APTISI Transactions on Management (ATM)
Vol. 10, No. 3, September 2026, pp. 318∼331
E-ISSN: 2622-6804 | P-ISSN: 2622-6812, DOI: 10.33050

Contract Governance in Lump Sum Design Build Infrastructure Projects

Endang Suprapti[1*], Arihta Esther Tarigan[2], Jum Anggriani[3], Eni Jaya[4], Iwan Dewantoro[5]
[1,2,4,5]Faculty of Law, Universitas Tama Jagakarsa, Indonesia
[3]Faculty of Law, Universitas Pancasila, Indonesia
[1]endangspt0@gmail.com, [2]arihtaesther@gmail.com, [3]jumanggriani@pancasila.ac.id, [4]enybirink@gmail.com,
[5]iwd.iwandewantoro319@gmail.com
***Corresponding Author**

Article Info

Article history:

Submission May 28, 2026
Revised August 03, 2026
Accepted August 29, 2026
Published August 31, 2026

Keywords:

Contract Governance
Legal Risk Management
Design and Build
Contract Amendments
Infrastructure Projects

ABSTRACT

Lump-Sum Design and Build contracts offer cost certainty and integrated project delivery, yet they often create significant governance challenges when project scope changes during infrastructure implementation. In the digital era, effective contract governance requires not only legal compliance but also technology-enabled mechanisms to ensure transparency, accountability, and balanced risk allocation. **This study examines** the legal protection and contract governance of Lump-Sum Design and Build agreements, focusing on how contract amendment mechanisms address the interests of contracting parties in the Jakarta–Cikampek II Elevated Toll Road Project. **Using qualitative** normative legal research with statute, conceptual, and case approaches, legal materials were analyzed through the lenses of contract governance, legal risk management, and digital transformation in project administration. **The findings reveal** that contract amendments function as critical governance instruments rather than mere administrative procedures. However, inconsistencies between contractual provisions and Indonesian construction service regulations regarding changes in work volume, technical specifications, and implementation requirements were identified. **These gaps resulted** in substantial contractual and financial impacts, totaling approximately Rp510.09 billion, due to unadjusted quantity variations. The study demonstrates that effective governance of Lump-Sum Design and Build contracts demands transparent, legally compliant, and digitally supported amendment mechanisms. Strengthening contract administration through digital tools, enhancing regulatory compliance, improving stakeholder coordination, and integrating technology-enabled risk management are essential to reduce legal uncertainty, mitigate financial risks, and support sustainable infrastructure delivery in strategic projects.

Corresponding Author:

DOI: https://doi.org/10.33050/atm.v10i3.2698

1. INTRODUCTION

Strategic infrastructure projects are essential for economic growth, regional connectivity, and sustainable national development. Their success depends not only on engineering excellence but also on effective project governance, contract management, stakeholder coordination, and risk management. In the digital era,

the complexity of large-scale infrastructure projects has made traditional contract administration insufficient [1, 2]. Rapid design changes and the need for transparent decision-making require technology-enabled contract governance that integrates legal certainty with digital tools for monitoring and risk mitigation. Construction contracts have thus evolved into strategic governance mechanisms that allocate responsibilities, manage risks, and support project performance through regulatory compliance and digital transformation [3, 4]. Indonesia has strengthened this framework through Law Number 2 of 2017, Government Regulation Number 22 of 2020, Government Regulation Number 14 of 2021, and the Job Creation Law to promote accountability, legal certainty, balanced risk allocation, and stakeholder coordination [5–8].

Construction work contracts serve as primary governance mechanisms between project owners and construction service providers by defining rights, responsibilities, risk allocation, decision-making, and project performance [9, 10]. In Indonesia, the Construction Services Law recognizes these contracts as legally binding instruments that support accountability, transparency, and legal certainty [11]. Well-structured contracts are therefore essential for minimizing disputes and maintaining stakeholder confidence [12, 13]. Among construction contract models, lump-sum contracts are widely applied because they provide cost certainty, clear responsibilities, and financial control by establishing a fixed contract value while allocating contractual risks between the parties [14, 15]. This mechanism is regulated under Government Regulation Number 22 of 2020 [16].

The Design–Build approach integrates design and construction responsibilities in a single contract, enabling faster delivery, better coordination, and clearer risk allocation. However, this integration increases governance complexity when changes in scope, technical specifications, or field conditions require amendments [17–20]. Under lump-sum arrangements, such changes are critical because cost certainty and risk allocation are fundamental; without adaptive amendment mechanisms, they may weaken accountability and create legal uncertainty [21–23]. Previous studies have mainly focused on procurement efficiency, legal compliance, and contractual validity, with limited attention to amendments as governance and risk-management mechanisms in large-scale lump-sum projects. Few studies combine legal analysis with a management perspective on accountability and stakeholder coordination [24, 25]. This gap highlights the need for an integrated contract-governance approach to assess how contractual changes affect legal protection, risk allocation, and project performance [26, 27].

The Jakarta–Cikampek II Elevated Toll Road Project represents a major strategic infrastructure project implemented under a Lump-Sum Design–Build contract. Changes in work scope during implementation required several contract amendments, creating governance challenges in balancing contractual certainty, legal protection, and project requirements [28]. These circumstances demonstrate that contract amendments function not merely as legal procedures but also as governance mechanisms influencing stakeholder coordination, contractual risk allocation, and project performance. Therefore, this project provides an appropriate case for examining contract governance when contractual changes occur within large-scale infrastructure development [29].

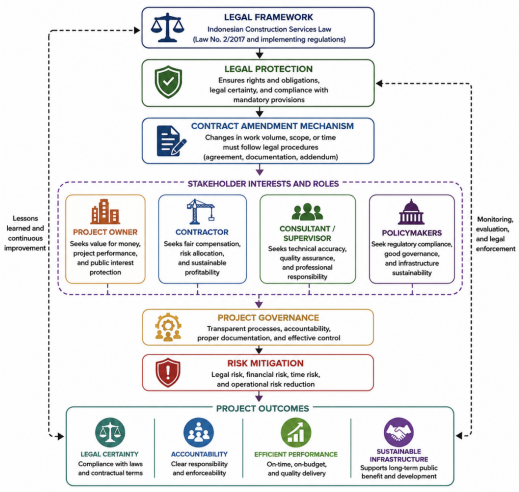

Figure 1. Conceptual Framework of Legal Protection in Lump-Sum Design and Build Contracts

To provide a clearer conceptual understanding of the study, Figure 1 illustrates the relationship between legal protection, contract amendment mechanisms, stakeholder interests, and project outcomes within the implementation of lump-sum Design and Build contracts [30, 31]. The framework demonstrates how compliance with the Indonesian Construction Services Law establishes legal protection, which guides contract amendment procedures and influences stakeholder interactions, project governance, and risk mitigation, ultimately contributing to improved legal certainty, accountability, and sustainable infrastructure development [32, 33].

Furthermore, this study is significant not only from a legal perspective but also from a management and digital transformation perspective. Effective contract amendment mechanisms are essential components of project governance, legal risk management, and infrastructure management, particularly in large-scale Design and Build projects involving multiple stakeholders. In the digital era, where infrastructure development increasingly depends on integrated project management systems, real-time data, and timely decision-making, ensuring consistency between contractual provisions and statutory regulations is critical [24, 34]. The absence of digitally supported amendment processes can amplify legal uncertainty, financial exposure, and coordination failures. Therefore, the findings of this study provide practical insights for strengthening governance practices by integrating legal frameworks with technology-enabled contract administration and risk management [35]. This contribution aligns with the growing focus of management studies on digital transformation, sustainable infrastructure delivery, and technology-driven risk mitigation in the construction sector [36].

Problem Formulation Based on the background of the problem, the problem formulation is as follows:

- What forms of legal protection are provided in the implementation of lump-sum Design and Build agreements?
- How do contract amendment mechanisms function as governance instruments to accommodate scope changes while protecting the interests of the contracting parties?
- How does the implementation of lump-sum Design and Build agreements in the Jakarta–Cikampek II Elevated Toll Road Project reflect the balance between contractual certainty, risk allocation, and stakeholder interests?

2. LITERATURE REVIEW

2.1. Contract Governance

Contract governance refers to the system of formal and informal mechanisms used to regulate contractual relationships, coordinate stakeholder interactions, allocate responsibilities, and control risks throughout the project lifecycle [37, 38]. In construction projects, contracts no longer function solely as legal documents but also as governance instruments that facilitate collaboration, establish accountability, and support project performance. Effective contract governance ensures that contractual provisions are consistently implemented while providing flexibility to address uncertainties arising during project execution. Recent studies demonstrate that contractual governance contributes positively to project performance by strengthening coordination among project participants, reducing opportunistic behaviour, and improving decision-making in complex construction environments [39, 40].

Within strategic infrastructure projects, contract governance plays a critical role because multiple stakeholders including project owners, contractors, consultants, subcontractors, and government authorities must coordinate their activities under a single contractual framework [41]. Clear governance arrangements define rights and obligations, establish procedures for contract administration, and provide mechanisms for resolving disputes and managing contractual changes. Consequently, contract governance serves as an essential foundation for balancing contractual certainty with project flexibility, particularly in integrated procurement systems such as Design–Build [42, 43].

Contract governance also contributes to project resilience by providing structured mechanisms for responding to uncertainties that emerge during project implementation. Construction projects frequently experience changes in design, site conditions, regulatory requirements, and stakeholder expectations that require adaptive contractual responses [44, 45]. Well-designed governance mechanisms enable contract amendments to be implemented transparently while maintaining accountability, equitable risk allocation, and project continuity. Rather than viewing contract amendments solely as legal procedures, contemporary construction management research considers them governance instruments that support effective project delivery under changing

project conditions [46, 47].

From the perspective of strategic infrastructure management, effective contract governance is closely associated with project performance by facilitating stakeholder communication, reducing contractual ambiguity, improving monitoring and control, and strengthening trust. Contractual and relational governance complement each other, particularly in large-scale and high-risk infrastructure projects [48, 49]. Therefore, contract governance provides an appropriate theoretical foundation for analysing Lump-Sum Design and Build contracts by examining legal certainty, contract amendments, stakeholder coordination, and risk allocation as interconnected mechanisms influencing project implementation and performance. From a management perspective, contract amendments should not be viewed merely as legal consequences of scope changes, but as governance instruments that help maintain accountability, manage legal risks, and sustain project continuity when technical and operational conditions evolve during implementation [50].

2.2. Project Governance in Design–Build Infrastructure Projects

Project governance refers to the framework of policies, processes, and institutional arrangements established to ensure that infrastructure projects are implemented efficiently, transparently, and in accordance with strategic objectives. Effective project governance provides clear decision-making structures, accountability mechanisms, stakeholder engagement, and performance monitoring throughout the project lifecycle. In large-scale infrastructure projects, governance is essential for aligning project objectives with organizational goals while ensuring that contractual obligations, resource allocation, and risk management are effectively coordinated.

The Design–Build procurement approach has increasingly been recognized as an effective project delivery system for improving governance in complex infrastructure projects. Unlike the traditional Design–Bid–Build system, Design–Build integrates design and construction responsibilities within a single contractual arrangement, thereby reducing fragmentation between project participants and facilitating more efficient communication, coordination, and decision-making. This integrated approach enables project owners and contractors to collaborate more closely in addressing technical, financial, and operational challenges during project implementation.

Project governance in Design–Build projects also emphasizes stakeholder collaboration and shared accountability. Since multiple stakeholders operate within an integrated contractual environment, effective governance requires transparent communication, clearly defined responsibilities, and structured decision-making procedures. Governance mechanisms therefore contribute not only to project efficiency but also to conflict prevention, timely problem resolution, and improved project performance. Consequently, governance quality has become one of the key determinants of successful infrastructure project delivery.

From the perspective of construction management, effective project governance supports contractual certainty while maintaining sufficient flexibility to accommodate project changes. This balance becomes particularly important in large-scale infrastructure projects where technical complexity, environmental conditions, and unforeseen circumstances frequently require contractual adjustments. Therefore, project governance provides an appropriate theoretical perspective for understanding how contract amendment mechanisms influence project implementation, stakeholder coordination, and infrastructure performance under Design–Build procurement systems.

2.3. Lump-Sum Design–Build Contract

The Lump-Sum Design–Build contract combines an integrated project delivery system with a fixed-price contractual arrangement. Under this procurement model, the contractor assumes responsibility for both design and construction while agreeing to complete the project within an established contract value. This contractual arrangement encourages efficiency in project planning, cost control, and resource utilization because financial risks associated with project execution are largely transferred to the contractor.

One of the primary advantages of Lump-Sum Design–Build contracts is the establishment of cost certainty at the beginning of project implementation. Fixed-price agreements provide project owners with greater budget predictability while encouraging contractors to optimize project planning and execution. At the same time, this procurement model requires comprehensive project planning and accurate risk assessment because unexpected changes during construction may significantly affect contractual obligations and project performance.

While the Lump-Sum Design–Build approach offers clear benefits, it faces notable governance challenges from scope, technical, regulatory, or site changes that require contract amendments to balance certainty

with project continuity. Consequently, modern construction management literature views these contracts not just as procurement tools, but as governance mechanisms that allocate risk, establish accountability, and manage uncertainty through transparent and fair amendment processes.

2.4. Legal Risk Management in Construction Projects

Legal risk management refers to the systematic process of identifying, assessing, mitigating, and controlling legal uncertainties that may influence project implementation and contractual performance. In construction projects, legal risks commonly arise from contractual ambiguity, changes in project scope, regulatory compliance, contractual disputes, and differing interpretations of contractual obligations. Effective legal risk management seeks to minimize these uncertainties while ensuring that contractual relationships remain legally enforceable and operationally effective.

In strategic infrastructure projects, legal risk management extends beyond regulatory compliance. It also functions as an important governance mechanism that supports project continuity, stakeholder confidence, and organizational accountability. Well-structured legal risk management enables project participants to anticipate contractual challenges, establish appropriate mitigation strategies, and implement contract amendments without compromising project objectives or contractual integrity.

Contract amendments are a key legal risk management instrument in Design–Build infrastructure projects, as changes in technical requirements, construction conditions, or project implementation may require contractual modifications. When supported by transparent governance and balanced risk allocation, amendments help maintain project performance and protect both parties' interests. Therefore, legal risk management is an integral component of contract governance, supporting legal certainty, stakeholder coordination, accountability, and project performance in Lump-Sum Design–Build contracts, particularly in the Jakarta–Cikampek II Elevated Toll Road Project.

2.5. Analytical Framework

This study adopts a contract governance perspective to analyse the implementation of Lump-Sum Design–Build contracts in strategic infrastructure projects. From this perspective, construction contracts are viewed not merely as legal instruments but also as governance mechanisms that regulate stakeholder relationships, allocate contractual responsibilities, manage legal risks, and support project implementation throughout the project lifecycle. The analytical framework is built upon four interrelated dimensions. The first dimension is contract governance, which provides the institutional and contractual arrangements governing the relationships between project owners, contractors, consultants, and other project stakeholders. Effective governance establishes accountability, transparency, and contractual certainty throughout project implementation.

The second dimension is the Lump-Sum Design–Build procurement system, which integrates design and construction responsibilities within a single contractual arrangement while applying a fixed-price payment mechanism. This procurement approach promotes project efficiency and accountability but simultaneously increases governance complexity whenever changes in project scope require contractual adjustments.

As the third dimension of the analytical framework, legal risk management explains how scope changes, additional works, and regulatory compliance affect legal certainty and stakeholder protection, functioning as an essential governance mechanism to balance contractual certainty with practical project needs. The final dimension, project governance performance, evaluates how effectively these mechanisms maintain project continuity, accountability, and stakeholder coordination by framing contract amendments as governance instruments rather than mere legal consequences. Together, these dimensions form the theoretical foundation for analyzing how amendment mechanisms drive governance effectiveness in Lump-Sum Design–Build contracts using the Jakarta–Cikampek II Elevated Toll Road Project as a case study.

3. RESEARCH METHODOLOGY

3.1. Research Design

This study employs a qualitative research design using a normative legal research approach to examine contract governance in Lump-Sum Design–Build infrastructure projects. Normative legal research is appropriate because the study focuses on analysing legal norms, statutory regulations, contractual provisions, and legal doctrines governing construction contracts. Rather than measuring causal relationships quantitatively, this research seeks to understand how legal principles and governance mechanisms interact in managing contractual changes during infrastructure project implementation.

3.2. Research Approach

The research adopts a statute approach, a conceptual approach, and a case approach. The statute approach is used to analyse Indonesian laws and regulations governing construction services, particularly Law Number 2 of 2017 concerning Construction Services and its implementing regulations. The conceptual approach provides a theoretical understanding of contract governance, project governance, legal certainty, and legal risk management within strategic infrastructure projects. Meanwhile, the case approach focuses on the implementation of the Lump-Sum Design–Build contract in the Jakarta–Cikampek II Elevated Toll Road Project as an empirical context for analysing governance challenges arising from contract amendments.

3.3. Sources of Legal Materials

This study utilizes three categories of legal materials: primary, secondary, and tertiary legal materials. Primary legal materials consist of statutory regulations related to construction services, procurement systems, and infrastructure development in Indonesia, including the Construction Services Law, Government Regulations, and Presidential Regulations. Secondary legal materials include academic books, peer-reviewed journal articles, conference proceedings, and international literature on contract governance, project governance, construction management, Design Build procurement, and legal risk management. Meanwhile, tertiary legal materials consist of legal dictionaries, encyclopaedias, and other supporting references used to clarify legal terminology and concepts.

Legal materials were collected through an extensive literature review and document analysis, including official legislation, contractual documents, judicial considerations, academic publications, and relevant project documentation concerning the Jakarta–Cikampek II Elevated Toll Road Project. These materials were systematically reviewed and organized according to the research objectives to identify contractual governance mechanisms, contract amendment practices, legal risks, and stakeholder responsibilities in the implementation of Lump-Sum Design–Build contracts.

3.4. Data Analysis

The collected legal materials were analysed using qualitative legal analysis combined with a contract governance perspective. The analysis involved interpreting statutory provisions, contractual clauses, and legal doctrines to examine how contract amendment mechanisms influence governance effectiveness, stakeholder coordination, contractual certainty, and legal risk allocation within Lump-Sum Design–Build projects. The analysis was conducted through three stages. First, relevant legal provisions and contractual arrangements were identified. Second, these legal materials were interpreted using principles of contract governance and project governance. Finally, the findings were synthesized to evaluate how legal certainty and governance mechanisms contribute to effective infrastructure project implementation.

3.5. Research Validity

The credibility of the research findings was strengthened through legal source triangulation. Various statutory regulations, contractual documents, judicial interpretations, academic publications, and construction management literature were comparatively analysed to ensure consistency in legal interpretation and governance analysis. This triangulation enhances the reliability of the conclusions by integrating multiple authoritative legal and academic sources relevant to contract governance in strategic infrastructure projects.

4. RESULTS AND DISCUSSION

4.1. Construction Work Contract Governance

Construction Work Contracts constitute the principal governance mechanism regulating the relationship between project owners and construction service providers throughout the infrastructure project lifecycle. Rather than functioning solely as legally binding agreements, these contracts establish governance structures that define stakeholder responsibilities, allocate contractual risks, regulate decision-making procedures, and ensure accountability during project implementation. Consequently, the effectiveness of contract governance depends not only on compliance with statutory regulations but also on the ability of contractual provisions to facilitate coordination, transparency, and project performance.

Within the Indonesian construction sector, the Construction Services Law requires that the legal relationship between service users and service providers be formalized through a Construction Work Contract.

This requirement provides legal certainty while simultaneously establishing a governance framework for contract administration. In integrated Design–Build projects, where planning, engineering, procurement, and construction are combined within a single contractual arrangement, governance mechanisms become increasingly important because contractual decisions directly influence project implementation, stakeholder coordination, and risk allocation.

The legal provisions governing Construction Work Contracts should be viewed not only as statutory obligations but also as governance instruments that support effective infrastructure project management. Compliance with Articles 46, 47, and 48 of the Construction Services Law strengthens contractual accountability, improves transparency in contract administration, and promotes effective governance throughout strategic infrastructure projects. This approach is applied in the Lump-Sum Design and Build Agreement for the Construction of the Jakarta–Cikampek II Elevated Toll Road.

4.2. Construction Services Law

Construction Services Law in Indonesia is regulated by Law Number 2 of 2017 concerning Construction Services (hereinafter referred to as UUJK 2/2017). Law No. 2 of 2017 came into effect on January 12, 2017, and revoked Law No. 18 of 1999 concerning Construction Services (hereinafter referred to as UUJK 18/1999). Although UUJK 18/1999 is declared invalid, UUJK 2/2017 states that all laws and regulations implementing Law No. 18 of 1999 remain in effect as long as they do not conflict with the provisions of UUJK 2/2017.

Construction Consultancy Services are services for all or part of the activities that include assessment, planning, design, supervision, and management of the implementation of the construction of a building. While the Construction Work business is all or part of the activities that include the construction, operation, maintenance, demolition, and reconstruction of a building. As for what is meant by Integrated Construction Work according to the explanation of UUJK 2/2017 is a combination of Construction Work and Construction Consultancy services. Article 15 paragraph 1 of UUJK 2/2017 states that the classification of Integrated Construction Work business includes: building construction and civil construction, which is further explained in Article 15 paragraph 2, namely business services that can be provided by Integrated Construction Work include: design, engineering, procurement, and implementation.

4.3. Integrated Design and Build Construction Work

Although Law No. 2 of 2017 (UUJK 2/2017) mandates further provisions regarding Integrated Construction Work under Government Regulation No. 22 of 2020 (PPJK 22/2020), the regulation explicitly defines it as a combination of construction work and consulting services. Under Article 59, Integrated Construction Work includes both design and build as well as engineering, procurement, and implementation, all of which must be integrated within a single construction contract.

According to the explanation of UUJK 2/2017, Integrated Construction Work is a combination of Construction Work and Construction Consulting Services. PPJK 22/2020 states in Article 22 that what is meant by general Construction Consulting Services includes: assessment, planning, design; supervision and/or management of Construction implementation, and specialist Construction Consulting Services include: surveys, technical testing and/or analysis. General Construction Work includes: construction; maintenance; demolition and/or reconstruction, specialist Construction Work includes: work on certain parts of a Construction Building or other physical form. Article 68 paragraph 2 of PPJK 22/2020 states that the criteria for work that can be carried out with Integrated Construction Work services include work that is: complex or urgent work that needs to be utilized immediately, which if not carried out in an integrated manner results in the fulfillment of the greatest benefit value (value for money) not being achieved.

4.4. Construction Work Contract Governance

Under Law No. 2 of 2017 (Article 46 and Article 1, number 8), agreements for building or infrastructure development are formally designated as Construction Work Contracts encompassing all contractual documents that govern the legal relationship between service users and providers rather than generic construction contracts. While traditional projects separate planning and execution into distinct contracts, Article 59 paragraph 2 of PPJK 20/2020 mandates that integrated construction work (combining design, engineering, procurement, and execution) must be unified within a single contract. Commonly referred to in everyday practice as a contracting agreement, this legal structure aligns with Article 1601b of the Civil Code, where a contractor commits to completing specified work for a client at an agreed-upon price.

In addition to the provisions referred to above, Article 47 paragraph (2) stipulates that a Construction Work Contract may include an agreement between the parties regarding the provision of incentives. Further provisions regarding construction work contracts are regulated in Article 48, which states that a construction work contract: For planning services, a Construction Work Contract for planning services must contain provisions regarding intellectual property rights. For construction service implementation activities, it may include provisions regarding sub-service providers and suppliers of materials, building components, and/or equipment that must meet applicable standards. Contracts with foreign parties must include technology transfer obligations.

The provisions of Articles 47 and 48 strengthen contract governance by clearly regulating intellectual property rights, subcontracting arrangements, procurement standards, technology transfer obligations, and the rights and responsibilities of the contracting parties. Clear allocation of responsibilities helps reduce uncertainty during project implementation, strengthens stakeholder accountability, and provides a structured basis for managing contractual risks. These provisions are particularly important in Design–Build projects because design, procurement, and construction activities are integrated within a single contractual arrangement, requiring continuous coordination among project owners, contractors, consultants, and suppliers. In addition, when a dispute involves a foreign party, the construction work contract must be prepared in Indonesian to ensure legal clarity and certainty.

4.5. Governance of Lump-Sum Design–Build Contracts

Lump-sum contracts primarily relate to the payment system for work results. Under Article 82 of PPJK 22/2020, the calculation systems include lump sum, unit price, a combination of both, percentage value, cost reimbursable, and target cost. A lump-sum arrangement constitutes a fixed-price calculation agreed upon between the Service User and Service Provider. However, paragraph 3 allows the fixed lump-sum price to be adjusted if both parties agree on a change in the scope of work.

Further regulations governing Lump-Sum contracts are provided under Presidential Regulation Number 16 of 2018 concerning Government Procurement of Goods and Services. From a contract governance perspective, these provisions establish the institutional framework through which contractual responsibilities, financial accountability, and project risks are allocated between project owners and contractors. The regulation not only defines the characteristics of the Lump-Sum payment mechanism but also promotes governance principles such as accountability, transparency, and efficient contract administration throughout the project lifecycle.

Within Design–Build procurement, the Lump-Sum mechanism provides greater cost certainty because the contract price is agreed upon before project implementation and generally remains fixed throughout contract execution. This governance arrangement encourages contractors to improve planning accuracy, optimize resource allocation, and strengthen internal risk management. At the same time, project owners benefit from greater budget predictability and improved financial control, which are essential for managing large-scale strategic infrastructure projects.

Nevertheless, governance effectiveness under Lump-Sum contracts depends not only on fixed-price arrangements but also on the availability of adaptive contractual mechanisms capable of responding to unforeseen project conditions. Infrastructure projects frequently experience technical changes, differing site conditions, or revised project requirements that cannot always be anticipated during contract preparation. Consequently, effective contract governance requires legal mechanisms that allow contractual adjustments while preserving transparency, accountability, and contractual certainty.

In general, a Lump-Sum contract has a fixed price with a Bill of Quantities that is not subject to remeasurement, remaining unchanged unless scope changes are instructed by the service user. This arrangement minimizes financial risks for the service user while shifting cost-overrun and execution risks to the service provider, who must factor worst-case scenarios into their bid to protect profit margins. Ultimately, a Lump-Sum contract operates as a governance mechanism that enforces contractual discipline, allocates project risks, and establishes stakeholder accountability throughout project implementation.

Although the term ”fixed” is used, this does not mean the contract value cannot change. The contract value does not change unless there is a change order resulting in additional or reduced work, while the quantity of work included in the contract cannot be remeasured. Therefore, the service provider bears significant risk in the event of differences in work quantity. If the actual work (after remeasurement) is larger than that stated in the contract, the service provider will be paid based on the contract volume. If the opposite occurs, and the work

volume is smaller, the service provider will receive a windfall profit. Furthermore, when calculating additional or reduced work, it must be understood that additions or reductions are calculated based on the volume stated in the contract, not the actual volume (remeasured). Sufiarina stated that ”the law on companies stipulates that directors carry out the management of the company for the benefit of the company.” This type of lump-sum contract is essentially related to a payment system based on work results.

When a job changes, service users tend to try to maintain the contract value unchanged. If additional work is required, an additional work order is issued and a reduction order is issued for other types of work. This becomes difficult if the nature, type, and unit price of the reduction work differ from the additional work. The contract value must also remain unchanged even if the work is remeasured at the request of the auditing agency and results in a larger or smaller volume. The auditing agency may request a reduction in the contract value or a refund if the measurement results are lower. Service providers may also object because this deviates from the lump-sum price principle. This misunderstanding can be avoided if the definition of the lump-sum price and the provisions regarding additional/decreased work are included in the contract. Therefore, the contract should provide definitions of words or terms with specific meanings to avoid misunderstandings that could lead to disputes or after the contract is signed.

4.6. Governance Analysis of Contract Amendments in the Jakarta–Cikampek II Elevated Toll Road Project

The Jakarta–Cikampek II Elevated Toll Road Project provides an important case for examining how contract governance operates within a Lump-Sum Design–Build procurement system. As one of Indonesia’s strategic national infrastructure projects, the project involved multiple stakeholders operating under an integrated contractual arrangement that required clear governance mechanisms to coordinate contractual responsibilities, manage project risks, and maintain accountability throughout project implementation.

PT Jasamarga Jalanlayang Cikampek and Waskita Acset Joint Operation established a Design–Build contract integrating design and construction to improve efficiency, coordination, and contractual certainty. However, subsequent scope changes created governance challenges, requiring amendments to maintain project continuity and protect both parties’ rights and obligations.

Contract for Construction Work Contracting Services (Design and Build) of the Jakarta-Cikampek II Elevated Toll Road, Cikunir to West Karawang Section (STA.9+500 to STA.47+500) Including On/Off Ramps at the Cikunir and West Karawang Interchanges Number: 001/KONTRAK-DIR/JJC/II/2017 Dated February 27, 2017” has complied with Article 50 of UUJK 2/2017 which is made in Indonesian. Furthermore, this Agreement has also fulfilled the requirements of the Construction Work Contract as stipulated in Article 47 paragraph (1) UUJK 2/2017.

a. Legal Aspects of Lump-sum Contracts The Contract Amendment clause is regulated in Article 11 concerning Contract Addendums, which states:

- A Contract Addendum may be made if changes occur, including changes to the scope of the Work that result in a change in the Contract Value and/or Contract term, as agreed by the PARTIES.
- If the Contract Addendum changes the Contract value and/or Contract term, the SECOND PARTY is required to adjust the Performance Guarantee and/or the validity period of the Performance Guarantee as referred to in Article 8 paragraph (1) letter a of this Contract.
- For certain items as stated in the General Contract Provisions or other Contract Attachments related to the scope of the Work as referred to in Article 2, an addendum cannot be made.

However, the Contract Addendum clause in Article 11 paragraph 3 of the Agreement does not meet the provisions stipulated in:

Article 82 paragraph 3 of the Implementing Regulations of Law Number 2 of 2017 concerning Construction Services, because this paragraph states that in the event of a change in the scope of work upon agreement between the Service User and Service Provider, the fixed lump-sum price may change in accordance with the agreed work value; and

Article 87 paragraph (1) of Presidential Regulation Number 54 of 2010, which states that in the event of a discrepancy between field conditions at the time of implementation and the drawings and/or technical specifications specified in the Contract Documents, the PPK, together with the Goods/Service Provider, may amend the Contract, including:

- Increasing or decreasing the volume of work listed in the Contract;

- Increasing and/or decreasing the type of work;
- Changing the technical specifications of the work to suit field needs; or
- Changing the implementation schedule.

The implementation of the Lump-Sum Design and Build Services Agreement for the Jakarta-Cikampek II Elevated Toll Road revealed that the dimensions and shape of the installed Steel Box Girder did not comply with the Basic Design, resulting in a quantity discrepancy. Article 87 demonstrates that contract amendments are an integral part of contract governance, not merely administrative procedures. By allowing adjustments to work volume, technical specifications, and implementation schedules, the regulation provides flexibility to maintain project continuity while balancing contractual certainty, operational adaptability, and the legitimate interests of both parties.

This finding is consistent with previous studies emphasizing that effective contract governance requires adaptive contractual mechanisms to maintain project continuity while preserving accountability and contractual certainty. However, unlike previous studies that mainly discuss procurement efficiency, the present study demonstrates that contract amendment mechanisms also function as governance instruments for balancing legal certainty with project flexibility in strategic infrastructure projects.

Table 1. Summary of Contractual Changes and Financial Impacts

Work Component	**Difference in Quantity**	**Financial Impact**	**Governance Issue**	**Governance Implication**
Bored pile concrete structure	4,787.32 m³	Included in total adjustment	Contract amendment was not aligned with changes in work volume	Indicates weak contract administration and insufficient monitoring of scope changes.
Pillar concrete structure	2,788.20 m³	Included in total adjustment	Inconsistency between executed work and contractual provisions	Demonstrates the need for timely contract revisions to maintain legal certainty and accountability.
Pier head concrete structure	7,655.07 m³	Included in total adjustment	Project implementation exceeded the original contractual scope	Reflects inadequate governance in managing project changes within the Design–Build framework.
Reinforcing steel	22,251.64 tons	Included in total adjustment	Quantity variation without corresponding contractual adjustment	Increases the potential for contractual disputes and financial risk allocation issues.
Difference in concrete structure work		Rp347,797,997,376.91	Financial discrepancy resulting from unadjusted contractual scope	Demonstrates that ineffective contract governance may significantly increase project costs and reduce contractual certainty.

Total financial impact	**Rp510,085,261,485.41**	Overall governance deficiency in contract amendment implementation	Highlights the importance of transparent contract amendment procedures, regulatory compliance, and effective legal risk management in strategic infrastructure projects.

Table 1 summarizes the principal contractual changes identified during project implementation and their corresponding financial implications. The table demonstrates that changes in work quantities without a corresponding contract addendum produced significant financial differences, with a total impact of approximately Rp510.09 billion. This finding reinforces that contract amendments are not merely administrative procedures, but essential governance and risk-management instruments. Without timely, transparent, and legally compliant adjustments, scope variations can increase financial exposure, weaken accountability, and undermine contractual certainty for both project owners and contractors in strategic infrastructure projects.

5. MANAGERIAL IMPLICATIONS

The findings provide several practical implications for project owners, contractors, and contract administrators in Lump-Sum Design and Build projects. First, contract amendments should be treated as strategic governance instruments rather than mere administrative procedures. Timely and transparent amendments are essential to prevent the accumulation of unadjusted quantity variations, which in this case resulted in a financial impact of approximately Rp510.09 billion.

Second, organizations need to strengthen digital contract administration systems. Real-time quantity monitoring and automated change-order workflows can reduce governance gaps and support faster decision-making when scope changes occur.

Third, clear contractual definitions of lump-sum principles and rules for additional or reduced works must be explicitly stated to avoid disputes and ensure balanced risk allocation.

Fourth, continuous stakeholder coordination through structured change-management protocols is necessary to detect and address quantity discrepancies early. Finally, greater alignment between contract clauses and the Construction Services Law, supported by technology-enabled risk management, is crucial for maintaining legal certainty and supporting sustainable infrastructure delivery.

6. CONCLUSION

This study concludes that contract amendment mechanisms in lump-sum Design and Build agreements must be implemented in accordance with the Indonesian Construction Services Law to ensure legal certainty, contractual fairness, and effective project governance. The analysis of the Jakarta–Cikampek II Elevated Toll Road project shows that inconsistencies between contractual provisions and statutory requirements can create legal uncertainty, financial discrepancies, and weakened accountability among the contracting parties.

The findings indicate that the effectiveness of lump-sum Design and Build contracts depends not only on initial risk allocation, but also on consistent contract governance throughout the project lifecycle. Although this model provides integrated delivery and cost certainty, those advantages may be undermined when scope changes are not followed by transparent and legally compliant amendments. In this project, quantity variations without corresponding contractual adjustments resulted in a financial impact of approximately Rp510.09 billion, demonstrating the significant governance and risk-management consequences of inadequate contract administration.

Theoretically, this study contributes to the literature on construction contract governance by positioning amendment mechanisms as instruments of legal protection and risk management. Practically, the findings

highlight the need for stronger contract administration, closer monitoring of scope changes, and improved stakeholder coordination to reduce disputes and support more accountable infrastructure delivery. These implications are also relevant to SDG 9 and SDG 16, particularly in promoting sustainable infrastructure governance and stronger institutional accountability.

7. DECLARATIONS

7.1. About Authors

Endang Suprapti (ES) https://orcid.org/0009-0009-5499-4198

Arihta Esther Tarigan (AE) https://orcid.org/0009-0000-8104-3704

Jum Anggriani (JA) https://orcid.org/0009-0003-6679-2135

Eni Jaya (EJ) https://orcid.org/0000-0002-3381-2879

Iwan Dewantoro (ID) https://orcid.org/0009-0003-7987-8317

7.2. Author Contributions

Conceptualization: ES and AE; Methodology: ES; Software: JA and EJ; Validation: AE and ID; Formal Analysis: AE and ES; Investigation: EJ; Resources: JA; Data Curation: ES; Writing Original Draft Preparation: ID and ES; Writing Review and Editing: ID and ES; Visualization: ES. All authors, ES, AE, JA, EJ and ID, have read and agreed to the published version of the manuscript.

REFERENCES

[1] S. Nurhayadi, M. R. Lubis, D. I. Iqbal, A. A. Ilmih, N. E. Maaliki, and M. A. Al-Sobh, "Reconstructing legal protection for construction service providers in construction contracts based on pancasila justice," *Nusantara: Journal of Law Studies*, vol. 5, no. 2, pp. 992–1016, 2026.

[2] A. R. Aruan, K. Toha, and A. R. Nurdin, "Digital governance for confiscating crypto-assets to settle tax liabilities in indonesia," *Aptisi Transactions on Technopreneurship (ATT)*, vol. 7, no. 3, pp. 1066–1079, 2025.

[3] I. Lifante-Vidal, "Legal interpretation: Concept, conceptions, and interpretative arguments in the civil law tradition," in *Research Handbook on Legal Argumentation*. Edward Elgar Publishing, 2025, pp. 29–45.

[4] M. R. Nauvaldi, "Mobile internet analysis in prevention of negative impacts of information and communication technology in indonesia," *IAIC Transactions on Sustainable Digital Innovation (ITSDI)*, vol. 4, no. 2, pp. 137–145, 2023.

[5] L. Epstein, G. Grendstad, U. Šadl, and K. Weinshall, "Introduction to the study of comparative judicial behaviour," in *The Oxford Handbook of Comparative Judicial Behaviour*. Oxford University Press, 2023, pp. 3–30.

[6] C. Lukita, A. K. Chandra, R. Fahrudin, N. M. Agatha, and D. P. Suci, "Maturity level measurement model of msmes for sustainable economic growth," *Aptisi Transactions on Technopreneurship (ATT)*, vol. 8, no. 2, pp. 434–442, 2026.

[7] H. J. EL-Matury, "Construction occupational safety and health expert training at the department of public works and spatial planning of the north sumatra provincial government." *Jurnal Pengabdian Masyarakat Putri Hijau*, vol. 6, no. 3, pp. 1–7, 2026.

[8] R. Wahdiniwaty, S. Pranata, and N. Komara, "Entrepreneurial technology resilience mediates entrepreneurial marketing on business performance in batik msmes," *Aptisi Transactions on Technopreneurship (ATT)*, vol. 7, no. 3, pp. 835–847, 2025.

[9] A. I. Hamzani, T. V. Widyastuti, N. Khasanah, and M. H. M. Rusli, "Legal research method: Theoretical and implementative review," *International Journal of Membrane Science and Technology*, vol. 10, no. 2, pp. 3610–3619, 2023.

[10] H. S. Disemadi, "Lenses of legal research: A descriptive essay on legal research methodologies," *Journal of Judicial Review*, vol. 24, no. 2, pp. 289–304, 2022.

[11] A. Lansonia, M. Austin, and E. Beldiq, "Study of student satisfaction in using the moodle e-learning system: Pls-sem approach," in *CORISINTA*, vol. 1, no. 1, 2024, pp. 1–7.

[12] F. Kurniawan, X. Nugraha, G. A. Putra, V. Taniady, and B. Jansen, "The principle of balance formulation as the basis for cancellation of agreement in indonesia," *Lex Scientia Law Review*, vol. 6, no. 1, pp. 121–156, 2022.
[13] S. Setiawan, U. Rusilowati, A. Jaya, R. Wang *et al.*, "Transforming human resource practices in the digital age: A study on workforce resilience and innovation," *Journal of Computer Science and Technology Application*, vol. 2, no. 1, pp. 84–92, 2025.
[14] A. I. Dryshliuk, Y. H. Orzikh, and V. M. Orzikh, "Application of law in judicial and notarial practice: Methodology, theory, practice." *Astra Salvensis*, vol. 10, no. 1, p. 347, 2022.
[15] A. Jaya, F. Saputra, D. N. Ramadhan, T. Green *et al.*, "Optimization of digital business to support msmes growth in the industry 4.0 transformation," *Journal of Computer Science and Technology Application*, vol. 3, no. 1, pp. 1–10, 2026.
[16] Y. Shymansky, "The genesis and evolution of notarial practice: Historical and legal aspects, concepts, essence, and legal nature of the institution of notarial practice," *Baltic Journal of Legal and Social Sciences*, no. 4, pp. 57–67, 2025.
[17] S. Shaumiwaty, H. R. C. MOCHAMAD, and N. HENI, "Enhancing personalized learning using artificial intelligence and machine learning approaches," *BLOCKCHAIN FRONTIER TECHNOLOGY: Pandawan*, vol. 4, no. 2, pp. 156–170, 2025.
[18] P. Wulandari, "Normative legal research methodology from the experts' perspective: A comparative analysis of concepts and approaches," *Archipel: Journal of Indonesian Interdisciplinary Studies*, vol. 1, no. 6, pp. 12–25, 2026.
[19] M. Upreti *et al.*, "The influence of financial literacy and risk preferences on cryptocurrency investment choices," *Blockchain Frontier Technology*, vol. 4, no. 1, pp. 35–40, 2024.
[20] M. M. Rohman, N. Mu'minin, M. Masuwd, and E. Elihami, "Methodological reasoning finds law using normative studies (theory, approach and analysis of legal materials)," *MAQASIDI: Jurnal Syariah dan Hukum*, pp. 204–221, 2024.
[21] R. Fahrudin, A. Nuche, E. D. Safitri *et al.*, "Innovations in technology and data systems to strengthen fisheries management," *Startupreneur Business Digital (SABDA Journal)*, vol. 5, no. 1, pp. 55–66, 2026.
[22] L. Meria, S. Hidayat, N. D. Santiago, S. Saukani, and S. H. Khotimah, "Blending work values, engagement, and satisfaction to drive ocb in technopreneurial startups," *Aptisi Transactions on Technopreneurship (ATT)*, vol. 6, no. 3, pp. 324–338, 2024.
[23] A. Kadim, I. Yusnita, A. Sutarman, R. Lesmana, and F. A. Ramahdan, "Assessing the impact of corporate governance and strategic leadership on economic growth and market stability," *IAIC Transactions on Sustainable Digital Innovation (ITSDI)*, vol. 6, no. 2, pp. 177–187, 2025.
[24] J. A. Wiraantaka, S. Sami'an, and S. Hardjomuljadi, "Implementation of legal principles in construction service agreements: A normative study," *SIGn Jurnal Hukum*, vol. 6, no. 2, pp. 386–400, 2024.
[25] W. W. A. Effendi, M. Maswanto, M. Murod, and I. Maria, "Artificial intelligence enhancing financial regulatory compliance through regtech governance applications," *IAIC Transactions on Sustainable Digital Innovation (ITSDI)*, vol. 7, no. 2, pp. 216–225, 2026.
[26] E. Suliyanto, S. Hardjomuljadi *et al.*, "Legal protection for construction workers in employment contracts according to employment law," *AL-QISTHAS: JURNAL HUKUM DAN POLITIK*, vol. 16, no. 2, pp. 135–155, 2025.
[27] S. Purnama, R. A. Sunarjo, M. Hardini, and J. Parker, "Ai governance for sustainable tech adoption and carbon reduction in smart industries," *ADI Journal on Recent Innovation (AJRI)*, vol. 7, no. 2, pp. 149–160, 2026.
[28] L. A. Amelia, "Legal protection for workers' rights in the indonesian labor system," *The International Journal of Politics and Sociology Research*, vol. 11, no. 2, pp. 373–380, 2023.
[29] P. A. Sunarya, T. Handra, S. Syahyono, K. A. Al-Farouqi, and S. V. Sihotang, "Governance frameworks for sustainable artificial intelligence in digital business practices," *ADI Journal on Recent Innovation (AJRI)*, vol. 7, no. 2, pp. 173–184, 2026.
[30] N. K. Rajagopal, N. I. Qureshi, S. Durga, E. H. Ramirez Asis, R. M. Huerta Soto, S. K. Gupta, and S. Deepak, "Future of business culture: An artificial intelligence-driven digital framework for organization decision-making process," *Complexity*, vol. 2022, no. 1, p. 7796507, 2022.
[31] C. P. Efunniyi, A. O. Abhulimen, A. N. Obiki-Osafiele, O. S. Osundare, E. E. Agu, and I. A. Adeniran, "Strengthening corporate governance and financial compliance: Enhancing accountability and trans-

parency," *Finance & Accounting Research Journal*, vol. 6, no. 8, pp. 1597–1616, 2024.
[32] F. Kurniawan, X. Nugraha, J. Hartono, and A. M. A. Wibisono, "Legal framework of sustainable construction procurement to prevent land degradation: comparison between indonesia, singapore and thailand," *Journal of Property, Planning and Environmental Law*, vol. 16, no. 2, pp. 92–104, 2024.
[33] A. N. Indahwati, S. Sami'an, and S. Hardjomuljadi, "Arbitration in resolving construction cost claim disputes due to time extensions: A study of contract law in indonesia," *SIGn Jurnal Hukum*, vol. 6, no. 2, pp. 263–281, 2024.
[34] S. Janizar and A. A. Anisarida, "The study of legal aspects of construction in civil building," *Greenation International Journal of Law and Social Sciences*, vol. 1, no. 2, pp. 56–61, 2023.
[35] S. Sufiarina, Y. Yetti, S. Wahyuni, and M. W. Utama, "The organization of the general meeting of shareholders based on court determination from the perspective of shareholder rights' protection," *Padjadjaran Jurnal Ilmu Hukum (Journal of Law)*, vol. 9, no. 2, p. 5, 2022.
[36] H. Gaffar and S. Albarashdi, "Copyright protection for ai-generated works: Exploring originality and ownership in a digital landscape," *Asian Journal of International Law*, vol. 15, no. 1, pp. 23–46, 2025.
[37] M. M. Siahaan, R. A. Sunarjo, R. Sebastian, S. M. Wahid *et al.*, "The role of natural language processing in enhancing chatbot effectiveness for e-government services," *Journal of Computer Science and Technology Application*, vol. 2, no. 1, pp. 65–74, 2025.
[38] N. E. F. Zulvacar and A. Gunadi, "Legal analysis of articles of association amendments that cause share dilution: Implications for minority shareholders' rights," *Jurnal USM Law Review*, vol. 8, no. 2, pp. 741–753, 2025.
[39] P. Paroli, M. Muhtarom, M. M. Siahaan, D. Derlina, K. Moyo *et al.*, "Smart contract based data strategy for startup growth in digital business systems," *Journal of Computer Science and Technology Application*, vol. 3, no. 2, pp. 117–129, 2026.
[40] N. Ahmad, A. Masum, and A. W. Ali, "Conceptual, legal, and ethical considerations in physician-assisted suicide: An overview," *UUM Journal of Legal Studies (UUMJLS)*, vol. 15, no. 2, pp. 707–744, 2024.
[41] L. Novianti, N. Azizah, M. Mardiana, and C. Perez, "A converged blockchain and artificial intelligence approach for strengthening transparency and trust in digital enterprises," *ADI Journal on Recent Innovation (AJRI)*, vol. 7, no. 2, pp. 125–136, 2026.
[42] C. A. Bradley, J. Goldsmith, and O. A. Hathaway, "The rise of nonbinding international agreements: An empirical, comparative, and normative analysis," *U. Chi. L. Rev.*, vol. 90, p. 1281, 2023.
[43] E. Gashi and M. Ivezaj, "Quality management for design–bid-build versus design-and-build contracts for infrastructure projects," *International Review of Applied Sciences and Engineering*, vol. 15, no. 1, pp. 130–137, 2024.
[44] H. Herman, W. Achmad, N. Aulia, S. Rusdian, and T. Green, "Utilizing ipfs for decentralized data storage a security and censorship resistance solution," *Blockchain Frontier Technology*, vol. 5, no. 2, pp. 124–135, 2026.
[45] S. Wong, C. Zheng, X. Su, and Y. Tang, "Construction contract risk identification based on knowledge-augmented language models," *Computers in industry*, vol. 157, p. 104082, 2024.
[46] K. M. Wongkar, T. F. Satriawan, N. P. L. Santoso, and N. Rangi, "Leveraging blockchain governance and smart contracts for entrepreneurs in social media," *Blockchain Frontier Technology*, vol. 6, no. 1, pp. 86–96, 2026.
[47] M. A. Syari, U. Rahardja, T. Wellem, H. D. Purnomo, and R. Buaton, "Iot enabled smart farming system for optimizing crop management using sensors and machine learning," in *2025 4th International Conference on Creative Communication and Innovative Technology (ICCIT)*. IEEE, 2025, pp. 1–7.
[48] D. Danang, H. Haryani, Q. Aini, F. A. Ramahdan, and J. Edwards, "Empowering digital literacy through blockchain based alphasign for secure and sustainable e-governance," *ADI Pengabdian Kepada Masyarakat*, vol. 6, no. 1, pp. 87–97, 2025.
[49] H. E. Mutikanga, M. Abdul Nabi, G. G. Ali, I. H. El-Adaway, and A. Caldwell, "Postaward construction and contract management of engineering, procurement, and construction hydropower projects: Two case studies from uganda," *Journal of Management in Engineering*, vol. 38, no. 6, p. 05022012, 2022.
[50] OECD, *Building More Resilient Cross-border Regions: Considerations in Governance and Partnerships*, ser. OECD Multi-level Governance Studies. Paris: OECD Publishing, 2024. [Online]. Available: https://doi.org/10.1787/d5fd3e59-en