

RESEARCH ARTICLE

Adequacy of Regulatory Framework to Minimize Disputes in Construction Projects

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Abstract: The construction industry is a competitive, complicated environment where people with various skills, perspectives, and levels of knowledge. Conflicts are unavoidable in this complicated setting due to differences in perspectives among project participants. Conflicts quickly develop into disagreements if they are not handled properly. The end goals of every construction project are to reduce cost, improve quality, and complete the job on schedule. One of the biggest things that prevents the construction project from being successfully finished is disputes. Construction conflicts have become significantly more common and complex in recent years. Consequently, it's critical to understand what leads to disagreements. However, in the event of a dispute, Dispute Resolution Methods are implemented to resolve differences and prevent the breach of relationship and communication between the parties to achieve the construction project in the desired time, budget, and quality. The purpose of this study was to identify and evaluate the main factors that contribute to building disputes. Through a comprehensive literature review, 39 root causes of construction disputes were identified under seven categories namely client-related, contractor-related, design-related, contract-related, human behavior-related, project-related, and external factors. The responses gathered from construction industry specialists in Sri Lanka via a questionnaire survey were used to determine the significance of those indicated factors by converting them to the Relative Importance Index(RII). Results showed that the project-related category is the most significant category that causes disputes in construction projects. Additionally, correlation analysis shows that there is a strong relationship among the dispute-causing categories. Also, the respondents are familiar with “arbitration” as the dispute resolution method and they are satisfied with the “conditions of contract” as a Regulatory framework for dispute resolution. The findings support the notion that construction disputes are a source of concern for every project and that the best way to address this issue is to prevent and cautiously manage them to ensure the smooth operation of the construction process.

Keywords: Construction Projects, Dispute, Dispute Resolution Methods, Regulatory Framework, Condition of Contract

Introduction

The construction industry is complex in nature due to its inherent characteristics such as multi-party involvement, ever-changing environment, unpredictable workload, long production cycle, etc. Further, it is perceived as huge, adversarial continually fragmented, and under the pressure of a controversial ambiance as a result of the new technology, tender costs, and legislative regulations on safety, health, and newer methods of procurement (Campbell 1997).

Due to its complex and competitive environment, where participants with varying perspectives, skills, and levels of knowledge the construction industry experiences frequent disputes and conflicts between all parties of construction contracts. Generally, “Dispute is a misunderstanding between two parties, either contractual or non-contractual”. In this complex environment, participants from various professions, each has their own goals and each expects to make the most of its benefits. In the construction industry, since differences in perceptions among the participants of the projects, conflicts turn into disputes are inevitable.

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Disputes are one of the main factors that prevent the successful completion of a construction project in terms of achieving cost, time, and quality requirements. In order to finish the construction project on schedule, within budget, and with the necessary level of quality, it is crucial to understand the reasons why disputes arise.

The expectation of clients, contractors, and consultants for construction projects is to confirm that the projects are delivered by an acceptable and mutually accepted standard. During the construction stage, unforeseen and unavoidable circumstances may occur that have an impact on the outcome of the project. Numerous conflicts can occasionally come from development participants, the surrounding environment, some external sources, etc. If those conflicts can be detected early on, they may be reduced or controlled. As a result, the impact of other important unavoidable factors on the deliverables of construction projects may be minimized.

The objectives of this study are to investigate the factors causing construction disputes, familiarity with dispute resolution methods, and their adequacy in the Sri Lankan construction industry perspective. A questionnaire was created to get the construction industry's expert opinion on dispute-oriented factors and dispute-resolution methods. Received responses were analyzed to rank the significance level of those factors and dispute resolution methods.

The construction industry plays a key role in any country's economy (Mashwama et al. 2017) and is one of the major sources of employment (Lewis 2004). During a project, many conflicts and disputes are commonly encountered by those involved in the construction industry. Conflicts can be managed among construction parties, but disputes, resulting from conflicts, are associated with distinct justiciable issues and require third-party interventions such as courts and arbiters.

Disputes in Construction

Due to the inherent nature of the construction industry, the main parties are required to identify the possible risks that can lead to conflicts between parties. Conflict is defined as "serious disagreement and agreement about something important" (Conlin et al. 2002). A claim is "a request for compensation for damages incurred by any party to a contract" (Semple et al. 1994). A dispute is defined as "any contract question or controversy that must be settled beyond the job site management" (Diekmann et al. 1994). According to (Acharya et al. 2006), it is proposed that

conflicts arise from mishandled risks; then, if they are not being managed well, they become a claim, and the claim can then escalate to a dispute if it is not cleared up, as shown in Figure 1.

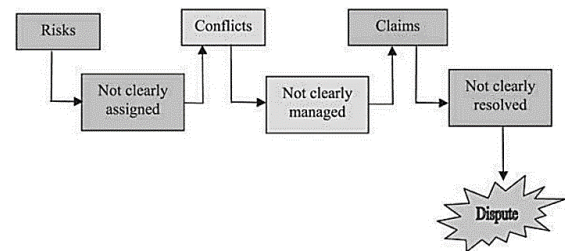


Figure 1: Relationship among Conflicts, Claims and Disputes

The word 'dispute', as per Cambridge's dictionary, means an argument or disagreement between two parties, in particular when they are official parties, such as two countries, workers and employers, or parties to a business contract. In the same context, the term 'construction disputes' is expressed as "the existence of incompatibilities of need and value" (Cheung and Yiu 2006), while a study conducted (Vorster 1993) defined disputes as an issue arising from a disagreement between the project parties with the project's processes and activities. Also, "Construction disputes vary in nature, size, and complexity and can be costly in terms of time and money" (Farooqui et al. 2014). Moreover, a dispute is defined as any inquiries or disagreements over the interpretation of the terms of the contract that must be managed, resolved, and simplified away from the workplace. The dispute may also be defined as any inquiry, or lack of clarity, regarding contracts' terms that must be resolved and managed since the dispute occurred (Alaloul et al. 2019a).

A conflict occurs when there is a disagreement among parties on a certain issue of fact, law, or policy. While one party accepts the other party has an opinion on refusing, rejecting, or counterarguments. In the absence of an acceptable resolution to the dispute, the parties to the contract engage in conflict. 10-30% of construction industry projects have experienced in serious conflict, and approximately 25% of disputes evolve into conflict and eventually reach litigation (Stipanowich 1998).

There are several factors that could lead to the emergence of disputes between the contracts' parties and thus lead to disputes, including poor planning, changes in the scope of work, exceptional circumstances, variation in interpretations of the contract language, and poor communication between

the contracting parties. Certainly, there will be a negative impact on the performance of the project and thus may lead to litigation (Akshaykumar and Joshi 2018). Based on the study done by Soni et al. (2017), if the disputes' proven factors can be categorized into different perspectives, management of those causes will be easy. Shash and Habash (2021) also analyzed disputes causing factors from the contractor and client's perspective only.

Dispute Resolution Methods (DRMs)

Dispute resolution methods (DRMs) and Alternative Dispute Resolution (ADR) are the mechanisms, procedures, and techniques used to tackle disputes that occur in construction projects. Considering the interests and benefits of each party, dispute resolution methods help to reach an agreement accepted by the disputing parties. Disputes require resolution, which is often costly (Sambasivan et al. 2017). When considering disputes there are several dispute resolution methods, such as Litigation, Adjudication, and Alternative Dispute Resolution. When considering ADR, there are four methods: Negotiation, Conciliation, Mediation, and Arbitration.

(Alaloul et al. 2019b) has identified different dispute-resolution processes namely negotiation, dispute resolution board, mediation, mini-trial, arbitration, and litigation. Further, they have shown that the above-mentioned dispute resolution processes' cost requirements have an increasing tendency while controlling power has a decreasing tendency. Negotiation is that a dispute should be settled immediately and efficiently in terms of time management, costs, and preservation of the relationships. Arbitration is a process wherein opposing parties submit their dispute or conflict for a binding determination by one or more third parties. Mediation is considered as a structured, informal, and nonbinding negotiation and it is believed to be the most important method of ADR. The med/arb method is a hybrid of mediation and arbitration that was developed by the Associated Soil and Foundation Engineers (ASFE) in the 1970s. The mini-trial is an alternative dispute resolution procedure that is used in the construction industry to resolve disputes without incurring the expense and delay associated with court litigation. Dispute Resolution Board is considered an innovative nonadversarial project management technique for avoiding or resolving disputes during the project lifecycle (Alaloul et al. 2019).

A recent study done by (Illankoon et al. 2022) has shown many factors that contribute to disputes and

factors that lead to the selection of DRM. The current study has categorized dispute-proven factors into several categories in the Sri Lankan context. Additionally, the adequacy of available DRM has not been focused on previous studies hence it was considered under the objectives of this research.

Methodology

Through searching the relevant literature, 39 root-causing factors that may cause construction disputes were identified under 7 categories. In a questionnaire, 39 factors were evaluated under those different categories. They are client-related, contractor-related, design-related, contract-related, human behavior-related, project-related, and external factor-related categories. The questionnaire survey was conducted among professionals in the construction industry. A purposive sampling technique was used to select the respondents. Purposive sampling, also known as judgment sampling, is the purposeful selection of a participant based on the traits the subject possesses. It is a non-random technique that does not require underlying theories or a predetermined number of participants. Simply said, the researcher determines what needs to be known and then seeks out persons who can and are willing to supply the information based on their knowledge or experience. It is commonly used in qualitative research to discover and pick the most information-rich examples to make the most use of available resources. This entails identifying and selecting individuals or groups of individuals who are adept and knowledgeable about a topic of interest (Ilker et al. 2016). There were 162 responses. The reliability of the data set was analyzed using Statistical Package for the Social Sciences (SPSS) software. Respondents' demographic information was collected to show the appropriateness of the selection of respondents. Relative Importance Index (RII) was used for ranking root-causing factors,

$$RII = \sum a * \frac{n}{N}$$

Where, RII - Relative Importance Index, a - Constant expression weight (1 to 5 based on a five-point Likert Scale), n - Frequency of response N - Total number of responses.

Additionally, the correlation between dispute-causing factors and categories is analyzed using SPSS software.

Results and Discussion

Background of the Respondents

Figure 2 depicts the respondents' designation and experiences. Most of the respondents were Engineers and they were 104 out of 162. Considering the experience of the professionals who responded, 99 out of 162 had experience of 1 to 5 Years in the construction industry and the others had experience of more than 5 Years.



Figure 2: Respondents' Background Information

Consistency of Survey Data

The internal consistency of the collected responses was first calculated using SPSS and it gave a Cronbach Alpha value of 0.948. As per statistics, if that is more than 0.7, the collected data has high internal consistency.

Familiarity with Dispute Resolution Methods

Dispute resolution methods are the mechanisms to solve disputes when they arise. Hence, the construction stakeholders need to be familiar with and know the advantages and disadvantages of using these methods. The questionnaire survey focused on investigating the familiarity of the construction industry professionals with available dispute resolution methods. Table 1 shows the results obtained using the RII method. Results show that 'Arbitration' is the most significant dispute resolution method

familiar to the construction professionals in the construction industry while 'Conciliation' is the least significant dispute resolution method considering construction professionals have the RII value of 3.82 overall.

Table 1: Familiarity with Dispute Resolution Methods

Dispute Resolution Methods	RII	Rank
Arbitration	4.14	1
Negotiation	3.98	2
Mediation	3.96	3
Adjudication	3.96	3
Dispute Review Boards	3.94	4
Mini-trial	3.86	5
Conciliation	3.82	6

Satisfactory Level of Available Regulatory Framework

The available regulatory frameworks are the standard documents that contain the solution for construction disputes in writing. The construction industry involves so many innovative technologies and new kinds of projects. So, the disputes in the construction industry can slightly take new faces. The satisfaction with the available regulatory framework was analyzed. The results are shown in below Table 2.

Table 2: Satisfactory Level of Available Regulatory Framework

Dispute Resolution Methods	RII	Rank
Conditions of Contract	4.21	1
Arbitration Act	4.09	2
Contract Data	4.07	3
Labour Law	4.07	3

'Condition of Contract' is the most satisfying available regulatory framework within the professionals in the construction industry while the 'Contract data' and 'Labor Law' are the least satisfying available regulatory frameworks considering construction professionals have the RII value of 4.07 overall.

Influence of different factors to overcome disputes.

Based on the responses received, the Relative Importance Index (RII) of each cause of disputes was calculated. Further, RII for each category was calculated. Table 3 shows the RII for each cause and category.

Table 3. Influence of Different Factors on Construction Disputes

Category	Description	RII of factors	Rank of factors	RII of categories	Rank of categories
Project Related Factors (A)	Site Conditions	4.37	1	4.23	1
	Change in the Financial /Economic situation in the Country	4.28	2		
	Unforeseen Changes	4.18	3		
	Availability of required Technological/Experts within the Country	4.17	4		
	Legislation and Policy Changes	4.17	4		
Contractor Related Factors (B)	Delays in work Progress	4.30	1	4.18	2
	Financial failure of the Contractor	4.23	2		
	Quality of Works	4.22	3		
	Time Extensions	4.15	4		
	Capability of Management Staff of the Contractor	4.10	5		
	Technical inadequacy of the Contractor	4.09	6		
Contract Related Factors (C)	Ambiguities in Contract Documents	4.26	1	4.16	3
	Different Interpretations of the Contract Provisions	4.17	2		
	Different Interpretations of the Contract Provisions	4.16	3		
	Cost Overrun	4.14	4		
	Risk Allocation	4.12	5		
	Multiple Prime Contracting Parties	4.10	6		
Client/Owner Related Factor (D)	Variations initiated by the Owner	4.39	1	4.15	4
	Change of Scope	4.15	2		
	Unrealistic Expectations	4.11	3		
	Payment Delays	4.11	4		
	Late giving of Possession	4.10	5		
	Acceleration	4.04	6		
Design Related Factors (E)	Design Errors	4.23	1	4.14	5
	Design Changes	4.17	2		
	Quality of Design	4.12	3		
	Availability of Information	4.10	4		
	Inadequate / Incomplete Specifications	4.07	5		
Human Behaviour Related Factors (F)	Adversarial / Controversial Culture	4.27	1	4.14	5
	Lack of Team Spirit	4.19	2		
	Lack of Communication	4.13	3		
	Misunderstandings among Participants	4.10	4		
	Unfair Behavior	4.01	5		
External Factors (G)	Weather and Environmental issues	4.27	1	4.14	5
	Legal and Economic Factors	4.17	2		
	Effect from the Society and Culture	4.15	3		
	Fragmented Structure of the Sector	4.11	4		
	Political Influence on the Project	4.08	5		
	Natural Disasters	4.07	6		

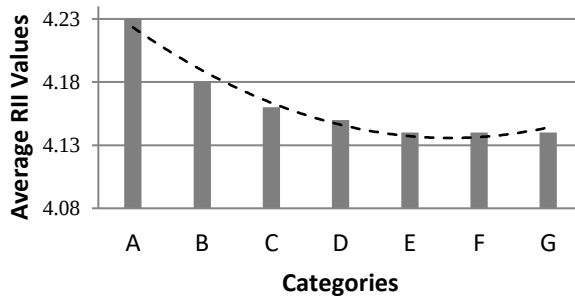


Figure 3: Influence of Different Categories for Construction Disputes

To illustrate the importance of each category, average RII values are presented in Figure 3. According to the

average RII values for each category, the project-related factors can be identified as the most influencing factors causing the construction disputes. Considering all the factors, variations initiated by the owner of the project cause the most significant construction disputes among different parties.

Correlation Analysis of Data

Correlation analysis between factors in each category and between categories was performed using SPSS software. According to the results, there was no strong correlation between factors in all the categories. However, a strong correlation can be seen between categories, and it is shown in Table 4.

Table 4: Correlation between Dispute causing categories.

		A	B	C	D	E	F	G
A	Pearson Correlation	1	0.792**	0.695**	0.738**	0.659**	0.660**	0.680**
	Sig. (2-tailed)		0.000	0.000	0.000	0.000	0.000	0.000
	N	162	162	162	162	162	162	162
B	Pearson Correlation	.792**	1	0.692**	0.788**	0.694**	0.614**	0.651**
	Sig. (2-tailed)	0.000		0.000	0.000	0.000	0.000	0.000
	N	162	162	162	162	162	162	162
C	Pearson Correlation	0.695**	0.692**	1	0.736**	0.615**	0.650**	0.680**
	Sig. (2-tailed)	.000	0.000		0.000	0.000	0.000	0.000
	N	162	162	162	162	162	162	162
D	Pearson Correlation	0.738**	0.788**	0.736**	1	0.681**	0.770**	0.738**
	Sig. (2-tailed)	0.000	0.000	0.000		0.000	0.000	0.000
	N	162	162	162	162	162	162	162
E	Pearson Correlation	0.659**	0.694**	0.615**	0.681**	1	0.625**	0.608**
	Sig. (2-tailed)	0.000	0.000	0.000	0.000		0.000	0.000
	N	162	162	162	162	162	162	162
F	Pearson Correlation	0.660**	0.614**	0.650**	0.770**	0.625**	1	0.705**
	Sig. (2-tailed)	0.000	0.000	0.000	0.000	0.000		0.000
	N	162	162	162	162	162	162	162
G	Pearson Correlation	0.680**	0.651**	0.680**	0.738**	0.608**	0.705**	1
	Sig. (2-tailed)	0.000	0.000	0.000	0.000	0.000	0.000	
	N	162	162	162	162	162	162	162

** . Correlation is significant at the 0.01 level (2-tailed).

Conclusion

The construction industry is complex resulting in complex contract documents. Complex construction can also lead to complex controversy. Cost, time, and quality are the target results of the success of any construction project. The complexity and number of contract conflicts and disputes have increased dramatically in recent years. Conflicts and disputes are a cause for concern as a well-planned construction project cannot run smoothly and successively. Attempts have been made to identify the causes of conflicts and disputes and their effects on the industry. Since the construction industry is important, it is difficult, but not impossible to avoid and minimize construction disputes and their effects through proper management and better communication between participants. There are various ways to settle disagreements that come up during construction projects. However, there isn't one optimal method for settling conflicts that works in every circumstance. Construction stakeholders should be aware of the benefits and drawbacks of each approach and make sure that the contracts they sign have appropriate dispute resolution provisions.

This research was focused on identifying the root causes of conflicts and disputes that occur in construction projects and investigating regulatory provisions to minimize conflicts and disputes and to ensure the success of the project from unwanted cost overruns, delays, and poor quality of the construction projects in civil engineering. Through searching the relevant literature, 39 root-causing factors were identified under 7 dispute-related categories. In a questionnaire, 39 factors were evaluated under those different categories. The questionnaire survey was conducted among professionals in the construction industry. 162 responses have been received. Relative Importance

Index (RII) was used for ranking root-causing factors. According to the results of RII values, project-related factors are the most important category for causing disputes in construction projects. It means if the project-related factors can be resolved well in the construction project, the success of the construction project can be seen clearly. But it does not mean that the other categories are not causing disputes. Additionally, correlation analysis also supported that there is a strong relationship between categories. Also, other categories should be considered in dispute avoidance and minimization. In the project-related category, 'Site conditions' is the most significant factor in causing disputes. "Variations initiated by the Owner" is the main cause for disputes considering all the factors together irrespective of the categories.

Satisfaction with the available regulatory provisions is determined by the construction professionals. The condition of the Contract is the most satisfying framework among the professionals, and it does not mean that the Condition of the Contract is completely satisfied. The available regulatory frameworks should be moderate according to the ongoing issues and problems occurring in construction projects.

There are several things to suggest for the development of future research towards a better direction, namely: more in-depth research can be done by adding other root-causing factors from various references and increasing the number of respondents. Further, research can be extended to get the perspective of different stakeholders such as clients and contractors.

Acknowledgment

The authors wish to acknowledge the assistance given by professionals in the construction industry to collect the data through the questionnaire.

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