

REVIEW OF FACTORS FOR TIME SCHEDULING AND ECONOMIC IN BUILDING PROJECT EXECUTION

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ABSTRACT: *Construction projects in India frequently clash problems which case cost overrun and time obstruct, the two approximately common issues. The circumstance of this work is to recognize and quantify these problems and thus maintain in avoiding them. The intensify of this business is on from one end to the other top issues which are: chain of command in bidding approach, cost- push inflation, low-cost condition of the government, not enough information gathered and surveys done once design, monthly expense difficulties, machinery cost changes, process changes separately legislature, economic difficulties, manner of accepting a loan and expense for completed field and changes made by the owner. A specification for each of these issues provides additional information approaching them. In the entire text of this survey the alike weighting approach is used to examine the absolute groups, and the results open that issues devoted to the groups of legislature, manager and authority has the approaching significant impact.*

Keywords: *Construction design, Time Obstruct, Monthly Expense Difficulties, Machinery Cost Changes, and Process Changes.*

I. INTRODUCTION

India is becoming increasingly discovered in the international background for its infrastructure development. The country's impulsive infrastructure capital, coupled by all of growth-oriented measures individually Government and added unknown capex, drives the activities in the infrastructure many folds. Major obstacle is the domestic function execution capabilities/project authority consultancy services. In construction market, the work management is traditionally learnt 'on the job', which is visualize drawn behavior and actually takes 3-4 projects back someone gets a grip of it. With increasing democracy among contract bidders, the main attract is upon the acquirement of the field by all of maximum efficiency from minimum value of basic material, specifically capital yet without compromising by all of quality standards and that extra within a restrictive duration of time. The bearing industry is the moment largest market in India afterwards agriculture. It accounts for approximately 11% of India as GDP. It makes important contribution to the resident economy and provides work to rich place of business of people. There are especially three segments in the point manufacturing appreciate real budget construction which includes residential and commercial construction; infrastructure building which includes roads, railways, thing etc; and industrial construction that consists of oil and gas refineries, pipelines, textiles etc. Construction is an essential case of whole country's infrastructure and industrial

development. Construction manufacturing, by all of its backward and earlier linkages with various contrasting industries like cement, steel bricks etc. catalysis trade generation in the country. Construction is the instant largest financial activity after to agriculture. Broadly construction can be covert directed toward 3 segments Infrastructure, Industrial and Real Estate. Infrastructure segments involve construction projects in divergent sectors like roads, railways, ports, irrigation, power etc. Industrial construction is contributed by success projects from various industry sectors. A working knowledge of general management and familiarity with the special knowledge domain related to the project are indispensable. Supporting disciplines such as computer science and decision science may also play an important role. In fact, modern management practices and various special knowledge domains have absorbed various techniques or tools which were once identified only with the supporting disciplines. For example, computer-based information systems and decision support systems are now common-place tools for general management. Similarly, many operations research techniques such as linear programming and network analysis are now widely used in many knowledge or application domains. Specifically, project management in construction encompasses a set of objectives which may be accomplished by implementing a series of operations subject to resource constraints. There are potential conflicts between the stated objectives with regard to scope, cost, time and quality, and the constraints imposed on human material and financial resources.

These conflicts should be resolved at the onset of a project by making the necessary trade-offs or creating new alternatives. Subsequently, the functions of project management for construction generally include the following:

- Specification of project objectives and plans including delineation of scope, budgeting, scheduling, setting performance requirements, and selecting project participants.
- Maximization of efficient resource utilization through procurement of labor, materials and equipment according to the prescribed schedule and plan.
- Implementation of various operations through proper coordination and control of planning, design, estimating, contracting and construction in the entire process.
- Development of effective communications and mechanisms for resolving conflicts among the various participants.

II. OBJECTIVE

The primary objective of research work is to identify the problems associated with the time consumption and economic variability of the construction projects, and to suggest methods to overcome such problems in real time.

III. LITERATURE REVIEW

Jingqin Gao et al. 2019 presents a comprehensive bottom-up methodology based on Life Cycle Cost Analysis (LCCA) to integrate project- and network-level analysis that can fast-track the acceptance of new materials or technologies. Hypothesized improvement rates are applied to the deterioration functions of existing materials to represent the expected improved performance of a new material compared with a conventional material with relatively similar characteristics. This new approach with stochastic treatment allows us to probabilistically evaluate new materials with limited data for their future performance. Feasible maintenance and rehabilitation schedules are found for each facility at the project level and near-optimal investment strategies are identified at the network level by using a metaheuristic evolutionary algorithm while satisfying network-wide constraints. This provides an effective solution to many issues that have not been fully addressed in the past, including the trade-off between multiple objectives, effects of time, uncertainty, and outcome interpretation. A hypothetical bridge deck system from New Jersey's bridge inventory database is used to demonstrate the applicability of the proposed methodology in constructing a planning and management decision-support procedure.

De Soto, B. G., Agustí-Juan et al. 2018 Although automation has been actively and successfully used in different industries since the 1970s, its application to the construction industry is still rare or not fully exploited. In order to help provide the construction industry with an additional incentive to adopt more automation, an investigation was undertaken to assess the effects of digital fabrication (dfab) on productivity by analyzing the cost and time required for the construction of a robotically-fabricated complex concrete wall onsite. After defining the different tasks for the conventional and robotically fabricated concrete wall, data was collected from different sources and used in a simulation to describe the distribution of time and cost for the different construction scenarios. In the example, it was found that productivity is higher when the robotic construction method is used for complex walls, indicating that it is possible to obtain significant economic benefit from the use of additive dfab to construct complex structures. Further research is required to assess the social impacts of using dfab.

A.Q.Adeleke et al. 2018 Substantial empirical research has shown conflicting results regarding the influence of organizational external factors on construction risk management, suggesting the necessity to introduce a moderator into the study. The present research confirmed whether rules and regulations matter on the relationships between organizational external factors and construction risk management.

P Karunakaran et al. 2018 aims to identify and cluster the potential construction project cost overrun factors according

to their originating groups using the thematic approach. Basically, through literature review, all the potential factors that may cause cost overrun were screened thoroughly before they were clustered into seven (7) groups of the originating factors, namely project, contract, client, contractor, consultant, labour and external. Each potential factor was explained clearly with some examples based on the Malaysian case studies to illustrate the cost overrun scenario. These findings may aid in the future to highlight on how to mitigate the critical potential factors of cost overrun to reduce or overcome its impact on all the stakeholders involved.

Clyde ZhengdaoLi et al. 2017 Smart construction objects and RFID-enabled smart gateway work collaboratively to ease operations within the three echelons of prefabrication manufacturing, logistics and on-site assembly construction, while real-time captured data are used to form a closed-loop visibility and traceability mode in which different end users can supervise the construction statuses, progresses in real time. The developed platform can provide various services, tools and mechanisms to different stakeholders, improve the success of daily operations and decision makings throughout PHC management, such that critical schedule risks can be mitigated and the schedule performance of PHC can be enhanced to ensure timely project delivery.

TolgaÇelik et al. 2017 Despite the fact that completion of construction projects has a direct positive impact on the growth of national and local economies as well as humans' wellbeing, construction projects, especially in the urban areas, generate serious environmental nuisances for the adjacent residents and have unintentional adverse impacts on their surrounding environment. Construction causative adverse impacts on the neighbouring communities are known as the social costs. This study aims to present a state-of-the-art overview of social costs in construction industry in terms of definition, consideration, classification and quantification. Furthermore, it is aimed to bring the construction social cost phenomenon for the agenda of Environmental Impact Assessors.

S. Chandrush et al. 2017 Rework, are activities in the field, which have been completed, but were required to be repeated or undertaken again as a result of some impeding correction that was necessary to be carried out during the project. This is regardless of source, or effecting a change, not due to change of scope by the owner. Fundamentally, rework becomes necessary either when an element of building works fails to meet customer requirements, or when the completed work does not conform to the contract documents. In either scenario, the product is altered so as to ensure conformity. At a certain moment during construction, for example due to an error, rework is necessary. But the rework might not be discovered until some form of quality control check is done, after which it can be concluded as to what kind of rework needs to be done. Rework can also have internal or external origins. Changes in clients' expectations are an example of an external factor that might lead to rework. Rework can cause many costs to be higher than calculated at the start of the project. Rework can result from various sources such as errors, omissions and changes.

Vahidreza YOUSEFI et al. 2016 the most possible causes of these emerging claims are identified and statistically ranked by Probability-Impact Matrix. Subsequently, by classifying claims in different cases, the most important ones are ranked in order to achieve a better understanding of claim management in each project. In this regard, a new index is defined, being able to be applied in a variety of projects with different time and cost values, to calculate the amount of possible claims in each project along with related ratios with respect to the cost and time of each claim. This study introduces a new model to predict the frequency of claims in construction projects. By using the proposed model, the rate of possible claims in each project can be obtained. This model is validated by applying it into fitting case studies in Iran construction industry.

Tarek Omar et al. 2016 This paper examines different technologies of automated and electronic construction data collection. In particular, enhanced IT, geo-spatial, 3D imaging, and augmented reality technologies have recently achieved significant advances in this field. Each of these technologies is discussed herein in terms of its advantages and limitations. Comparisons of such technologies to identify various trends concerning their applicability in real-time data acquisition of construction projects are made, along with recommendations for their suitability in different projects. This should assist construction stakeholders in choosing appropriate tools to enhance time and cost effectiveness and achieve better control and more effective decisions during construction. It is also hoped that this review will stimulate further research on and development of these technologies.

Greeshma B Suresh and Dr. S. Kanchana 2015 said that any project is said to be successful when it is completed in desired time and cost. The Construction industry of India is an important indicator of the development, as it creates investment opportunities across various related sectors. Construction delays can be minimized only when the causes are identified. Time is one of the major considerations throughout project management life cycle and can be regarded as one of the most important parameters of a project and the driving force of project success. The construction industry is the tool through which a society achieves its goal of urban and rural development.

It is one of the sectors that provides important ingredient for the development of an economy. They identified the following top ten major factors of construction delay: Shortage of construction materials, Effect of subsurface conditions and natural disaster, Delay in material delivery, Low productivity of labour, Rework due to errors, Late procurement of materials, Unqualified workforce, Low productivity and efficiency of equipment, Delay in quality control, Poor site management and supervision, Poor communication between parties and Lack of high technology. Ar. Meena V. and K. Suresh Babu 2015 agreed that time delay is one of the biggest problems facing in many construction buildings in India. Completing projects on time is the key factor of the project, but the construction process is subject to many variables and unpredictable factors, which result from many sources such as availability of resources, external factors, performance of parties and type of building.

If there is a delay in project it leads to loss of productivity, increased cost, contract termination and disputes between contractor and owner. They found that the most common factors of delay on almost every project are external factors, financial difficulties, shortage of labour, insufficient labour productivity, owner interference and improper planning. They listed several other factors also that contributed in consumption of valuable time: Weather conditions, External factors, lack of funds, Deviation of scheduling, lack of communication, Poor decision making process, Lack of coordination/Wrong delegation of authority, Lack of inspection, Improper planning, Lack of knowledge, Lack of facilities at site, Poor selection of vendors, Labour shortage and Shortage of skilled labour.

Rahul Kolhe, Milind Darade 2014 found that delay is a critical function in construction projects. In general, the time delay and the cost of the project get increased simultaneously. Their studies figured out time overrun and cost overrun as the most frequent effects of delays which significantly affect the entire construction project. Also, there are loss and expense claims arising from delay and fluctuation claims during the delay period which have significant effects on cost overrun.

SUMMARY

The problem of project time overrun is of international concern. Time overrun is the extension of time beyond planned completion dates usually traceable to contractors. It is defined as the time lapse between the agreed estimation or completion date and the actual date of completion. Time overrun as the time during which some part of construction project is completed beyond the project completion date or not performed as planned due to an unanticipated circumstance. Time overrun affects the project owners, contractors and other project participants. Project owners may be affected through lost benefits that could have accrued from the completed facility, while contractors may have to spend more on labour and plant, pay penalties as per the contract or even lose other profitable contracts because resources for the next job are tied up on delayed projects. Many researchers have highlighted the causes of project time and cost overrun. These studies established that the problem of project delays and cost overrun are caused by financing and payment for completed works, poor contract management, changes in site conditions, shortage of materials, design changes, weather condition, among others.

IV. CONCLUSION

According to the results collected in review survey following conclusions can be made:

1. On part of the client/owner of the project, following problems have been identified: late approval of material samples, slow decision making, delayed approval and revision of drawings, change orders in the design during the course of work and poor communication and coordination. These problems must be taken care of seriously to avoid undesirable delays.
2. Consultants were also held responsible in this analysis for causing delay. Delay in providing the design documents, and

excessive mistakes and discrepancies in good for construction drawings were the key issues for the execution team that should not happen in order to achieve uninterrupted progress.

3. Poor communication and coordination between the parties involved in the project, lack of proper planning and coordination, difficulties in financing the project and utilization of proper planning tools like MS Project, Primavera etc. were found to be the major factors on part of the contractor that obstructed the timely completion of work.

4. The progress of the project gets affected when the construction materials are not procured on time and when specially required materials and building components are manufactured late.

5. Shortage of labourers at site is yet another issue that was raised by the site engineers which needs to be rectified in order to finish work on time.

Further, the respondents expressed following problems-cum-suggestions that should be seriously worked out to avoid unnecessary construction delays:

1. Approval of specialized agencies for work took too much time.

2. Timely payment from client against running bill was yet another issue of concern. 3. Communication channels were too long, this posed to be a problem for day to day needs. 4. Unpredictable financial recoveries/penalties imposed by the client on account of milestones, part-rates etc. causing financial strain on the contractor, was another issue. 5. The contractor on a project also gave a suggestion that Mobilization Advance given to them should be made interest free as it unnecessarily increases financial strains on the contractor. 6. It was expressed very strongly that the decision takers for any project must be available at site so that issues can be resolved without losing any time. 7. Lack of project specific experience of the Government Officials was held responsible for their slow speed of decision making.

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