

Impact of Inflation Rate on Construction Project A Review

Rahul Kumar Pandey¹, Afzal Khan²

P. G. Scholar¹, Assistant Professor²

Department of Civil Engineering, Millennium Institute of Technology, Bhopal, Madhya Pradesh, India

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ABSTRACT

Construction of high-rise structures was initiated in complex and dynamic problems resulting in circumstances of high uncertainty and risk, which were compounded by demanding many constraints. The occurrence of risk accidents in the phase of multi-storey construction will lead to great losses to the proprietor and construction enterprises if the construction risk of the structure has not been paid more attention to. The worst catastrophic may occur during structural construction is collapse of permanent or temporary construction. If risk management is not considered in bridge construction projects, there is chance for unwanted problems and uncertainties, by these risks objective cannot be achieved on time, within budget, or with suitable quality results.

In this paper presenting review of past publications and researches.

Keywords: project management, scheduling, inflation rate, costing, monitoring.

I. INTRODUCTION

Many factors affect the accuracy of building construction projects cost estimating which should be considered in the early stage of the estimating process. Some factors can incorrectly increase the estimated costs and the possibility of contractual disputes between the various parties involved. Other factors can help the estimator to decrease the unnecessary cost of an item and hence lead to successful tendering in a very competitive market.

Construction industry is very important in the economic development of any nation especially in expanding economy like India. It controls the capital flow, as well as labour resources, which had cost implications. As a result of this, proper management of these resources is considered an important aspect of project works.

Likewise if the resources are adequately harnessed, issues that relate to cost overrun would not arise which could result to variations and claims. Some firms rely on claims as a result of variation incurred during the course of the project execution and afterward evaluate their profit after incurring necessary and unnecessary costs on a project.

Therefore, accurate estimating requires detailed study of the bidding documents and the environmental situation. It also involves a careful analysis of all projects' data in order to arrive to the most accurate estimate of the probable cost consistent with the bidding time available and the accuracy and completeness of the information submitted.

The purpose is to test whether the project as specified will be economically viable or whether it will generate good value for money. Leaving such feasibility studies until after a project has started, may mean that potential

problems are not revealed in time to influence project planning. Although the economic and financial evaluation of the project is probably the most obvious element of the feasibility stage, external factors can play a major role in determining whether a project will proceed. The project's political context, its relationship with the local community, the general economic environment, its location and the physical conditions in which it will be built, are the most important external factors.

There are both empirical and anecdotal evidence which suggest that delays in the completion of a project, cost escalation, as well as rate of inflation significantly impact on project delivery. Indeed, overruns in both time and cost is not only a general occurrence but equally a huge problem faced during project execution. This usually manifests as an extension of project duration time (time overrun), and/or an increase in the cost of execution (cost overrun). A cost overrun occurs when the cost incurred in executing a project exceeds the estimated cost. Time overrun on the other hand is the extension of time beyond planned completion dates traceable to the contractors. The Department of Housing and Public Works noted that cost overrun could be used interchangeably with the term cost escalation - the anticipated increase (usually over a defined period) in the cost of executing a project

II. LITERATURE SURVEY

Abdel et.al (2022) objective of the research paper was to narrate the current management of cost and time in construction sites in Khartoum state. A relatively high response of more than 80% was received from eligible identified professionals, and the data were analyzed using SPSS software. Author used the questionnaires to collect the data and process it using the SPSS software present amicable solutions to overcoming the obstacles faced by Engineers, developers, and clients, starting from the beginning to the end of projects.

Results concluded that natural, political, and economic factors are the most important factors affecting cost and time control. Furthermore, good

coordination, monitoring, and appropriate fund management are the key factors that play an essential role in reducing construction project implementation duration and cost delays.

H.A.Tarkasband and S.D. Joshi (2022) author stated that the practices adopted in different regions for qualitative risk assessment in project and time management and measures taken to overcome the failures in overall project management. It was learnt whether the construction companies are following the project management tools and techniques for effective execution of the plan in the completion of the project successfully. Different regions follow varied aspects of project management dependent on the resource availability, costs and labour work culture in the respective region. Certain regions may discover new models specific to their problems and introduce the same for the effective realization of solutions. Identification of the risk factors affecting the project well in time is important so as to tackle such risk factors.

The conclusion stated that there was a lack of usage of risk assessment tools and techniques during construction project management and hence affects on project time management, costs and labor intensive. Also it increases the risks during project execution and has hazards on health and safety. Time overrun and cost overrun are the main issues arisen due to improper project management.

W. T. Borku and E. Yeniale (2022) author investigated the factors that might contribute to cost inflation on construction materials is significant in order to notice attention to specific areas of improvement for building construction projects in Wolaitasodo. This research attempted to assess the impact of cost inflation, and identify problems of cost inflation on construction materials and adjustment and methods to manage/administer cost inflation on construction materials in Wolaitasodo building

construction projects, which can serve as the way forward for future work in coping with this inflation. The results revealed that the major impacts of cost inflation on construction materials which have been occurring on the projects are improper risk management and improper team organization. Quality of workmanship, risk of project abandonment and Lack of firm price quotes are the factors that cause the cost inflation on construction materials and adjustment problems on Wolaita sodo building construction projects.

A M Faten Albtoush et.al (2020) Cost is one of the important key factors affected of construction performance, its need to manage and control along a life cycle of construction project. So cost management is important in a construction project to ensure the success of project, the most factors affected in cost management that indicated through literature review in this study are: Poor scope definition, Inaccurate activity cost estimate, Poor work breakdown structure definition, Change in schedule, Unrealistic time schedule imposed in contract, Ineffective frequency of project budget updates, Lack of proper training and experience of project manager, Not implementing project management tools like primavera and other management software's. The majority of the construction project in different countries suffered from cost overrun, cost management reduce it and help the project managers to achieve the success in their projects, so this study encourage the engineers and other parts interested in construction projects to implement the cost management actively.

Elkhider B. E et.al (2020) research paper portrayed an analysis of the inflation trend in Sudan and its effect on the construction industry for the last few years. Initially, a market survey was conducted to determine the pattern of prices increase over the selected period to allow gauging the inflationary effect. Eventually, it

was required to derive a predictive mathematical relationship between inflation rates in Sudan and the trend in construction materials prices increase.

Results stated that the construction industry inflation rate is not equal to the economy-wide inflation. An increase in construction materials prices is not only caused by inflation but inflation is an important factor. Other macro-economy factors such as supply and demand transportation, energy costs, raw materials and input costs, exchange rates, import duties and crude oil prices also contribute to these increases and have an effect on the trend in price movement. It is necessary to benefit from the rate of inflation of construction materials (CMIR) by working on developing it and creating a data base for the construction sector in Sudan, which will help in estimating the future costs of projects and planning the target costs by owners and projects managers, which in turn will help to reduce conflicts caused by sudden change in prices or abandoned some owners for many projects as a results of these projects exceeded the cost allocated to them as a results of the impact of construction materials for inflation and exceeded the target cost.

Avinash R. Yadav and R. M. Swamy (2019) objective of the research paper was to test whether the project as specified will be economically viable or whether it will generate good value for money. Leaving such feasibility studies until after a project has started, may mean that potential problems are not revealed in time to influence project planning. Due to a dramatic shift in the capacity and volume of the Indian construction sector over the last decade, the need of a systematic analysis of the reasons of delays and developing a clear understanding among the industry professionals are highly crucial. The Overruns in cost and time is a never-ending threat to a construction manager and is being faced in all types of projects which include infrastructure projects, heavy construction projects, residential or commercial construction projects etc.

The first three factors ranked by RII method first is a conflict between labour, a second lack of sub-contractor skills and third is poor financial control mechanism. The first conflict between labour in the category of labour its RII is 0.70, the second one is lack of sub-contractor skills in the category of contractor its RII is 0.68 and the third one poor financial control mechanism in the category is client its RII is 0.63. The severity index and frequency index of the factors are, for conflict between labour is 70.00, for lack of subcontractor skills is 68.00 and for poor financial control mechanism is 63.33. The average percentage cost growth rate for all three case studies is 98.62% and the average actual cost percentage change for all three case studies is 97.20%.

K. Kabirifar and M. Mojtahedi (2019) objective of the research paper was to analyze and rank EPC critical activities across large-scale residential construction projects in Iran, by using the TOPSIS method as a multi-attribute group decision-making technique. Author primarily focused on the project triangle (cost, time, and scope) due to the fact that these factors are more tangible for project's stakeholders for the purpose of assessing project success.

Results indicate that engineering design, project planning and controls are significant factors contributing to project performance. In addition, engineering has a pivotal role in project performance and this significance is followed by the construction phase. On the contrary, all believe procurement is more important than the Construction phase.

Nafeesa Minnath M. T and Anupama Natesh (2019) Research paper deals with an ongoing construction project of a Commercial Building (B+G+3) "Dream City Mall" at Kasaragod, Kerala and collect relevant data related to the project from the concerned agencies and track the process of the work deeply, with the use of a project management software named Primavera P6 which is a tool to plan a project and to

track the progress of work time to time. Time and Cost Effectiveness is focused in this project. The study covers mainly the process of planning, scheduling the activities and monitoring. A comparison of the actual and original time and cost is performed in this study using project management software Primavera.

Results stated that 74.18% of the work was completed in this project and project was delayed by 65.79%. The cost of the project is increased by 3%. Critical path and Critical activities are found using Primavera. This would help in reducing the time delay and cost overrun in the project. Delay in these activities have led to delay in the project and cost overrun. Another main reason for project delay is the pandemic that hit the country off late in the worst possible manner due to which the entire country was under lockdown. All the works had come to halt due to Covid - 19 situation. And resumed after a period of one or two months which again led to the shortage of workers and equipment and the budget too.

Cooray, N. H. K.et.al (2018) the primary objective of the research paper was identification of costs overruns in the building construction projects in Sri Lanka. The relationship between cost control techniques and construction project delivery will be analysed. The study expects to adopt a composition of qualitative and quantitative approach to conduct the research process. The role of cost control techniques in determining the project delivery will be widely scrutinized and questioned in relation with academically and theoretically due to the absence of universally accepted theory.

Conclusion stated that there was a significant impact on the project delivery by the cost controlling techniques used by the organization. It was identified that even the economic conditions are different the impact of the cost controlling techniques on the project delivery is having the same impact

Muhamad Rizki Aditya et.al (2018) research paper presented a systematic analysis to identify structural work costing indicators, specifically for the bridge project. Regarding the existing project budgeting condition to the construction implementation process, there are 5 important factors to be noticed regarding the upper structure costing at Cimanuk Bridge project. This research identifies 36 variables of bridge upper structure construction project costing which affect construction implementation performance. There are 36 independent variables in this research which are analyzed in 5 factors. However, after a series of data analysis process were done which includes the correlation test and factor test, there are only 2 strong correlation factor components which are structured in 7 independent variables are chosen at correlation test and inter-correlation test. Component factor 1 consists of X7 (ignoring the risk factor at the project location), X9 (ignoring the inflation and escalation factor), X10 (incomplete contract clause), X13 (too many working repetitions because of bad quality), X14 (the cost of material double order), X15 (the cost for worker wage), X31 (monitoring working performance to the expenses spent on the project). Component factor 2 consists of only the variable of X7.

Ikechukwu A. Diugwu et.al (2017) research paper aimed to explain the effect of time overrun (TO) and inflation rate on project completion cost (PCO). Variations in costs and durations of projects were calculated for 250 government and private building projects executed between 2005 and 2015, while inflation rates for the last quarter of these years were used. A multiple regression analysis of cost overrun as the endogenous variable, with time overrun and inflation rates as the exogenous variable was conducted for private and government-funded projects. The result revealed that the cost overrun can be predicted by the equations; predicted private cost

overrun = $-669673.60 + 50182.35$ (time overrun) + 106690.20 (inflation rate), and predicted government cost overrun = $-9805996 - 148721.90$ (time overrun) + 1266038 (inflation rate) respectively for private and government-funded projects. Also, while there is evidence of the significant relationship between the completion cost of projects and variations in time and inflation rate for both private and government-funded projects, the mean variations between time overrun and inflation rate viz-a-viz completion cost are not equal for private and government-funded projects.

Sampatti Goyal (2017) research paper analysed the effect of inflation involved in the time and cost overruns in the Infrastructure projects of Rajasthan. Each project involves immense cost overrun. The government is not able to implement each project efficiently within the normally expected constraints of time and cost.

Results revealed that material price escalation is the primary reason for cost overruns during execution. Costs of key inputs such as iron and steel, cement, bitumen, concrete, crude oil, etc. have fluctuated sharply. The risk of material cost fluctuation is inherent in infrastructure projects. Inflation has more effect on infrastructure costs where delay in project development was higher.

Shahenda EL-Matbaegy et.al (2017) the objective of the research paper was to develop an appropriate risk model to mitigate the recession effect on the construction industry in Egypt. The methodology of the research was based on identifying the potential risks in construction projects during the recession period, characterizing their probability and impacts, performing the quantitative and qualitative risk analysis (based on questionnaires' survey conducted in the year 2015/2016), and statistical analysis by (SPSS) was carried out to develop risks' model and

measurement framework using the Primavera Risk Analysis (V8) Software.

Results showed that the corruption associated with recession is the most aspect of risks affecting the Egyptian construction sector during recession periods in addition risks that related to poorly sector participants management abilities.

Y. Suponco Wisnu Broto et.al (2017) research paper proposed a model to estimate cost escalation based on System Dynamic (SD) approach. SD is used to represent the correlation among risk factors influencing cost escalation and to calculate cost escalation during the project period. A Causal Loop Diagram (CLD) was made based on an in-depth literature review and confirmed by the experts. To validate the model, 7 multi-years projects in Indonesia were used as a case study.

The results showed that the proposed model can accurately predict project cost escalation with an accuracy of 91.21%. Simulation of SD also showed that the change of scope of work, ambiguous contract conditions, unpredictable conditions, project schedule delay, inflation, and extreme weather condition are the most influencing factor of cost escalation. Besides predicting the cost escalation of projects, this model can also be used as early warning system in a multi-year projects environment.

Mohamed Abd El razek et.al (2014) research paper presented a new methodology for net cash flow prediction which depends on applying risk factors that affect the cash flow process. The probabilistic S curves was used as an alternative of the Standard S curve and the traditional method that neglect the effect of risk and uncertainties. These risk factors have been determined through a questionnaire survey. This survey was conducted among the main three parties in the construction industry contractors, consultants and owners. A simulation programs were used for generating the probabilistic S curves. A MS

excel macro was used for a probabilistic cash in prediction. Probabilistic S curves provide a probability distribution of required cost and time to finish the project for any selected point at the project. The probabilistic cash flow prediction enables the users to accurately determine the project cash flow position.

With the comparison between the actual and the output probabilistic data, it was noticed that with respect to the duration it a perfect fit but in the case of the cost the difference between the actual and deterministic is a small. Probabilistic cash flows is more accurate than deterministic one and it can be used by decision maker to evaluate the projects with a higher level of accuracy.

III. CONCLUSION

In this paper reviewed several authors and stated that different authors mentioned different conditions of ailment and analysis of a project and scheduled the management of these construction setups.

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