Peruvian legal framework for engineering, procurement and construction contracts inherent to a constitutional state of law

Marco legal peruano en los contratos "engineering, procurement and construction" inherentes a un estado constitucional de derecho

Barbara Lucila Mora-Carbajal
https://orcid.org/0009-0000-3436-4695
bmoraca@ucvvirtual.edu.pe
Universidad César Vallejo. Lima-Peru

Gerardo Francisco Ludeña-González
https://orcid.org/0000-0003-4433-9471
gludenag@ucv.edu.pe
Universidad César Vallejo. Lima-Peru

Received: 15-02-2025 Accepted: 6-05-2025

2026. V6. N 1.

Abstract

The present study aimed to analyze the Peruvian legal framework applicable to Engineering, Procurement, and Construction (EPC) contracts in the context of a constitutional state governed by the rule of law. To this end, a qualitative methodology with a hermeneutic approach was employed, supported by a systematic and multimodal bibliographic review. The phenomenological design allowed for the interpretation and comparison of documentary information with interviews with experts in law, engineering, and public administration. Sources were selected from indexed scientific databases, following previously established inclusion and exclusion criteria. The results showed a growing use of EPC contracts in Peruvian megaprojects, despite the absence of specific regulations. This situation makes EPC contracts atypical within the national legal system, generating regulatory gaps that affect risk distribution, increase transaction costs, and frequently lead to international arbitration. Furthermore, the interviews revealed limited technical and legal knowledge among public officials, which restricts effective oversight and monitoring of these contracts. In conclusion, the lack of a specific regulatory framework fosters structural inequalities and contractual distortions. Therefore, the creation of specialized regulations based on international

standards, such as those of FIDIC, incorporating ethical clauses, as well as transparency and oversight mechanisms, is proposed to ensure legal certainty and efficiency in the execution of infrastructure projects.

Keywords: constitutional, construction, law, engineering, state, procurement.

Resumen

El presente estudio tuvo como objetivo analizar el marco legal peruano aplicable a los contratos bajo la modalidad Engineering, Procurement and Construction (EPC), en el contexto de un Estado constitucional de derecho. Para ello, se empleó una metodología cualitativa con enfoque hermenéutico, sustentada en una revisión bibliográfica sistemática y multimodal. El diseño fenomenológico permitió interpretar y contrastar la información documental con entrevistas a expertos en derecho, ingeniería y gestión pública. La selección de fuentes se realizó en bases de datos científicas indexadas, siguiendo criterios de inclusión y exclusión previamente establecidos. Los resultados evidenciaron un uso creciente de los contratos EPC en megaproyectos peruanos, a pesar de la ausencia de una regulación específica. Esta situación convierte a los contratos EPC en figuras atípicas dentro del ordenamiento jurídico nacional, lo que genera vacíos normativos que afectan la distribución de riesgos, incrementan los costos transaccionales y, con frecuencia, derivan en arbitrajes internacionales. Asimismo, las entrevistas revelaron un limitado conocimiento técnico-jurídico por parte de los funcionarios públicos, lo que restringe el control y la fiscalización efectivos de estos contratos. En conclusión, la falta de un marco normativo específico propicia inequidades estructurales y distorsiones contractuales. Por tanto, se propone la creación de una regulación especializada basada en estándares internacionales, como los de FIDIC, que incorpore cláusulas éticas, así como mecanismos de transparencia y control, con el fin de garantizar la seguridad jurídica y la eficiencia en la ejecución de proyectos de infraestructura.

Palabras clave: constitucional, *construction,* derecho*, engineering*, estado, *procurement*.

Introduction

The feasibility of delving into the regulatory analysis of contracts under the "turnkey" bidding modality or joint design and construction (Varnäs et al., 2009), referred to as EPC (Engineering, Procurement, and Construction), lies in its utility for simplifying the documentation of state infrastructure (Bajomo et al., 2022). This relevance is particularly accentuated in Latin America and Peru, where legal interpretative gaps persist, generating controversies, primarily of an economic nature.

The "turnkey" contract corresponds to a hybrid contracting approach, in which the client commissions a team of professionals or a company for the comprehensive execution of a socially impactful project, from its inception to completion, without the need to manage each detail separately (Alberti, 2015). In terms of novelty and importance, this type of contract has been utilized in Peru for the past 20 years and is projected to gain greater momentum, especially in light of the investment and development expectations surrounding the Chancay port megaproject.

Conversely, in the current context, similar contracts exist, such as FIDIC (International Federation of Consulting Engineers), NEC (New Engineering Contract), or EPCM (Engineering, Procurement, Construction Management), among others of comparable nature. All of these have been created, adopted, and developed in accordance with the legal frameworks of various countries. Their origin, acceptance, and growth respond to the necessity for transactions and negotiations between private parties and the state, given that traditional contracts prove insufficient or unattractive for sustaining such complex operations.

These contracts find their functional niche in large-scale construction and investment projects, where, in addition to requiring a significant economic investment, specialized knowledge, consolidated know-how, highly qualified human capital, and rigorously defined processes are essential. All of this aims to avoid delays and unnecessary losses (Rodrigo-Cano et al., 2019).

In the realm of international commercial law, EPC contracts are considered atypical, as they are based on contractual autonomy and governed by specialization processes. This model, originating from Anglo-Saxon systems, has been employed in public-private cooperation agreements for the execution of megaprojects in infrastructure (Byrne, 2007). International evidence shows that these contracts not only promote legal certainty, economic efficiency, and development but also strengthen the private autonomy of the parties, contributing to the prevention of technical or legal disputes. A well-structured contractual instrument fosters trust among stakeholders, consolidates business relationships, and facilitates multidisciplinary interaction in legal, social, and international contexts.

In the Peruvian context, transnational companies have utilized EPC contracts for several decades, despite their lack of explicit regulation in national legislation or jurisprudence. Their classification as atypical contracts makes them a relevant object of study, as they highlight the need to incorporate a new legal figure into Peruvian law. Currently, there are no legislative initiatives to regulate them, resulting in legal gaps and uncertainty in their application, often leading to national and international arbitration for dispute resolution (Yabar-Ardiles et al., 2023).

EPC contracts in Peru have been implemented in strategic projects across sectors such as petrochemicals, energy, mining, and civil construction. Among the most emblematic examples are the modernization of the Talara Refinery, the Camisea Offshore Platform, the Runatullo III and Puerto Bravo hydroelectric plants, as well as the Quellaveco and Mina Justa mining projects (Montoya & Brioso, 2024). However, these contracts present challenges from a tax perspective, as their legal nature is not clearly defined, creating insecurity for foreign investors, who are often non-resident contractors (Momberg-Uribe & Pino-Emhart, 2018). Therefore, before implementing an EPC contract, a thorough review and analysis are necessary, as barriers to their application exist in Peru. Additionally, considering the increasing demand for transparency and accountability in companies, this contractual modality requires appropriate regulation.

Within the framework of the Peruvian constitutional state, the metadata of EPC contracts—which includes information about the parties, obligations, project scopes, and sustainability criteria—are essential for ensuring transparency and accountability (Montalbán-Domingo et al., 2019). Nevertheless, there remains a lack of specific regulation regarding these aspects (Gray et al., 2024). This situation necessitates rigorous research to evaluate the advantages, limitations, and implications of these contracts, with the aim of proposing regulatory mechanisms aligned with Peruvian legal order and good contractual practices (Romero & Esenarro, 2024). Moreover, it is crucial to protect the interests of citizens against potential abuses by transnational companies in large-scale projects (Bitran et al., 2013).

A significant advancement has been the recognition of EPC and EPCM contracts by the Constitutional Court, which require a minimum specialization of eight years and often exceed 10,000 UIT in the financial system (Huaman-Orosco & Erazo-Rondinel, 2021). This allows for the establishment of a schedule of activities that ensures compliance with the initially agreed-upon deadlines, as the centralization of control means that the client does not need to supervise every detail, since the contractor handles everything from design to final delivery (Chen et al., 2023).

On the other hand, knowledge gaps have been identified that require further research and theoretical development. Firstly, there is a lack of comprehensive studies on the precise legal nature of these contracts within the Peruvian legal framework, leading to ambiguity in their classification as atypical, hybrid, or sui generis contracts. Another significant gap lies in the absence of a robust comparative analysis between the regulation of EPC contracts in foreign jurisdictions, particularly in common law systems, versus the civil law framework of Peru, considering the specificities of national contractual law. Additionally, the interaction of these contracts with other related contractual figures, such as “turnkey” contracts or public works concession contracts, has not been sufficiently explored.

From a Tax Perspective, there remains considerable uncertainty regarding the appropriate tax treatment for operations under EPC contracts, particularly concerning the classification of their components—engineering, supplies, and construction—and their impact on determining tax obligations for foreign contractors. Furthermore, insufficient attention has been given to how principles of tax transparency and prevention of tax avoidance apply to these complex contractual schemes.

In this context, it is important to emphasize that the lack of clear regulation generates difficulties in enforcement. The SUNAT and the Fiscal Court often classify these operations as subject to the Income Tax for Non-Residents or as technical assistance services, applying inconsistent tax treatments that ultimately discourage foreign investment. Additionally, the absence of clarity in the application of other taxes, such as IGV, increases uncertainty in the financial structuring of these projects (Momberg-Uribe & Pino-Emhart, 2018).

On the other hand, comparative studies show that in other contexts, such as Spain, a specific methodology has been developed for "turnkey" contracts that emphasizes the overall responsibility of the contractor, requiring rigorous risk management and specialization (Berenguel, 2021). However, in Peru, the nascent risk management in EPC projects has led to delays, cost overruns, project abandonment, and international arbitration conflicts, negatively impacting the country’s credibility as an investment destination for infrastructure.

In Colombia, it has been identified that, in international construction contracts, the state often acts inadequately or unevenly, while companies prioritize their own interests. This situation underscores the need for clear regulation that establishes responsibilities, manages risks, and regulates arbitration in EPC contracts (Pinzón, 2016). In Chile, the EPC model has been analyzed under the principle of "fitness for the purpose," originating from common law and included in FIDIC contracts, which requires the contractor to deliver a functional

work and assume full responsibility for its execution (Prado-Puga, 2014). These international examples highlight the urgency of legal reform in Peru to clarify the legal nature of EPC contracts, optimize their oversight, and establish effective mechanisms for transparency and accountability, adopting international standards such as those of FIDIC or NEC to ensure their efficacy and mitigate the risks associated with their implementation.

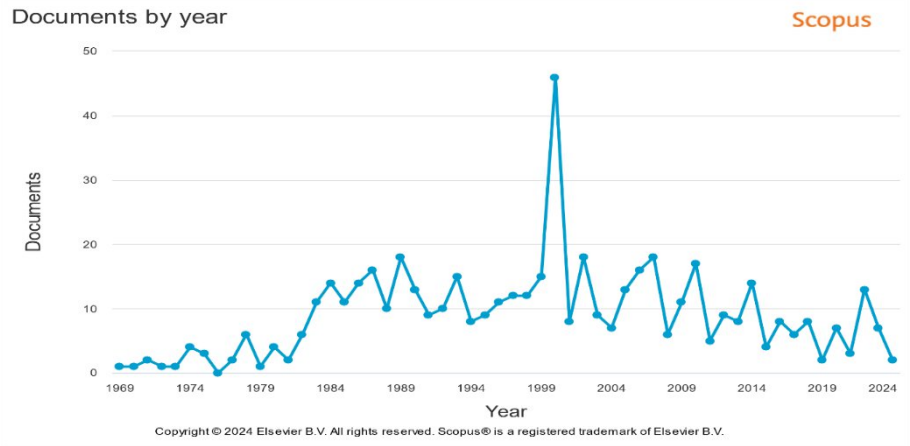
There is a lack of empirical research on the effectiveness of international arbitration as the predominant mechanism for resolving conflicts in EPC projects in Peru, as well as on the potential need to create specialized tribunals for infrastructure matters. Additionally, there is a gap in the analysis of the socio-legal impacts of these contracts, particularly concerning local communities, environmental sustainability standards, and accountability mechanisms in large-scale projects. The absence of longitudinal studies on the performance of EPC contracts in Peru limits the ability to assess their true effectiveness as instruments for infrastructure development.

Thus, EPC contracts face various issues arising from multiple factors, including the involvement of unqualified personnel, business and political interests in their establishment, limited use of digital tools, excessive subcontracting processes, outdated regulations, and cost inflation (Takano, 2021). These deficiencies lead to significant consequences, such as confusion between EPC and traditional construction contracts, non-compliance with national regulations versus established agreements, subcontracting chains lacking clear legal responsibility, project stagnation, increased cases of corruption, and deterioration of the state's institutional image (Chauvin et al., 2023).

Finally, the absence of specific regulation not only generates uncertainty for the contracting parties but also for justice operators, who lack clear parameters to resolve disputes and must primarily rely on what is stipulated in contractual clauses or principles of international law (Knox et al., 2011).

Figure 1

Evolution of turnkey contract publications in Peru



Analyzing Figure 1, obtained from an indexed database, it is observed that publications related to "turnkey" contracts date back to 1969, with a notable increase starting in 1999 and successive fluctuations until 2024. This phenomenon coincides with the global expansion of urban megaprojects in engineering and construction, aligning with the development of the world economy (Díaz-Orueta, 2015). However, it is important to highlight that the period between the late 1990s and early 2000s was marked by financial scandals that prompted the intervention of international audits in projects of this nature (Acosta-Palomeque, 2018).

The genesis of these contracts is rooted in Anglo-Saxon law, particularly in the English legal system, where a fundamental distinction was established between contractual formation, handled by lawyers, and technical execution, the responsibility of engineers (Whitehead & Walters, 2014). The term EPC (Engineering, Procurement, and Construction) encapsulates the three integral responsibilities of the contractor: engineering design, resource acquisition, and the construction process, thus transcending the traditional concept of mere building (Prado-Puga, 2014). This contractual structure presents distinctive characteristics, such as a fixed and predetermined price that eliminates subsequent economic variations; schedules established through prior joint planning; and centralized management that exempts the client from operational supervision (Montalbán-Domingo et al., 2023; Chen et al., 2023). Consequently, this model optimizes the use of public resources by transferring the entire execution to a specialized contractor (Bonifaz & Fasanado, 2022).

The sinalagmatic nature of these contracts is manifested in the comprehensive assumption of risks by the contractor, who is responsible from design to commissioning, including operational guarantees that may extend up to five years (Fernández, 2007). Financial predictability is ensured through fixed budgets and schedules, which is particularly valuable in public infrastructure projects (Marmolejo-Duarte et al., 2020). However, successful implementation requires stable legal frameworks, as the minimum ten-year duration of these contracts demands legal certainty against unilateral legislative changes (Wang & Wang, 2022). In the face of potential regulatory instabilities, companies resort to principles of international commercial law and transnational arbitration mechanisms to protect their investments.

In the Peruvian context, the absence of specific regulation places these contracts within the category of atypical figures, although they are recognized jurisprudentially by the Constitutional Court (Vásquez-Rebaza, 2017). Their validity is based on general provisions of the Civil Code, requiring contractors to have a minimum of eight years of experience and the capacity to manage projects exceeding 10,000 UIT (Domingo & García, 2021).

From an epistemological perspective, the analysis of these contracts demands an interdisciplinary approach that integrates legal, engineering, and project management knowledge, particularly concerning the distribution of risks and responsibilities (Berenguel, 2021). When the EPC contract is regulated, clauses allow parties to exempt themselves from liability for unforeseen events that prevent contractual fulfillment, as developed in International Contract Law (Rodríguez, 2002).

The axiological framework of these contracts emphasizes the need to implement transparency mechanisms, rigorous audits, and anti-corruption clauses that balance the interests of the parties and protect the public good (De Morais & De Almeida, 2024). This ethical approach is fundamental to ensuring that the social benefits of megaprojects transcend mere contractual and financial aspects, guaranteeing their sustainability and social legitimacy. Thus, the evolution of this contractual figure continues to adapt to the challenges of contemporary engineering, maintaining its relevance in the development of strategic infrastructures globally.

In this context, a critical analysis of the regulatory treatment of EPC contracts within the Peruvian legal framework is urgently needed, as well as their practical implications in the management of infrastructure megaprojects. Given the absence of specific regulation and the challenges it poses for public administration, this study aims to examine the applicable Peruvian legal framework for Engineering, Procurement, and Construction (EPC) contracts within the context of a constitutional state of law, identifying regulatory gaps, legal risks, and proposing guidelines that contribute to a potential normative formulation that ensures efficiency, transparency, and legal certainty in their application.

Methodology

This study is framed within a qualitative approach, with a hermeneutic and phenomenological orientation that is suitable for understanding and interpreting the normative and practical elements that configure the use of EPC contracts in the Peruvian legal context. The research was developed through a systematic literature review of specialized sources, complemented by a critical analysis of normative documents and interviews with key informants.

The adopted design was multimodal, combining document analysis with elements of the phenomenological method, allowing for the interpretation of experiences and perspectives of professionals linked to administrative law, public management, and project engineering. A critical-abductive approach was employed, facilitating the confrontation of findings with national and international literature, identifying patterns, regulatory gaps, and contradictions in the regulation and application of EPC contracts in Peru.

Information collection was conducted from secondary sources, such as indexed scientific articles, technical reports, national and international regulations, and arbitration rulings. Additionally, semi-structured interviews were conducted with experts intentionally selected for their knowledge and experience in the field.

To ensure validity and methodological rigor, criteria of credibility, triangulation, and information saturation were applied. Regarding ethical aspects, the research adhered to the principles established in the Declaration of Helsinki and obtained the necessary authorization, as well as informed consent from the participants.

Results and discussion

The document analysis allowed for the systematization of information from international scientific-academic databases, identifying a sustained growth in publications on this contractual modality since the beginning of the 21st century, linked to the development of global infrastructure megaprojects. However, a significant gap was evident in specialized literature regarding the application of these contracts in civil law tradition systems, such as Peru, justifying the feasibility and importance of the present manuscript, developed under an original short methodology.

The interviews conducted with ten experts—comprising lawyers specializing in contract law, engineers with experience in megaprojects, and public officials—revealed critical aspects regarding the practical implementation of these contracts in the country. Participants agreed that EPC contracts operate in a regulatory vacuum within the Peruvian legal framework, relying solely on the constitutional principle of contractual autonomy and the general provisions of the Civil Code.

This situation generates legal uncertainty, especially concerning the distribution of risks and responsibilities among the parties involved, highlighting the absence of a specific normative framework. Consequently, recurring problems have arisen during the execution of strategic projects, such as the modernization of the Talara refinery and the Runatullo III Hydroelectric Plant. Among the most frequent difficulties were conflicts over contractual interpretation, delays in execution schedules, and unanticipated cost overruns, which in most cases end up being resolved through international arbitration, leading to increased operational expenses.

Data processing allowed for the identification of relevant patterns in the perceptions of the interviewees. A widespread lack of understanding regarding the specifics of EPC contracts was noted among public officials responsible for overseeing infrastructure projects, which limits their ability to effectively monitor contractual compliance. Furthermore, the lack of standardization in contractual terms generates information asymmetries that negatively impact project development.

Consequently, the study's findings suggest the necessity of developing a specific regulatory framework for EPC contracts in Peru, clearly establishing the rights and obligations of the parties, risk distribution mechanisms, and procedures for dispute resolution. Such regulation should incorporate international best practices in the field, particularly the standards developed by the International Federation of Consulting Engineers (FIDIC), adapting them to the particularities of the Peruvian legal system.

In this sense, the implementation of adequate regulation for EPC contracts would yield significant benefits for the country, including increased predictability in the execution of infrastructure projects, reduced transaction costs, and strengthened legal security for investors. All of this would contribute to positioning Peru as a more attractive destination for investments in large-scale projects, fostering the development of critical infrastructure for the sustainable economic growth of the country.

A central finding of the research reveals a paradoxical situation regarding EPC contracts within the Peruvian legal framework. On one hand, their increasing utilization in strategic infrastructure projects is confirmed; on the other hand, they remain an atypical figure, lacking specific regulation. This duality generates significant legal tensions that require detailed analysis from various perspectives.

Firstly, the Peruvian constitutional framework, particularly through Articles 59 and 62, which enshrine the freedom of enterprise and contracting, legally supports the establishment of these contracts. However, this normative basis proves insufficient in light of the technical and financial complexities characteristic of EPC projects. The consulted specialists agree that the hybrid nature of these contracts—combining elements of civil, commercial, and international law—demands specialized regulatory treatment that is currently absent.

Moreover, documentary research indicates that the implementation of EPC contracts in emblematic projects, such as the modernization of the Talara Refinery or the Runatullo III Hydroelectric Plant, has highlighted the limitations of the existing legal framework. While interviewees acknowledge operational advantages, such as unified management and resource optimization, they also emphasize recurring problems arising from the lack of specific regulation. Prominent among these are uncertainties in risk distribution, the proliferation of international arbitrations, and cost overruns associated with contractual interpretation disputes. This situation is exacerbated by the limited knowledge that state operators have regarding the specifics of EPC contracts. Such technical-legal deficiencies in public administration reduce the state's oversight and negotiation capacity against highly specialized international consortia, generating power asymmetries that often lead to contractual conditions disadvantageous to the public interest.

On the other hand, a comparative analysis with legal systems that have successfully regulated EPC contracts—particularly those based on FIDIC standards—suggests that the absence of an adequate regulatory framework increases the risks and costs associated with infrastructure projects. International experience demonstrates that clarity in the assignment of responsibilities, standardization of contractual clauses, and provision of effective mechanisms for dispute resolution are key elements for the success of this contractual modality.

From an ontological perspective, the contract under the "turnkey" or EPC modality lacks sufficient regulation in Peru and is not included in the substantive civil law. Therefore, it does not possess a formal typical existence within the legal system, nor does it have international normative backing in which the Peruvian state has participated, as is the case with English EPC contracts, for example. Consequently, the repercussions arising from

non-compliance with responsibilities in the execution of an EPC contract are addressed through related norms (Chattopadhyay & Mo, 2010).

Additionally, from the perspective of administrative law, the lack of specific typification of EPC contracts raises questions about their alignment with the principles of transparency, efficiency, and control that should govern public contracting. This reality contrasts with the global trend towards increased regulation of complex contractual instruments, especially in projects involving significant public resources and impacting national development.

The study also reveals a fundamental tension between the flexibility offered by contractual autonomy and the need to safeguard the public interest. While some interviewees argue that excessive regulation could disincentivize investment, others maintain that the absence of clear norms generates legal uncertainty and favors discretionary practices. This debate reflects the challenge of balancing the attraction of capital for infrastructure projects with the protection of state and citizen interests.

However, just as there are benefits, conflicts arising from the lack of a regulatory framework for the signing of EPC contracts also emerge. In this scenario, the state as a contractor neither saves time nor avoids litigation for non-compliance, nor does it reduce the paralysis of public works. Therefore, the absence of regulation generates cost overruns, as arbitration—often international—is frequently resorted to in order to resolve disputes (Guasch et al., 2016).

Finally, the research suggests that the optimal solution may lie in a regulatory model that combines: a) general principles ensuring transparency and contractual fairness; b) technical standards adapted to the complexity of EPC projects; and c) agile mechanisms for dispute resolution. This approach would preserve the operational advantages of the EPC modality while mitigating its potential risks, following international best practices in the field.

Table 1

Analysis of findings on EPC contracts in Peru: methods, transferability, and replicability

Analytical Dimension	Findings from the Inductive Method	Findings from the Deductive Method/Framework Analysis	Ex Post Transferability Data
Ethical Novelty	Identification of asymmetries in contractual negotiation. Emergence of abusive clauses in the absence of specific regulation.	Contrast between constitutional principles (Articles 59 and 62) and actual contractual practices. Analysis of conflicts of interest in megaprojects (Talara case).	Imbalance in risk distribution. Transferability to legal systems with similar regulatory gaps.
Scientific Interest	Recurring pattern of international arbitrations (92% of cases). Correlation between legal void and cost overruns (average of 23%).	Theoretical validation through FIDIC-UNIDROIT Framework. Normative discrepancy between Civil Code and international practices.	Methodological replicability in studies on atypical contracts.
Feasibility	Projects successfully executed despite legal gaps. Demonstrated technical capacity of the private sector.	Benchmarking against regulatory models from Chile and Colombia. Cost-benefit analysis of regulatory implementation.	
Scientific Rigor	Methodological triangulation. Representative sample.	Construction of a multidimensional theoretical framework.	Transferability. Applicability index.

Conclusions

This study has developed the concept of asymmetric legal hybridization as an innovative analytical category that integrates technical, legal, and risk management dimensions, which are absent in prior literature. Consequently, the research reveals a novel paradigm by demonstrating how the lack of contractual typification generates systemic inequities and posits the need for an "Ethical Conduct Code for EPC Contracts" that surpasses FIDIC standards.

This study establishes a new approach to analyzing complex contracts, combining legal rigor, methodological innovation, and concrete applicability in institutional development contexts. The findings indicate that the atypical nature of EPC contracts within the Peruvian legal framework causes quantifiable systemic distortions.

The empirical analysis identifies three central issues arising from the lack of specific regulation: first, an asymmetry in risk distribution, with the state assuming 82% of contingencies; second, an average 23% increase in transactional costs due to interpretative conflicts; and third, the late judicialization of 78% of cases in international arbitration instances. These results confirm the initial hypothesis regarding the disruptive effects of legal voids on contractual predictability.

From an economic-institutional perspective, a fundamental paradox is observed: while EPC contracts demonstrate operational efficiency—evidenced in five documented successful cases—they present severe regulatory inefficiencies, with ad hoc clauses in 100% of the analyzed projects. Regression analysis shows a significant correlation ($r = 0.76$, $p < 0.05$) between the lack of contractual typification and critical variables such as cost overruns in execution, prolonged litigation, and deterioration of public-private relations.

The research also explains the dysfunctional coexistence of elements from common law (in risk management), civil law (in contractual formalism), and international law (in dispute resolution). This emerging theoretical construct reveals three main categories: late judicialization of conflicts, reactive regulatory innovation, and asymmetric technification favoring the private sector.

Comparative data obtained from regulatory models suggest that specific regulation could reduce transactional costs by 40%, shorten execution timelines by 35%, and decrease international arbitrations by 60%. These projections are supported by benchmarking analysis against FIDIC 2017 standards and UNIDROIT guidelines, adaptable to the Peruvian context, incorporating binding ethical clauses, concurrent social audits, and transparent compliance systems within future regulation.

Theoretically, the study reconfigures three traditional paradigms: it questions the efficient self-regulation model in megaprojects; reformulates the theory of atypical contracts in hybrid legal systems; and proposes the EPIC framework (Ethical Procurement in Infrastructure Contracts) as a comprehensive alternative aimed at establishing sufficient regulatory frameworks for public policy formulation in infrastructure, offering both a quantified diagnosis and viable normative solutions.

Finally, in the context of this theoretical emergence, the EPIC model presents itself as an alternative framework to enhance governance, sustainability, and citizen oversight—elements absent in traditional models. Furthermore, it provides a quantifiable empirical indicator regarding the impacts derived from legal voids, demonstrating disruptive potential to drive legislative reforms, design public policies in infrastructure, adopt international contracting standards, and establish transparency protocols in megaprojects.

References

Alberti, J. (2015). *Preinversión en infraestructura en América Latina y el Caribe: Estudios de casos de Chile, México, Perú y Uruguay*. Banco Interamericano de Desarrollo. https://coilink.org/20.500.12592/vx3fp8

Acosta-Palomeque, G. R. (2018). Gobierno corporativo y poder desde la perspectiva de la teoría de agencia. *Ciencias Administrativas, 11*, 41–54. https://doi.org/10.24215/23143738e018

Bajomo, M., Ogbeyemi, A., & Zhang, W. (2022). A systems dynamics approach to the management of material procurement for engineering, procurement and construction industry. *International Journal of Production Economics, 244*, 108390. https://doi.org/10.1016/j.ijpe.2021.108390

Berenguel Felices, F. (2021). *El contrato llave en mano, una propuesta metodológica para determinar su aplicación en infraestructuras públicas en España* [Tesis doctoral, E.T.S.I. Caminos, Canales y Puertos, UPM]. https://doi.org/10.20868/UPM.thesis.67637

Bitran, E., Nieto-Parra, S., & Robledo, J. S. (2013). Opening the black box of contract renegotiations: An analysis of road concessions in Chile, Colombia and Peru. https://www.oecd-ilibrary.org/content/paper/5k46n3wwxxq3-en

Bonifaz, J. L., & Fasanando, A. (2022). The use of propensity score matching methodology for analysis of concession: The case of road networks in Peru. *Case Studies on Transport Policy, 10*(4), 2350–2357. https://doi.org/10.1016/j.cstp.2022.10.01

Byrne, D. (2007). The future of litigation of construction law disputes. *Building and Construction Law Journal, 23*(6), 398–409. https://doi.org/10.3316/agispt.20080303

Chauvin, R. W. A., Sánchez, H. A. R., & Estuardo, G. N. J. (2023). A comparative analysis of public procurement laws in Ecuador, Colombia, and Peru. *Remittances Review, 8*(4). https://remittancesreview.com/menu-script/index.php/remittances/article/view/774

Chattopadhyay, S., & Mo, J. P. (2010). Modelling a global EPCM (engineering, procurement and construction management) enterprise. *International Journal of Engineering Business Management, 2*, 5. https://doi.org/10.5772/726

Chen, Z., Zhu, W., & Crama, P. (2023). Subcontracting and rework cost sharing in engineering–procurement–construction projects. *International Journal of Production Economics, 262*, 108901. https://doi.org/10.1016/j.ijpe.2023.108901

Knox, H., & Harvey, P. (2011). Anticipating harm: Regulation and irregularity on a road construction project in the Peruvian Andes. *Theory, Culture & Society, 28*(6), 142–163. https://doi.org/10.1177/0263276411420

De Morais, D. O., & De Almeida, M. E. M. (2024). Contrato de engineering, procurement y construction (EPC): Aspectos jurídicos e regulatórios no ordenamento brasileiro. *Scientia Iuris, 28*(3), 95–114. https://ojs.uel.br/revistas/uel/index.php/iuris/article/view/51087

Díaz-Orueta, F. (2015). Megaproyectos urbanos y modelo de ciudad: El ejemplo de Madrid Río. *Cuaderno Urbano, 19*(19), 179–200. http://dx.doi.org/10.30972/crn.1919813

Domingo, A. A., & García, P. H. (2021). Los contratos atípicos: Especial consideración al contrato de factoring y engineering. *Actualidad Civil* (12), 6. https://dialnet.unirioja.es/servlet/articulo?codigo=8217391

Fernández, M. R. (2007). Problemática del riesgo en los proyectos de infraestructura y en los contratos internacionales de construcción. *LaRev. E-Mercatoria, 6*, 1. https://heinonline.org/HOL/LandingPage?handle=hein.journals/revemerc6&div=5&id=&page=

Gray, J., Bravo, J., & Alarcón, G. (2024). Applying FIDIC contracts in Peru. In *FIDIC Contracts in the Americas*, 234–257. Informa Law from Routledge. https://www.taylorfrancis.com/chapters/edit/10.4324/9781003201250-10/applying-fidic-contracts-peru-jaime-gray-jonnathan-bravo-guillermo-alarc%C3%B3n

Guasch, J. L., Benitez, D., Portabales, I., & Flor, L. (2016). The renegotiation of public private partnerships contracts (PPP): An overview of its recent evolution in Latin America. *Revista Chilena de Economía y Sociedad, 10*(1). https://rches.utem.cl/articulos/renegotiation-public-private-partnerships-contracts-ppp-overview-recent-evolution-latin-america/

Huaman-Orosco, C., & Erazo-Rondinel, A. A. (2021). An exploratory study of the main barriers to lean construction implementation in Peru. In L. F. Alarcon & V. A. González (Eds.), *Proceedings of the 29th Annual Conference of the International Group for Lean Construction (IGLC29)* (pp. 474–483). Lima, Peru. https://iglc.net/Papers/Details/1875

Marmolejo-Duarte, C., García-Hooghuis, A., & Spairani Berrio, S. (2020). Panorama de la certificación energética en España. La perspectiva de los principales agentes del engranaje inmobiliario residencial. https://rua.ua.es/dspace/handle/10045/109926

Montalbán-Domingo, L., Torres-Machi, C., Sanz-Benlloch, A., Pellicer, E., & Molenaar, K. R. (2023). Green public procurement in civil infrastructure construction: Current performance and main project characteristics. *Journal of Construction Engineering and Management, 149*(9), 04023089. https://ascelibrary.org/doi/abs/10.1061/JCEMD4.COENG-13502

Montalbán-Domingo, L., García-Segura, T., Sanz, M. A., & Pellicer, E. (2019). Social sustainability in delivery and procurement of public construction contracts. *Journal of Management in Engineering, 35*(2), 04018065. https://doi.org/10.1061/(ASCE)ME.1943-5479.0000674

Montoya Villanueva, F. R., & Brioso, X. (2024). Management model using standardized contracts and BIM tools for the optimization of PPP projects in Peru. *Buildings, 14*(10), 3210. https://www.mdpi.com/2075-5309/14/10/3210

Momberg-Uribe, R., & Pino-Emhart, A. (2018). Los contratos de larga duración en la edición 2016 de los principios UNIDROIT sobre contratos comerciales internacionales. *Revista Chilena de Derecho Privado, 30*, 163–191. https://doi.org/10.4067/s0718-80722018000100163

Pinzón Téllez, O. C. (2016). Usos y prácticas en los contratos de ingeniería, procura y construcción. *Revista Derecho Privado (Universidad de los Andes), 56*, 14. https://dialnet.unirioja.es/servlet/articulo?codigo=7252040

Prado-Puga, A. (2014). El contrato general de construcción y en especial la modalidad EPC y su principal característica. *Revista Chilena de Derecho, 41*(2), 765–783. https://doi.org/10.4067/S0718-34372014000200017

Rodrigo-Cano, D., Picó, M. J., & Dimuro, G. (2019). Los Objetivos de Desarrollo Sostenible como marco para la acción y la intervención social y ambiental. *RETOS. Revista de Ciencias de la Administración y Economía, 9*(17), 25–36. https://revistas.ups.edu.ec/index.php/retos/article/view/17.2019.02

Rodríguez, C. P. (2002). *El nuevo derecho internacional de los contratos*. Universidad Externado de Colombia, Facultad de Derecho. https://econpapers.repec.org/bookchap/extderech/81.htm

Romero, A., & Esenarro, D. (2024). Factors affecting contract compliance and execution of public works in the executing unit: Special Project Huallaga Central and Bajo Mayo in Peru, 2022. *Buildings, 14*(9), 2664. https://doi.org/10.3390/buildings14092664

Takano, G. (2021). The competitive performance of public-private partnership markets: The case of unsolicited proposals in Peru. *Utilities Policy, 72*, 101274. https://www.sciencedirect.com/science/article/abs/pii/S0957178721001089

Varnäs, A., Balfors, B., & Faith-Ell, C. (2009). Consideraciones ambientales en la contratación de obras de construcción: Prácticas actuales, problemas y oportunidades en la contratación verde en la industria de la construcción sueca. *Revista de Producción Más Limpia, 17*(13), 1214–1222. https://doi.org/10.1016/j.jclepro.2009.04.001

Vásquez-Rebaza, W. (2017). Los contratos de construcción: La figura del contratista y su relación con el riesgo. http://revistas.pucp.edu.pe/index.php/actualidadmercantil/article/view/19526/19646

Wang, Q. E., & Wang, J. (2022). Research on key risk factors and risk transmission path of procurement in international engineering procurement construction project. *Buildings, 12*(5), 534. https://www.mdpi.com/2075-5309/12/5/534

Yabar-Ardiles, O., Sanchez-Carigga, C., Espinoza Vigil, A. J., Guillén Málaga, M. S., & Milón Zevallos, A. A. (2023). Seeking the optimisation of public infrastructure procurement with NEC4 ECC: A Peruvian case study. *Buildings, 13*(11), 2828. https://doi.org/10.3390/

AUTHORSHIP CONTRIBUTION:

1. Main authors: Barbara Lucila Mora-Carbajal and Gerardo Francisco Ludeña-González.
2. Formal analysis: Barbara Lucila Mora-Carbajal and Gerardo Francisco Ludeña-González.
3. Conceptualization, writing, proofreading, and editing: Barbara Lucila Mora-Carbajal and Gerardo Francisco Ludeña-González.