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Review on Developing and Evaluating Claims for a Road project by Using PCM

Mr. Aniket S. Gawande¹ Prof. Apeksha G. Choudhary²

PG Student (Construction Management) Dept. of Civil Engineering, G.H.Raisoni University, Amravati, India¹

Assistant Professor, Dept. of Civil Engineering, G.H.Raisoni University, Amravati, India²

ABSTRACT: Construction claims have such high impacts on the project's cost and time that the contractors should establish the effective claim management in their organizations. Nowadays, the substantially increasing volume of claims are the result of the rising complexity of the projects, the price structure of the construction industry and the legal approach taken by a lot of owners and contractors. Claims are becoming an inevitable and unavoidable burden in modern projects involving new technologies, specifications and high expectations from the owner. It is, therefore, imperative for all the parties to be fully acquainted with the procedures and systems, including recourse to certain preventive actions as found necessary and required. Changes in the construction field can be consolidated directly or converted to a full process project. This study aims to identify the method of using the PCM program and Primavera P6 to prepare the claims in a short time with less effort to produce fully documented claims.

I. INTRODUCTION

There are numerous different types of construction projects and the contractual arrangement can be done in several ways. Previous research seems to focus on traditional construction projects when addressing claim management. Compared to traditional design-bid-build, are engineering, procurement, to constructions based on basic specifications provided (Pal et al., 2017). Not much attention in previous research is given to claim management in EPC-projects where the main contractor is responsible for several outsourced activities, hence also responsible for the conflicts that arise from the outsourced activities. Whereas the main-contractor has to manage and solve conflicts that arise "internally" without creating conflicts between main-contractor and client.

Many articles on conflicts and disagreements in the construction industry exclusively deal with the circumstances characterizing a conflict and tend to ignore the causes therefore erroneously present relevant circumstances as causes (Mitkus and Mitkus, 2014). Acharya et al. (2006) used a questionnaire survey to collect professionals experience on conflicting activities, and face to face interviews to ratify the findings from the field survey. Related to EPC projects, did Shen et al. (2017) conceptualize causes of construction claims based on existing literature and empirically tested the causes with industry survey, structural equation modeling and case studies from the perspective of Chinese contractors?

II. STATE OF DEVELOPMENT

The extensive literature review was carried out by referring standard journals, reference books,

I.S. Code and conference proceeding. The major work carried out by different researchers is summarized below:

1] Emre Cakmak , Pinar Irlayici Cakmak ; (2013) have analyzed in this paper aims to analyze the main causes of disputes which occur in the construction industry. In order to reach this aim, a literature review was undertaken to identify the common construction disputes. The disputes derived from a cross-section of the literature, were classified into main categories and the main causes of construction disputes were determined. Finally, an analysis was carried out using the analytical network process (ANP) approach to determine their relative importance. First, the main causes of construction disputes were determined with a comprehensive literature review. Then, the disputes derived from the literature, were classified into main categories. According to the classification, main disputes categories were found as; owner related disputes, contractor related disputes, design related disputes, contract related disputes, human behavior related disputes, project related disputes and external factors. All these disputes categories have their own sub-dispute causes. After determining the dispute causes, an approach was carried out using the ANP and an ANP model was developed. The model considers the relevant dispute causes which occur in the construction projects. Finally, an analysis was carried out to identify the relative importance of the different dispute causes. The analysis reveals that the

contractor related disputes and their sub-dispute categories are the most common ones in the construction industry. This approach provide the clear idea and understanding about the most likely caused disputes and their occurrence area.

2] **Assegid Getahun, Yolente C. Macarubbo, AlemuMosisa (2016)** have analyzed in this research has three primary objectives, which were achieved through the data collected using Survey, Case study and Document Review techniques. The first objective was to determine the causes that lead to construction dispute; second, to identify the most frequent causes of dispute; and third, to assess the current dispute resolution mechanisms in Ethiopian Somali region's road construction industry. Results show to have five major categories of disputes which are design- related, contractor-related, owner related, contract-related, and external factors ranked from first to fifth, respectively. Under each of the major categories, sub-causes of disputes were identified and ranked according to its relative importance. Overall, there were twenty three (23) factors found under all these major categories. The top three causes of dispute were design errors, inadequate/incomplete specification, and quality of design (all are under design-related disputes), respectively; while one of the least's factors is fragmented structure of the sector Based on the results obtained from this research, the following conclusions of the research were drawn according to the response of the respondents. Results from respondents' responses through the questionnaire show that the most commonly used dispute resolution mechanism was Negotiation; while from the analysis of case studies, Arbitration ranked the first. The differing result shows different levels of understanding and lack of knowledge of the parties as to the nature of claim and the actual status of disputed cases. That's where the claim could not be resolved through Negotiation considering the nature of claim, it has to resort to Arbitration (Litigation) which is the final stage of dispute management in the road construction sector. Also, lack of ability of the parties to negotiate will result to adversarial resolution mechanism. The majority of construction participants has a moderate knowledge of ADR methods and experiences the methods as not being flexible and somewhat too complex. Through data analysis, it was generated that waste of time and hostility is a cost to be sacrificed for resolution of unnecessary and time wasting litigation as the consequence of unresolved dispute. For the question "Which type of dispute resolution mechanism fits for the road construction industry", almost all respondents reported that they wish to use ADR, like negotiation before arbitration (litigation) to avoid time and the involvement of third parties. In the case studies, it was determined that had the parties use ADR as the resolution method, projects should not have been terminated, suspended nor delayed. Projects in Road Construction Industry of Ethiopian Somali Region suffered from a lack of legitimate ADR application. The litigation option does not show itself compatible option for dispute resolution as assessed. Further, Somali regional state was not following the actual DRE System as formal method used by ERA yet the ERA's Standard Specification treats the settlement of disputes mainly for road construction projects.

3] **Anita Rauzana (2016)** have analyzed in this research paper that Construction is a project- based activity that requires endeavours from multiple parties among numerous organizations, each with their own interests to pursue through the implementation of a project (Dulaimi et al. 2003). This complexity, combined with the enormous variety of unforeseen situations that can emerge during a construction project, makes conflict unavoidable (Yiu and Cheung 2006; Acharya et al. 2006). Conflicts between the two main parties in a construction project owners and contractors are the most common. The causes of these specific conflicts are numerous [often including, e.g., ambiguous contract terms, late supply of material and equipment, changed conditions, poor communications, labour disputes, limited resources, inadequate design, and force majeure events (Harmon 2003)], yet they must be settled because unresolved conflicts can lead to claims and disputes, which undermine the project, cause immense financial harm, and even result in costly litigation (Kumaraswamy 1997; Cheung and Yiu 2006).

The current dominant theory is the used to resolved the conflicts are given as follows:

1. Withdraw / Avoid: -Techniques for resolving conflict in a way to delay or avoid situations of potential conflict would occur. Avoid or delay the settlement of the conflict in order to do a better preparation, or expect to be completed by others.
2. Smooth / Accommodate: - Technique of resolve conflict with an emphasis to the area of the level of agreement.
3. Compromise / Reconcile: -Techniques for resolving of conflict by seeking solutions that provide a level of satisfaction to all parties to temporarily or partially resolve the conflict. This approach is also called the "give and take".
3. Force / Direct:-Techniques for resolving conflict based on the dominance of one party without regard to the other party. Usually based on the authority and power that the parties resolve the conflict. Also known by the win-lose approach.
4. Collaborate / Problem Solve:-Techniques for resolving of conflict by combining multiple the views and from several different perspectives. Requires behavior of co-operative and open dialogue to get a consensus or a shared commitment.

4] **Sagar Soni, Mukesh Pandey, Sohith Agrawal (2017)** covers meanings of conflict & dispute and its causes. The effort has been made for finding the factors responsible for conflict and dispute and by proper management of these factors helps in minimizing their effect on industry. Since construction industry is critical in nature therefore, it is difficult, but not impossible to minimize their effect by proper management and to better communication among participants. Though limiting their effect brings many favorable changes like money saving, time saving, rapid growth etc. The key variable is to attempt to urge all participants to participate rather than compete with each other. The review in this paper covers meanings of conflict & dispute and its causes. The effort has been made for finding the factors responsible for conflict and dispute and by proper management of these factors helps in minimizing their effect on industry. Since construction industry is critical in nature therefore, it is difficult, but not impossible to minimize their effect by proper management and to better communication

among participants. Though limiting their effect brings many favorable changes like money saving, time saving, rapid growth etc. The key variable is to attempt to urge all participants to participate rather than compete with each other.

5] KongKoon Tochaiwat and Visuth Chovichien (2004) presented the impacts of construction claims on the project success and the importance of having efficient claim management within the contractors' organizations. Thai contractors, in average, should improve their inefficient claim management sub-processes - active notification of the change, active negotiation of the claim of change, and defensive recognition and identification of the change - while maintaining their efficient ones (active recognition and identification of the change, systematic and accurate documentation of the change, and analysis of time and cost impacts of the change) Globalization forces every organization to improve itself in order to be viable in international competition. The result from this research can help the contractors improve their viabilities. In the authors' opinions, this is the time for contractors to improve their organizational potentials not only in their claim management, but also in entirety of their business processes.

6] Jan Pícha, Aleš Tomek, Harry Löwitt (2015) analyzed in this research paper that, the idea of using EPC Contracts was to give the jobs to engineer for procure and construct the required works. At the time of completion of the project, the plant is handed over to the owner, which can be, operate by himself. The project, which deals with the revenue generating facility and include power plants. Every contracts has its own claims in between the parties such as delay of time, quality and cost overruns. The contracts defines general obligation of specific project performance including the project schedule, which generally fails to meet the agreed obligation between the parties. It also contains claims for changing the scope of work, liquidated damages, verification change of orders and notices and unfair claims of force majeure conditions. The key clauses of EPC Contracts such as "Single point of responsibility", "Fixed Contract price", "Fixed Completion date" etc. which helps the lenders organization requirement of knowing contracting firm's banking capacity to finance the project up to its completion.

7] Wenxin Shen, Wenzhe Tang, Wenyang Yu, Colin F. Duffield, Felix Kin PengHui, Yongping WEI, Jun Fang (2016) Studies revealed different types of claims in the project in the viewpoint of project participants. The contributing factors are of different types:-

1. External risk (e.g., events that project parties could not control);
2. Client related factor (e.g., change orders);
3. Consultant related factor (e.g., delay in inspection and approval);
4. Designer factor (e.g., design errors and omissions);
5. Supplier related factor (e.g., problems on materials and equipment);
6. project definition in contact

(e.g., unclear scope of work and ambiguous technical requirement). From perspective of EPC contractors, claims, which comes from designer to supplier, cannot be raised against the clients as the designer, supplier and the constructor working as a team. Therefore, designer and supplier related factors should be excluded from the cause of contractor claims in EPC projects. On perspective viewpoint of contractors in the international EPC projects the causes of claim is the external risk such as socio-political risk, economic risk and natural hazards and for the clients perspective it is untimely payments, change orders and inefficient processing and for the project perspective is concerned it is unclear scope of work and unclear specifications.

8] Abhishek Raj Singh, Dr. Sanjay Tiwari (2015) reveals about the dynamic nature, flexibility and effective project delivery models in EPC approach of contracting for an increase approach of mega project construction. This papers also says about the reason to use EPC type of contracting as other type of contracting includes cost overrun, time delay etc. To overcome this issue industries merged lump-sum and turnkey contracting and this fusion resulted in an integrated form of contract EPC/LSTK contracts. This type of contacts help the industries to sort out design responsibility, contract price determination, contract administration approach, risk allocation and performance guarantee. The EPC contacting also have its drawbacks such as loss of control for owners in the project involvement, mainly contractors control QA/QC, dispute tends to be larger & management of long term risk. The factors that contribute the dominance of EPC type of contracting is due to single point responsibility, risk transfer & performance guarantee which are the major factors which is implemented for the successful completion of projects.

9] George E. Baram, (June 27, 2005); This paper reveals about different aspects or the parties of the contract encounter nature of EPC/Turnkey contracts, its risks and rewards. Moreover, the contractor needs to calculate the risks as per their contract so that during execution the problems related about the contract can be resolved. So the contractor needs to draw the line upto which he can bear the risks. Identification of risky clauses or elements towards the contract does not make them less risky but its upto the authorized personnel to decide whether to go for this type of contract or not. This paper also speaks about the roles of project manager on a typical EPC/Turnkey Contract to cover much technical and managerial expertise to be implemented in the early stages of the execution of the contract.

10] Yaser Motamedi Mohammadian, Ali Zare, (2017), The subject matter in this paper reveals about the responsibilities in accepting the risk in EPC Contracts. The effective change given in the EPC contracts could have an economic equilibrium and also contain two most vital pillars of the this type of contracts such as the duration and amount of the contract, if any changes occurred during the execution would affect both the parties.

III. CONCLUSIONS

The critical review undertaken in this paper covers various definitions of conflicts & disputes. The attempt has been made to differentiate between conflicts and disputes. Construction projects are big budget endeavors, it is difficult, if not impossible, and to completely avoid construction conflicts. Many researches have been done in past on conflicts and disagreements in the construction industry that exclusively deal with the circumstances characterizing a conflict and tend to ignore the causes thereof or erroneously present relevant circumstances as causes. Therefore in this study, the work is done by analyzing conflicts in the construction industry through experts either in construction production or administration.

As there is no direct attempt made by any researches, in this study, construction is understood as a process with the following key players: client, contractor, subcontractor, designer, construction technical supervisor. However, the analysis is focused on conflicts between the parties directly participating in the construction process, i.e., between the client and the customer. By analogy, research results may apply to the relations between the contractor and the subcontractor as they are in essence similar to those between the client and the contractor.

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