Evaluation of Dispute Prone Areas in Construction Projects

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ABSTRACT

Construction projects experience claims and disputes due to increased complexity of contract documentation, which subsequently affects the cost performance of projects. Majority of the previous studies on disputes and cost overrun have mainly focused on finding the causes of cost overrun or disputes in the industry. Identification of dispute prone areas and the associated range of cost overrun due to the disputes are less explored. Previous research findings indicate that the various factors resulting in cost overrun itself are the causes of disputes. It is necessary to understand, assess and take appropriate actions for increasing the predictability of claims and disputes in order to improve the cost performance of construction projects. In this study, an attempt is made to identify and prioritize the dispute prone areas in Indian construction projects by analytical hierarchy process (AHP). Suspension of works, changes in scope and definition of project and delay in handing over the site and work permissions were ranked as the top three causes of claims in the study. Rankings on the various causes of disputes obtained using AHP are similar to that reported in literature. Dispute resolution is a great challenge in today's construction industry. An understanding of the dispute prone areas in construction projects can prompt parties in contract to take appropriate actions to resolve them prior to costly and time-consuming litigation procedures.

Keywords: Construction projects, Claims, Disputes

1 Introduction

Projects suffer due to claims and disputes, consequent time and cost overruns take place, and society as a whole is deprived of timely benefits from the project (Parikh et al. 2019). Claims are defined as a request, demand, or assertion of rights by a seller against a buyer, or vice versa, for consideration, compensation, or payment under the terms of a legally binding contract, such as for a disputed change (PMBOK 2013). Moza and Paul (2019) discussed the commonality of claims and disputes due to several uncertainties in the construction projects. Complex processes in construction and involvement of many stakeholders with conflicting interests along with a variety of unanticipated and indefinite parameters give rise to claims and disputes among the stakeholders (Parikh et al. 2019). With the increase in complexities in the nature of work, contracts are also complex, and the contract language would be difficult to comprehend and becomes a source of disputes (Iyer et al. 2008). According to Iyer et al. (2008), frequent claims and disputes in the industry sends a wrong signal to foreign as well as national investors. Mitkus and Mitkus (2014) while analysing causes of conflicts in the construction industry, also pointed out how the stakeholders become dissatisfied as construction conflicts make the sector expensive and unprofitable. To overcome this scenario, there must be proper means for processing, adjudicating and communicating contract claims since claim awards can directly impact the budgeted cost. Delay, disputes and claims are interconnected where the occurrence of one among them can initiate a chain of events that affects the projects. The claims raised on damages and/or additional works encountered during the

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course of project are to be paid off and the ambivalence of parties in contract often worsens the dispute. Such additional expenses encountered, alters the cost of project. The objective of this research is to identify the dispute prone areas in the Indian construction industry. A critical literature review forms the basis to identify various causes of dispute and causes of cost overrun. Analytical Hierarchical Process is used in this study to rank the important causes of disputes identified.

2 Literature Review

A lot of research has been undertaken to understand construction disputes and their causes. One of the major causes of disputes in construction projects is delay in handing over the site. When the owner fails to give possession of the site or the site has limited access, smooth progress of the work is hindered (Jalal et al. 2019). When dispute arises at the very initial stage of the project due to non-handing over of entire site by a given date, the contractor is eligible for a claim under idling of resources (Iyer et al. 2008). Parikh et al. (2019) reported that during the progress of highway projects, hindrances due to encroachments in the site had interrupted the timely handing over of the site to contractor. Moza and Paul (2019) analysed claims in public works department in India and found that the maximum amount claimed belonged to delay in handing over site. In another study, it was found out that out of 46 arbitration awards considered, 15 awards referred to delay related claims, mainly, due to late handing over of site (Chaphalkar and Iyer 2014). The main questions governing the decision making in claims regarding late handing over the site are, whether the project schedule is affected and whether the claim is supported by valid documents (Parikh et al. 2019, Chaphalkar and Iyer 2019). In large infrastructure projects with multiple government agencies involved, failure to coordinate the stakeholders and obtain permissions for work can also cause a delay in handing over of site (Chaphalkar and Iyer 2019). Untimely approval of drawings, inspection or supply of raw materials can affect the schedule also. In the types of contracts where the owner is making design, any corrections or changes to be made will be needing owner's approval and can result in delays (Iyer et al. 2008). In government-funded projects, there are chances that inspection and approvals may get delayed and contractor can raise claims for idling of resources (Parikh et al. 2019). The study by Moza and Paul (2019) also ranked it first in total amount claimed among the case studies considered by them.

Bhakary et al. (2015) remarked that changes to contract work increase the risk of construction claims and decrease productivity. Construction conditions often change, and the client often modifies design solutions for constructions in progress and the changes in project scope, work quantities and owner requirements, delay the construction phases (Mitkus and Mitkus 2014). Design changes introduced at the post-tender stage was pointed as the main reason for claims in a survey conducted among contractors in Malaysia (Bakhary et al. 2015). Even with time extensions, the contractor will suffer losses in remobilising the resources (Chaphalkar and Iyer 2014). Change orders during construction were noted as the second important cause of construction conflicts leading to claims with a frequency of 37% by Jalal et al. (2019). Extra work due to change orders may not always be due to owner demand. Full scope of work in the construction industry cannot be defined clearly at the beginning due to unpredictable underlying subsurface conditions (Iyer et al. 2008). In case of unavailability of the equipment, or certain material, the contractor may inform the owner and get prior approval for using the alternative resource. Indian Contract Act (Section 70) states that a person (the owner) enjoying the benefit of non-gratuitous act of the other person (the contractor) is bound to make compensation to the latter (Iyer et al. 2008, Moza and Paul 2019). Findings of Moza and Paul (2019) support this, as even with the lower number of claims related to deviation in quantities/specifications in their study, 36% of the claimed amount was awarded.

A very similar and interconnected reason for disputes due to extra works or reworks is deviation from the specifications due to misinterpretation of contract documents. Chaphalkar et al. (2015) ranked variation in work ordered by the owner and variation in work due to inconsistency in documentation as top factors influencing decision making in arbitrations. Often risks arise from ambiguity in drafting and interpretation of different clauses in the construction contracts (Jagannathan and Delhi 2019). Contract documents which legally bind the stakeholders is the datum of every aspect of the project and loopholes and errors will be crucial at the time of disputes. Iyer et al. (2008) stated that rework due to work not conforming to specifications may result due to improper communication or misinterpretation by contract administrators and contractor can raise claims. Plan or specification of work and site conditions differing from interpretations were the most frequent claim in the study by Hashem et al. (2014). Bakhary et al. (2015) found in a questionnaire study that an inadequate definition of the scope of work was the third most frequent reason for claims. Ambiguities in contract clauses made to the top five most influential claim cause in the study by Parikh et al. (2019). The authors commented that miscalculations in Bill of Quantities (BOQ) and payment, extra work encountered due to inadequate preliminary studies and poor-quality construction could result due to such ambiguities.

Another critical area of dispute is related to payments of bills, from the release of mobilisation advances to final payments. Many contracts cater for the provision of a mobilisation advance by the owner at the commencement stage of a project to reduce the burden of mobilising the resources of the contractor (Chaphalkar and Iyer 2014). When the payment gets delayed, the contractor finds a way to raise the additional money for the work and claims for interest on that (Iyer et al. 2008). Mitkus and Mitkus (2014) pointed out another instance termed as unfair behaviour where client having some financial difficulties, instead of recognising the situation, raises unreasonable claims arguing that delayed payment was the result of poor workmanship or lack of quality. This finally ends in litigation procedures. Jalal et al. (2019) identified 80 most frequent claims in the Iranian construction industry and found that the majority of claims, i.e., around 52% of claims, were from construction and financial sector. Delay in compensation payments, loss of interest on delayed payments, delayed or even reduced payments were often subject for disputes and claims (Parikh et al. 2019, Jagannathan and Delhi 2019). Moza and Paul (2019) categorised claims in public works in India and identified payment-related claims among the top five claims in all the categories of maximum number of claims, maximum amount claimed and maximum percentage awarded. Claims related to payment of running bills and final bills and recovery of advances were recognised to be the most successful claims since most of the claimed amount was awarded. Claims pertaining to interest due to delayed payments became the second highest category in terms of claimed amount, third highest category in terms of maximum percentage of claimed amount awarded and fourth in terms of the greatest number of claims raised (Moza and Paul 2019).

Increased rate of errors, substandard work and non-conformance to specification of work by the contractor forces client to take actions against the contractor. Temporarily suspending or terminating contractor due to proven faults of the contractor does not require any form of compensation to the contractor. However, there were instances where work had to be suspended, or contractor had to face damages due to client's fault, such as client facing financial instability (Mitkus and Mitkus 2014, Iyer et al. 2008) or sudden changes required due to changes in project philosophy (Bakhary et al. 2015). Some other issues leading to temporary stoppage are substandard work, non-availability of specialised equipment or material, subcontractor abandoning work without any notice and dispute over running bills (Iyer et al. 2008). Contractor claiming on overhead costs and resource rates which are idle, and claim on maintenance rates by the owner during the suspension period, further increases the heat of disputes (Jalal et al. 2019). Further stoppage of work is a cause of claim and can

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be seen in studies by Parikh et al. (2019) and Chaphalkar et al. (2015). In large industrial projects or transportation projects where more than one contractor is involved, or subcontractors are involved, one party abandoning or delaying their work simultaneously affects other contractors (Chaphalkar and Iyer 2014). This is of particular importance in transportation projects when certain parts of the alignment are awarded to separate contractors. It can result in works in succeeding areas getting temporarily stopped due to preceding works getting delayed.

Even with properly planned finance management and foreseen market variation, there can be sudden swings in economic and market conditions that will affect the sector. Moza and Paul (2019) have identified claims related to non-payment or partial payment on the pretext of cost escalation. Chaphalkar et al. (2015) and Parikh et al. (2019) have taken into account the claims related to price escalation of materials, including fuel. Parikh et al. (2019) further consider claims over the cost of arbitration and other statutory changes. Sudden changes in government policies, taxes and revised labour rates can be the ground of disputes.

The claims discussed above are the claims that can be assigned to either of the parties taking part in the construction. There are unforeseen conditions beyond the control of the parties involved that can hinder with the progress of the project (Chaphalkar et al. 2015). Jalal et al. (2019) also mentioned the unpredictability of these unforeseen conditions such as, delay claim due to adverse weather conditions, which is related to project safety. Iyer et al. (2008) identified six major unforeseen events from case studies, including accidents due to lack of safety or errors in design and drawings, and force majeure, that results in claims. Iyer et al. (2008), Parikh et al. (2019) and Bakhary et al. (2015) have mentioned the impact of labour agitations, negative effects of political factors and court intervention leading to stoppage of work. Sinha and Jha (2019) reported the impact of judicial overreach in construction by referring to a case where court intervention later transformed as a long-term litigation process affecting the project. Compensation claims for such conditions are decided based on who is responsible for the accident, which directly assigns the responsibility of delay. Force majeure claims are usually shared by both the parties and the decisions are made by negotiations. In substandard work or lack of safety considerations resulting in accidents, the contractor is held responsible. The accident may likewise happen because of untimely utilisation of a facility before its testing or before it is officially handed over. The contractor then cannot be held responsible, and the owner will be at risk to pay compensation (Iyer et al. 2008). Claims are simply the means available to the parties to the contract to be able to adjust the contractual and economic relationship between them to meet changing conditions (Parikh et al. 2019). Claim management and dispute resolution are gathering much attention since it has a considerable impact on the cost and time performance of the project. Delays and disputes itself is a cause of cost overrun, and various factors resulting in cost overrun are the causes of disputes. Few attempts are made to maintain claim and dispute data to learn and evolve from previous occurrences. It is essential to maintain and analyse the claim and dispute data to improve the predictability of the occurrence of various claims as well as the probable outcomes. This reasearch focuses on identifying the major areas of disputes in the Indian construction industry. The dispute prone areas are prioritised using Analytical Hierarchy Process (AHP).

3 Data Collection and Calculations

A questionnaire was designed to prioritize the causes of disputes as identified from literature. The questionnaire consisted of three sections. The first section was designed to collect information on the respondents. The second section required the respondents to express their view on various dispute prone areas. Analytical Hierarchy Process (AHP) was used to make a pairwise comparison among the factors. The respondents were

asked to rate the importance of each factor with respect to the other factors. Importance of each factor was to be marked on a scale of 1 to 9 where 9 is extreme importance, and 1 is equal importance in comparison to the other factor (Saaty 1990). The third section was an open-ended question to identify other dispute prone areas. Stable results can be obtained even with small sample sizes in case of AHP. Experts from the construction field having more than ten years' experience in handling legal formalities or in contract management were selected as the respondents. Responses were collected personally by visiting the respondents. The objectives of the study were explained to the respondents, and confidentiality of the data was ensured. A handout containing details regarding the factors included in the survey and areas considered under each criterion, were provided to each respondent to avoid misinterpretations and any further doubts were also clarified. After the survey, their take on the project and the factors were also discussed. The respondents included two legal advisors and seven engineering professionals. Based on their expertise, the pairwise comparison of ranks was made.

For the calculations, an AHP template based on Microsoft Excel developed by Goepel (2013) was used and acceptancy of inconsistency was set to 10%. Weights were set to 1 for all participants to give equal priority.

4 Results and Discussions

Overall consistency was found to be 1.7% which is less than the acceptable level of inconsistency of 10%. However, some individual results had inconsistency greater than 10%, and after reconsultation with the respondents and clarifications, they were normalised. If the consistency ratio is less than 0.1, human judgments are acceptable. (Kilincci and Onal, 2011). Table 1 shows the rankings obtained for the factors from the survey. From the results,

- Termination of work and change and deviation from project scope and definition were ranked first and second consecutively.
- Delay in issuing drawings, site inspection and approvals came third.
- Statutory changes in norms and regulations were of least concern due to fewer occurrences.

Table 1 Ranking of criteria based on AHP analysis

Rank	Code	Comment	Weights
1	Criteria-5	Termination of work	22.90%
2	Criteria-3	Changes and deviation from project scope and definition	19.90%
3	Criteria-8	Delay in issuing drawings approvals and inspection	13.90%
4	Criteria-1	Delay in handing over the site	9.60%
5	Criteria-2	Delay in payments	9.00%
6	Criteria-7	Acts of god/ Adverse weather	8.80%
7	Criteria-4	Misinterpretation of contract documents	8.30%
8	Criteria-6	Statutory changes due to norms and regulations	7.60%

This study revolved around causes of conflicts and claims in favour of the contractor, with the assumption that client caused delays are mainly responsible for the cost overrun of the project and respondents were asked to share their observations in this regard. One of the observations made is the issues generated by the local population. Construction procedures are noisy, dusty and sometimes heavy equipment and material transport

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can hamper the traffic. Along with the site investigation studies, the locale must be properly studied, peak traffic timings, transportation routes investigated and a healthy public relation maintained. When discussing about site investigation, the respondents mentioned about the practice of beginning the construction with the available drawings. Sometimes in large building construction projects, detailed drawing of the superstructure or fixtures may not be available at the time of commencement of the work and contractor begins with the foundation work. Then as the work progresses, changes might be added to current works to satisfy the upcoming designs, which calls in for changes in specification. Disputes arise very often due to wrong estimations due to lack of adequate field study by the owner. The contractor also is responsible for starting construction without evaluating such improper market study and time schedules. There was an opinion about poor rates offered by the owner, which forces the contractor to go for cheap quality materials. Coordination between the employees of the client and contractor, ensuring uninterrupted resource availability, proper document management and maintaining timely inspection and approval procedures are necessary for reducing uncertainties in the projects. Being prone to various uncertainties, construction professionals stick on to the conventional techniques and the respondents pointed out that reluctance to adopt innovative technologies and management philosophies pull back the development in this industry. This can also mean that stakeholders do not have enough experience or knowledge in modern practices and hence hinder the ability to foresee the risks that may arise. With multinational investments coming, handling of different or unfamiliar codes of practice and contract manuals will bring imperfections. The contract manuals usually adopted in India were of Central Public Works Department (CPWD), respective states public works departments and Military Engineering Services (MES). Later with foreign investments from Asian Development Bank (ADB) and World Bank, internationally accepted contract manuals like Federation Internationale Des Ingeieurs Conseils (FIDIC – The International Federation of Consulting engineers) were made mandatory and things became complex and marked the beginning of a learning curve. This is the same case with revised government policies, and a recent issue was the introduction of Goods and Services Tax (GST). In order to avoid much trouble, the government permitted the ongoing projects and approved plans to be completed without the reform. Still, the new practice affected the material rates, and upcoming projects lacked the information from previous works.

5 Conclusion

Many of the construction disputes can be avoided if all parties involved in the project are first able to communicate and stick to realistic expectations. Failure to communicate what is expected and to do what is promised is the greatest issue in all contractual relationships. Experience of the project personnel helps in foreseeing weak points of the project and handling those portions to avoid the domino effect of dispute and claims. Disputes are a real concern to the industry, causing time and cost overruns. Suspension of works, changes in scope and definition of project and delay in handing over the site and work permissions were ranked as the top three causes of claims in questionnaire survey. There are so many factors to be taken into consideration in the construction industry and if one piece is missing or wrongly interpreted, hampers with the schedule and budget of the project. The results of the study shed light to the fact that proper planning and preparatory work of the project prior to its commencement can go a long way in avoiding disputes in the projects.

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