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CONFLICT AND DELAY IN CONSTRUCTION PROJECTS: A SYSTEMATIC LITERATURE REVIEW

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Abstract— This study conducts a systematic literature review (SLR) of 90 publications from 2007 to 2024 on the link between conflict and delay in construction projects. Conflicts are categorized as behavioral, contractual, and technical, with 93 common conflict factors identified across project phases. The research highlights the importance of early issue identification and phase-specific strategies to reduce delays, emphasizing the need for effective project management, clear contracts, and thorough design. A qualitative methodology, involving semi-structured interviews with 18 construction professionals, explores stakeholders' perspective. Thematic

Literature Review	analysis, supported by NVivo software, led to a model illustrating the conflict-delay relationship.

I. Introduction

Conflict and delay in construction projects significantly affect outcomes and stakeholder relationships. Conflict arises from stakeholders' differing objectives, which disrupts progress and can cause delays [1-2]. Delays, whether critical or non-critical, impact performance and increase costs [3]. Common conflicts, including regulatory challenges and resource shortages, vary by region, disrupt workflows, and escalate costs through disputes [4-5].

The relationship between conflict, claims, and disputes in construction delays is intricate. Conflicts often emerge from risks like scope changes and resource constraints, leading to both functional outcomes (e.g., process improvements) and dysfunctional outcomes (e.g., claims and disputes) [6].

Claims arise when a party seeks compensation for delayed impacts, and unresolved claims escalate into disputes requiring legal intervention. According to [7], unresolved disputes can create a feedback loop, further delaying projects. Effective conflict management and timely claim resolution are thus essential for maintaining project momentum.

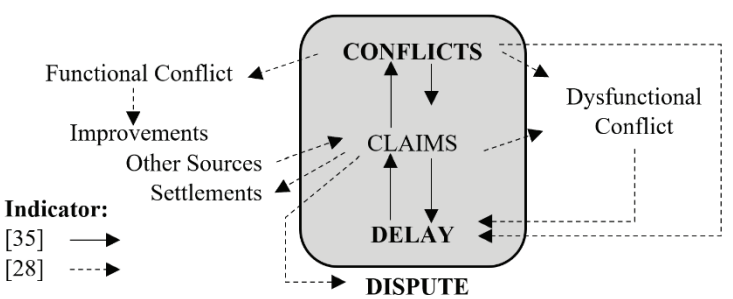

Figure 1: Basic Relationship between Conflict and Delay in Construction Projects

[6] and [7] underscore the interlinked nature of conflict and delay in construction. Kumaraswamy notes that risk triggers conflict, with outcomes ranging from improvements to claims and delays. Figure 1 integrates [6] and [7] perspectives, illustrating how conflict, claim, and delay reciprocally affect project progression. Communication failures are a primary cause, where inadequate exchanges among stakeholders lead to misunderstandings and disputes [8]. Contract ambiguities and design errors also exacerbate conflicts, as poorly defined terms and flawed designs often result in disagreements among project parties [8-9].

Stakeholder claims for compensation or time extensions often escalate into disputes, affecting project outcomes [10-11]. Effective conflict resolution strategies are thus crucial for reducing delays, enhancing collaboration, and ensuring project success.

This study categorizes conflicts using [12] model, which classifies conflicts as behavioral, contractual, and technical. Unlike [13], who focus on communication clarity, Jaffar et al.'s approach addresses a broader spectrum of conflict sources, providing a comprehensive framework for understanding the complex dynamics of construction conflicts.

II. Rationale of study

Construction projects are complex, involving multiple stakeholders and tasks, with conflicts which are behavioral, contractual or technical inevitably contributing to delays [14]. Existing research often isolates conflicts from delays, failing to address their interconnected nature. Studies by [6] and others highlight how poor management and ambiguous terms exacerbate delays.

A gap in the existing research is the lack of a framework categorizing conflicts by type and project phase. This study proposes a dual framework that categorizes conflicts by type and

by project phase, aiming to enable targeted interventions that minimize delays. Using three categories of conflicts identified by [12], contractual conflicts arise from disputes over contract terms, including variations, payment issues, and quality specifications. Behavioral conflicts stem from interpersonal issues, such as personality clashes and cultural differences. Technical conflicts occur due to discrepancies between required and provided information, often caused by unrealistic client expectations or incomplete specifications.

III. Method

This research adopts a qualitative methodology grounded in constructivist epistemology and an interpretivist theoretical framework to explore the subjective experiences of stakeholders involved in construction projects, specifically conflicts leading to delays [13]. A narrative inquiry methodology based on [14], captures the experiences of architects, engineers, and quantity surveyors selected through purposive and snowball sampling. Interviews focus on key factors, mechanisms, and strategies related to conflict and delays, while also gathering recommendations for conflict management. The study begins with a systematic literature review (SLR) of articles published from 2007 to 2024 to identify factors contributing to delays as depicted in Figure 2. Based on the SLR, semi-structured interviews are developed and analyzed using thematic analysis [15]. Thematic analysis supported by NVivo software is used to categorize recurring themes. Ethical considerations, including informed consent, confidentiality, and participant anonymity, are followed throughout to ensure transparency and respect for participants' rights. The findings provide insights into the dynamics of conflict in construction projects and offer recommendations for addressing delays.

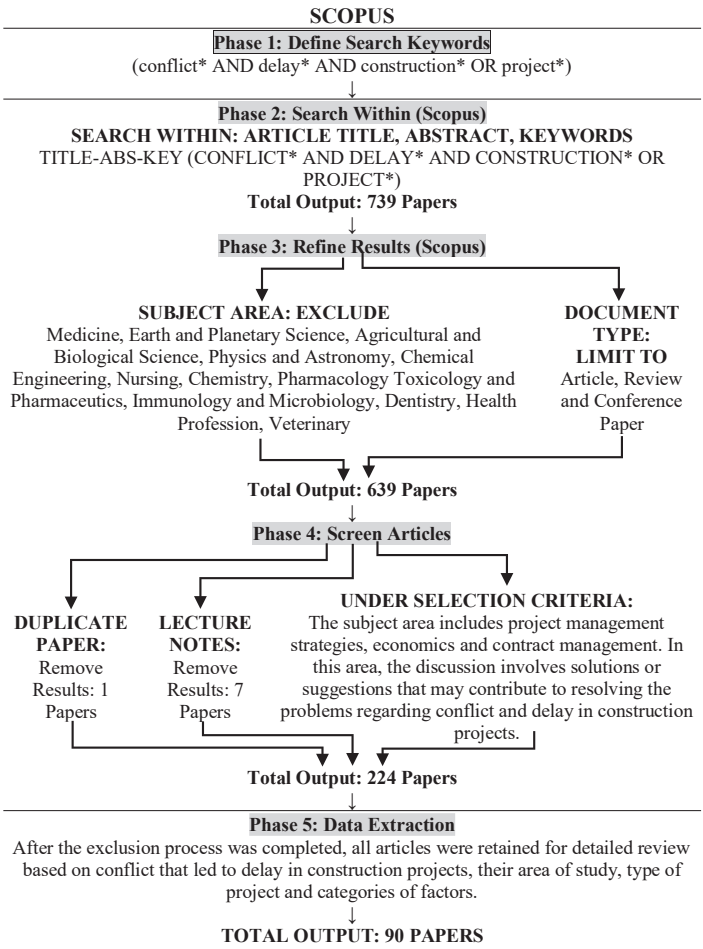

Figure 2: Summary of the Five stages of the Systematic Literature Review Process

IV. Results and Discussion

From the review of 90 papers, conflicts were identified and categorized using Jaffar et al.'s framework. The study reviewed articles to identify 94 common conflicts causing delays, grouped into three categories. Table 1 highlights the top three conflicts per category, each coded for easy reference and further analysis. A further analysis was conducted to identify which authors discussed all nine conflict types. Table 2 presents a selection of authors from 90 publications who discuss the top three conflicts.

Table 1: Top Three Conflict Types by Category

Type of Conflict	Coding	Conflicts Contributing to Project Delay
Behavioural conflict (83 instances)	B1	Disagreements
	B2	Lack of communication.
	B3	Poor project management skills.
Contractual Conflict (73 instances)	C1	Insufficient information/ documentation.
	C2	Lack of clear communication.
	C3	Delayed payments.
Technical Conflict (67 instances)	T1	Design and specification.
	T2	Resource management and allocation.
	T3	Weather and climate conditions.

Table 2: Conflict Occurrences Across Construction Project Phases

Code	Conflicts	P	D	C	Authors
C3	Delays in payments, contractor financial failures, limited project funds, and late interim payments from clients.	✓		✓	[10, 23, 24, 25, 8, 26, 27]
T1	Design errors, post-award design changes, and variations in quantities.		✓	✓	[23, 28, 29, 30]
B2, B3	Poor communication skills, lack of coordination, absence of cooperation, and team spirit deficiencies.	✓	✓	✓	[28, 29, 31, 32, 33, 22]
C1	Ambiguous contractual terms, weak contract management, inadequate contracting strategies, and ineffective dispute management.	✓	✓	✓	[28, 29, 34, 21, 35, 36, 27, 37]
B3	Poor planning and scheduling, delayed approvals, inadequate planning, and ineffective site management.	✓	✓	✓	[29, 25, 18, 30]
T2	Inadequate equipment, insufficient materials, and resource shortages.			✓	[24, 25, 32]
T3	Environmental factors such as climate conditions and geological issues.			✓	[8,17, 32]
B2	Conflicts due to poor stakeholder collaboration, stakeholder behaviour issues, and lack of cooperation.	✓	✓	✓	[38,31,34,22]
T4	Lack of contractor qualifications, insufficient skill levels, and experience deficiencies.			✓	[29,17,39]
T1	Conflicts over aesthetic preferences, building code variations, and contracting practice differences.	✓	✓		[17, 40]

** P = Planning Stage, D = Design Stage, C = Construction Stage*

A. Reviewing of Behavioural, Contractual, and Technical Conflicts in Relation to Delay

Contractual conflicts were the most frequent, including issues like payment delays, variation orders, and contractor financial failures [16]. Ambiguous contract terms, unclear scope, and inefficient change order processes were also identified as major sources of delay [8][17]. To mitigate these, clear, well-defined contracts and transparent communication are crucial.

Technical conflicts primarily stem from design errors, unrealistic client expectations, and climate-related impacts. Studies emphasized how poor design quality, late instructions, and environmental factors lead to delays [18-19]. Inadequate planning and resource mismanagement further exacerbate technical challenges [20]. Strengthening design review processes and improving risk management are key strategies for addressing these issues.

Behavioral conflicts arise from poor communication, lack of coordination, and interpersonal tensions within project teams. Studies by [8] and [21] found that ineffective communication and lack of team spirit often escalate conflicts. Factors such as ambition, frustration, and power dynamics also exacerbate disputes, requiring an understanding of human behavior for resolution [12][22]. Promoting a collaborative environment and enhancing project management skills are essential for preventing these conflicts.

In conclusion, contractual, technical, and behavioral conflicts are interrelated and collectively contribute to project delays. Addressing these through improved communication, clear contractual agreements, and effective technical planning can significantly reduce delays and enhance project success.

B. Project Phases of Conflicts Leading to Delay

A review of 90 publications identified 30 papers providing

insights into conflict phases in construction projects. These studies highlight conflicts peaking in the construction stage, followed by design and planning stages in Table 2. The construction stage is particularly prone to conflicts due to the involvement of multiple stakeholders.

V. Conclusion

The SLR emphasizes the significant relationship between conflicts and delays during the construction stage. Conflicts that arise during this phase often contribute to project delays, highlighting the need for focused conflict management strategies at this critical point in the project lifecycle.

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