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Interrelationship Between Causes of Construction Disputes

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***Abstract*—** *This study explored how different causes of construction disputes are connected, focusing on both visible (patent) and hidden (latent) factors. Patent causes such as poor contract management, delays in client decisions, and low construction quality were identified as major triggers. Latent causes, including unfair contract terms, unclear project scopes, and incomplete designs, were found to create conditions that make disputes more likely. Using structured interviews with experts and Social Network Analysis, the study showed that disputes arise through a chain of interacting causes rather than isolated problems. Court case analysis from Kenya confirmed these findings. The results emphasize the need to manage both surface-level and underlying causes early in the project. The study recommends improving contract clarity, strengthening communication among project parties, and setting up early warning systems to detect issues before they escalate. A better understanding of these interactions can help reduce disputes and improve project outcomes.*

***Keywords*—** *Construction disputes: Latent causes: Patent causes: Social Network Analysis.*

I. INTRODUCTION

A. Background Information

The construction industry is universally recognized as a cornerstone of economic development, contributing significantly to global Gross Domestic Product (GDP) and employment [1]. However, despite technological advancements and improvements in project management practices, construction projects continue to be plagued by delays, cost overruns, and disputes. Disputes, in particular, remain a persistent and disruptive feature of the construction landscape, often resulting in strained relationships, arbitration, litigation, and substantial financial losses.

Disputes in construction projects typically arise from a complex interrelationship between patent and latent causes [2,3]. Patent causes refer to visible, surface-level problems that are easily identifiable during the course of project execution [4]. These include delayed interim payments, change orders, incomplete drawings and specifications, poor workmanship, and communication breakdowns among project stakeholders. Such issues are often the immediate triggers for disputes as they directly impact project timelines, costs, and quality expectations. Latent causes are deeper, systemic issues that may not be immediately apparent but have significant cumulative effects over time [5]. These hidden drivers include inadequate planning, unrealistic scheduling, deficient contract drafting, poor stakeholder coordination, financial instability, and lack of trust. Latent causes often lay the groundwork for patent causes to emerge, creating a cascading effect that heightens project vulnerability to disputes.

Recent studies have emphasized that delays and conflicts are not isolated phenomena but are intricately linked [6-8]. Delays in project schedules can create stress among stakeholders, undermine mutual trust, and fuel conflicts regarding responsibility and compensation. Conversely, unresolved conflicts can impede communication, disrupt coordination, and cause further delays. This cyclical relationship suggests that disputes and delays often co-evolve rather than occur independently.

The global construction industry, regardless of geographic location or project scale, exhibits a commonality in the root causes of disputes [9]. Factors such as inadequate experience, financial mismanagement, incomplete documentation, variations in work scope, and insufficient risk management recur across different regions and project types. These issues embody both patent and latent characteristics, highlighting the necessity of examining disputes from a dual-perspective approach. Despite the extensive body of literature addressing construction delays and disputes separately [10], few studies have systematically explored their mutual interactions and how latent factors underpin the manifestation of patent issues. Existing research often isolates causes without adequately examining the pathways through which deep-seated organizational and contractual weaknesses materialize as operational disputes.

Understanding the interrelationship between patent and latent causes of construction disputes is vital for several reasons. It enables a more holistic risk management strategy that addresses not just the symptoms (e.g., delay events) but also the root systemic vulnerabilities (e.g., poor initial planning or unrealistic client expectations) [11]. It supports the development of more effective dispute avoidance frameworks by promoting early identification and mitigation of latent issues before they surface as patent disputes. It fosters better communication, collaboration, and trust among project stakeholders, which are critical to project success. The intricacies of the construction process, including multiple contracting parties, complex contract conditions, diverse stakeholder interests, and technical uncertainties, make it particularly susceptible to the emergence of both visible and hidden dispute causes [5]. A deeper understanding of how these causes interact will contribute to more resilient project management practices and minimize the need for reactive dispute resolution mechanisms like litigation and arbitration.

Despite abundant literature on delays and disputes separately, the dynamic interrelationship, how latent weaknesses aggravate patent issues and vice versa, remains underexplored. Understanding this interaction is critical for devising proactive construction management strategies aimed at dispute avoidance and timely project delivery.

B. Contribution

This study is justified by the persistent high rate of construction disputes despite improvements in project management. Past research has overlooked the interconnectedness between patent (visible) and latent (hidden) causes. Minor issues often escalate due to deep-rooted systemic flaws, making traditional reactive dispute resolution insufficient. Understanding how latent factors manifest as patent disputes will enable proactive management, reduce risks, and improve project success. Given the recurrence of these causes across global perspective, this research offers broad applicability and will contribute to more resilient, cost-effective, and collaborative construction practices.

II. Related Works

A. Empirical Review

[12] study aimed to identify key causes that convert construction claims into disputes and propose a system to prevent their escalation. Through a four-stage process, 140 factors were initially gathered from international literature, reduced to 31 via brainstorming, and categorized into behavioral, contractual, and operational matters. Subsequent surveys and importance indexing ranked these factors, with the 80/20 rule highlighting eight primary causes, including delayed payments, poor team qualifications, and incomplete specifications. The findings revealed how behavioral and contractual deficiencies interrelate with operational issues, aligning closely with the broader understanding of the interrelationship between causes of construction disputes.

[13] identified the root causes of construction disputes and examine their impact on client organizations. A questionnaire survey targeting clients, consultants, and contractors was used. The study found nine causes attributed to clients, five to consultants, and four to contractors. Disputes led to time overruns, increased costs, reputational damage, and strained relationships among stakeholders. Alternative dispute resolution was identified as a cost-effective and time-saving method. The findings showed that various stakeholder-related issues were interrelated, emphasizing the interconnected nature of causes in the development of construction disputes.

[14] reviewed and synthesized on the global research on the causes of construction delays through a meta-analysis using Relative Importance Index values. The study identified 36 common delay causes from influential research over the past 15 years. Key findings showed that financial difficulties of contractors, delayed approvals, slow material delivery, poor site coordination, and inadequate planning were the top causes. The study demonstrated how delays, often resulting from organizational and financial weaknesses, were interconnected and contributed to disputes, highlighting the significant relationship between delay causes and the escalation of construction conflicts.

[8] explored the hidden relationship between delays and conflicts (D&Cs) in construction projects, an area previously overlooked by most research. Literature was reviewed to develop a global ranking of D&Cs causes, and data were classified using Jenks optimization. The findings identified financial problems by owners, change orders, and lack of communication as common top causes. The study revealed how delays and conflicts are interrelated, emphasizing that addressing these shared causes could significantly enhance construction management strategies and improve project success, while offering new directions for future research.

[9] investigated the causes of disputes specific to modular construction projects, an area previously overlooked in construction research. Using an integrated methodology involving case analysis, social network analysis, spectral clustering, and association rule mining, the study identified key dispute causes, including payment delays, project completion delays, poor communication, and lack of collaboration. The findings emphasized that disputes in modular construction were often triggered by multiple interconnected causes, demonstrating how delays and conflicts are closely linked. This highlighted the interrelationship between dispute causes and the need for tailored contractual management in modular construction.

[12] identified the major causes that convert construction claims into disputes and propose a system to mitigate them. The research proceeded in four stages, reducing 140 causes to 31 key factors categorized into behavioral, contractual, and operational issues. Using surveys and importance indexing, eight primary causes were identified, including delayed interim payments, poor teamwork qualifications, and incomplete drawings. The findings emphasized how multiple factors interact to escalate claims into disputes, highlighting the close interrelationship between claims and conflict development in construction projects.

B. Literature Gap

The reviewed studies collectively reveal an evolving trend toward recognizing that construction disputes rarely arise from isolated factors but are often the product of interconnected causes. [12] demonstrated how behavioral, contractual, and operational issues interact, leading to the escalation of construction claims into disputes. This acknowledged that causes are not independent but overlap across different dimensions of project management. Similarly, [13] expanded this view by categorizing causes across clients, consultants, and contractors, showing how inter-stakeholder dynamics contribute to disputes. [14] strengthened this direction by systematically synthesizing global research on delays, identifying financial and organizational weaknesses as key triggers that indirectly foster disputes. By linking delays to conflict, it established the foundation for understanding the latent-patent interplay in dispute emergence.

Study [8] advanced the discourse by explicitly investigating the hidden relationship between delays and conflicts (D&Cs), highlighting that financial problems, change orders, and

communication failures are not just individual issues but mutually reinforcing causes. However, while [8] acknowledged mutual influence, it lacked a structured model for tracking how causes evolve through the project lifecycle. Study [9] brought a specialized focus by analyzing modular construction projects, revealing that disputes stem from multiple, interconnected causes rather than single triggers. Their use of network analysis and clustering methods underlined that cause relationships are critical in modern construction environments. While these studies strongly point to a shift from a single-cause to a multi-cause understanding of disputes, a critical research gap remains: few studies systematically model or quantify how patent causes (observable) and latent causes (hidden) evolve and mutually reinforce each other over a project's life cycle.

TABLE I. Summary of Literature Review

Author	Study Variables	Findings	Research Gap
[12]	Causes of construction claims leading to disputes (behavioral, contractual, operational)	Identified eight major causes, emphasized interaction between behavioral, contractual, and operational deficiencies	Focused on escalation of claims; did not explicitly model mutual interaction between latent and patent causes across the project lifecycle. Adopted a four-stage survey and importance indexing method.
[13]	Causes of construction disputes by stakeholder (clients, consultants, contractors)	Disputes cause time overruns, cost increases, reputational damage; identified 18 causes across three groups	Segmented causes by party but did not explore dynamic interrelationship or evolution of causes over project timeline. Relied on questionnaire survey.
[14]	Global causes of construction delays	Identified 36 common delay causes; financial and organizational factors linked delays to disputes	Connected delays to disputes but treated them sequentially, not as interacting phenomena. Used meta-analysis and Relative Importance Index.
[8]	Hidden relationship between Delays and Conflicts (D&Cs)	Financial problems, change orders, and poor communication are common top causes; delays and conflicts interrelated	Explored relationships qualitatively but lacked structured dynamic modeling across project stages. Used literature review and Jenks optimization.
[9]	Disputes in modular construction (payment, project delays, poor communication, lack of collaboration)	Disputes in modular projects triggered by multiple interconnected causes	Focused on modular sector only; did not generalize model for broader construction industry dispute relationships. Used case analysis, social network analysis, clustering, and association rule mining.

Moreover, methodological differences, from simple surveys ([13]) to advanced clustering and network analyses ([9]), show that a comprehensive, integrative approach is still missing. The proposed study addresses this gap by explicitly focusing on the dynamic interrelationship between causes of construction disputes, aiming not only to identify causes but also to explain how they interact, reinforce, and propagate through construction phases. To better illustrate these observations, the key aspects of the reviewed studies are summarized in the TABLE I.

III. METHODOLOGY

This study adopts a two-phased methodological approach to achieve its objectives, systematically identifying and modeling the interrelationship between causes of construction disputes.

A. *Phase 1: Determination of Construction Dispute Causes*

The first phase involves identifying and validating the primary causes of construction disputes. The source of data is dispute resolvers listed on the Chartered Institute of Arbitrators Kenya Branch (CIArb-Kenya) portal. Purposeful sampling was used to select experts ranked as Fellows and Chartered Arbitrators with construction-related backgrounds. Data collection was conducted through structured online interviews, following a four-step process: planning and invitation of participants, preparation of a draft interview schedule, piloting the interview with selected experts, and final administration of interviews. The structured interviews employed a 5-point Likert scale to measure the significance of causes identified from literature. Data analysis was carried out using Social Network Analysis (SNA) metrics in UCINET software, identifying and prioritizing significant dispute causes based on centrality measures.

B. *Phase 2: Modeling the Interrelationships Between Dispute Causes*

In the second phase, the study models how validated dispute causes interact during construction disputes. The source of data was public construction dispute cases retrieved from the Kenya Law portal (http://kenyalaw.org/caselaw/cases), focusing on cases filed over the past ten years involving clients, contractors, or consultants. Cases were selected using keyword searches ("construction and building contract disputes") and screening for relevance based on participant roles.

The data collection procedure involved extracting cause-related information from case documents using NVIVO software. Identified causes were organized into a two-mode matrix (causes versus cases), which was then converted into an adjacency matrix using UCINET. The modeling procedure involved visualizing the interrelationships through NetDraw software and analyzing the network structure. SNA methods assessed network characteristics such as density, degree centralities, average path lengths, and clustering. Further structural analyses included small-world and power-law assessments, structural equivalence, and influence measures (degree, betweenness, and eigenvector centralities) to reveal how dispute causes are interconnected and reinforce each other. This integrated approach ensures not only the identification of causes but also a detailed analysis of their dynamic interrelationships, offering new insights into dispute causation

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pathways within the construction sector. The proposed methodology is summarized in Fig. 1.

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Start
 |
 |--> Phase 1: Determining Construction Dispute Causes
 |      |
 |      |--> Literature Review: Identify Dispute Causes
 |      |--> Develop Structured Interview Schedule
 |      |--> Sampling of Subject Matter Experts (CIArb-Kenya List)
 |      |      (Focus: Chartered/Fellow status and relevant construction background)
 |      |--> Conduct Structured Online Interviews
 |      |      - Pilot Interview Schedule
 |      |      - Collect Demographic and Cause-Rating Data
 |      |--> Analyze Data with UCINET (SNA Centrality Metrics)
 |      |--> Validate and Prioritize Significant Dispute Causes
 |
 |--> Phase 2: Modeling Interrelationships Between Causes
        |
        |--> Data Collection: Construction Court Cases (Kenya Law Portal)
        |      - 10-Year Search Span
        |      - Screen Cases: Focus on Client-Contractor Disputes
        |--> Data Extraction Using NVIVO
        |--> Develop 2-Mode Matrix (Causes vs. Cases)
        |--> Convert to Adjacency Matrix (UCINET)
        |--> Visualize Interrelationships (NetDraw)
        |--> Analyze Interrelationships Using SNA Techniques:
        |      - Causal Paths and Density Measures
        |      - Topological Properties (Small-World, Power-Law)
        |      - Structural Equivalence and Euclidean Distance
        |      - Centrality Measures (Degree, Betweenness, Eigenvector)
 |
End
```

Fig. 1. Summary of the proposed methodology

IV. Results and Discussion

A. Patent Causes of Construction Disputes

1) Demographic Profile

TABLE II summarizes the background information of the subject matter experts (SMEs) who participated in the study.

TABLE II. Background Of Interviewees

Interviewee	Profession	Years of Experience	Number of Cases Involved
SME1	Civil Engineer	12	16
SME2	Quantity Surveyor	37	46
SME3	Quantity Surveyor	10	8
SME4	Architect	8	10
SME5	Quantity Surveyor	21	21
SME6	Quantity Surveyor	29	42
SME7	Quantity Surveyor	20	48
SME8	Civil Engineer	11	22
SME9	Quantity Surveyor	26	27
SME10	Quantity Surveyor	8	9
SME11	Quantity Surveyor	9	15
SME12	Civil Engineer	8	9
SME13	Quantity Surveyor	12	17
SME14	Quantity Surveyor	16	15
SME15	Civil Engineer	10	11

TABLE II indicate that the mmajority of the respondents (67%) were Quantity Surveyors, followed by Civil Engineers (27%) and one Architect (6.7%). Years of experience ranged from 8 to 37 years, with an average of 16 years. Although generally, more experienced experts participated in more dispute cases, there were exceptions where experience did not directly correlate with the number of disputes handled.

2) Patent Causes and Indicators Measured

TABLE III presents the 17 identified patent causes of construction disputes, along with their indicators.

TABLE III. Patent Causes And Indicators

Node ID	Patent Cause	Indicator
PC1	Inaccurate design information	Specifications discrepancies
PC2	Inadequate design information	Design errors
PC3	Inadequate site investigations	Unforeseen changes
PC4	Slow client response/decision	Client indecisiveness
PC5	Payment delays	Unjustified payment delay
PC6	Under certification	Undervaluations
PC7	Delay in work progress	Time overruns
PC8	Nonconformance to quality	Poor workmanship, failure to certify
PC9	Client-initiated changes	Client disruption, cost overruns
PC10	Poor communication	Unequal information distribution
PC11	Unrealistic time targets	Inappropriate construction methods
PC12	Low bid prices	Under quoting
PC13	Poor contract administration	Unauthorized changes
PC14	Uncontrollable external events	Inclement weather
PC15	Incomplete tender information	Inadequate specifications
PC16	Unclear risk allocation	Inappropriate payment mechanisms
PC17	People and behavior	Lack of trust

3) Patent Cause by Event Matrix

Table 4.1.3 summarizes how each patent cause was rated across the subject matter experts, presenting the frequency of occurrence.

TABLE IV. Patent Cause by Sme Event Matrix (Frequency Summary)

Most Frequent	Patent Cause	Occurrence
PC13	Poor contract administration	53
PC8	Nonconformance to quality	51
PC4	Slow client response/decision	50

Poor contract administration emerged as the most cited factor, suggesting systemic management weaknesses. Similarly, poor workmanship and delays in client decisions critically contributed to disputes.

4) Co-occurrence Between Patent Causes

The adjacency matrix (TABLE V) revealed co-occurrence patterns between patent causes.

Strongest interaction (46 links) was observed between PC8 (Nonconformance to quality) and PC4 (Slow client response). Another strong interaction was between PC13 (Poor contract administration) and PC4 (Slow client response). Such interactions suggest that project management failures (client

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indecisiveness and variation mismanagement) significantly amplify technical defects.

TABLE V. Patent Cause By Patent Cause Matrix

	PC1	PC2	PC3	PC4	PC5	PC6	PC7	PC8	PC9	PC10	PC11	PC12	PC13	PC14	PC15	PC16	PC17
PC1	14	12	7	14	8	13	8	14	14	8	6	14	14	6	14	13	7
PC2	12	42	14	38	16	32	16	39	36	14	14	36	39	10	34	39	10
PC3	7	14	15	15	8	12	8	15	14	6	10	15	15	7	14	15	6
PC4	14	38	15	50	16	40	16	46	42	15	16	43	46	10	40	42	11
PC5	8	16	8	16	17	14	9	17	17	11	8	17	17	6	14	16	6
PC6	13	32	12	40	14	43	15	39	40	15	12	38	42	9	34	37	10
PC7	8	16	8	16	9	15	16	16	16	10	8	16	16	6	16	16	6
PC8	14	39	15	46	17	39	16	51	43	15	16	45	45	10	38	42	11
PC9	14	36	14	42	17	40	16	43	47	14	14	42	46	10	34	39	11
PC10	8	14	6	15	11	15	10	15	14	15	5	15	15	7	15	15	6
PC11	6	14	10	16	8	12	8	16	14	5	16	16	15	8	15	16	6
PC12	14	36	15	43	17	38	16	45	42	15	16	49	45	10	39	42	11
PC13	14	39	15	46	17	42	16	45	46	15	15	45	53	10	39	42	11
PC14	6	10	7	10	6	9	6	10	10	7	8	10	10	10	10	10	5
PC15	14	34	14	40	14	34	16	38	34	15	15	39	39	10	42	38	11
PC16	13	39	15	42	16	37	16	42	39	15	16	42	42	10	38	46	11
PC17	7	10	6	11	6	10	6	11	11	6	6	11	11	5	11	11	11

5) Significant Patent Causes (Centrality Measures)

TABLE VI presents the results from Social Network Analysis (SNA) centrality measures (Degree, Bonacich, and Eigenvector).

TABLE VI. Patent Causes Ranked By Centrality

Node	Patent Cause	Degree	BetaCent	Eigenvector
PC13	Poor contract administration	457	458147.8	0.331
PC8	Nonconformance to quality	451	451451.9	0.326
PC4	Slow client response/decision	450	450859.8	0.326
PC12	Low bid prices	444	444164.5	0.321
PC9	Client-initiated changes	432	434032.2	0.313

Poor contract administration was consistently ranked the highest across all centrality measures, confirming it as the most critical patent cause of disputes.

B. Latent Causes of Construction Disputes

1) Demographic Information

TALE VII is the composition demographic survey of the latent causes.

TABLE VII. Background Of Interviewees

Interviewee	Profession	Years of experience	Number of cases involved in
SME 1	C.Eng.	12	16
SME 2	QS	37	46
SME 3	QS	10	8
SME 4	QS	21	21
SME 5	QS	29	42
SME 6	QS	20	48
SME 7	QS	26	27
SME 8	QS	8	9
SME 9	QS	9	15
SME10	C.Eng.	8	9
MSE11	QS	12	17
SME12	QS	16	15
SME 13	C.Eng.	10	11
		Average=16.8	

Key: SME=Subject matter expert; QS=Quantity surveyor; C. Eng. =Civil Engineer

The composition remained predominantly Quantity Surveyors (QS) (80%), with an average experience of 16.8 years.

2) Latent Causes and Indicators Measured

TABLE VIII presents 14 latent causes with their corresponding indicators.

TABLE VIII. Latent causes and indicators measured

Node ID	Latent cause	Indicator
LC1	Inequitable contractual practices	Employer's agent certification authority, site asset specificities
LC2	Mismatch between contractual practices	Mismatching fixed price with cost-plus
LC3	Unequal information distribution	Information withholding
LC4	Conflict of interest	Kickbacks, fictitious claims
LC5	Ambiguities in contract terms	Unclear scope, Unclear specifications
LC6	Incomplete design	Drawing's insufficient details
LC7	Contractual inconsistency	Discrepancies between documents
LC8	Defectiveness	Missing & over measured items
LC9	Substantive uncertainty	Contract misinterpretation
LC10	Strategic misrepresentation	Intentional under estimation
LC11	Institutional uncertainty	Lack of a common understanding
LC12	Hidden characteristics	Understated or overstated capacity
LC13	Lack of prior relationships	Mistrust
LC14	Hold-up	Forced renegotiations, Termination threats

3) Latent Cause by Event Matrix

Most Frequent	Patent Cause	Occurrence
LC1	Inequitable contractual practices	42
LC5	Ambiguities in contract terms	39
LC6	Incomplete design	34

Power imbalance, vague documentation, and incomplete designs are critical latent conditions leading to disputes.

4) Co-occurrence Between Latent Causes

TABLE IX revealed that strongest association between LC1 (Inequitable practices) and LC5 (Ambiguities in contract terms). Strong links between LC1 (Inequitable practices) and LC6 (Incomplete design). These interrelationships suggest that

administrative bias combined with poor documentation significantly increase dispute potential.

TABLE IX. Latent Cause By Latent Cause Matrix

	LC1	LC2	LC3	LC4	LC5	LC6	LC7	LC8	LC9	LC10	LC11	LC12	LC13	LC14
LC1	42	8	17	29	34	31	26	28	28	22	21	28	9	11
LC2	8	8	6	8	8	8	7	8	8	5	6	8	5	3
LC3	17	6	18	17	17	17	15	16	15	15	12	14	6	9
LC4	29	8	17	32	29	25	21	25	25	22	18	27	9	11
LC5	34	8	17	29	39	30	26	27	25	21	21	28	9	12
LC6	31	8	17	25	30	34	21	23	23	21	21	25	8	10
LC7	26	7	15	21	26	21	30	23	17	13	16	18	7	9
LC8	28	8	16	25	27	23	23	32	22	17	16	21	9	11
LC9	28	8	15	25	25	23	17	22	30	20	18	24	8	10
LC10	22	5	15	22	21	21	13	17	20	26	16	19	7	10
LC11	21	6	12	18	21	21	16	16	18	16	24	19	6	9
LC12	28	8	14	27	28	25	18	21	24	19	19	30	9	10
LC13	9	5	6	9	9	8	7	9	8	7	6	9	9	5
LC14	11	3	9	11	12	10	9	11	10	10	9	10	5	12

5) Significant Latent Causes (Centrality Measures)

TABLE X. Latent Causes Ranked by Centrality

Node	Latent Cause	Degree	BetaCent	Eigenvector	Rank
LC1	Inequitable contractual practices	292	289011.1	0.35	1
LC5	Ambiguities in contract terms	287	284000.0	0.344	2
LC4	Conflict of interest	266	264274.9	0.32	3
LC6	Incomplete design	263	262554.6	0.318	4

Inequitable contractual practices, coupled with ambiguous terms and design incompleteness, dominate the systemic environment that fosters disputes.

C. Discussion

The results of the study confirmed that construction disputes are not triggered by isolated causes but rather emerge from the complex interrelationships between patent and latent factors. Through the analysis of structured interviews with subject matter experts and SNA techniques, the study identified critical causes and the strength of their interconnections. On the side of patent causes, the findings revealed that poor contract administration, nonconformance to quality specifications, and slow client response were the most significant contributors to disputes. These causes were not only frequent but also highly influential in the network of interactions, as shown by the centrality measures. Poor contract administration consistently ranked highest across degree, Bonacich power, and eigenvector centralities, underscoring its central role in escalating construction disputes.

Co-occurrence analysis demonstrated that patent causes did not operate independently. Strong linkages were observed, for instance, between nonconformance to quality and slow client response, as well as between poor contract administration and client decision-making delays. This interaction suggests that weaknesses in administrative processes amplify technical and quality-related problems, which in turn make disputes more likely and severe.

On the latent causes side, the study identified inequitable contractual practices, ambiguities in contract terms, and incomplete design as the most critical underlying conditions fostering disputes. The adjacency matrix analysis of latent causes revealed strong interrelationships, particularly between inequitable practices and ambiguities in contract drafting, as well as between inequitable practices and incomplete design information. Centrality analysis further affirmed that inequitable contractual practices were the most influential latent cause, followed closely by ambiguities and conflicts of interest.

The findings point to the critical realization that latent causes, although dormant initially, create an environment in which patent causes thrive. Inequitable contract structures, unclear roles, and poor information distribution embed vulnerabilities into construction projects long before operational problems are visible. Once a project encounters inevitable uncertainties or pressures, these latent weaknesses trigger operational faults such as poor workmanship, delays, and defective communication, which then manifest as visible disputes. Thus, construction disputes should be seen not as isolated project management failures, but as outcomes of deeper, interconnected systemic flaws.

V. Conclusion

The study's conclusion is that effective management of construction disputes requires a holistic approach that addresses both the surface-level operational triggers and the deeper contractual and institutional weaknesses. Poor contract administration, quality failures, and slow client decision-making are visible indicators, but their roots often lie in inequitable power dynamics, contractual ambiguities, and incomplete design documentation. Recognizing and addressing these latent factors proactively will enhance the likelihood of successful project delivery, minimize dispute risks, and improve overall construction industry performance.

The study's focus on Kenyan construction disputes limits its generalizability to other regions. Although structured interviews with 28 experts provided valuable insights, they may not fully represent the industry's diversity. Excluding arbitration cases and concentrating on a ten-year case period further constrained the analysis. To address these limitations, the study recommends adopting a dual-lens risk management

approach, improving contract clarity, fostering early collaboration among stakeholders, and implementing proactive dispute detection mechanisms to better manage both patent and latent causes of disputes. Finally, future research should expand to include arbitration case studies, incorporate cross-country comparisons, and explore dispute dynamics in emerging contractual frameworks, thereby offering even broader insights into the evolving nature of construction conflicts.

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