour related factors were ranked first and external factors ranked last. Delay caused were analysed by frequency, severity importance and relative importance.

Tommy Y.Lo; Ivan W. H. Fung and Karen C.F. Tung, [2006] [4], identified few strategies to mitigate construction delays and to improve the overall productivity in civil engineering industry: (a)better communication and strong management teams underlines the need for effective site management. (b)manpower, at both technical and managerial levels, should have their knowledge updated by continuous professional development schemes. (c)to accelerate the communication and decision making among all the parties, appropriate overall organisational structures and communication systems linking all projects teams should be developed throughout the life of the project. (d)the roles and

responsibility of those involved in the project team should be clearly defined, and the designated decision makers should also be clearly identified.
They also stated that setting some milestones and priorities are required with reference to the survey findings so that improvement can be achieved in progressive way.

3. DELAYS IN CONSTRUCTION PROJECT

One of the main objectives of any public or private sectors dealing with the construction projects is to upgrade projects performance, through reduction of costs, completion of projects within assigned budget and time constraints, and improve quality.

Completion time is one of the performance measures of construction projects, which are time, cost, and quality. Project success is measured by these measures which show the performance of the construction parties involved, mainly the owner and the contractor.

The construction process is subjected to the influence of highly changing variables and unpredictable factors, which could result from different sources. These sources include the performance of construction parties, resources availability, environmental conditions, involvement of other parties, and contractual relations. As a consequence of these sources, the construction of projects may face problems, which could cause delay in the project completion time. Delay means the time overruns either beyond the completion date specified in the contract, or beyond the date that the parties agreed upon for delivery of the project; in both cases, the delay is usually a costly manner. Delay represents an act or event, which extends the time, required to perform or complete a part of the works or all works under the contract.

Delays in the completion of construction projects are one of the most recurring problems in the construction industry. Delays have costly, risky and undesirable consequences on project success in terms of time, cost, quality and safety. These impacts are not only confined to the construction industry but they influence the overall economy of a country.

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5. DELAY CAUSES

Based on previous studies, few major causes of delays have been identified. Causes of delays are attributed mainly due to owner, contractor, design and drawing, material, equipment, and labor. Following is the brief discussion of these factors that cause delay.

Owner include the cause of delay related to delay in approving shop drawings, slow in decision making, suspension of work, change orders. Contractor includes rework due to errors during construction, poor site management, poor communication and coordination, improper construction methods implemented, delay in site mobilization. Design and Drawing includes delay in producing design document, complexity of project design, insufficient data collection and survey before design, misunderstanding of owners requirements by design engineer. Material includes delay in material delivery, delay in manufacturing special building material, changes in material types and specifications during construction, late procurement of materials, and non-availability of materials. Equipment includes equipment breakdown, shortage of equipment, equipment failure(mechanical failure) and low level of equipment operator's skill, low productivity and efficiency of equipment. And labor includes shortage of labor, unqualified workforce, low productivity level of labors, personal conflicts among labors.

6. IMPORTANCE OF CORRECTIVE ACTIONS ON DELAYS

Construction delays are widespread in most projects around the world. Some delays may happen in the preconstruction phase which is defined as the period beginning from the initial conception of the project to the signing of the contract

between the owner and the contractor; however some of them may happen in the construction phase that is the period when actual construction is under way. These delays definitely create negative impacts on project performance.

To reduce the impact of delays on construction projects, corrective actions for the caused delays are very necessary. These corrective actions for delays caused will definitely lessen the effect of delays on project. Each activity will have its own corrective action according to the type of delay caused and the reason behind that delay. Before suggesting or recommending a corrective strategy or action, one has to thoroughly scrutinize the activity, its work plan, prioritize it amongst other activity and re-evaluate the milestones targets.

Again, any delay in suggesting actions on delay will further result in delay for execution of that activity. So as soon as delay is identified, its corrective action should be given.

It is very important to identify the delays caused and then recommend the appropriate action for rectifying the negative impact of the delay on other activity or on the project as a whole.

It is necessary to track the project every month so that the delays which have been occurred in the due course can be identified and the corrective actions can be implemented for reducing their adverse effect on further activities. Therefore, corrective actions for reducing delay impact on project must be given utmost important by all who are involved in successful completion of project.

For the activities with delays occurred and the corrective actions suggested, it is required to check whether the actions have been implement as on date otherwise delay in implementation of corrective actions will itself increase the delay duration of the project.

Following are some examples showing the corrective actions for some of the common delays in construction projects:

Table -1: Delay Causes and Corrective Action

Sr. No.	Delay causes	Corrective actions
1	Labor shortfall	Increase labor strength as per the requirement ASAP
2	Design drawing receipt delay	Request for design drawing receipt ASAP
3	Work front shortfall	Need to prepare the work front for further activity ASAP
4	Material Shortfall	Alternate predefined source to be used ASAP

*ASAP: As Soon As Possible

7. DISCUSSION

Through this study it is clear that delays have undesirable consequences on the construction projects. Delays cannot be overlooked. They must be taken into sincere consideration so that they do not affect project in terms of time, cost and quality. The most common type of delay causes which accounts for most of the delays are due to owner, contractor, labor, material, design and drawing and equipment.

It is very much required to identify delay in the first place and then find the cause of its occurrence. Delay cause hence identified will help to recommend a corrective action for each delay occurred. This corrective action is to be implemented without any further delay. This will help to avoid delay occurrence in further activities hence will help improve project.

8. CONCLUSION

One of the main objectives of construction project is increasing performance of project, completion of project within their assigned time and budget, reduction in cost of project and quality of work executed. A proper team of engineers/planners should be appointed for the project to take care of these of various causes mentioned earlier.

Timely completion of project is very important. It is the time which features the performance of project. Delays occurred in any project leads to completion of project beyond the scheduled date. As the delay will lead to much more consequences in completion of project as per the performance required, it is necessary to prevent delays in construction projects.

If delay occurred in any construction project, it affects the project with respect to its time performance, cost of resources and quality performance. To minimize the impact of delays on project, measures must be taken. These measures are the corrective action to reduce the effect of delays.

Delays must be identified as soon as possible, and accordingly the corrective actions must be identified and implemented then and there. This will reduce the impact of delays on the successor activity and on the project as a whole.

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