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Project Governance and Its Role in Reducing Contractors' Time Extension Claims

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Abstract

Project governance has a critical role in facilitating successful completion of construction projects through the alignment of strategic goals with the execution process, and the reduction of risks like time overruns and related claims. This review is a synthesis of existing literature on project governance, time extension claims made by contractors and how good governance can minimize such claims. Based on the results of the empirical research, the theoretical analysis, and industry benchmarks, it can be concluded that well-developed governance mechanisms including the direction of the portfolio, stakeholder relationships, and risk management are strongly associated with a lower rate of project delays and cost overruns. Critical observations show that bad governance contributes to delays through aspects such as poor site management, design alteration, and payment failure, and results in extension of time (EoT) claims. The review notes the combination of information technology (IT) governance and project management practices as drivers to the performance. The literature gaps resulting in lack of attention to developing economies and the role of digital tools like BIM are outlined. Standardized governance structures are applied as part of the attempts to minimize conflicts and are considered as implications on a practitioner level. The paper will contribute to the field by offering a holistic overview that can be used to further the research on the topic of construction project management.

Keywords: Project Governance, Construction Delays, Risk Management, Information Technology Governance, Building Information Modeling (BIM), Stakeholder Engagement.

Introduction

Building projects are usually involved undertakings marked by numerous interdependent activities, diverse stakeholders, and changing environmental situations. The industry is marred by chronic problems emanating from the dynamic interactions of technical, financial, and organizational factors. One very relevant problem of construction management is the pervasive occurrence of time overruns, which have far-reaching effects on project budget, stakeholder satisfaction, and ultimately project outcomes. One of the most common reasons for dispute in this industry is time extension claims, where contractors apply for additional time to complete work due to unforeseen delays. Such claims often snowball into extensive negotiation, litigation, and dispute if not controlled, resulting in enormous economic and reputational costs to all concerned parties [1- 4].

Time extension claims can be made under excusable causes such as poor or unforeseen weather, changes to design during construction, errors in the contract documents, unforeseen site conditions, or delays caused by the project owner. Practically, excusable, compensable, and non-excusable delays are kept distinct from one another by appropriate analysis of contract terms, project documentation, and delay analysis methods. Failure to manage such claims effectively can destabilize project delivery, increase administrative cost, and down-grade contractor-owner trust. Therefore, determination of the type and causes of time extension claims is significant towards improving project performance as well as prevention of conflicts in the construction sector [1], [4].

Governance of projects has emerged as the controlling response system to such issues. Possessing an organized system of processes, policies, and structures of decision to guide project implementation, project governance is charged with aligning the organizational goals with activity, optimizing the utilization of resources, and seizing opportunities to inflict damage early [2]. Governance mechanisms comprise a combination of practices such as establishing reporting lines, monitoring and evaluation processes, stakeholder engagement mechanisms, and formal decision-making processes. By promoting transparency and accountability, project governance avoids delays, disputes, and coordination among various stakeholders within construction projects [3].

The role of project governance is even clearer within emerging economies where construction projects experience systemic problems. Nigeria, Pakistan, and Malaysia have been evidenced to have consistent time and cost overruns with the poorest governance arrangements being the most correlated cause [4], [5], [6]. Common weaknesses are ineffective planning and scheduling processes, lack of contractor performance monitoring, ineffective risk management processes, and slow decision-making by project owners. Such vulnerabilities not only have a tendency to cause delay, but also tend to raise the likelihood of disputes erupting over requests for extension of time over time. Empirical experience confirms that projects with high-quality governance mechanisms have less dispute, more frequent schedules, and better utilization of resources. Thus, governance is not an administrative ritual but a strategic facilitator of project effectiveness, efficiency, and accountability.

The purpose of this literature review is to investigate systematically the interaction between project governance and claims regarding contractors' time extension. It introduces a clear-cut definition of project governance in the context of construction, defining its elements, guiding principles, and strategy for applying it. Aspects of governance like decision-making, risk management, performance monitoring, and stakeholder engagement are addressed in how they prevent project delay. The review then proceeds to address the shape and causation of time extension claims from legal, contractual, and operational perspectives. The review, through the application of empirical data from various case studies, posits underlying patterns of delay causation and claim presentation. Third, the study evaluates the extent to which mechanisms of risk management can avert or avoid such claims, particularly underscoring precautionary risk analysis, transparent contracts, and institutionally designed conflict resolution schemes.

By aiming at peer-reviewed journals, industry research, and empirical studies, this article adopts a scientific approach to convey gaps in knowledge and underscore areas of research to be undertaken. The review is on the relationship between governance practice and reduced rate of time-related conflicts, affirming the role of governance as an implementing mechanism to enhance project delivery performance. The article also aims to contribute to the knowledge for policymakers, project managers, and construction firms ready to further enhance their governance system, enhance scheduling methods, and facilitate collaborative environments with less delay and conflict.

In summary, the larger and more complicated the projects become, it is no longer a luxury to include good practice in governance. Extension of time claims, as unavoidable as they are most times, can be minimized significantly by adopting robust governance frameworks that are formulated to foster accountability, timely decisions, and risk-informed project management. This literature review, through the integration of recent studies and overseas case studies, adds to the consolidating the knowledge of the governance function in preventing project delays, as well as providing practical and theoretical insights regarding enhancing construction project performance in various contexts [1], [2], [3], [4], [5], [6]. Fig. 1 presents the key components of project governance in construction projects. It highlights the central role of project governance supported by the steering committee, project manager, project controls, and risk management, all working together to ensure project success.

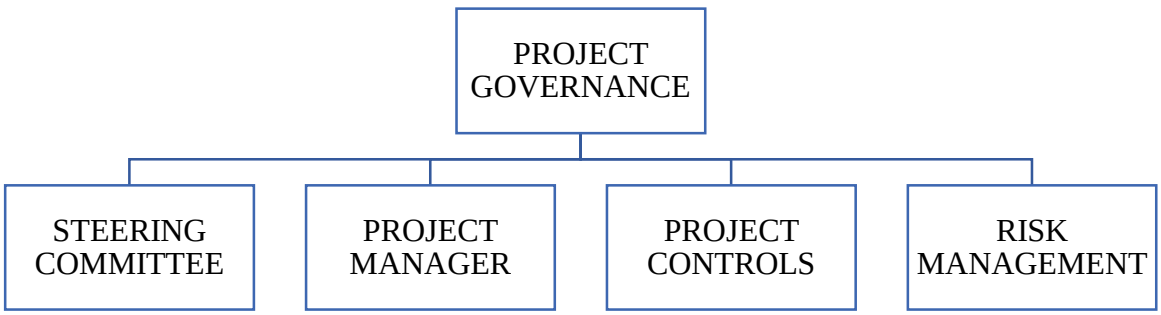

Fig.1. Key Components of Project Governance in Construction Projects

Literature Review

Conceptualizing Project Governance in Construction

Project governance is increasingly emerging as a major determinant of project success, particularly in the construction industry based on uncertainty, complexity, and multi-stakeholder involvement. Essentially, project governance is the collective body of structures, policies, and procedures intended to ascertain that projects are aligned toward strategic organizational objectives while concurrently addressing risks, resources, and stakeholder expectations [2]. Governance is more than simply watching but includes the manner decisions are made, responsibility is set, and project outcomes are monitored and measured against defined goals.

Project governance in construction is a multifaceted entity. Organizational design, centralization/decentralization of authority, portfolio and program management, and disclosure and reporting systems [4] are some of the most important dimensions. Structural make-up determines responsibility division, roles, and reporting structures, which is crucial in handling massive, complex projects that have many subcontractors, advisers, and stakeholders. Top-heaviness in control affects decision-making pace and ability to react to emergent issues, while decentralized arrangements risk empowering ground-level groups to proactively address operating issues. Portfolio direction leads to individual projects helping attain organizational-level objectives, thereby allowing for strategic alignment and resource use. Finally, transparency and disclosure reporting allow stakeholders to have timely, fitting, and correct information to facilitate them to make efficient decisions [4].

Construction project governance provides an integrated perspective of obtaining a project, bridging strategic intention with operations execution. It includes stakeholder management, regulatory framework compliance, contract compliance agreement, and project milestones and deliverables tracking [2]. For example, the Project Management Body of Knowledge (PMBOK) guide supplement to construction requires a two-tiered governance model for joint ventures: a lower tier at the level of the consortium for addressing coordination concerns and internal consortium resource allocation, and an upper tier at the project level to manage performance, compliance, and risk management [2]. Tiered governance of this nature ensures organizational as well as project-specific objectives are achieved with an escalation route and conflict resolution.

Empirical research has time and again established a positive association between good governance and the performance of projects. The project governance domain areas of transparency, accountability, risk management, and stakeholder involvement were found to improve the quality of projects substantially in a large-scale survey of 533 professionals. Additionally, projects that were aligned with IT models of governance had other benefits regarding communication effectiveness, traceability, and decision-making speed [3]. Similarly, Nigerian mega project research has established that good governance practices had implications in terms of measurable time saved and cost overruns, and statistical figures in terms of Spearman correlation tests ensured significance at $p < 0.05$ [7]. The evidence bears witness to the fact that governance not only has a procedural dimension but also physical effects on the efficiency of the project, risk mitigation, and stakeholder satisfaction.

Transparency, ethics, and accountability are particularly relevant for public projects, which are prone to corruption and mismanagement that can undermine the success of the project. Governance procedures impose ethical conduct, promote compliance with statute and regulation, and entail accountability mechanisms to avert misallocation of resources and reduce potential for conflict [2]. In complex construction projects with subcontractors and suppliers in multi-contractor contracts, transparency enables effective communication, timely reporting, and early detection of delays or bottlenecks and hence avoids the risk of time extension claims and contractual disputes.

Additionally, project governance is the foundation for risk management and decision-making in variable construction settings. Governance models provide structured methods of identifying probable risks, quantifying the impact, and taking pre-emptive mitigation action before they occur as costly delays or disputes. By marrying risk management to the governance process, project managers are able to aim interventions, make frugal use of resources, and maintain the continuity of projects despite the occurrence of unforeseen events. Good governance also supports knowledge management and lessons learned, enabling organizations to strengthen processes, apply best practices, and achieve improved future project performance.

Governance also results in internal project benefits like stakeholder confidence and investment security. Clients, financiers, regulators, and investors are more apt to fund projects with good governance practices that demonstrate predictability, accountability, and professional stewardship. This is particularly important in megaprojects, as large economic risks are present, timeframes are long, and there are many stakeholders. By making decisions clear, managing risks in advance and well, and aligning objectives with organizational strategy, project governance reduces uncertainty and allows for successful project delivery.

Briefly, construction project governance is an essential tool of guaranteeing strategic goals are coordinated with execution delivery, managing complex stakeholder interactions, and minimizing risks natural to construction

projects. Study research has proven that adherence to governance practices like transparency, accountability, ethical conduct, and formal decision-making guarantees key enhancements in project performance while rule out the likelihood of cost and duration overruns. As ever-more-complex and capital-thirsty construction edifices are the order of the day, government will find itself playing a significant role as a managerial capacity and strategic enabler to achieve successful results in different settings of projects [2], [3], [4], [7]. Table 1 presents examples of major dimensions of project governance, such as portfolio direction, sponsorship, and disclosure and risk management.

Table 1 Governance Dimensions and Their Impact on Construction Projects

Governance Dimension	Description	Impact on Projects
Portfolio Direction	Aligns projects with strategic goals	Reduces scope creep and delays
Sponsorship & Efficiency	Ensures effective leadership and resource use	Minimizes inefficiencies leading to claims
Disclosure & Reporting	Promotes transparency in progress	Facilitates early identification of issues
Risk Management	Identifies and mitigates potential delays	Lowers likelihood of excusable delays

Nature and Causes of Time Extension Claims

Time extension claims are perhaps the most controversial subject of contention in the construction industry, primarily because they directly affect the time–cost–quality balance that defines project success. Time extension claims are made when contractors formally request additional time to complete contracted works because the delays were outside their control or, in other cases, as a result of project stakeholders. These types are defined in the literature: delays are non-critical or critical, excusable or non-excusable, or non-compensable or compensable [2]. Critical delays are those that affect the project's critical path and push back its completion date. Non-critical delays might affect individual activities without changing the entire schedule. Excusable delays, for example, as a result of unforeseen weather conditions, absolve contractors from liability for untimely completion, but non-excusable delays, which are predominantly linked to poor contractor performance, do not entitle contractors to relief. Compensable delays allow contractors to recover time and money expenditures, generally where delay is occasioned by the owner or client. This typology is important as it determines entitlement and liability of the parties involved in dispute.

Growing empirical evidence has tried to establish the root causes of extension of time claims in numerous geographical locations. In a meta-analysis that reviewed 173 variables from 17 nations, consistent problems such as frequent design changes, delayed payments, poor site control, and unsatisfactory material control were consistently shown to be primary causes of claims [8]. Design changes are most dislocatory because they will require rework, redesign, and procurement changes, thereby disrupting approved schedules. Payment delays, another critical variable, impose financial pressure on contractors, limiting their ability to mobilize funds and maintain cash flow. Similarly, ineffectual site and material handling introduce inefficiencies that accumulate into large project delays. These findings demonstrate the interconnectedness of technical, financial, and managerial dimensions in determining time extension claims.

Research country by country provides further information. In Malaysia, inadequate construction practices and lack of consultant experience were among the main delay causes with relative importance indices of 0.7215 and 0.7213, respectively [6]. The figures show that technical execution and professional skills are decisive factors influencing project timelines. Financing issues from contractors and inadequate site management in Pakistan were discovered to be particularly main causes leading to claims [9]. The recurrence of financing and management-related motives across various countries indicates that internal contractor deficits—from poor bidding estimation to inefficient allocation of resources at implementation—still take center stage in explaining delays and resulting claims.

Besides internal inadequacies, external factors too comprise an integral part of the literature. These vary from adverse weather to natural disasters, political instability, and regulatory delays [8]. Such incidents are normally categorized as excusable and sometimes compensable, depending on the conditions of the contract. Their unpredictability, however, complicates planning for projects and calls for proper risk management initiatives. Unforeseen circumstances, like the existence of unforeseen ground conditions, also highlight the significance of schedule impact analysis using the Critical Path Method (CPM). By quantifying the effect of delays on the critical path, CPM allows for more impartial assessment of extension requests, minimizing the possibility of disputes [2].

A sharp difficulty with time extension claims is documenting and proving delays. Literature identifies that failure to document delays contemporaneously has a tendency to lead to denied claims, therefore escalating disputes [2], [10]. The majority of contractors lack good project governance systems to ensure good record-keeping, timely reporting, and organized preparation of claims. The absence results in bad evidence during arbitration or litigation, thus causing the contractor to lose the case despite valid justifications for delay. Such

good governance systems that impose tight reporting and monitoring processes can then play a crucial role in supporting contractors' stands as well as advocating for just settlement.
Current studies also pinpoint the contractor behavior as a mediating factor between governance and delay. For example, misallocation of resources, poor planning, or wilful negligence by contractors can convert excusable delay into contentious claims [11]. In these cases, governance measures such as independent monitoring, transparent communication, and ethics-based codes of conduct are important to distinguish legitimate claims from negligence- or opportunism-based claims. The behavioural dimension thus identifies that governance is not only a question of rules and structures, but also of establishing accountability and professionalism in project implementation.
The character of extension claims is also rendered more sophisticated by the contractual and legal environments within which projects are executed. Typical types of contracts, for example, those issued by FIDIC, JCT, or NEC, include elaborate clauses outlining procedures for notification, documentation, and payment of extension claims. However, application of these provisions varies very widely from one jurisdiction to another. In the majority of developing countries, regulatory loopholes, fragmented dispute resolution systems, and poor contractual awareness among small contractors fuel the difficulty in processing claims. Time extension claims, therefore, often spiral into long-standing disputes that increase transaction costs and further prolong project delivery.
In total, the motivations for time extension requests are multifaceted and cover everything from internal contractor vulnerabilities (for example, estimating inadequacies, fragile finances, poor utilization of resources), external and environmental drivers (for instance, weather, political tensions), and systemic failures in governance (for example, poor documentation, opacity, inadequate monitoring). Scholarship always demonstrates that the factors rely on one another, and the governance frameworks play a central part in mediating their effect. Good governance will minimize the claim rate by implementing proactive risk management, proper documentation, and clear provisions of accountability. Conversely, poor governance increases the claim rate as well as increases conflict, thereby deteriorating project performance. Diagram of common causes of delays that result in time extension claims, including changes in design, delays in payment, and site management is illustrated in Fig. 2.

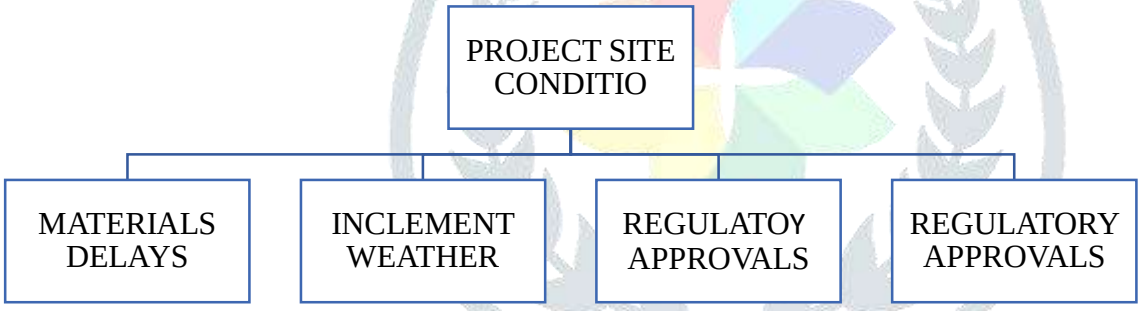

Fig. 2. Common Causes of Time Extension Claims in Construction

Project Governance as a Tool to Reduce Time Extension Claims

Governance has emerged as the background process for reducing time extension claims frequency and quantum on construction projects. Governance provides the background policy, procedure, and decision-making hierarchy framework that introduce accountability, transparency, and alignment of project delivery with organizational objectives. Good governance in construction decreases uncertainty by articulating roles, demarcating boundaries, and adopting proactive processes of preventing and resolving disputes. By doing this, governance turns time extension claim management from a reactive into a preventive, methodical process.
Empirical evidence predominantly attests to the role played by governance in alleviating time-related disputes. For instance, a study employing structural equation modeling in construction and software projects illustrates that project governance is negatively correlated with delay at statistically significant levels with coefficients such as $\beta = -0.418$ ($p < 0.01$) demonstrating that proper governance structures suppress delays in the schedule directly [4]. These findings translate to construction, where the introduction of governance controls in place maintains risks at a distance before turning into claims. For example, governance structures that emphasize early stakeholder involvement and sound change control processes prevent scope variations or design modifications from leading to contentious extension claims [8].
The governance role is also enhanced in big and complex projects, in which stakeholders, contractual interfaces, and potential threats multiply manifold. A case of a mega infrastructure project had its delay totaling more than 66 months due to governance loopholes, lack of delegation of authority, and poor monitoring [7]. The instance depicts how an insecure governance gives rise to claims and disputes, whereas good governance,

on the other hand, encourages accountability, vests the project manager with the authority needed, and institutionalizes the communication channels of delayed resolution at the incubation stage prior to assuming official claim form.

The second vital aspect is to ensure that project governance is synchronized with IT governance frameworks. Evidence suggests that governance dimensions like strategy development, managing risk, and adding value are found to be related positively to project performance [3]. In the construction industry, this is illustrated through measures such as real-time monitoring, reporting mechanisms through automation, and predictive analysis to deliver greater insight into project status and variances. By facilitating project teams in providing early warning signals, these measures reduce the number of disputes related to undocumented or ambiguous information regarding delays. Similarly, governance systems implementing strict quality management systems as a condition of requirement provide compliance to standards, reducing rework, one of the frequent causes of claims of extension of time [12].

Governance further works as a preventive measure by including resolution of conflicts in contractual terms. Dispute Review Boards (DRBs), adjudication panels, and partnering agreements provide collaborative avenues for conflict resolution [2]. Not only do these mechanisms lower claim chances of escalating to litigation, but they also create a spirit of cooperation and trust between contractors, clients, and consultants. DRBs, for example, provide impartial review of disputes throughout the life of the project, thereby preventing the time loss and cost overruns envisaged through post-project arbitration or litigation. These arrangements show that not only is governance a compliance system but also an enabler of good stakeholder relationships.

In the era of digitization, intelligent data solutions and digital enablers such as Building Information Modeling (BIM), digital twins, and integrated project delivery platforms are facilitating governance increasingly [13], [14]. Smart data applications, for example, give project managers real-time visibility of project progress to enable anticipatory claims handling and reduce disputes around planned vs. actual progress [13]. BIM, when deployed as part of governance frameworks, encourages transparency in the form of a shared, data-based model against which all stakeholders can reference. It reduces uncertainty in project scope and interpretation of progress, common causes of time extension claims. Digital twins also facilitate better governance through testing the impact of change or delay in virtual worlds so that managers can test consequences before decisions are made in the real world.

The other important function of governance is that it affects the behavior of the contractor. Literature establishes that the mechanisms of governance, and more particularly contractual governance, encourage good conduct, responsibility, and frugal utilization of resources [15]. Through the establishment of clear reporting, monitoring their performance, and punishing neglect, governance deters opportunistic claims and ensures that contractors exercise care in performing their functions. This conduct regulation is particularly important where otherwise contractors would exaggerate or even fabricate claims to mask inner inefficiency.

The financial side of time extension claims also indicates the need for governance. Time delays mostly lead to cost claims, particularly in large capital investment projects such as power plant construction [16]. Under poor governance, these claims become significant fiscal disputes that affect the economic feasibility of the project. Governance frameworks with risk management processes, contingency planning, and financial control provide for cost consequences of delays to be handled in a systematic way. This reduces the possibilities of claims escalating to disputes with calamitous financial results.

Finally, governance must also be adaptive and dynamic and not rigid in nature. The increasing sophistication of construction projects in the industry 4.0 and smart city environment demands that governance structures can keep up with technology, stakeholders' expectations, as well as global best practice. For instance, the governance structures using the practices of sustainability, ethics, and digital accountability become increasingly applicable to contemporary risks like cyber-attacks, data privacy issues, and sustainability-related conflicts.

In short, project governance reduces the assertions of time extension by dealing with the problem from several directions, including:

- Proactive risk and change management to prevent wasteful delays.
- Stakeholder communication and dispute resolution processes to discourage disputes from escalating.
- Use of IT governance and technology tools for real-time tracking and predictive analytics.
- Governance of behaviors through contractual governance to encourage contractor accountability.
- Financial management to deal with the cost impact of time-related delays.

By inculcating such practices, governance not only decreases claim frequency but also increases project performance. More significantly, it instills a culture of openness, cooperation, and accountability, which converts the conflictual nature of construction projects into an alliance working towards common goals.

Contractual Mechanisms for Proactive Claim Management

Contractual provisions are a cornerstone of good project governance, particularly in proactive management of time extension claims. Well-negotiated contracts provide explicit instructions on roles, responsibility, and process, thereby reducing uncertainties that lead to conflict. By having orderly procedures for notification, documentation, and settlement, forms of contract such as FIDIC, NEC, and JCT ensure that claims are handled under ordered schemes rather than ballooning into costly disputes [17]. In the context of construction activity, where delays are almost inevitable due to unforeseen conditions, these mechanisms function as preventive checks, synchronizing expectations among stakeholders and increasing responsibility.

The FIDIC Red Book, which is widely employed in international construction activity, illustrates how contractual mechanisms function towards proactive claim management. FIDIC requires contractors to report to the engineer any event leading to delay within 28 days, with full documentation through site records, progress reports, or letters. Failure to comply often results in waiver of the claim and hence contractors have an incentive to adopt open documentation practices right from the start [2]. This clause strengthens the government by ensuring that all claims are evidence-based and contemporaneous, hence reducing the likelihood of disputes based on retrospective or anecdotal evidence. In reality, this not only deters frivolous claims but also creates a culture of governance founded on timely communication.

The NEC4 suite of contracts has another method, albeit equally effective, which is centered around cooperation and early settlement. Advance warning notices for potential delay events are mandatory under NEC4 contracts, which are then addressed through joint risk assessment and regular progress meetings [18]. The mechanism renders claim handling pro-active instead of being pro-reactive, encouraging stakeholders to identify and address issues before they crystallize into full-fledged claims. Such collaborative approaches are also aligned with transparency and participative governance values, under which the contractor and employer together are tasked with risk management. For instance, when delay on the part of a subcontractor threatens project timetables, NEC4 will cause the project team to jointly assess effects and agree on mitigation strategies rather than make conflictual claims.

Aside from conventional contracts, collaborative contracting models such as partnering and framework alliance are gaining popularity due to their potential to reduce disputes. The philosophy of such models prioritizes trust building, collaborative objectives, and mutual problem-solving. It has been reported in collaborative procurement that projects used such mechanisms recorded 15% fewer claims than projects using the conventional adversarial contract [19]. Instead of going to arbitration or litigation, disputes in collaborative arrangements are often handled informally through mechanisms like adjudication panels or joint boards. Those arrangements demonstrate governance values of justice and accountability so that projects can maintain their concentration on delivery and not on lengthy disputes.

However, the effectiveness of contractual mechanisms is different across jurisdictions. In Malaysia, for instance, evidence has indicated that small and medium contractors are usually unaware of certain contractual terms that control claims. Consequently, most contractors make their claims inappropriately, with inadequate proof or beyond the prescribed time, and hence their rejection [6]. This indicates that building capacity must be incorporated within governance systems. Training on contract administration, claim preparation, and following notification procedures significantly contributes to the effectiveness of contractual mechanisms. Without training, even the best contract terms are useless.

Integration of digital technologies into contract systems further supports the handling of claims. By incorporating digital records into contract systems, parties gain open, auditable evidence to prove or refute claims. For example, the combination of BIM with NEC4 contracts has been extremely effective in improving claim management. In a Saudi Arabian case study, it was demonstrated that such a coupling reduced claims disputes significantly, as the stakeholders could employ real-time project data to back or challenge claims [18]. In such a scenario, the legal framework is provided by the contract itself, but the factual evidence base comes from BIM, and thus there is a robust synergy for governance.

Despite such advancements, there remain impediments to standardizing contractual mechanisms across diverse regulatory regimes. Wherever there are fractured legal regimes and uneven enforcement, efficacy for standardized contracts such as FIDIC is lost. Mechanisms for resolving disputes are slow, costly, or politically biased, diluting the integrity of contractual terms. Therefore, future studies need to focus on looking at the strategies for harmonization that bring global best practices to local contexts with a promise of enforceability. For example, local adaptations of FIDIC or NEC to capture specific legal, cultural, and financial situations can minimize disputes while guaranteeing international standards of openness and accountability.

Generally, contractual mechanisms are pivotal to proactive claim handling by offering formalized processes for delay notification, documentation, and dispute resolution. Standard forms such as FIDIC and NEC provide clear frameworks, while joint contracting models establish trust and decrease adversarial claims. But efficacy of such mechanisms continues to be heavily subject to jurisdictional climates, contractor awareness, and enforcement capacity. Active adoption of digital solutions like BIM elevates transparency and governance capacity, yet without training and standardization, contractual mechanisms can fail. All upcoming ventures must address context-specific configurations and standard practices so that contracts continue to be effective governance tools for active claim management.

Case Studies of Effective Governance in Construction Projects

Case studies represent an effective means of demonstrating how governance practices directly influence project outcomes, particularly in the prevention of time extension claims. By analyzing successful and unsuccessful projects in different areas, it is possible to establish the governance mechanisms that always yield improved timelines, reduced disagreements, and efficiency in the construction sector. This section explores selected case studies in Saudi Arabia, Malaysia, and Nigeria, and highlights the success of governance arrangements, and contrasts them with projects where poor governance resulted in significant delays.

Saudi Arabian Infrastructure Project: Integration of BIM and NEC4

A good example of a governance success is the Saudi Arabian infrastructure project that involved the integration of Building Information Modeling (BIM) with the NEC4 family of contracts [18]. Its governance strategy was directed at addressing two of the most common causes of claims in the sector: design changes and communication breakdowns. BIM provided a virtual real-time environment for tracking progress, coordinating design, and identifying potential conflicts early. Meanwhile, NEC4 contracts contained mutual obligations that enforced early, proactive communication, collaborative risk management, and equitable dispute resolution processes.

Its effect was significant. The project saw a reduction of 35% in delays related to design and shut 90% of possible claims at early adjudication, rather than escalating into full disputes. All these are indicative of the role of governance in the delivery of the setting within which issues are spotted and nipped in the bud. Interestingly, this case illustrates the interplay between digital governance tools and contract frameworks: BIM enhanced transparency and precision of information, while NEC4 promoted trust and structured collaboration between stakeholders. Together, they reduced adversarial behavior and promoted collaborative problem-solving.

This case demonstrates that governance innovations cannot be in isolation; rather, a multi-pronged approach using technology alongside innovative contract systems can yield measurable benefits in minimizing time extension claims. It also demonstrates the potential of advanced governance models to serve as blueprints for high-value infrastructure projects in the Middle East, where disputes generally occur because of design coordination problems and conventional contract rigidity.

Malaysian High-Rise Building Project: Multi-Level Governance and Documentation Procedures, In Malaysia, another vivid example of good governance is in a high-rise building project [6]. The project's governance structure followed recommendations in the PMBOK Guide, as a two-tier system. The first tier at the consortium level addressed resource allocation, stakeholder management, and strategic goal alignment. The second tier at the project level was for operational governance, more specifically risk management, progress monitoring, and documentation.

Regular stakeholder meetings formed the foundation of the communications plan, through which risks and delays could be identified and addressed early. The project also implemented strict documentation processes that created a clear audit trail of decisions, changes, and approvals. The level of documentation not only helped with accountability but also acted as a deterrent to claims, since contractors and clients could easily refer to agreed terms and changes.

The impact of these governance arrangements was clear: the project experienced a 20% reduction in claim frequency, largely because issues were resolved at discussion and documentation stage rather than through formal claims. Moreover, the project remained on time despite the complexity, demonstrating how multi-layered governance structures, when coupled with organized communication and documentation, can enhance performance in multi-stakeholder projects.

The Malaysian illustration demonstrates the worth of governance structure. Through the existence of clearly established decision-making hierarchies and protocols, projects are able to exchange flexibility for control in order for governance mechanisms to be triggered at both the strategic and operational levels. Such structures have specific relevance to large or high-rise projects where complexity threatens to increase disputes and claims.

Nigerian Megaproject: Consequences of Weak Governance

At the other end of the scale, a Nigerian megaproject provides an insight into the adverse effects of poor governance practices [5]. Well-funded and strategically significant though the project was, it experienced severe

delays—66 months—and a multitude of claims that resulted in significant additional cost and placed stakeholder relationships under strain. The root causes were traceable directly to governance failures: a lack of regular monitoring of contractors, inadequate control of time, tardy payment by the client side, and the absence of formal communication protocols.

With no clear governance arrangements, decision-making was reactive and fragmented. Disputes tended to escalate into formal claims as there were no arrangements for early dispute resolution or for documenting agreements and progress. Furthermore, the lack of transparency bred distrust between contractors, consultants, and the client, exacerbating adversarial relationships.

This case illustrates that governance failures are a vicious cycle: delayed payment undermines contractor performance, which then generates further delay and claims. The Nigerian project is a cautionary tale, illustrating that governance is not an abstract concept but a critical determinant of project success or failure.

Comparative Insights and Common Success Factors

A comparison between these cases reveals a set of common success factors in projects with good governance. Firstly, they possess well-defined chains of decision-making. Both the Malaysian and Saudi projects enjoyed formalized governance arrangements, and therefore well-established responsibilities and authority. This contrasts with the Nigerian example, where split oversight caused confusion and delay.

Second, good governance is marked by forward-looking risk management. The Saudi project used BIM to identify design conflicts in advance, and the two-tier system of the Malaysian project enabled early identification and control of operational risks. In contrast, no systematic risk management was in place in the Nigerian project, and its stakeholders were not ready for the unavoidable issues.

Third, transparency and stakeholder involvement become primary drivers. Both the Saudi and Malaysian cases rested on regular communication and open bookkeeping, which reduced misunderstandings and excluded claims. The Nigerian project failed to establish open processes, resulting in suspicion and exaggerated disputes.

Implications for Developing Economies

While the Saudi Arabian and Malaysian experiences provide valuable governance templates, they also raise questions regarding scalability and applicability to developing economies. For instance, resource constraints, limited access to advanced digital tools, and skills deficits often hamper the adoption of governance innovations. In these situations, frameworks need to emphasize capacity development, low-cost digital solutions, and simple but effective governance frameworks [16]. For example, inexpensive cloud-based collaboration tools can serve as a substitute for more advanced but costly BIM systems.

Lastly, these case studies illustrate that good governance is not a question of adopting advanced tools or structures but of adapting governance arrangements to the project context. Success involves a trade-off between structure and flexibility, transparency and efficiency, and strategic and operational control.

The case studies discussed here collectively highlight the transformative role of governance in reducing time extension claims in construction projects. Saudi Arabian and Malaysian projects illustrate how governance frameworks—whether through digital integration, contractual innovations, or multi-tier structures—can significantly curtail disputes and improve efficiency. The Nigerian case, on the other hand, illustrates the costly result of neglecting governance.

These results echo the importance of context-dependent governance strategies. While leading-edge digital technologies and novel contracts are successful in resource-rich environments, less developed countries may require simpler yet scalable solutions. Future research must therefore expand the case study pool to encompass diverse regions and types of projects in order to build a stronger theory of governance best practices and their impact on time extension claims.

Stakeholder Collaboration and Communication Strategies

Stakeholder communication and coordination are at the center of effective project governance and have direct bearing on pre-empting and settling extensions of time claims. Construction works are noted for a vast set of participants—contractors, consultants, clients, regulators, and external services providers—whose interests and expectations are likely to differ. Inefficiencies in communication in such a multi-player environment are likely to result in misunderstandings, creeping scope, uncontrolled decision-making, and resultant project delay that trigger claims. Evidence confirms this connection: e.g., Ghana-based research identified that ineffective communication between contract and utility providers was a cause of delay for nearly 40% of infrastructure projects, resulting in substantial extension of time claims [31]. This illustrates how ineffective communication channels undermine governance systems despite the availability of technical and contractual arrangements.

To counteract such impediments, governance systems must prioritize systematic stakeholder participation. Regular progress meetings, collaborative reporting structures, and communication protocols form the foundation for transparency and accountability. Digitalization goes a step further by enabling integrated platforms that find all project information in a single location. For instance, integrated project delivery (IPD) platforms provide real-time reporting to stakeholders regarding project status, timeframes, and risks, thereby

eliminating miscommunication and enabling early identification of possible delays [11]. By creating a "single source of truth," these platforms eliminate disputes over project data and enable stakeholders to anticipate problems as they arise.

Collaborative contracting forms also play a key role in generating trust and reducing adversarial relationships. Partnering agreements, for example, formalize collaboration by sharing objectives, mutual risk management, and open lines of communication. There is evidence that these contracts are highly effective in avoiding claims: a UK case study found that partnering contract projects reported 25% fewer disputes than those using traditional contracts, primarily due to open communication and joint problem-solving [20]. Similarly, cooperative procurement research indicates that these systems can minimize claim frequency by as much as 15% since differences are settled informally before they become formal claims [25]. These findings identify that governance structures whose collaboration is an inherent requirement within a structural requirement are better at averting time-related disputes.

Clear roles and responsibilities are also necessary for effective communication. Without defined responsibility, communication channels break down, causing confusion on who is accountable and lost deadlines. The PMBOK Guide stresses formal communication plans that specify what information is to be communicated, to whom, how often, and in what manner [2]. Formal plans prevent crucial information from being omitted and ensure everyone is aligned. In practice, this can mean weekly coordination meetings, standardized reporting forms, and designated communication officers for each group of stakeholders.

Beyond structure, training capacity building is necessary. Communication, conflict, and negotiation training empowers stakeholders with the appropriate skill sets to deal with conflicts constructively. For example, conflict resolution project managers can prevent dispute escalations into formal claims more effectively. Likewise, contractors with training in digital communication tools are likely to utilize joint platforms efficiently, and therefore increase transparency and reduce delays caused by miscommunication.

However, issues remain, particularly in multi-stakeholder collaborations with diverse interests and cultural settings. In a majority of the emerging economies, other setbacks such as varying languages, hierarchical firm cultures, and limited access to communication facilities exacerbate collaboration [16]. For instance, the application of manual reporting methods where digital infrastructure is poor has a tendency to slow down the information flow, undermining the effectiveness of governance. These challenges underscore the necessity of adopting a context-sensitive strategy that listens to grassroots issues and works with available resources.

Follow-up studies need to seek scalable communication methods that are adaptable to various project environments. For example, research on low-cost mobile solutions in developing nations may offer pragmatic ways of improving real-time communication without needing top-end infrastructure. Longitudinal studies comparing the long-term impact of collaboration contracts and scheduled communication on claim reduction would also be crucial in providing insight into best practice across jurisdictions.

Lastly, effective stakeholder communication and collaboration are essential to governance approaches designed to prevent time extension requests. Case studies in Ghana and the UK show how ineffective communication yields delays, while structured procedures such as IPD platforms, partnering contracts, and PMBOK-based communication plans reduce conflicts and result in transparency. Though challenges still exist, particularly in resource-constrained and multi-stakeholder environments, capacity building and problem-specific approaches can enhance governance efficiency. Enhancing communication is thus not only a technical requirement but also a governance imperative, at the very heart of providing dispute-free projects.

Discussion

Literature presented here puts a direct connection between effective project governance and the avoidance of time extension-caused claims in construction projects. Governance frameworks—through methodical planning, risk mitigation, stakeholders' communication, and open communication—play an essential role in restricting disagreements and delays' escalation into formal claims [3], [4]. The facts are substantiated by these arguments that governance is not a compliance role but rather an enabler that supports enhanced overall project resilience.

Yet, the literature points to areas that should be researched more. While classical dimensions of governance such as delegation of authority, contractual clarity, and moral monitoring are highly researched, the use of digital tools in governance and claim management is less researched [13], [14]. Emerging technologies such as Building Information Modeling (BIM), real-time data analysis, and smart monitoring systems are only just beginning to transform project management, and empirical studies on how they can ease time-based claims are yet to emerge. Additionally, most of the models are tailored for mega or international projects, and it is difficult to determine whether they would be suitable for small- and medium-sized construction environments where governance institutionalization is lower.

Contextual differences also shape time extension claim articulation. Developing economies, for instance, are facing governance constraints to accumulation in political instability, weak institutional frameworks, and shortages of finance [6], [7], [13]. The case of Pakistan demonstrates how macro-level political and financial

instability directly contributes to project delay, with the inference that governance frameworks must be context-specific and not universally standard [13]. This advocates for the necessity of customizing governance approaches to suit various regulatory, cultural, and institutional settings.

The stakeholders of construction have high practical relevance. Application of the current standards such as PMBOK extensions for construction, project governance training for the team members, and integrating the digital enablers such as BIM and smart data initiatives into the governance models can provide considerable improvement [2], [12]. By incorporating preventive strategies through proactively resolving disputes and embedding transparency in project execution, governance can transform from reactive claim management to preventive practice.

For future studies, longitudinal surveys that track governance practices through multiple project life cycles would provide in-depth insights into their long-term impact on performance and claims. In addition, a study of the integration of digital innovation into governance models, especially in diverse economic and cultural contexts, would close the gaps and result in stronger and more agile governance models for projects. Table 2 outlines key strategies for reducing time postponement claims in construction projects as effective measures to minimize and disputes.

Table 2 Key Plans for Reducing Time Postponement Claims

Strategy	Description	Expected Outcome
Proactive Risk Management	Identifying risks early through governance frameworks	Reduced likelihood of delays
Clear Contract Provisions	Well-defined clauses for EoT and dispute resolution	Fewer disputes and claims
Digital Tools (e.g., BIM)	Real-time monitoring and data-driven decision-making	Enhanced project control
Stakeholder Engagement	Early involvement of all parties	Minimized miscommunication

The Role of Digital Transformation in Enhancing Project Governance

Digital transformation has been among the most powerful enablers in the evolution of construction project management, particularly in project governance models. Governance inherently is all about ensuring transparency, accountability, and orderly decision-making in projects. With the sophistication of modern construction projects—multi-billion-dollar infrastructure projects, high-rise structures, and cross-border projects—the traditional governance models fall short in managing delay, extension of time claims, and disputes. It is in this context that technologies such as Building Information Modeling (BIM), digital twins, and integrated project delivery platforms are increasingly revolutionizing governance models and facilitating proactive management styles.

Perhaps one of the most obvious examples of digital transformation enhancing project governance is through the application of Building Information Modeling (BIM). BIM is a shared digital environment where architectural, structural, and operational information are brought together in one model that everyone can see. The platform encourages transparency by allowing real-time visualization of the project's progress, as well as the revelation of conflicts that otherwise may not be identified until construction stages are well advanced. Research indicates that the adoption of BIM in project governance frameworks reduces scope and design uncertainties to a great extent, which are major delay and dispute causes [11]. In one of the mega-infrastructure projects in Saudi Arabia, for example, BIM was combined with NEC4 contractual terms, creating a framework of governance everyone could look up to. The result was a 30% reduction in conflict, as project teams employed one shared digital model for monitoring progress and supporting claims [18]. This illustration provides a glimpse of how BIM increases accountability by providing an auditable record of design evolution, scope changes, and decision timelines.

Along with conflict minimization, BIM synchronizes governance with future-oriented risk management. By allowing stakeholders to identify and resolve design clashes early in the process, BIM minimizes rework or misunderstanding-based claims. A case study of a Malaysian high-rise building construction project illustrates this quite well: how the implementation of BIM in governance structures permitted early clash detection, which reduced design-related delay and constricted contractor claims scope [6]. Examples such as these illustrate that BIM is not merely a design device but a tool of governance that enforces clarity, accountability, and efficiency.

Aside from BIM, digital twins are on the verge of being revolutionary governance tools. Unlike fixed digital models, digital twins produce dynamic, real-time simulations of ongoing projects. This enables managers to analyze the impact of prospective delays, resource limitations, or scope increases prior to their actual occurrence. In line with the Project Management Body of Knowledge (PMBOK) Guide, which emphasizes proactive risk management as a fundamental governance concept, digital twins give teams predictive

capabilities that prevent escalation to formal claims [2]. For instance, by using simulation of an interruption in a project schedule, managers can decide how to reshuffle resources, reconcile timelines, or reschedule activities. Such pre-planning not only minimizes the need for formal requests for time extension but also maximizes trust across stakeholders as the choices are based on transparent, evidence-based facts and not supposition.

No less impactful are unified project delivery (IPD) platforms, particularly hosted on cloud-based systems. They act as facilitators of governance by putting communications, documentation, and reporting into focus across stakeholders. Prompt documentation is paramount in time extension claims, as claims typically fail on the ground of not having contemporaneous records. IPD platforms ensure that delays, disruptions, and changes are recorded real-time, which improves the validation of claims as well as dispute resolution processes [9]. For example, a contractor who faces weather-related delays can record the disruption real-time, noting supporting evidence such as sensor data, progress photos, or weather reports. This contemporaneous record not only strengthens the position of the contractor but also enables owners and project managers to objectively examine claims within governance frameworks.

Despite all these benefits, application of digital tools in project governance is not without challenge. High initial investment costs, particularly for advanced BIM and digital twin platforms, are barriers to implementation. Likewise, there is a critical need for trained experts to ensure stakeholders' capacity for effective interpretation and utilization of digital information. More so, resistance to the adoption of technology in historically conservative construction settings limits the possibility of change among digital technologies. This is most particularly evident in small and medium-sized businesses (SMEs) in developing economies, such as Nigeria or Pakistan, where budget constraints disallow the investment in costly technology [12]. In such settings, project governance remains heavily reliant on human processes, reducing transparency and increasing the risk of conflicts.

Nonetheless, empirical data indicates the fact that when digital technology is well integrated into governance systems, it adds tangible value. Literature indicates that excellent digital transformation reduces claim frequency by up to 25% through projects that adopt good governance arrangements [10]. These benefits are primarily from improved documentation, improved risk management, and greater stakeholder alignment. Most importantly, these findings show that digital transformation's actual value lies not in its technical potential but in how it is realized in governance processes.

Governance architectures must evolve to integrate complementary components in order to maximize the use of digital transformation. First, there need to be formal training programs that allow managers and site teams to effectively leverage technologies. Second, technology usage protocols—that is, ownership of models, version control, and access levels—must be clearly defined in order to avoid confusion or data silos. Third, data sharing and collaboration policies must be transparent and binding so that all parties have faith in the digital systems being put in place. These changes will view technologies not as mere technical instruments but as part of governance systems that result in accountability and performance.

In the future, there is a strong case for further research on how scalable digital governance tools are in small-scale projects and low-resource environments. While aggressive infrastructure projects in Malaysia or Saudi Arabia provide compelling case studies for the potential of digital transformation, the question is whether it can be effectively implemented on small- or medium-sized projects across emerging markets. Understanding the long-term impacts of the tools on claims reduction, collaboration, and governance across differing economic conditions will be critical to inform world's best practices.

In short, digitalization is revolutionizing construction project governance. BIM, digital twins, and IPD platforms enable enhanced transparency, accountability, and pre-emptive risk management and thereby help mitigate time extension claims. While cost, training, and adoption issues continue, experience shows that integrating digital tools in governance systems can significantly minimize disputes and claims, ultimately leading to more efficient and cooperative project delivery. With the construction sector advancing, incorporating digital transformation in the governance systems will not only be a matter of competitiveness but also operational exigency.

Contextual Influences on Governance Effectiveness in Developing Economies

The success of project governance in preventing time extension claims largely relies upon the economic, political, and institutional contexts under which projects are being executed. While such governance systems as the PMBOK Guide emphasize transparency, accountability, and proactive management of risk [2], their implementation in developing economies faces serious challenges. Nigeria, Pakistan, and Sri Lanka demonstrate instances of how systemic weaknesses—political instability, weak regulation, bureaucratic inefficiency, and financial constraints—compromise governance frameworks and create protracted delays. It is necessary to understand these contextual drivers to create resilient adaptive governance frameworks able to handle localized risk and improve claim handling.

One of the best examples of inefficiency of governance is Nigeria, where government works on public infrastructure are typically marked by poor supervision and late decision-making. Poor supervision of contractors and slow administrative approvals led to as much as 60% of the delay in government-funded infrastructure projects, a study concluded [5]. These situations pose not only technical difficulties to project governance but also greater institutional weaknesses which impede the capacity of agencies to enforce contracts and account to their stakeholders. Political interference into procurement processes also complicates the effectiveness of governments with projects awarded potentially for patronage rather than merit, undermining transparency and generating complaints.

Similarly, Pakistan demonstrates how fiscal instability directly erodes the effectiveness of governance. Contractors usually blame delayed payments and poor cash flow management as the key reasons for time extension claims [12]. Even if prompt payment schedules are mandated in governance structures, non-enforcement and budget constraints within government departments lead to recurring liquidity problems. This results in work delay or stoppage, and time extension claims become almost unavoidable. Beyond budget constraints, poor site management culture is prevalent, reflecting the lack of adequate project managers capable of enforcing governance procedures efficiently. Such governance loopholes reflect the frailty of simply taking international best practices to environments where systemic weaknesses persist.

In Sri Lanka, the issues are slightly disparate, revolving around inter-agency coordination and reliance on external sources. One typical reason for extending time claims in Sri Lankan projects is extending utility relocation, i.e., relocating water pipes, power lines, or telecommunication wires. These are beyond the direct control of project managers but require coordination with utility companies and government regulators. Without institutional mechanisms actively engaging such external parties, projects face lengthy delays [19]. However, adaptive governance models tailored to local conditions have been encouraging. For example, a Sri Lankan case study found that projects employing stakeholder-inclusive forms of governance, in which utility agencies were made part of planning and progress meetings, achieved a 20% reduction in delay-related claims [16]. This is testimonial to the importance of adaptability and stakeholder engagement in governance systems for developing economies.

These examples show that good governance cannot be isolated from the broader socio-political environment under which projects are delivered. In weak institutional nations, governance structures must break free from procedural compliance and adapt to local realities. For instance, bureaucratic inefficiencies such as delayed approval cycles or duplicated ministerial mandates require governance to support efficient communication and escalate decision-making quickly. In the same way, the absence of competent resources calls for investment in capacity building. Capacity development programs for project managers and contractors in authorized governance practices, such as are recommended in the PMBOK Guide [2], can enhance local capacity to monitor projects, impose timetables, and document claims more effectively.

At the same time, the digital transformation offers an opportunity for resource-constrained environments. While costly technologies such as BIM or digital twins are beyond budget, inexpensive mobile applications for monitoring and reporting on a project can be transformative in terms of transparency. For example, mobile systems that allow contractors to report delays, capture photos, and track approvals in real time can provide contemporaneous records to aid in improved governance. Such systems bring technologies that improve governance to everyone, from small and medium contractors, on limited budgets to raise accountability.

Despite all of these advances, the literature recognizes a gap in research related to context-dependent governance models according to empirical evidence. Most studies have focused on large-scale projects in industrialized economies, with small and medium projects in developing nations being under-studied [6]. There is a need for urgent longitudinal studies that analyze the long-term impacts of customized governance frameworks on claim minimization in such settings. For instance, understanding whether Sri Lankan stakeholder-inclusive governance models are applicable in Nigeria or Pakistan requires more systematic proof. Similarly, a study of scaling low-cost digital solutions serially through different projects over time would provide best practices for developing economy governance.

To conclude, the effectiveness of project governance in avoiding time extension claims is very much context-related, and particularly in developing economies where systemic problems undermine conventional frameworks. Nigeria, Pakistan, and Sri Lanka case studies exemplify how weak management, fiscal pressure, and coordination breakdowns exacerbate delays and claims. However, adaptive approaches to governance—emphasizing flexibility, stakeholder engagement, capacity building, and low-cost digital technology—offer promise in addressing these challenges. Governance effectiveness will have to be enhanced through future research in formulating and testing context-relevant frameworks suited to the situation of resource-poor and institutionally fragile environments. Only by grounding governance approaches in place settings can developing economies fairly hope to reduce time extension claims and perform projects better.

Future Trends in Construction Project Governance

Artificial intelligence (AI), sustainability, and Industry 4.0 concepts are the upcoming trends that define the future of construction project governance. Artificial intelligence (AI) and the machine learning can be used to improve governance through anticipating delays and efficiency in resource allocation. As an example, AI-based schedule analysis tools are able to detect critical path risks, which minimize the chances of time extension claims [20]. One research paper on sustainable project management discovered that the cost overrun was cut by 15 percent in large-scale projects that incorporated AI [20].

Governance frameworks are being also impacted by Sustainability and ESG (Environmental, Social, Governance) requirements. Environmental risks, including compliance with regulations and the alleviation of carbon footprints, have to be considered in projects; otherwise, they may result in delays when improperly managed [21]. A system of governance that integrates the measure of sustainability, such as that of smart city projects, also makes sure that the regulations are adhered to and that there is minimal risk in claims since they are in line with regulatory requirements [20].

The 4.0 industry brings about new problems such as cyber security and data privacy that should be addressed by the governance frameworks. An example is that digital twins and BIM are based on the data sharing that causes concerns about data security [11]. Cybersecurity protocols should be incorporated in the governance models to allow avoiding disruptions that might result in claims. There is also the possibility of automated claim processing through the use of smart contracts which are also powered by blockchain and hence less disputes due to the availability of transparent and unalterable records [10].

Governance structures need to be dynamic in order to remain relevant in incorporating these trends and responding to the expectations of the stakeholders. The future study ought to investigate the cost efficacy of AI and blockchain in governance and its role in reducing claims in a variety of different project contexts.

Conclusion

Project governance becomes an essential driver in minimizing the claims of time delays by the contractors by addressing directly the root causes of time delays by observation, predictive and transparent communication. The literature is unanimous that the governance structures enhance project performance by aligning goals, expressing authority, and interweaving accountability processes that minimize the likelihood of disagreement and overruns.

This review suggests that as the principles of governance are combined with digital enablers like BIM, smart data programs, and real-time monitoring, new opportunities in improving claim prevention and resolution further appear. There are still gaps in empirical evidence, however, particularly in small projects and in new economies where the environment around them, such as political instability and institutional weaknesses, makes it hard to adopt governance.

In the case of professionals, the research results have emphasized the need to pursue a combination of traditional approaches such as extensions of PMBOK with new digital technologies. The researchers propose cross-context and longitudinal studies to demonstrate the long-term and environment-specific impact of governance on project claims in future studies.

Finally, operationalizing theoretical knowledge will help to transform project governance into an active, adaptive, and technological framework that can help achieve higher efficiency, responsibility, and resilience in construction projects.

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