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REVIEW ARTICLE

The role of financial management in Public-Private Partnership (PPP) governance in the railway industry: A scoping review

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ABSTRACT - Public-Private Partnerships (PPPs) are essential for the modernization of railway infrastructure, the enhancement of service quality, and the efficient utilization of resources. This review provides an analysis of PPPs in the railway sector, focusing on 25 articles retrieved from the Scopus database. Nonetheless, the study encompasses three primary topics: (1) PPP in Railway Projects, (2) Evaluation and Performance of Railway Infrastructure, and (3) Conflict Resolution and Risk Management in Railway Projects. Additionally, the findings suggest that PPPs can help governments reduce their financial burdens by utilizing private sector investment and expertise, resulting in faster project completion and cost savings. Effective PPPs in the railway sector are characterized by well-defined legal frameworks, strong contract management, and transparent governance. However, the presence of obstacles such as time delays, exceeding the budget, and conflicts among partners requires the implementation of efficient risk management and flexible governance strategies. Besides, case studies from different nations illustrate the potential and intricacies of PPPs, underscoring the importance of strategic involvement of stakeholders and the use of creative funding models. In conclusion, this review determines that the success of PPPs in railway infrastructure development depends on careful planning, well-defined regulatory frameworks, and proactive risk management to achieve sustainable and high-quality results.

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1. INTRODUCTION

Public-Private Partnerships (PPPs) are now essential for modernizing infrastructure, enhancing service quality, and optimizing resource utilization in the railway sector. PPPs are collaborative arrangements between government bodies and private sector firms that leverage each side's unique strengths to achieve common goals (Rutkowski et al., 2022). Collaboration in the railway industry is currently deemed essential to address the increasing need for effective, environmentally friendly, and financially viable transportation options (Suripatty, 2019). PPPs in the railway sector can be established using many procedures, including build-operate-transfer (BOT), design-build-finance-operate-maintenance (DBFOM), and concessions (Winata & Gultom, 2023). These models allocate risks and responsibilities between public and private partners based on their respective expertise, promoting private investment and innovation while ensuring public oversight and accountability ("Impact of Effective Information Technology Governance on Audit Technology Performance in Ghana," 2020). The public sector benefits from the increased efficiency and technological advancements of the private sector, while the private sector gains access to new markets and opportunities for generating cash.

The primary rationale for introducing PPPs in the railway sector is the significant financial burden associated with the construction and maintenance of the rail infrastructure. Government entities often face budgetary constraints that limit their ability to fully fund large-scale programs. PPPs allow the private sector to provide the necessary financial resources and operational knowledge, which helps speed up project timelines and reduce costs (Sharma & Jayachandran, 2011). Furthermore, PPPs enable the more convenient utilization of state-of-the-art technologies and streamlined management approaches, thereby enhancing the quality of services and operational effectiveness. Successful PPPs in the railway industry are characterized by clearly defined legal and regulatory frameworks, robust contract management, and transparent governance structures (Berisha et al., 2022). These elements ensure that projects are delivered on schedule at a reasonable cost and with a high level of quality. Furthermore, stakeholder involvement and effective public communication are essential for developing and maintaining public confidence and support for PPP efforts.

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Globally, several countries have demonstrated the effectiveness of PPPs in the field of railways. An illustration of this phenomenon may be seen in the rail franchising model implemented in the United Kingdom, which has led to amplified investments, improved services, and heightened passenger satisfaction (Jupe & Funnell, 2017). The implementation of the PPP concept has been instrumental in the development of metro systems in many cities in India, resulting in improved urban mobility and stimulating economic progress. However, the success of PPPs remains challenging. Issues such as project completion delays, surpassing financial constraints, and conflicts among partners can undermine the benefits of such collaborations (Haqq & Gultom, 2021; Oyieyo, 2020). To address these issues and ensure the sustained viability of railway PPP projects, it is imperative to establish effective risk management, uniform performance monitoring, and adaptive governance (Khahro et al., 2021; Liu & Sun, 2020; Mazher et al., 2022).

In conclusion, the implementation of PPPs in the railway sector offers a promising strategy for improving infrastructure, enhancing service quality, and achieving sustainable development goals (Khan & Khan, 2024; Palmer, 2021). PPPs leverage the combined strengths of the public and private sectors to achieve significant benefits such as fostering economic growth and enhancing public welfare (Shuliuk & Horyn, 2022).

1.1 Objective of the Study

This study aims to determine the role of governance through PPP in railway projects. The objective that can be extracted from the scope of this paper:

RO-1: To determine the relationship between PPP in the railway projects.

RO-2: To what degree, irrespective of the size or extent of the project, would the evaluation and performance of railway infrastructure be relevant to PPP project outcomes?

RO-3: To determine whether risk management was practiced in the railway projects.

2. METHODOLOGY

The search string stage of the scoping review approach was employed to select a significant number of pertinent papers for this investigation. In the initial stage, pertinent keywords were chosen, and equivalent terms were identified by employing the Scopus database, along with previous research. Following the creation of the search queries for Scopus, only pertinent phrases were chosen. A total of 214 publications from both databases were gathered for the current study project during the initial phase of the systematic review procedure.

Table 1. The search string

Index	Keywords
Scopus	TITLE-ABS-KEY (public-private AND partnership AND railway) AND (LIMIT-TO (PUBYEAR, 2020) OR LIMIT-TO (PUBYEAR, 2021) OR LIMIT-TO (PUBYEAR, 2022) OR LIMIT-TO (PUBYEAR, 2023) OR LIMIT-TO (PUBYEAR, 2024)) AND (LIMIT-TO (DOCTYPE, "ar")) AND (LIMIT-TO (PUBSTAGE, "final")) AND (LIMIT-TO (LANGUAGE, "English")) AND (LIMIT-TO (SRCTYPE, "j"))

2.1 Screening

The screening method involved carefully examining the collection of potentially relevant research items to determine whether their content aligned with the predetermined research question(s). Subsequently, research items were selected based on these criteria. Nevertheless, a comprehensive assessment was conducted on 25 publications, employing rigorous criteria to determine their inclusion or exclusion, as outlined in Table 2. The initial criterion for selection was literature, specifically research papers, because of their significance as the main source of practical guidance. However, it was determined that the most recent study did not consider assessments, thorough analyses, statistical analyses, literary works, collections of literary works, specific sections within literary works, and records of conference discussions. Furthermore, the review was restricted to studies written exclusively in the English language. In this study, the strategy was focused solely on the years 2020 and 2024. Overall, a total of 189 papers were rejected because they failed to meet the duplication criterion.

Table 2. The selection criterion is searching

Criterion	Inclusion	Exclusion
Language	English	Non-English
Timeline	2024 – 2020	< 2019
Literature type	Journal (Article)	Conference, Book, Review
Publication Stage	Final	In Press

2.2 Data Abstraction and Analysis

In this study, integrative analysis was used to evaluate and combine multiple research designs, specifically quantitative methodologies. A proficient investigation was conducted to determine the relevant subjects and subcategories. The first

stage of theme development consisted of gathering the data. Furthermore, the authors reviewed and analyzed a set of 25 publications to identify relevant statements or materials related to the topic of the current study. The authors then evaluated relevant and important studies on PPP in the railway industry. The methodology used in all investigations, as well as the research findings, were examined. Subsequently, the author collaborated with other co-authors to identify themes based on the evidence in this study.

3. RESULTS AND DISCUSSION

3.1 Public-Private Partnerships in Railway Projects

PPPs in railway projects have demonstrated notable success, as evidenced by the Hyderabad Metro Rail project in India and Chengdu Rail Transit Line 17 in China. The Hyderabad Metro, completed in 2020 for US$3.3 billion, spanned 67 kilometres with 57 stops, leveraging stakeholder engagement, secure funding, transparent bidding, and effective risk management to achieve significant time and cost savings (Killada & Gottumukkala, 2021). Similarly, the Chengdu project utilized a system dynamics (SD) model to optimize risk allocation and cash flow, incorporating social capital and government perspectives to develop a comprehensive decision-making scheme (Huang et al., 2022). Despite these success stories, empirical data on the superior performance of PPPs over traditional contracts remain limited. However, studies such as those on Dutch infrastructure projects indicate that PPPs, particularly those using the design-build-finance-maintain model, exhibit better cost performance compared to traditional methods (Verweij & van Meerkerk, 2021).

Second, PPPs in railway projects offer a promising approach for enhancing efficiency and managing financial risks. Comprehensive research provides governments, private investors, and stakeholders with the best practices for establishing high-speed rail (HSR) lines, emphasizing cross-border cooperation and distinct contracts for various infrastructure components (González-Medrano & Martínl, 2021). China's transition to PPPs under the Belt and Road Initiative aims to control debt while managing financial complexities, as seen in projects such as the Nairobi Expressway and the Tanzania-Zambia Railway. However, challenges such as public opposition and corruption remain (van Wieringen & Zajontz, 2023). In Korea, the BTO risk-sharing model incentivizes private sector participation by sharing operating expenses and income, addressing inaccuracies in demand projections, and significantly impacting the concessionaire's rate of return (Lee et al., 2022).

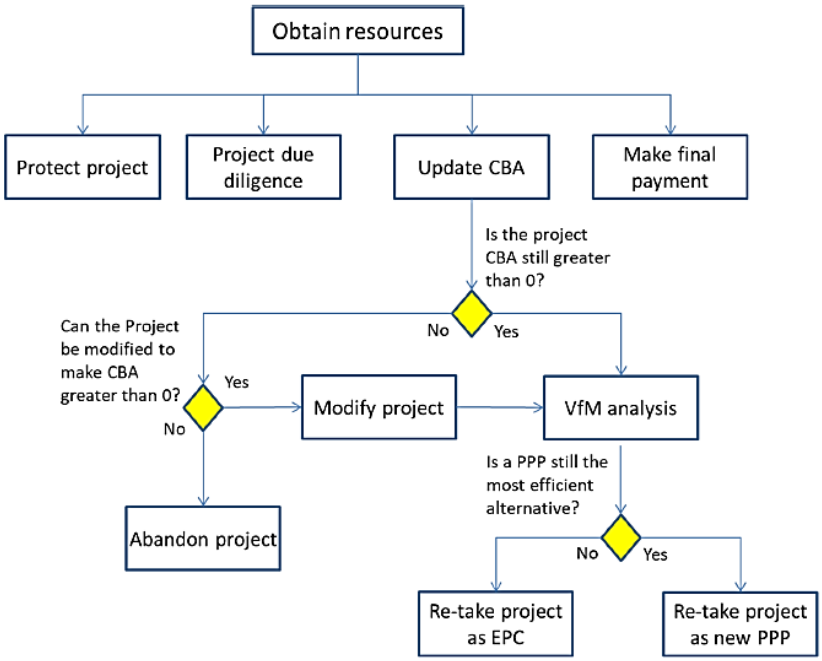

Figure 1. A proposed framework for PPP projects that come to early termination

Meanwhile, PPPs in railway projects encompass various innovative models for risk management, financial structuring, and service quality enhancement. In HSR projects, banks play a crucial role in financing and risk assessment by utilizing a comprehensive risk evaluation index system (EIS) and a static game model to ensure equitable risk distribution among the government, private sector, and financial institutions (Yang & Tan, 2020). Globally, PPPs have been applied across multiple infrastructure sectors, including railways, with a focus on negotiating risk. Furthermore, allocation to maintain public interest, though challenges in transparency and governance persist, as highlighted by the Portuguese highway maintenance contract (Morais et al., 2022). Additionally, public perceptions of social responsibility activities in urban rail transit (URT) projects significantly influence passenger satisfaction and perceived quality, as evidenced by studies on PPP URT projects in Beijing, Dalian, and Hangzhou, China, thereby providing insights into sustainable project management and operation (Cui et al., 2022).

Nowadays, PPPs have become increasingly popular in railway projects worldwide, driven by the need for innovative funding and management strategies. In Yokohama's Tama Plaza redevelopment, PPPs were utilized to address declining revenues and rising costs, highlighting the importance of socio-political and cultural contexts in effective project governance (Khan & Khan, 2024). URT projects, such as those in Delhi and Hong Kong, demonstrate the critical role of PPPs in infrastructure delivery, despite the challenges in cost-effectiveness and profitability for governments and concessionaires (Xiahou et al., 2022). Integrating land value capture (LVC) with PPPs has emerged as a promising approach to enhance economic feasibility. Additionally, a study on URT-PPPs emphasized the importance of understanding social impacts, proposing a conceptual model with 37 indicators to assess social consequences and stakeholder satisfaction (Li & Love, 2022). These insights underscore the need for context-specific governance mechanisms and innovative funding strategies to ensure the success and sustainability of PPP railway projects globally.

Finally, PPPs in railway projects such as the London Underground PPP and High Speed 2 in the UK, as well as the Móstoles-Navalcarnero railway in Spain, illustrate the complexities and challenges inherent in these long-term agreements. These projects have faced significant controversies and incomplete success, highlighting difficulties identified by Foster in public enterprise administration (Glaister, 2023). To address these issues, European directives and national legal frameworks have evolved to ensure adequate risk allocation to the private sector, particularly in cases of premature termination. The analysis of the Móstoles-Navalcarnero project under different Spanish legal frameworks demonstrates the importance of robust legal measures to protect public interest and enhance the effectiveness of PPPs in public infrastructure projects (Alcaraz Carrillo de Albornoz et al., 2022). These insights emphasize the need for meticulous risk management and legal adaptations to ensure the success and public benefit of PPP railway projects.

3.2 Evaluation and Performance of Railway Infrastructure

The evaluation and performance of railway infrastructure involves various innovative methodologies to enhance decision-making and efficiency. In Brazil, a system combining the real options theory with binomial models, dynamic programming, and Monte Carlo simulations addresses inefficiencies in public investment assessments by considering risk factors and managerial flexibility, which classical discounted cash flow methods often overlook (Gartner, 2022). Similarly, in Nigeria, an analysis of the railway sector over 40 years revealed that inadequate management significantly impacts performance, with PPPs showing slight improvements over public management (Ogochukwu et al., 2022). Additionally, in Serbia, the application of the Project Portfolio Management (PPM) model using the Analytic Hierarchy Process (AHP) has proven effective in selecting and prioritizing modernization projects. This approach aligns projects with strategic objectives, reduces financial resource requirements, and demonstrates the benefits of contemporary strategic management frameworks in railway reforms and PPPs (Ković and Milenković, 2022).

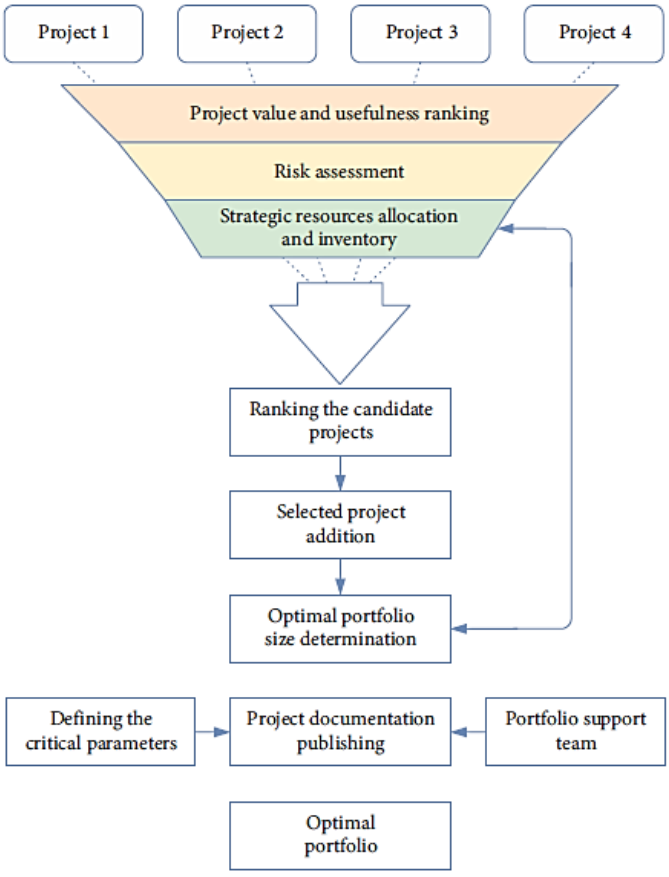

Figure 2. Portfolio project candidate's selection algorithm (Adapted from: Ković & Milenković, 2022)

Next, the evaluation and performance of the railway infrastructure were examined across diverse contexts, shedding light on strategies to improve efficiency and sustainability. In India, a comprehensive analysis of the railway freight sector revealed challenges stemming from competition with road transportation and internal inefficiencies. Indian Railways' initiatives, including dedicated freight lanes, technological upgrades, and dynamic pricing, have yielded positive outcomes, fostering increased freight traffic and customer satisfaction (Sharma et al., 2024). Similarly, in Brazil, infrastructure bottlenecks and low transportation productivity have contributed to elevated freight prices and CO_2 emissions. However, to address these issues, the government has proposed a public-private partnership to enhance railway infrastructure. The proposed two-step assessment model combines a Network Equilibrium Model to simulate transportation flows and a cost-effective analysis to prioritize railway investments based on economic and environmental impacts. Finally, this research indicates potential cost and CO_2 emission reductions with the introduction of new railway systems, making certain projects appealing to private investors (Branco et al., 2022).

3.3 Conflict Resolution and Risk Management in Railway Projects

Conflict resolution and risk management in railway projects, particularly in the context of PPPs, are complex endeavours that require strategic analysis and innovative approaches. Game theory offers insights into the individualistic behaviors of stakeholders, which is crucial for understanding and resolving conflicts inherent in PPP rail projects. Challenges often arise from divergent interests, requiring dynamic frameworks and evolutionary characteristics to be factored into conflict-resolution strategies (Shakibaei & Alpkokin, 2020). In India, the adoption of PPP procurement strategies in transportation infrastructure, including railways, has encountered delays and disputes, notably concerning land acquisition and regulatory approval. While concession agreements (CAs) provide mechanisms for dispute resolution, litigation remains common, highlighting the need for legislative improvements and stringent enforcement to mitigate conflict and ensure project success (Sinha & Jha, 2020). Similarly, in the broader context of PPPs, disputes can lead to renegotiations, impact project outcomes, and cause uncertainty. Robust decision-making (RDM) approaches, informed by game theory models and simulations, offer avenues for analyzing and mitigating the consequences of renegotiations, as evidenced by the case study of the Tanzania Railway project (Khallaf et al., 2021).

Furthermore, conflict resolution and risk management in railway projects, particularly within the context of PPPs, require innovative frameworks and informed policy decisions. In China's URT sector, the integration of risk and reward mechanisms in PPP projects is facilitated by an information integration framework that leverages data and knowledge warehouses to enhance decision-making in financing and ongoing operations. This framework offers valuable insights for global URT project management (Huang et al., 2022). Similarly, in the context of high-speed railway (HSR) projects involving private sector participation, an SD simulation model was constructed to understand the complex interactions between stakeholders' decisions and passenger usage. These findings underscore the importance of coordinated efforts between public and private stakeholders to effectively manage HSR projects, emphasizing the need for strategic pricing, service availability modifications, and promotional activities throughout different operational stages (Bugalia et al., 2023). Furthermore, the broader implications of infrastructure projects, including railways, human rights, and sustainable development, are examined in Myanmar. While PPPs are encouraged to support infrastructure development, challenges remain in addressing human rights abuses and ensuring accountability. This underscores the necessity of clear roles and accountability systems to mitigate adverse effects and uphold human rights standards in infrastructure investments(Palmer, 2021). These studies collectively emphasize the significance of proactive risk-management strategies, stakeholder collaboration, and policy frameworks in addressing conflicts and promoting sustainable outcomes in railway projects under PPP arrangements.

4. CONCLUSIONS

PPPs in railway projects have demonstrated significant achievements in terms of efficiency and cost reduction. However, there is a scarcity of empirical evidence to support their superior performance compared to regular contracts. This research examined the crucial significance of PPPs in the railway industry, emphasizing their capacity to update infrastructure, improve service quality, and optimize resource allocation. The data highlight the significant and positive effect of PPPs in tackling the financial, operational, and technical difficulties encountered by the railway sector. PPPs harness the distinct advantages of both public and private sectors to enable the injection of private investment and innovation while maintaining public supervision and responsibility. This collaboration not only speeds up the completion of projects and lowers expenses but also guarantees the use of cutting-edge technology and efficient management methods, thereby improving the overall quality and effectiveness of railway services.

The effective execution of PPPs in different international settings, such as the Hyderabad Metro Rail project in India and Chengdu Rail Transit Line 17 in China, showcases the substantial advantages of these cooperative agreements. These projects exemplify the efficacy of engaging stakeholders, obtaining solid financing, implementing transparent bidding procedures, and using rigorous risk-management techniques. These practices result in significant reductions in time and cost, enhanced service delivery, and increased passenger satisfaction. Nevertheless, PPPs in railway projects encounter intricate issues and obstacles, underscoring the significance of tailored governance systems and legal adjustments for their success and societal advantages, including disagreements among partners, budgetary limits, and project completion delays. To address these difficulties, it is necessary to implement efficient risk management strategies, consistent performance tracking, and flexible governance structures.

Additionally, this research emphasizes the need for well-defined legal and regulatory frameworks, strong contract management, and transparent governance structures to ensure the successful implementation of PPP projects. These factors are essential for reducing risk, preventing project delays and cost overruns, and preserving public trust and support. Next, this study analyzed the assessment and effectiveness of railway infrastructure in many nations, emphasizing the need for innovative approaches and strategies to improve decision-making, productivity, and environmental friendliness. These involve integrating risk factors and managerial adaptability into investment evaluations, investigating the consequences of insufficient management and the possible advantages of PPPs, and employing project portfolio management models to align projects with strategic goals. Additionally, efforts such as the implementation of exclusive lanes for transporting goods, improvements in technology, and the use of flexible pricing strategies have yielded favorable results in boosting the volume of freight transportation and enhancing consumer contentment. Furthermore, the introduction of evaluation models that consider both economic and environmental consequences can appeal to private investors and contribute significantly to reducing costs and CO_2 emissions.

In conclusion, effective conflict resolution and risk management in railway projects, especially in the context of PPPs, necessitate strategic research, inventive methodologies, and proactive risk-management techniques. Effective stakeholder participation, well-informed policy decisions, and strong decision-making frameworks are essential to resolving conflicts and achieving sustainable outcomes in PPP railway projects. The use of PPPs in the railway industry offers a promising approach for achieving sustainable development objectives. PPPs provide a practical answer to the urgent infrastructure requirements of the contemporary world by promoting economic development, improving public well-being, and guaranteeing the provision of efficient, ecologically sustainable transportation choices. The findings obtained from this research provide useful directions for governments, private investors, and stakeholders in developing prosperous and enduring PPPs in the railway sector.

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AUTHORS CONTRIBUTION

Mohamed Faiz Ramli (Lead author, conceptualisation, main drafting, coordination of manuscript preparation, final approval of the paper)

Hanini Ilyana Che Hashim (Methodological guidance, structural review)

Zafara Farhana Zakaria (Proofreading and preparation of supporting materials)

Mohd Khairul Afzan Mohd Lazi (Validation of review of study and critical content review)

Zulaffendi Jamalludin (Technical formatting, double proofreading and citation consistency)

Nurul Aien Abd Aziz (Language editing, refinement of writing style and final formatting check)

Sari Dewi (Expert input on thematic development and validation of review content)

AVAILABILITY OF DATA AND MATERIALS

The data supporting this study's findings are available on request from the corresponding author.

ETHICAL STATEMENT

Not applicable.

CONFLICT OF INTEREST

The author certifies that there were no conflicts of interest during the research writing process. All contributors provided excellent cooperation, and this study was not linked to any grants, being carried out with unanimous agreement.

REFERENCES

Alcaraz Carrillo de Albornoz, V., Molina Millán, J., Lara Galera, A. L., & Muñoz-Medina, B. (2022). A dysfunctional legal framework for failed public–private partnership projects: Accounting or economics? *Social Sciences*, *11*(12), 554.

Berisha, A., Kruja, A., & Hysa, E. (2022). Perspective of critical factors toward successful public–private partnerships for emerging economies. *Administrative Sciences*, *12*(4), 160.

Branco, J. E. H., Bartholomeu, D. B., Junior, P. N. A., & Caixeta Filho, J. V. (2022). Evaluation of the economic and environmental impacts from the addition of new railways to the Brazilian's transportation network: An application of a network equilibrium model. *Transport Policy*, *124*, 61-69.

Bugalia, N., Maemura, Y., Dasari, R., & Patidar, M. (2023). A system dynamics model for effective management strategies of High-Speed Railway (HSR) projects involving private sector participation. *Transportation Research Part A: Policy and Practice*, *175*, 103779.

Cui, C., Han, X., Zhou, Q., Xu, M., Xia, B., Skitmore, M., & Liu, Y. (2022). Impact of passengers' perceptions of social responsibility activities on the efficacy of PPP urban rail transit projects. *Cities*, *130*, 103987.

Gartner, I. R. (2022). Binomial real options model with dynamic programming applied to the evaluation of railway infrastructure projects in Brazil. *Pesquisa Operacional*, *42*, e260438.

Glaister, S. (2023). Lessons from London Underground Public Private Partnership and UK High-speed Rail. *Journal of Transport Economics and Policy (JTEP)*, *57*(4), 379-401.

Medrano, M. G., & Martín, T. G. (2021). Critical Success Factors Identified in High-Speed Railway Infrastructure: Public-Private Partnerships in Portugal and the Netherlands. *Revista Portuguesa de Estudos Regionais*, (59), 61-78.

Haqq, A. M., & Gultom, Y. M. (2022). The challenge of implementing public-private partnerships: a transaction costs perspective on waste to energy projects in Indonesia. *Journal of Financial Management of Property and Construction*, *27*(3), 365-386.

Huang, Y., Ato, W. X., & Li, C. (2022). Information integration framework for a public–private partnership system of an urban railway transit project (Part A: System architecture). *Journal of Industrial Information Integration*, *25*, 100244.

Huang, Y., Xu, W., & Li, C. (2022). Information integration framework for a public–private partnership system of an urban railway transit project (Part B: An empirical application). *Journal of Industrial Information Integration*, *25*, 100245.

Kong, Y., & Nelson, S. E. (2020). Impact of effective information technology governance on audit technology performance in Ghana. *Research Journal of Finance and Accounting*, *11*(24), 39-46.

Jupe, R., & Funnell, W. (2017). 'A highly successful model'? The rail franchising business in Britain. *Business History*, *59*(6), 844-876.

Khahro, S. H., Ali, T. H., Hassan, S., Zainun, N. Y., Javed, Y., & Memon, S. A. (2021). Risk severity matrix for sustainable public-private partnership projects in developing countries. *Sustainability*, *13*(6), 3292.

Khallaf, R., Naderpajouh, N., & Hastak, M. (2021). Robust decision-making for multiparty renegotiations in public–private partnerships. *Journal of Legal Affairs and Dispute Resolution in Engineering and Construction*, *13*(3), 05021004.

Khan, M., & Khan, S. (2024). Proactively effecting community engagement in PPP projects: Lessons from the Tama Plaza redevelopment project, Yokohama. *Sustainability*, *16*(1), 180.

Killada, M., & Gottumukkala, R. V. (2021, April). Hyderabad Metro Rail in India: A new record for public–private partnerships. In *Proceedings of the Institution of Civil Engineers-Civil Engineering* (Vol. 174, No. 6, pp. 25-30). Thomas Telford Ltd.

Ković, R., & Milenković, M. (2022). A two-step approach for selection of railway modernization projects based on analytic hierarchy process. *Transport*, *37*(4), 264-278.

Lee, J., Kim, K., & Oh, J. (2022). Build-Transfer-Operate with risk sharing approach for railway public-private-partnership project in Korea. *Asian Transport Studies*, *8*, 100061.

Li, X., & Love, P. E. (2022). Procuring urban rail transit infrastructure by integrating land value capture and public-private partnerships: Learning from the cities of Delhi and Hong Kong. *Cities*, *122*, 103545.

Liu, B., & Sun, F. H. (2020). Research on the risk assessment method of PPP project based on the improved matter element model. *Scientia Iranica*, *27*(2), 614-624.

Mazher, K. M., Chan, A. P., Choudhry, R. M., Zahoor, H., Edwards, D. J., Ghaithan, A. M., ... & Aziz, M. (2022). Identifying measures of effective risk management for public–private partnership infrastructure projects in developing countries. *Sustainability*, *14*(21), 14149.

Morais, P., Matos, J., Bessa Vilela, Noémia, & Oplotnik, Z. J. (2022). Transparency and risk allocation in PPP: Addressing complex contracts' mathematical formulas in the Portuguese case. *Lex Localis: Journal of Local Self-Government*, *20*(2), 435-453.

Ogochukwu, C. G., Ogochukwu, O. F., Ogorchukwu, I. M., & Ebuka, I. A. (2022). Assessment of the performance of railway transportation in Nigeria from 1970 to 2010. *Scientific African*, *15*, e01120.

Oyieyo, P. A. (2020). Emerging challenges in the completion of construction projects through public private partnerships: empirical literature review. *Journal of Building Construction and Planning Research*, *8*(04), 263.

Palmer, E. (2021). Regulating infrastructure: Human rights and the sustainable development goals in Myanmar. *Human Rights Law Review*, *21*(3), 588-619.

Rutkowski, C. J., Eboch, K., Carr, A., & Greer, B. M. (2022). Strategic procurement collaboration for the common good: private and public procurement relationship duringa pandemic. *Journal of Public Procurement*, *22*(1), 43-63.

Shakibaei, S., & Alpkokin, P. (2020). Conflict resolution in competitive liberalized railway market: Application of game theoretic concepts. *International Game Theory Review*, *22*(01), 1950013.

Sharma, S., & Jayachandran, A. A. (2011). Scaling-up proven public private partnership models to achieve family planning equity goals in India. *2011 International Conference on Family Planning*.

Sharma, S., Kandpal, V., & Gonzalez, E. D. S. (2024). A comprehensive review of Indian railway freight business: Strategies for regaining the lost ground and future prospects. *Case Studies on Transport Policy*, *16*, 101195.

Shuliuk, B., & Horyn, V. (2022). Banking project financing of public-private partnership and its role in ensuring public welfare. *Financial and Credit Activity Problems of Theory and Practice*, *2*(43), 17-23.

Sinha, A. K., & Jha, K. N. (2020). Dispute resolution and litigation in PPP road projects: Evidence from select cases. *Journal of Legal Affairs and Dispute Resolution in Engineering and Construction*, *12*(1), 05019007.

Suripatty, G. (2019). Standar prosedur pelaksanaan rekrutmen dan seleksi aparatur sipil negara. *Jurnal Sosio Sains*, *5*(2), 79-90.

Van Wieringen, K., & Zajontz, T. (2023). From loan-financed to privatised infrastructure? Tracing China's turn towards public–private partnerships in Africa. *Journal of Current Chinese Affairs*, *52*(3), 434-463.

Verweij, S., & van Meerkerk, I. (2021). Do public–private partnerships achieve better time and cost performance than regular contracts? *Public Money & Management*, *41*(4), 286-295.

Winata, L. E., & Gultom, Y. M. (2024). The effects of governance on performance: The case of Public–Private Partnership (PPP) toll roads in Indonesia. *International Journal of Construction Management*, *24*(13), 1398-1406.

Xiahou, X., Tang, L., Yuan, J., Zuo, J., & Li, Q. (2022). Exploring social impacts of urban rail transit PPP projects: Towards dynamic social change from the stakeholder perspective. *Environmental Impact Assessment Review*, *93*, 106700.

Yang, X., & Tan, K. (2020). Tripartite risk game analysis on public private partnership projects of high-speed rail from the perspective of bank. *International Journal of Safety and Security Engineering*, *10*, 617-623.