Review on Construction Disputes: A Novel Approach to Reduction and Resolution

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Abstract: The construction industry is prone to conflicts due to the high budgets and long durations of projects, which often involve uniqueness. The projects are handled by many people at various stages of the project; the chances of miscommunication and misunderstanding are high, which can lead to disputes. In this paper, a study is conducted on the resolution and reduction of disputes. In the resolution of disputes, different methods are explained and compared, including mediation, arbitration, conciliation, litigation, adjudication and ADR methods. Reduction of disputes can be done by various methods, which are compared here. Litigation is expensive and lengthy compared to other methods; arbitration is short. ADR methods are safe, and mediation, conciliation and adjudication are the most acceptable ways to resolve disputes. Prediction of disputes is also discussed, which includes technological approaches. This paper aims to provide an overall study of prediction, reduction, and resolution of disputes for the successful completion of the projects.

Keywords: Dispute, Prediction, Reduction, Resolution

1. Introduction:

Construction projects in the past decades were of short duration and small budgets, and thereby more stable. In the current scenario, infrastructure projects are of long duration, high budget and huge scope. In projects of high capital, with a larger number of stakeholders involved, the complexity of the work and scope are also huge. The construction industry has unique features compared to other industries. As the construction industry continues to grow in size, the planning and budgeting problems also increase, and the projects are not completed on time and within budget. Alinaitwe et al. 2013). Patil P. et al. (2019) in their paper suggested the optimisation method, the resources include the 4Ms, which are man, machine, material and money. Risks in construction projects may lead to disputes. Construction projects may be similar, but risk characteristics can differ in different regions. The study by Mohanlal et al.(2019) suggests a methodology for implementing a single platform for project-related information and documents, which helps in managing the project.

Due to the complexity, high budget and long duration of the projects, chances of disputes are higher. According to Marale R G et al. (2017), the competitive nature and contractual inherent within construction can cause an increase in the occurrence of disputes. Lowe et al.(2020) in their study mentioned the delay and cost overrun of infrastructure project of Mumbai underground Metrorail passageway. Many

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stakeholders are involved in each construction project, and the chances of miscommunication are high. According to recent studies, most disputes occur during the execution period. This paper explains construction disputes, their causes, ways for resolution and reduction of construction disputes.

2. Literature Review

This paper gives a review of construction disputes and their resolution and reduction by various methods.

2.1. Dispute

Disputes in construction projects arise due to delays in work completion, lack of fund transfer, improper communication, changes in orders, etc. Due to these uncertainties in the project, conflicts may arise between the stakeholders. Conflicts are disagreements that occur between individuals due to nonconvergence of ideas, interests, and concerns (Ejohwomu, A. O et al. 2016). And if the parties in a conflict cannot reach a satisfactory outcome, the conflict may progress into a dispute. (Chong,et al. 2012, Ayhan, et al. 2022). Equbal et al. (2017) also mentioned in the paper that conflict is the incompatibility of interests, which can be managed to some extent. Disputes are a major reason for the failure or unsuccessful completion of the projects (Cakmak et al. 2014). The improper handling of dispute factors at the beginning will lead to litigation and take years to resolve. Some of the major reasons for disputes include a lack of clauses related to each specification, work to be carried out, and any deviations.

2.2. Resolution of construction disputes

Construction disputes are a major cause of delay and sometimes failure of the projects. The dispute factors are categorised into owner-related factors, contract-related factors, construction management-related factors, contractor-related factors, etc. Depending on the specification and clauses mentioned in the contract agreement, the resolution of disputes can be carried out by various methods. A detailed explanation is given in this paper.

3. Methodology

In this paper, the study of disputes, their impact and the methods of resolution were discussed. Resolution methods help to solve the already occurred disputes. The various approaches to predict and reduce disputes are also discussed.

3.1. Dispute Resolution Methods

Dispute resolution methods are useful for resolving disputes. The various resolution methods for resolving disputes, including litigation, arbitration, mediation, conciliation, adjudication, and dispute resolution board, are explained below.

a. Litigation

Litigation is a legal process in a court or judicial setting to establish and uphold legal rights. This method is complicated and less acceptable in the construction field, as it may affect the relationship between stakeholders. Litigation is more costly, time-consuming, risky, and the process is also stressful. In addition to the tedious, expensive, lengthy, and stressful nature of the process, there is no real certainty of outcomes other than at least one party losing a dispute.

b. Arbitration

Arbitration is one of the most powerful resolution methods. An arbitration award

is enforced by law. Arbitration is governed under the Arbitration and Conciliation Act 1996. The tribunal of arbitrators is of an odd number to make fair decisions. An arbitrator can be a person from a civil or legal background. The decision-making authority in an arbitration is the arbitrator. The process is fast compared to other methods.

c. Mediation

Mediation is one of the most acceptable resolution methods, as the mediator may or may not be a legal person. The mediator is neutral, a third party who must make a fair decision. He tries to solve disputes by combining agreement with a fair result. The court refers the dispute to mediation, without the consent of the parties.

d. Conciliation

Conciliation is similar to mediation. As per the Conciliation, the Court can refer a case to Conciliation only with the mutual consent of both the claimant and respondent.

e. Adjudication

Adjudication is a state-administered system of justice, formal and procedural, in which the judge hears both sides and provides the binding verdicts. A neutral and independent authority determines any amount which the respondent owes to the claimant, on the particular date on which the amount to be paid and the interest amount are also considered. In adjudication, their intention and objective are to settle the dispute by imposing the decision on both the claimant and respondent.

f. Disputes resolution board

The dispute resolution board (DRB) is a dispute adjudication process. The contracting parties choose the adjudicators who are independent and impartial. A dispute resolution board is generated at the beginning of a project. DRB is considered part of the project, which helps in identifying the evolution of any disputes, and may be resolved at the origin through proper settlement.

Dispute Factors

In past decades, studies have been conducted on the dispute factors that led to construction disputes. Francis et al. (2022) summarised in their research that disputes must be avoided beforehand and, if they materialise, should be managed accordingly. Many of the journals identified the construction dispute factors and categorised them into 5 to 10 categories as per their convenience and the requirements of research. In the study conducted by Cakmak et al. (2014) they categorised the dispute factors into six categories. One sample is given in Fig.1, causes of claims with categories. Table 1 shows the factors causing disputes with references. Hall J.M. (2002) studied disputes in the United Kingdom and concluded that a vital reason for dispute occurrence is ineffective communication. In the study by Sinha et al. (2007), scope changes, design changes and payment problems were mentioned as dispute factors. Francis et al. (2014) explained that government-funded public projects were affected by funding issues, as projects were commenced before securing adequate funding.

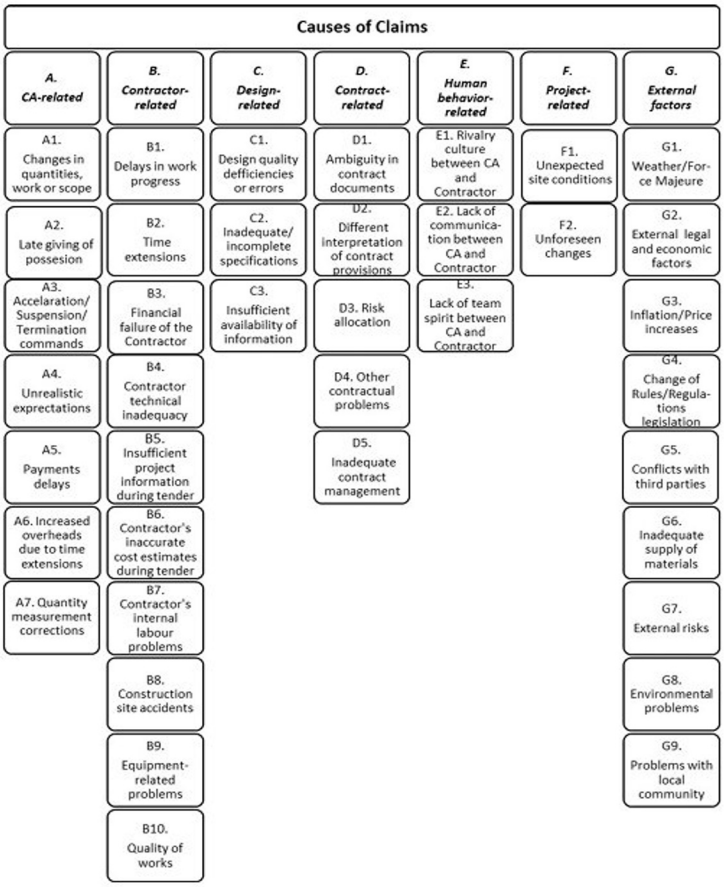

Fig.1. Claim factors with categories (Kalogeraki, M.et al. 2024, Antoniou et al.2024).)

Table 1. Causes of Disputes (T.N.Liyanawatta et al. (2024)

Table 1. Causes for disputes.

	Causes for disputes	References
1	Design errors	S1, S2, S7, S8, S11
2	Time limitations in the design phase	S5, S11
3	Inadequate/ Incomplete Specifications	S1, S2, S4, S7, S8, S13
4	Poor preparation and approval of drawings	S3, S5, S6, S8, S11
5	Poorly designed scope of work	S2, S5, S11
6	Estimation errors	S4, S7, S8
7	Inadequate site investigation	S2, S6, S11, S13
8	Low bidding price	S8
9	The unclear tender document, lack of understanding about agreements	S2, S9, S13
10	Lack of communication	S2, S5, S7, S8, S10, S11, S12, S13
11	Inadequate early planning	S5, S11
12	Changes of scope	S1, S2, S7, S8, S10, S13
13	Delays in work	S2, S8, S10, S12
14	Delays in providing information and decision making	S5, S7, S9, S12
15	Delay in reply to queries	S7, S8
16	Poor management and coordination	S5, S7, S11, S12, S13
17	Lack of trust in each other	S2, S10
18	Lack of experience of consultants & employer	S7, S12
19	Unclear terms in contract documents, poorly written contracts	S2, S6, S7, S9, S10, S11, S13
20	Contractual anomalies, inaccurate information in contracts	S4, S5, S8, S9, S13
21	Improper contractor selection	S8
22	The negative attitude of parties	S8
23	Poor teamwork	S8, S10, S13
24	Lack of technical competencies	S2, S8, S12
25	Inadequate risk allocation	S3, S8
26	Lack of familiarity with local laws	S8, S9, S10
27	Obtaining permits and approvals from authorities	S11
28	Non-serviceable contract information, lack of information	S10
29	Unrealistic requirements of parties, excessive demand for benefits	S2, S10

S1—Chaphalkar and Patil (2012), S2—Cakmak and Cakmak (2014), S3—Farooqui et al. (2014), S4—Awwad et al. (2016), S5—Al Mousli and El-Sayegh (2016), S6—Mishmish and El-Sayegh (2016), S7—Rauzana (2016), S8—Zubair and Gabriel 2017), S9—Trangkanont (2017), S10—Vo et al. (2020), S11—El-Sayegh et al. (2020), S12—Viswanathan et al. (2020), S13—Aka et al. (2020).

Dispute reduction is possible by identifying the factors that lead to construction disputes and trying to reduce the occurrence of those factors. Many studies discussed the prediction of disputes and suggested methods to reduce them. Fig.2 shows the sample methodology for reducing disputes. In this methodology, data collected through interviews is used to generate a prediction model. The prediction model was developed using machine learning tools.

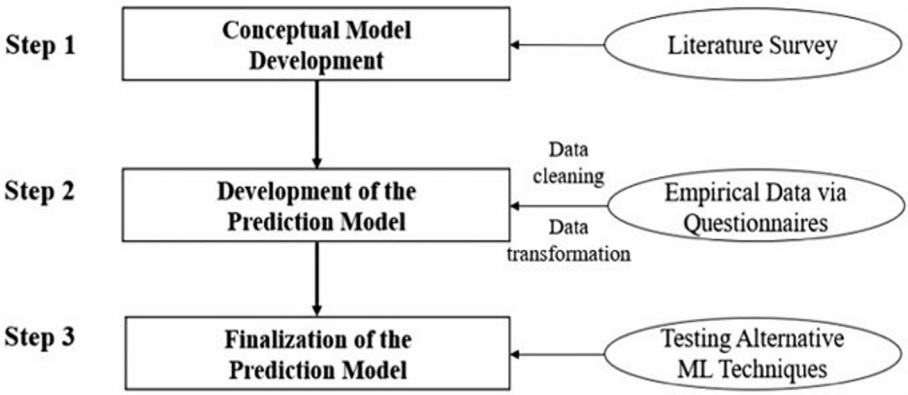

Fig.2. Research Methodology (Murat Ayhan et al. 2021)

4. Results

In the results, a comparison table is prepared of various dispute resolution methods, which were explained in the methodology. The methods of dispute resolution, including mediation, arbitration and conciliation, are compared here in Table 2. The particulars like the role of the unbiased party, nature of the process, decision-making authority, confidentiality, decision enforcement procedure, expenses, duration and termination.

Table 2. Comparison of Dispute Resolution Methods: Mediation, Arbitration and Conciliation

Particulars	**Mediation**	**Arbitration**	**Conciliation**
Role of the unbiased party	The mediator acts as a guide and facilitator	An arbitrator is the Decision Maker	The conciliator acts as a guide and facilitator
Nature of the process	Adversarial, which is characterised by conflicts	Consensual, which is made by mutual consent	Consensual and non-adversarial process
Decision taken by	Parties	Arbitrator	Parties
Confidentiality	Confidential	Not always confidential	Confidential
Decision enforcement procedure	The settlement agreement is enforceable as a contract	Awards can be enforced through legal process	Equivalent to an arbitral award on agreed terms
Expense	Reasonable or less expensive	Potentially Expensive	Less expensive
Duration taken for	Quick	Some delay more in case of a challenge	Quick
Termination	-Mutual agreement between the parties. -One party's decision to withdraw. -Impasse, where further mediation seems unlikely to produce an agreement.	-Mutual agreement between the parties. -Withdrawal of the claim by the claimant. -Arbitrator's order, if the proceedings are not being pursued.	-Mutual agreement between the parties. -One party's decision to withdraw. -Conciliator's decision, if further efforts seem futile.

The other resolution methods, such as litigation, adjudication and DRB, are compared in Table 3. The particulars include the role of an unbiased party, nature of the process, decision-making authority, confidentiality, decision enforcement procedure, expenses, duration and termination. The comparison of various methods suggests that litigation

is the most expensive and lengthy procedure, and the dispute resolution board (DRB) is the safest way to avoid disputes.

Table 3. Comparison of Dispute Resolution methods: Litigation, Adjudication and DRB

Particulars	Litigation	Adjudication	DRB
Role of an unbiased party	Dispute resolution by a judge in the court system	An adjudicator is the Decision maker	A proactive system for preventing disputes
Nature of the process	A formal, public and structured legal process governed by strict rules	Semi-formal process	Less formal as generated to avoid disputes
Decision taken by	Judge	Adjudicator	A board of one or three experts
Confidentiality	Open to the public	Not always confidential	Confidential
Decision enforcement procedure	Court orders are legally enforceable through the authority of the state	Awards can be enforced through legal process	Enforceability depends on the contract and the type of DRB
Expense	Expensive	Lower than litigation	Less expensive
Duration taken for	Very Lengthy	Quick	Quick and efficient
Termination	Parties can settle the dispute at any time	-Mutual agreement between the parties.	-Mutual agreement between the parties.

In the Table. 4, various methods to reduce the dispute are discussed. In many research works, the identification of dispute factors, the prediction of dispute occurrence and various ways to avoid generating disputes are discussed.

Table 4. Comparison of the reduction methods of disputes

Reference	Methodological Approach	Key takeaways

Chou et al. (2013)	Multilayer Perceptron neural networks, Decision trees, Standard Vector Machine, Naïve Bayes Classifier and K Nearest Neighbor	This paper generated models that proactively give warnings and decision support information, thereby helping to select the proper resolution strategy and prevent disputes from occurring.
Elziny, A. A., et al. (2016)	An Expert System	Alternate dispute resolution methods for resolving disputes.
Ayhan et al. (2021)	Machine Learning Techniques	In this study, an early warning system was generated that can predict disputes using machine learning models.
Gamage, et al., (2022)	Identification of important factors to improve the team's communication	The author focused on giving attention to the communication to reduce disputes in construction
Francis et al. ASCE (2022)	The project characteristics were identified, which caused disputes in 44 building project documents.	This paper suggests a way to avoid disputes by addressing disputes at the initial stage itself, according to the context
Liyanawatta, et al. (2024)	Data collected through interviews and analysis done using N-Vivo12.	A comprehensive framework for mitigation disputes.
Jannadia, M. Osama, et al.(2000)	Allocation of fair contract risk, dispute clauses, team building, the provision for neutral arbitrator and binding of arbitration.	Contract administration methods

5. Conclusion

The construction project got delayed and over budget due to the disputes. The successful completion of the project is possible by avoiding the occurrence of dispute factors. For complete control over disputes, various processes must be implemented. In this paper, a review is conducted on the reasons for disputes, the prediction, reduction, and resolution. The methods of resolution and their particulars are compared. The litigation is the most expensive and lengthy resolution method. Arbitration is also a high-cost, law-enforced and faster method among other resolution methods. A dispute resolution board is suitable to control dispute generation during the execution stage

and throughout the project. Mediation, Conciliation and Adjudication are the fastest methods to resolve disputes between parties with mutual agreement. The reduction is possible by predicting disputes at the earliest and managing the causes through proper communication or the involvement of authorities.

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