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Mitigating Legal Risks in NHAI EPC Contracts Clause Impacted by Safety Parameter

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Abstract: Globally, disagreement, legal actions, and litigation around the development of national highways are growing daily. Numerous investigations have uncovered problems with contract formulation, contract document faults, and the pre-construction stage. The analysis focuses on five EPC contract terms related to national highway safety that carry a high risk of lawsuit. Contractors, consultants, and employees of the authority were handed a questionnaire survey as part of this investigation. Google Forms was used to gather 161 replies. Principal component analysis was used in SPSS to analyse the aforementioned data. The result shows that there are a number of crucial (high risk) contract elements in EPC contracts that could lead to litigation.

Keywords: Impacted clause, Safety, EPC, Principal component analysis, NHAI, SPSS.

I. INTRODUCTION

For infrastructure projects to be finished on schedule, Engineering, Procurement, and Construction (EPC) contracts must be successfully carried out. The National Highways Authority of India (NHAI), a key organisation in India's infrastructure development, oversees and manages these contracts in a significant way. But since large-scale infrastructure projects are so complicated, legal conflicts frequently develop and cause delays and high costs. The application and interpretation of clauses has been one area of NHAI EPC contracts that has generated a lot of controversy. The inclusion of safety clauses in EPC contracts is essential for guaranteeing the health and safety of construction site workers, the general public, and the environment. These provisions lay out the process for resolving safety-related issues, define stakeholder duties, and create a framework for compliance with safety standards. However, there may be misunderstandings and disputes on how these terms should be interpreted, which could result in protracted legal disputes. In order to shed light on the complex issues and potential solutions, this article conducts a rigorous analysis of safety clause disputes under NHAI EPC contracts. This paper attempts to offer insights into how legal risks resulting from clauses can be efficiently managed by diving into particular cases and jurisprudential studies.

The analysis of the underlying causes of these issues will next follow, including ambiguities in contract text, differences in stakeholder interpretation, and external variables affecting safety compliance. The study will come to a close by outlining proactive methods for reducing the legal risks brought on by clauses in NHAI EPC contracts. This critical analysis is essential for policymakers, project managers, and stakeholders in the larger field of infrastructure development, in addition to legal professionals and contract administrators involved in NHAI projects. We can promote more effective and fair settlement methods and eventually help India's crucial infrastructure projects to be implemented more smoothly by improving our grasp of the complexities surrounding safety clause conflicts.

II. OBJECTIVE OF THE STUDY

To identify critical contract clauses of EPC contract which have high risk of litigation that were impacted by safety in National Highway.

III. LITERATURE SURVEY

A review of many works of literature, was conducted in various journals. A set of guidelines for the use of everyday language in organisational regulations was developed by Kevin Walsh. Appointing and training a reviewer with the responsibility of recognising dubious terminology and alerting the organization's decision-makers to it. establishing red flags and must-have clauses that must be either incorporated into every contract or avoided.

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To learn from and build upon the company's mistakes, locate and collect its lessons learned.(2)According to research by Prasad K.V. et al, The main causes of highway or transportation project delays were issues with land acquisition and utility-related delays. The study's findings have shown that each project's delays have unique reasons and degrees of significance. The development of sound contract terms, the project schedule, documentation, and records were scrutinised in order to ascertain the root of the delay in the settlement of claims during pre-contract negotiations.(3) The validity and/or sincerity of the allegation may be contested. It is feasible to enhance claims management and promote the deployment of more effective and efficient dispute minimization techniques by fine-tuning management attention to foresee and prevent, or provide for, common trouble areas.. (5)Working during the rainy season, flooding, impacts on people's land, awarding the project to the lowest bidder, frequent equipment breakdowns, inadequate contractor technical staff and project teams, poor ground and terrain, delayed progress payments, and low productivity labour are some of these factors. As a general rule, consider the top ten elements of delays as well.(6)It will be vital for drafters/revisers to take into account the criteria described in this study when developing or modifying contract clauses so that project stakeholders can make the most of the available ADR options rather than resort to litigation.(7)Before a problem or dispute affects a building project legally, there are three main stages to it. These phases are as follows: Claim filing, claim denial, and the failure of a peaceful resolution (Stage 3) are the first two stages of the claim process. Certain construction project components' cost overruns or delays are what give rise to a claim that ultimately leads to litigation.(4)When legal certainty no longer meets the standards, litigation—which in the past was the initial course of action—will be challenged for judicial review after the district court, high court, and Supreme Court as the final ruling by the aggrieved plaintiff. The benefits of (1) legal certainty, (2) cost, (3) time, and (4) preserving a connection where the decision is final and binding, as well as its confidentiality, make arbitration the preferable course of action. The majority of arbitration panel verdicts can be challenged in court, therefore recently, it has become a last choice. (9)India has a variety of concurrent conflict resolution techniques. Although they are still in their infancy and are not yet commonly employed, Dominant Cause, Apportionment, and other methodologies that are widely used throughout the world have been used in India. (8) The top five reasons for lawsuits included unclear contract provisions, bad contract writing, uneven clause implementation by different contract parties, a lack of information, and problems with the change. They went on to say that the main causes of disagreements between contracting parties are a lack of adequate contract documentation and unnecessary information. Within the contract and stakeholder categories of the proposed model, the literature and SCC instances contain examples of these top-ranked classes. The initial contract will incur additional costs as a result of the litigation (such as attorney fees and damages assessments)..(10)Every year, a significant amount of time and money is spent trying to settle construction conflicts. To reduce claims and deal with the problems, it is crucial to use the right management plan.(11)Only 8.5% of the projects under review were completed on time and only 7% were completed within budget. Major urban development projects faced the most cost overruns and delays. (12)The interests of the impacted communities have a greater impact on social disputes in the project than internal project interests do. (13)International Journal of Law, Management, and Humanities Traditional dispute resolution processes might be replaced by the idea of alternative dispute resolution (ADR). ADR promises to resolve any issues, including legal, commercial, industrial, and family problems, if negotiations or a compromise are unsuccessful. To promote communication and resolve disputes between the parties, ADR frequently uses unbiased third parties. It is a tactic for upholding interpersonal harmony and reducing hostility between people and groups.(14)Arbitration does not appear to have much of an impact on resolving construction disputes in Kuwait, despite the fact that many disputes that start with arbitration wind up being settled through the court system. (15).By accounting for various claim causes functioning concurrently, the series of models created utilising the frequency of claim causes enabled the prediction of time and cost overruns.(16) The interpretation of the letter and spirit of construction contract conditions is essential in the dispute settlement process. If more than one phrase discusses a particular issue and such phrases overlap, each word must be understood both in the extremely specific context in which it is used and in a holistic manner.(17) The intricacy of using indemnification contract provisions to spread the risk load associated with the architectural, engineering, and construction industries.(18)

Arbitration doesn't seem to have much of an impact on resolving building disputes in Kuwait since many matters that begin with arbitration seem to end up in the litigation system..(15)

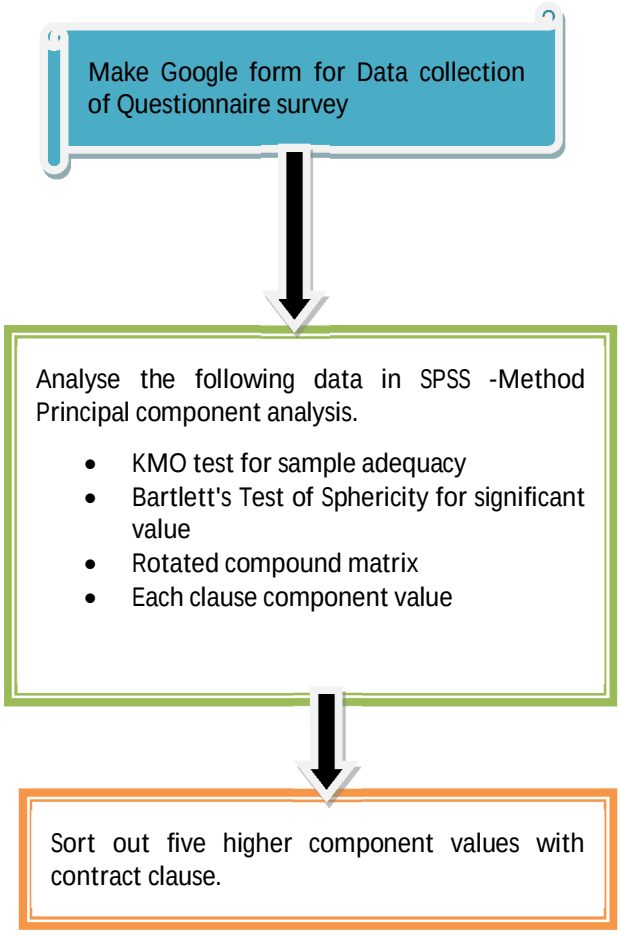
IV. RESEARCH METHODOLOGIES

The approach was used in accordance with Figure No. 1. The diverse respondents' data for the questionnaire survey was gathered using a Google form. Each contractor, consultant, authority, arbitrator, etc. received a separate form. In SPSS, the collected data were analysed. Principle Component Analysis was the approach used. The KMO test and Batletts Test of Sphericity would be examined for sample adequacy. The scree plot reveals a variety of components.

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To determine the overall variance, rotated compound matrix, and other information, data were further processed. The rotated compound matrix gives us individual component values. Sort out the component value from higher to lower value with respect to the contract clause.

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V. DATA COLLECTION

Through the use of a questionnaire survey, data were gathered. The questionnaire was issued to everyone who is directly or indirectly involved in National Highway EPC projects, including the Arbitrator, Authority personnel, contractors, consultants, etc. There were 27 key questions in the Google form that was created. On a scale of 1 to 5, where 1 is very low, 2 is low, 3 is moderate, 4 is high, and 5 is very high, the responder has provided the impact of time on each contract clause.

There is a summary of the response in Table No. 1. There were 161 total responses. 65 contractors, 47 consultants, 27 personnel of the NH authority, 12 arbitrators, and 10 other people with expertise ranging from two to thirty eight years have contributed their insightful replies.

Table -1 Summary of data response

Sr.No	Type of respondent	No of response	Experience
1	Contractor	65	2 to 38 years
2	Consultant	47	
3	Authority	27	
4	Arbitrator	12	
5	other	10	
		161	

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VI. RESULT AND ANALYSIS

For data analysis, principal component analysis was performed. Principal component analysis, or PCA, is a technique for reducing the number of dimensions in large data sets by condensing a large collection of variables into a smaller set that retains the majority of the large set's information. Accuracy naturally suffers as a data set's variables are reduced, but the answer to dimensionality reduction is to trade a little accuracy for simplicity. Because machine learning algorithms can analyse data points considerably more quickly and easily with smaller data sets because there are less irrelevant variables to process.(19)

SPSS software would be used for analysis. The SPSS software was used to upload all of the data. The Kaiser- Meyer-Olkin (KMO) test was used to gauge the effectiveness of the sampling. The test result was 0.907, which is greater than 0.7, indicating that the sampling adequacy was adequate. The next test was Bartlett's test, and it was successful because the significance value was 0.00, which is less than 0.5. based on the table no.2 The results of the sphericity tests by Bartlett and Kaiser-Meyer-Olkin (KMO) demonstrate multivariate normality and adequate sampling.(20)

Table -2 Summary of KMO test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.907
Bartlett's Test of Sphericity	Approx. Chi-Square	2695.45
	df	351
	Sig.	0.00

The data was subsequently examined by the researcher as a rotated compound matrix in SPSS. Each component's unique factor and variables are provided in this. Each variable, or contract clause, has a distinct value under each component, according to Table No. 3. The values of all twenty-seven variables are present in the six components.

Table -3 Rotated Component Matrixes

Cl No	Component						Total
	1	2	3	4	5	6	
s25	.785						.785
s22	.774						.774
s23	.762						.762
s24	.743						.743
s20	.694						.694
s26	.675						.675
s27	.652						.652
s19							0.0
s21							0.0
s15		.761					.761
s11		.731					.731
s16		.723					.723
s14		.705					.705
s17							0.0
s10							0.0
s12							0.0
s18							0.0
s2		.781					.781
s4		.652					.652
s3		.642					.642
s1		.631					.631
s8			.815				.815
s9			.761				.761
s13							0.0
s6				.720			.720
s7							0.0
s5							0.0

Extraction Method: Principal Component Analysis.

The variable's value was arranged from highest five value under the condition. The sorted value along with the contract clause are shown in Table 5. Table 5 and analysis show that clauses nos. 8,2 5, 2,22, 23 are the five most critical clauses in a contract. A higher component value indicates that the cited clauses are more critical.

Table -4 Summary of more impacted clause

Rank	cl no	Component value	Time impacted Critical contract clause
1	8	0.815	Right of way
2	25	0.785	Liability and indemnity
3	2	0.780	Scope of project
4	22	0.774	Suspension of contractors rights
5	23	0.762	Termination

VII. CONCLUSIONS

As stated earlier that this research is referred to as EPC clauses in the contract which have high risk of litigation that were impacted by safety. The 161 responses were collected from the questionnaire survey. Principal component analysis technique used for dimension reduction in SPSS software. The finding indicates that there are several critical (high risk) contract clauses in EPC contracts for litigation: Suspension of contractor's rights is the first critical contract clause with a strong impact, according to Table No. 5. The remaining four high risk clauses are as follows: representation and warranties; traffic regulation; termination; supervision and monitoring during maintenance. Revision& amendment is required of the above time-impacted high risk-critical contract clause to reduce the litigation.

VIII. FUTURE SCOPES

Effect of a safety parameter in the different contractual models on the national highway.

IX. CONFLICT OF INTEREST

The corresponding author declares there aren't any competing interests on behalf of the other writers.

X. LIMITATIONS

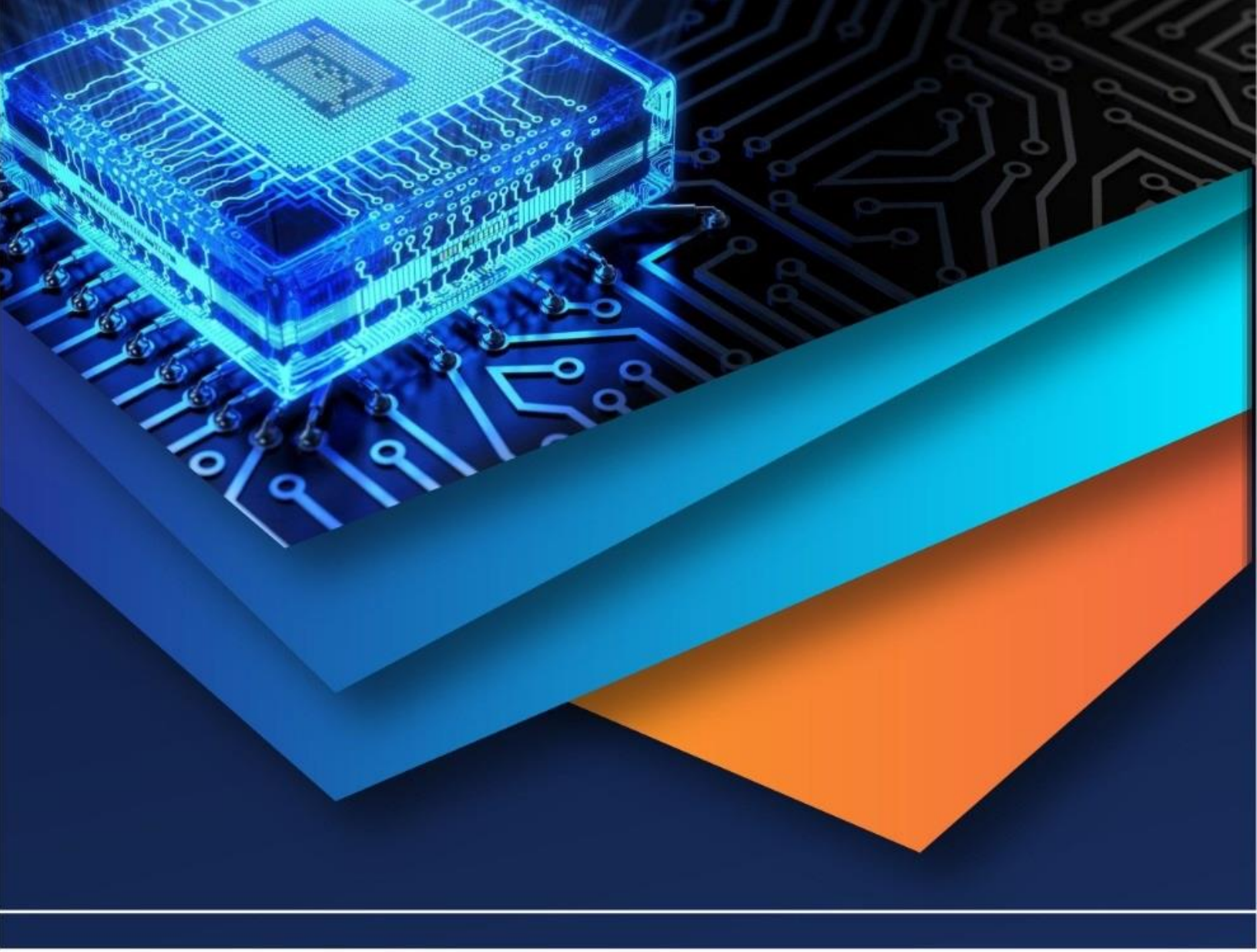
This study has two limitations it has considered only the EPC contract of national highways and it focuses only on safety parameter impact.

REFERENCES

[1] PRS Legislative Research. Demand for Grants 2023-24 Analysis : Road Transport and Highways. Available from: https://prsindia.org/budgets/parliament/demand-for-grants-2023-24-analysis-road-transport-and-highways
[2] Walsh KP. Identifying and Mitigating the Risks Created by Problematic Clauses in Construction Contracts. J Leg Aff Disput Resolut Eng Constr. 2017;9(3):1–9.
[3] Prasad K V., Vasugi V, Venkatesan R, Bhat NS. Critical causes of time overrun in Indian construction projects and mitigation measures. Int J Constr Educ Res [Internet]. 2018;00(00):1–23. Available from: https://doi.org/10.1080/15578771.2018.1499569
[4] Jagannathan M, Delhi VSK. Litigation in Construction Contracts: Literature Review. J Leg Aff Disput Resolut Eng Constr. 2020;12(1):03119001.
[5] M.Kumarswamy M. Time & cost overrun analysis of National highway development project. 1997;
[6] Santoso DS, Soeng S. Analyzing Delays of Road Construction Projects in Cambodia: Causes and Effects. J Manag Eng. 2016;32(6):1–11.
[7] Jagannathan M, Delhi VSK. Litigation Proneness of Dispute Resolution Clauses in Construction Contracts. J Leg Aff Disput Resolut Eng Constr. 2019;11(3):04519011.
[8] Munvar C, Mengistu DG, Mahesh G. Concurrent Delay Analysis: Methods, Case Law, and Expert Perception. J Leg Aff Disput Resolut Eng Constr. 2020;12(1):04519035.
[9] Hardjomuljadi S. Use of Dispute Avoidance and Adjudication Boards. J Leg Aff Disput Resolut Eng Constr. 2020;12(4):03720004.
[10] Chan EE, Nik-Bakht M, Han SH. Sources of Ambiguity in Construction Contract Documents, Reflected by Litigation in Supreme Court Cases. J Leg Aff Disput Resolut Eng Constr. 2021;13(4).
[11] R. Ansari, S. A. Banihashemib, R. Taherkhania SM, A. Decision Support System for Analyzing Key Performance Indicators in Construction Projects Management. Int J Eng. 2022;35(5):865–74.
[12] Heravi G, Mohammadian M. Investigating cost overruns and delay in urban construction projects in Iran. Int J Constr Manag [Internet]. 2021;21(9):958–68. Available from: https://doi.org/10.1080/15623599.2019.1601394

[13] Sanggoro HB, Alisjahbana SW, Mohamad D. Influence of Project and Affected Local Community Interests Level on Social Conflicts in Indonesian Infrastructure Projects. Int J Eng Trans A Basics. 2022;35(7):1217–26.
[14] Ghosh Sweta sinha vijoykumar. A System of Rights. Am J Leg Hist. 1999;43(1):95.
[15] Alrasheed K, Khalafallah A, AlShaheen A, Albader H. Litigation versus Judicial Arbitration as Binding Dispute Settlement Techniques in Public Construction Projects. J Leg Aff Disput Resolut Eng Constr. 2023 Feb;15(1).
[16] Parikh D, Joshi GJ, Patel DA. Development of Prediction Models for Claim Cause Analyses in Highway Projects. J Leg Aff Disput Resolut Eng Constr. 2019;11(4):1–11.
[17] Sinha AK, Jha KN. Critical Analysis of Contract Clauses in Road Sector: Case Study. J Leg Aff Disput Resolut Eng Constr. 2020;12(3):1–6.
[18] Hutchens PE. Risk Reduction Through Indemnification Contract Clauses. J Manag Eng. 1992;8(3):267–77.
[19] PCA [Internet]. [cited 2023 May 28]. Available from: https://builtin.com/data-science/step-step-explanation-principal-component-analysis
[20] Navandar Y V., Singh M, Dhamaniya A, Patel DA. Empirical analysis of level of service at toll plaza by using ordered probit model. Transp Lett [Internet]. 2020;12(10):692–700. Available from: https://doi.org/10.1080/19427867.2019.1694201

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