

Navigating the landscape of public–private partnership research: a novel review using latent Dirichlet allocation

International
Journal of Public
Sector
Management

Abderahman Rejeb

Department of Management and Law, University of Rome Tor Vergata, Rome, Italy

Karim Rejeb

Faculty of Sciences of Bizerte, University of Carthage, Bizerte, Tunisia

Andrea Appolloni

Department of Management and Law, University of Rome Tor Vergata, Rome, Italy

Suhaiza Zailani

University of Malaya, Kuala Lumpur, Malaysia, and

Mohammad Iranmanesh

La Trobe Business School, La Trobe University, Melbourne, Australia

Received 5 September 2023

Revised 30 November 2023

31 January 2024

Accepted 3 February 2024

Abstract

Purpose – Given the growing significance of contemporary socio-economic and infrastructural conversations of Public-Private Partnerships (PPP), this research seeks to provide a general overview of the academic landscape concerning PPP.

Design/methodology/approach – To offer a nuanced perspective, the study adopts the Latent Dirichlet Allocation (LDA) methodology to meticulously analyse 3,057 journal articles, mapping out the thematic contours within the PPP domain.

Findings – The analysis highlights PPP's pivotal role in harmonising public policy goals with private sector agility, notably in areas like disaster-ready sustainable infrastructure and addressing rapid urbanisation challenges. The emphasis within the literature on financial, risk, and performance aspects accentuates the complexities inherent in financing PPP and the critical need for practical evaluation tools. An emerging focus on healthcare within PPP indicates potential for more insightful research, especially amid ongoing global health crises.

Originality/value – This study pioneers the application of LDA for an all-encompassing examination of PPP-related academic works, presenting unique theoretical and practical insights into the diverse facets of PPP.

Keywords Public-private partnership, Sustainability, Healthcare, Urbanisation, Latent Dirichlet allocation

Paper type Original article

1. Introduction

Recently, public-private partnerships (PPP) have emerged as instrumental catalysts in sculpting modern societies, propelling economic advancement (Ahmadabadi and Heravi, 2019; Hodge and Greve, 2007), driving innovation processes (Hoppe and Schmitz, 2013; Shahbaz *et al.*, 2020), and reinforcing social welfare systems (Boardman and Vining, 2012;

© Abderahman Rejeb, Karim Rejeb, Andrea Appolloni, Suhaiza Zailani and Mohammad Iranmanesh. Published by Emerald Publishing Limited. This article is published under the Creative Commons Attribution (CC BY 4.0) licence. Anyone may reproduce, distribute, translate and create derivative works of this article (for both commercial and non-commercial purposes), subject to full attribution to the original publication and authors. The full terms of this licence may be seen at <http://creativecommons.org/licenses/by/4.0/legalcode>



International Journal of Public
Sector Management
Emerald Publishing Limited
0951-3558
DOI 10.1108/IJPSM-09-2023-0263

Busom and Fernández-Ribas, 2008). The realm of PPP projects has recently seen an escalating interest among researchers, resulting in a significant volume of academic literature including various review papers (Liu *et al.*, 2014). For example, they delve into performance metrics within PPP, contending that traditional post-project assessments fall short of adequately gauging the efficacy of PPP projects. They advocate for a paradigm shift towards an evaluation grounded in procedural dynamics. In one distinct study, Ma *et al.* (2019) offer a holistic exploration of cutting-edge research on PPP. Their approach, which intertwines scientometric analysis with a systematic review, delves into predominant challenges and points toward prospective research avenues in PPP. They underscore an observed deficiency in structured methodologies to encapsulate research themes and broach novel trajectories, pointing out an imminent need for enhanced exploration of innovation, sustainability, and challenges inherent to PPP deployments.

From a more regional perspective, Pu *et al.* (2021) engage in rigorous bibliometric scrutiny and meta-analytic investigation of PPP-focused scholarly pieces from China. Their analysis suggests a pronounced inclination towards micro-level examinations, with ancillary emphasis on issues linked to the procurement phase. On the other hand, Ullah *et al.* (2016) embark on a journey to dissect key determinants that steer the decision-making trajectory within PPP concessions. Their research showcases China and the USA as leading contributors to PPP-centric academic research. An intriguing element of their work is synthesising a decision-making blueprint derived from 63 discerned factors influencing PPP concessions; notably, a minor segment (8%) of these factors holds paramount significance, while a fifth (21%) carries nuanced importance in decision-oriented contexts. Navigating the intersection of PPP and infrastructure resilience, Ampratwum *et al.* (2022) elucidate the applicability of PPP in fortifying critical infrastructure resilience (CIR). Their study underscores the primary objectives underpinning PPP within the CIR framework— from crafting resilience blueprints and executing risk assessments to demarcating critical infrastructure. Concurrently, the authors spotlight the pivotal role of synergistic endeavours between state apparatuses and private infrastructure agencies in augmenting the robustness of essential infrastructure.

While previous systematic literature reviews and bibliometric analyses have significantly advanced our comprehension of the PPP arena, their inherent limitations must be addressed. These traditional forms of synthesis tend to impose a linear progression on complex subjects, potentially glossing over the multifaceted structure of the PPP field. This oversimplification risks omitting subtle yet critical insights and emerging trends vital for a holistic understanding (Polonioli, 2020; Rejeb *et al.*, 2021). Similarly, while bibliometric analyses offer valuable insights into scholarly impact and trends, they may not fully capture individual studies' nuanced context and depth (Lewis *et al.*, 2018). These methods, albeit rigorous, struggle to keep pace with the swiftly evolving and inherently multidisciplinary nature of PPP.

In response to the limitations of traditional analyses in capturing the complexities of PPP research, this study adopts a mixed-method approach combining Latent Dirichlet Allocation (LDA) and bibliometrics. LDA stands out as a sophisticated analytical tool that complements and extends the capabilities of systematic reviews and bibliometric analyses (Rejeb *et al.*, 2023c). It allows for a more dynamic, granular, and contextually-nuanced investigation of PPP. This method leverages probabilistic modelling to identify latent topics within large text corpora, providing a broad thematic mapping that reveals underlying patterns and trends that are not immediately apparent through traditional methods (Moro *et al.*, 2015). The application of LDA in PPP research is particularly beneficial, given the field's interdisciplinary and dynamic nature. It distills complex information into discernible themes and facilitates a more strategic understanding of the sector's evolution, challenges, and future directions.

Moreover, incorporating bibliometric analysis enriches this approach by offering a quantitative backdrop. Together, LDA and bibliometric analysis create a synergistic effect, where LDA's qualitative thematic exploration is grounded by the quantitative rigour of bibliometrics. This allows for a holistic view of the PPP field, integrating statistical trends and thematic patterns. By using LDA, this study highlights prevalent topics within PPP literature and unveils emerging areas that warrant further exploration. Thus, it contributes substantially to the theoretical and practical discourse in PPP. The fusion of LDA with bibliometric insights enables a multifaceted exploration of the PPP domain and aligns with the research objectives to map the knowledge field comprehensively, ensuring a balanced and thorough examination of both qualitative and quantitative dimensions.

In terms of contributions, the current study is multifaceted. First, it enriches the PPP field by applying a novel and text-based analysis to a vast corpus of PPP literature, providing unprecedented insights into thematic trends. Second, it identifies knowledge gaps and offers a clear direction for future research. Third, our work advances methodological approaches within PPP scholarship by demonstrating LDA's utility in extracting and interpreting complex data. Lastly, the study contributes to policy and practice by highlighting underexplored areas where PPP can integrate with current economic and social priorities, suggesting pathways for impactful future developments.

2. Methodology

2.1 Selection of publications

In this study, we adopted text-mining techniques to glean insights specifically from the abstracts of selected publications, with a concentrated focus on the dynamics of PPP. Mirroring the methodology adopted in prior LDA-based research (Rejeb *et al.*, 2023a), our analysis zeroed in on abstract-level content to understand the multi-dimensional nature of PPP. To assemble relevant articles, we sought data from the esteemed Scopus database, renowned for its exhaustive inclusion of scholarly articles (Rejeb *et al.*, 2023b). On 19th May, 2023, we instigated our search in Scopus with the specific query: TITLE-ABS-KEY ("public-private partner*" OR "public-private partner*" OR "private-public partner*" OR "private-public partner*" OR "public and private partner*" OR "private and public partner*") AND (LIMIT-TO (SRCTYPE, "j")) AND (LIMIT-TO (DOCTYPE, "ar") OR LIMIT-TO (DOCTYPE, "re")) AND (LIMIT-TO (LANGUAGE, "English")). A preliminary search focusing on the topic of PPP was conducted in the Web of Science and Scopus databases. This search revealed a notable difference in the volume of relevant publications between the two databases. In the Web of Science, the search yielded 6,843 document results related to PPP. In comparison, Scopus provided a more extensive collection of literature on the subject with a total of 13,147 document results. Given the superior coverage and alignment with LDA-based review studies (Madzík and Falát, 2022; Rejeb *et al.*, 2023a), Scopus was deemed the most appropriate database for this research.

To uphold the scholarly rigour of our study, we anchored our exploration exclusively around English language articles, aligning with established research practices (Fahimnia *et al.*, 2015). This decision ensured the extraction of high-quality and peer-reviewed content and provided a focused overview of the prevailing research panorama. Zeroing in on journal articles underscored our commitment to understanding the PPP landscape with a meticulous lens, offering a detailed view of the current state of knowledge and spotlighting existing research gaps. Following the preliminary data evaluation and removal of irrelevant content, two authors independently examined the abstracts to ensure objectivity. This collaborative vetting resulted in 3,057 articles most relevant to our research theme. Articles from 1985 to May 2023 were then compiled for an in-depth review. For an illustrative guide to our article selection process, please see the PRISMA diagram in Figure 1.

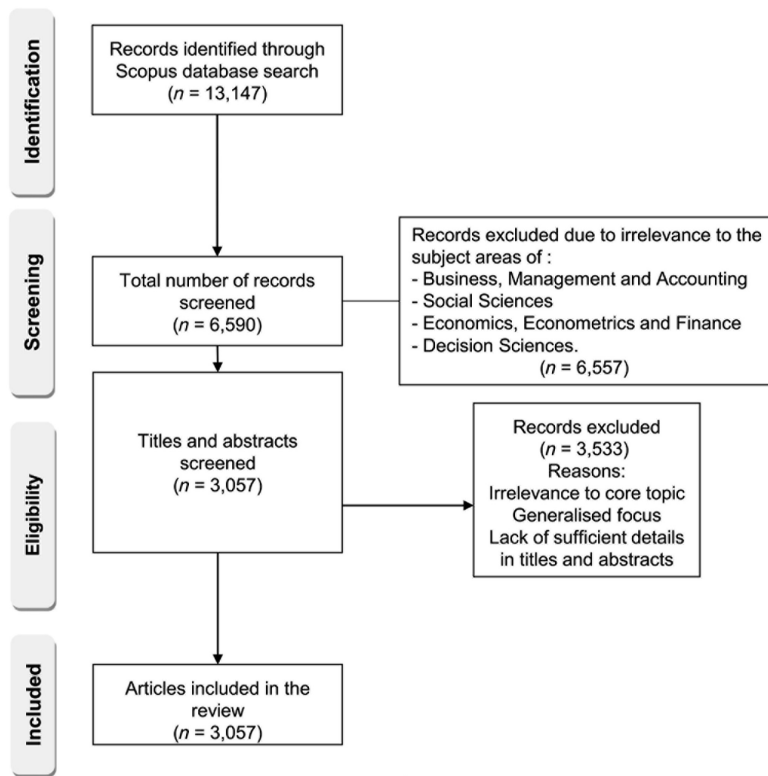


Figure 1. PRISMA Flowchart depicting the systematic screening and selection methodology for research articles on PPP

To further analyse the extensive document corpus, we employed topic modelling, which is a fundamental tool in text mining and language processing. It plays a significant role in uncovering hidden semantic structures within these large document collections (Chen *et al.*, 2022). This technique independently identifies and categorises underlying themes, which is crucial for researchers attempting to derive insights from large textual datasets. Such a capability becomes increasingly important in managing the vast amount of information prevalent in the current digital era (Williamson *et al.*, 2021). At its core, topic modelling employs unsupervised machine learning and probabilistic methods to elicit abstract themes from text collections. These algorithms deduce concealed subjects and cluster documents with similar content by evaluating word frequencies and their joint appearances. The versatility of this technique is evident in its application across various domains, including Industry 4.0, global trade, and societal conversations during health crises, serving as functions from gauging public sentiment to spotting nascent trends (Janmajaya *et al.*, 2021; Kozlowski *et al.*, 2021; Xue *et al.*, 2020).

For our analysis, we have selected LDA as the preferred method for topic modelling. LDA is conceptualised as a generative model predicated on the notion that documents are compositions of topic probabilities, with each topic being a cluster of words (Blei, 2012). The model posits that documents are a concoction of multiple topics and strives to identify these topics through patterns and co-occurrences of words (Li *et al.*, 2016). This method facilitates an organised and thorough review of extensive scholarly works and provides a sound methodological foundation for detecting topics in the PPP field (Guo *et al.*, 2017; Rejeb *et al.*, 2023c).

2.2 Pre-LDA textual data refinement

In our methodology section, we have clarified the use of LDA for our analysis. We conducted a comprehensive data cleansing phase, initially removing newline characters, URLs, punctuation, and non-relevant symbols from the text corpus. We refined the dataset using Python's Gensim library by stripping out parts of the text that could cloud our thematic analysis such as verbs, adverbs, adjectives, and common stop words. Additionally, we tailored Gensim's stop word list to exclude terms not pertinent to our PPP-focused inquiry, ensuring a high degree of relevancy. Finally, Gensim facilitated the breakdown of our text into individual words by assigning unique identifiers to each and preparing our corpus for the subsequent LDA analysis.

2.3 Constructing the LDA model and determining the optimal topic count

The foundation of a robust vocabulary is a decisive phase in constructing the LDA model and extracting themes from the textual content focusing on the PPP field. We swiftly achieved a vectorised representation of words using the "id2word" function from Gensim. Subsequently, the Mallet toolkit's proficiency in document classification and topic modelling was employed to construct the LDA model. The modelling required careful parameter calibration; thus, Mallet ran multiple simulations with varying topic counts (McCallum, 2002). The inherent strength of Mallet in data examination and insight extraction is indispensable. This modelling stage required various parameter adjustments. Hence, we employed Mallet to run several LDA simulations, each featuring a distinct topic count. To identify the most suitable topic count, we employed the coherence score, a metric that assesses topic congruity by examining the associations between its comprising words.

Figure 2 showcases the coherence scores generated through this unsupervised approach. Using coherence as a guiding metric, the most optimal LDA model would be one that consistently registers the highest score as it denotes enhanced semantic clarity within its topics. The results highlighted that when the model incorporated six topics, the coherence score peaked at 0.4118. Expanding beyond six topics would not provide further meaningful thematic clarity. Based on these coherence metrics derived during the LDA simulation, we

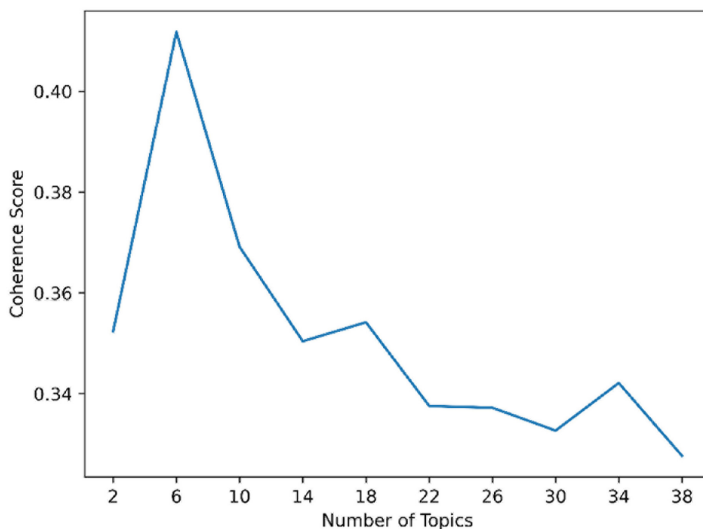


Figure 2.
Coherence scores plot

deduced that the model with six topics was the most fitting choice for our analysis. Table 1 enumerates the coherence scores for the various topic counts we evaluated.

2.4 Topic discovery process

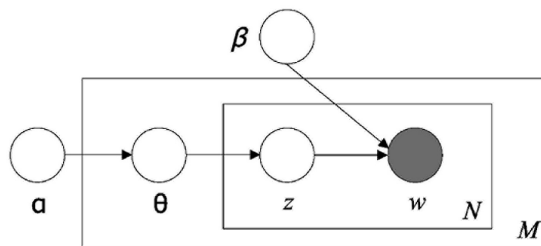
In the visual display presented in Figure 3, the rectangles function as iterative markers. Here, “M” stands for the documents, while “N” captures the frequency of topics within those documents. The observable words, denoted by “w”, are rooted in the topic distribution, symbolised by “z”. Within this framework, “β” highlights the word distribution amongst the topics, “θ” describes the distribution of topics over documents, and “α” conveys the word distribution within specific topics. We used the LDA algorithm to determine how often the six topics appeared in the selected academic papers. We leveraged the semantic coherence metric to measure the prevalence of terms associated with each topic within the article abstracts. Two scholars, operating independently, followed a process dictated by the semantic coherence scores to compile a list of articles corresponding to every topic. The LDA analysis was conducted on all abstracts, harnessing multiple Python libraries. We utilised PyLDAvis to gauge the mean separation between topics and identify our collection’s top ten pivotal terms. Moreover, the Matplotlib tool was summoned to visually present our research outcomes, amplifying the findings’ interpretability and lucidity.

2.5 Bibliometric analysis

Using the “Bibliometrics” R package, the bibliometric analysis aimed to extract descriptive statistics that inform the evolution of PPP research and spotlight the most productive

Table 1. Coherence scores value

Number of topics	Coherence score
2	0.3524
6	0.4118
10	0.3692
14	0.3504
18	0.3542
22	0.3376
26	0.3372
30	0.3327
34	0.3421
38	0.3277



$$p(\theta, z, w | \alpha, \beta) = p(\theta | \alpha) \prod_{n=1}^N p(z_n | \theta) p(w_n | z_n, \beta)$$

Source(s): Blei et al. (2003)

Figure 3. LDA model representation

journals in the field. This analysis facilitated a deeper understanding of research trends and author collaboration within the PPP academic landscape (Caputo *et al.*, 2021).

3. Findings

Publications in the PPP domain demonstrate longevity and impact with an average lifespan of 8.28 years and a notable citation count per document. As a result, this illustrates an ongoing interest in PPP research. The trend towards collaboration is significant, as evidenced by the high number of multi-author documents, reflecting the interdisciplinary demands of PPP studies. This collective approach suggests that PPP complexities benefit from diverse scholarly input. For detailed data, see the [Appendix](#).

The scholarly trajectory of PPP has been substantial and enlightening, punctuated by discernible shifts in academic focus over the years. Examining the data from 1985 to 19 May 2023 (as depicted in [Figure 4](#)), one can delineate three distinct epochs of academic exploration. From 1985 to 1995, there was a palpable reluctance in academic contributions to PPP. This era witnessed sporadic publications, emblematic of a field in its embryonic stage. The ensuing decade, 1996 to 2005, ushered in a discerning academic community, progressively attentive to the complexities and potentialities of PPP. Publications were consistently more numerous, indicating the gradual cementation of PPP as a salient topic of investigation. 2006 to 2015 heralded a conspicuous intensification in scholarly output. This surge can be contextualised as a response to global shifts towards hybrid governance and cooperative infrastructural frameworks. As the world transitioned into the subsequent decade, the vitality of research into PPP reached unprecedented heights. 2022, in particular, culminated with a notable 277 research outputs.

[Figure 5](#) underscores the dominion of key specialised journals within the sphere of PPP research. The Journal of Construction Engineering and Management, an esteemed publication in the construction domain, emerges at the forefront, indicating a nexus between PPP and infrastructural development. Concurrently, the International Journal of Project Management's significant contribution underscores the project-oriented nature of PPP initiatives. The prominence of Engineering, Construction, and Architectural Management and the Journal of Management in Engineering corroborates the symbiosis of engineering and management disciplines in the PPP context. Furthermore, this compilation's eminence of Built Environment Projects and Asset Management accentuates the importance of asset management and lifecycle considerations within PPP projects.

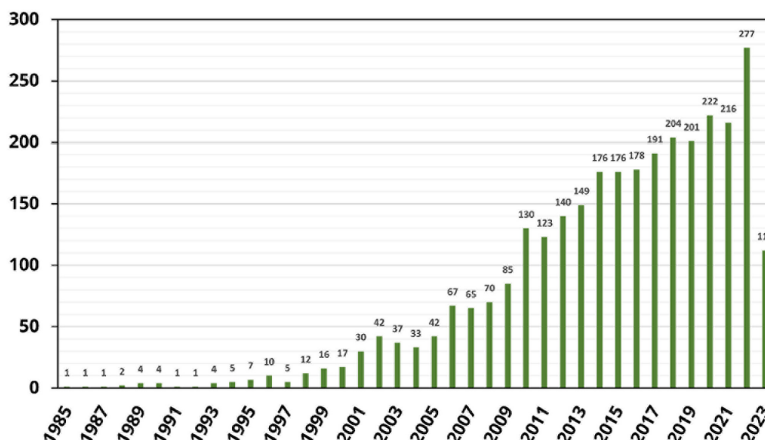


Figure 4.
Articles published per
year (up to 19
May 2023)

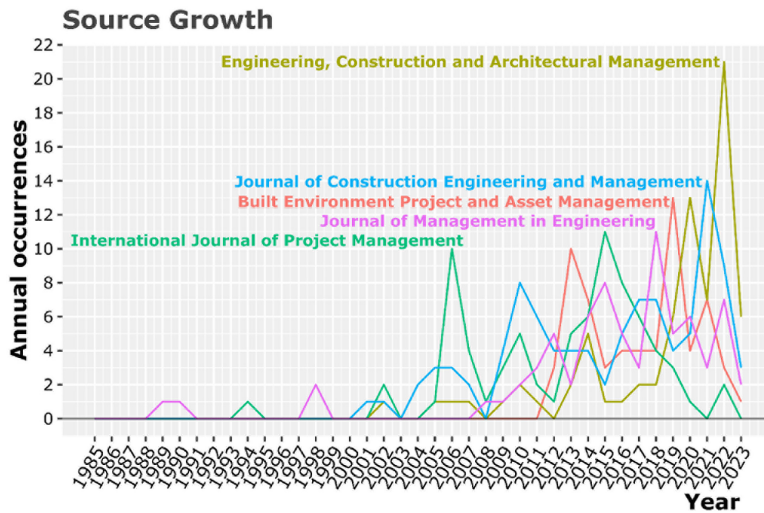


Figure 5.
Most productive journals in the PPP field

The primary objective of this research is to construct and analyse an LDA model focusing on the intricacies and dynamics of PPP. The research team utilised ten keywords and their associated weights to examine the six topics proposed by the model. Inductive analysis was employed to identify themes connected to these keywords. This analysis revealed six key topics, offering a general overview of the current trends and areas of focus within the realm of PPP research. The most debated themes within the PPP literature were Topic 6: Risk and performance metrics in PPP projects and Topic 4: Financial and risk aspects of PPP infrastructure.

Topic 6 delves into the methods and metrics used to assess risk and performance in PPP projects, signifying the significance of establishing effective measures to gauge success in these initiatives (Saad *et al.*, 2021; Tallaki and Bracci, 2021). Topic 4 emphasises the fiscal and risk-related considerations associated with the infrastructure developed through PPP (Anderson *et al.*, 2006; Xu *et al.*, 2023). The recurrent discussion of these topics emphasises the importance of developing innovative solutions that ensure financial sustainability and effective risk management in PPP projects.

Using PyLDAvis, a Python package, the significance of the weights of the chosen topics regarding PPP within the LDA model can be discerned (Sievert and Shirley, 2014). Each identified topic is represented as a coloured circle on a 2D map (Figure 5) generated by PyLDAvis. Topic 6 has the most extensive circle size, showcasing its dominant role in the current research panorama. Moreover, the intertropical distance map illustrates overlaps between Topic 4 and Topic 6 and between Topic 3: PPP impacts in urban development and service delivery and Topic 1: PPP dynamics in socio-economic innovation. These overlaps indicate robust interconnections between these themes in the literature, mainly because they all delve into the intricacies of PPP from various perspectives.

Despite the overlaps, Figure 6 displays distinctness in the diameters of the various circles and a considerable variation in PPP-related topics. This infers a myriad of subfields within the domain of PPP, each undergoing distinct scrutiny. This diversity, combined with the observed overlaps, can herald unexplored avenues for interdisciplinary research. Thus, scholars could traverse the intersections between these topics to unearth new insights and augment a holistic understanding of PPP implementations across various sectors.

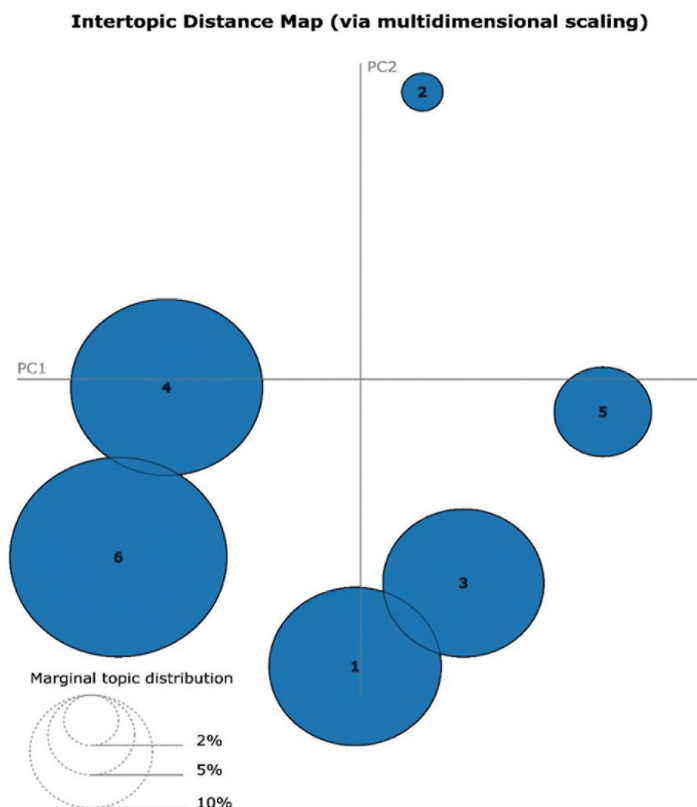


Figure 6.
Intertopic
distance map

4. Topics analysis

A systematic process guided the selection of references for each topic identified by the LDA model. Initially, the LDA model algorithmically identified documents highly relevant to the keywords associated with each topic. This was achieved by analysing the frequency and distribution of keywords within the corpus (see [Table 2](#)). A thorough review of the identified documents was conducted to complement this data-driven process to ensure their contextual relevance to the respective topics. This combined approach, which leveraged both the quantitative capabilities of the LDA model and qualitative assessment, provided a robust foundation for the subsequent analysis of the identified topics ([Table 2](#)).

4.1 PPP dynamics in socio-economic innovation

Topic 1, labelled PPP dynamics in socio-economic innovation, predominantly emphasises the interplay of development, governance, and collaboration and suggests an integrated approach where public, private, and social sectors converge their efforts for broader societal benefits. For example, [Andonova and Piselli \(2022\)](#) and [von Malmborg \(2007\)](#) offer insights into the role of institutions in sustainable development. Specifically, the Amazon Region Protected Areas (ARPA) exemplifies how domestic institutions can navigate the intersection of sustainable and socio-economic goals. Concurrently, local authorities are positioned as key agents in propelling incremental, sustainable innovations, emphasising the role of grassroots initiatives in actualising global sustainability targets.

Topic	Keywords	Trends
1	0.011*“development” + 0.009*“innovation” + 0.008*“policy” + 0.007*“organisation” + 0.007*“public” + 0.007*“business” + 0.006*“governance” + 0.006*“institutional” + 0.006*“partnership” + 0.006*“new”	PPP dynamics in socio-economic innovation
2	0.018*“insurance” + 0.012*“disaster” + 0.011*“flood” + 0.005*“group” + 0.004*“sharing” + 0.004*“credit default swap” + 0.004*“air” + 0.004*“insurer” + 0.004*“national air traffic service” + 0.003*“work”	PPP in disaster-ready sustainable infrastructure
3	0.022*“public” + 0.010*“urban” + 0.010*“partnership” + 0.009*“private” + 0.009*“government” + 0.008*“local” + 0.008*“policy” + 0.007*“ppp” + 0.007*“sector” + 0.007*“service”	PPP impacts in urban development and service delivery
4	0.021*“private” + 0.019*“ppp” + 0.017*“public” + 0.015*“government” + 0.012*“cost” + 0.010*“investment” + 0.010*“model” + 0.010*“sector” + 0.009*“infrastructure” + 0.009*“project”	Financial and risk aspects of PPP infrastructure
5	0.025*“health” + 0.015*“healthcare” + 0.010*“city” + 0.009*“hospital” + 0.009*“system” + 0.008*“development” + 0.007*“care” + 0.007*“public” + 0.007*“policy” + 0.006*“service”	Healthcare in the PPP context
6	0.054*“ppp” + 0.038*“project” + 0.019*“risk” + 0.010*“factor” + 0.010*“public” + 0.010*“sector” + 0.008*“management” + 0.008*“private” + 0.008*“analysis” + 0.007*“infrastructure”	Risk and performance metrics in PPP projects

Table 2.
LDA model results

The study of [Wilson *et al.* \(2009\)](#) and [Kolk *et al.* \(2008\)](#) investigate the nuances of collaboration within tourism and corporate sectors. The former illustrates a paradigm shift in managing protected areas and highlights the need for a more integrated partnership with tourism operators. The latter presents an empirical investigation into companies' collaborations with NGOs and governments and emphasises a business model that integrates profit-driven objectives with societal goals. [Bull and Miklian \(2019\)](#) examine the evolving role of businesses in the sphere of global development. Amidst the challenges posed by global capitalist structures, the authors identify various mechanisms, such as PPP and corporate social responsibility initiatives, as instrumental in aligning business operations with the United Nations Sustainable Development Goals. The emergence of new developmental actors from the Global South adds a layer of complexity to this dynamic. In this context, [Parra *et al.* \(2011\)](#) provide a comparative analysis of network structures in Brazil and Colombia, which aim to promote physical activity. Their study underscores the significance of network structure, which can be decentralised as seen in Brazil or centralised in the case of Colombia, in determining collaborative outcomes. Such structures impact the nature and efficiency of inter-organisational collaborations. Finally, [Hessevik \(2022\)](#) focuses on Norway's maritime sector initiatives, specifically its green shipping practices. Through organisations like Maritime CleanTech, Norway demonstrates how combining technical expertise, policy advocacy, and stakeholder engagement can collectively influence sustainability transitions in complex sectors.

While the research within PPP dynamics in socio-economic innovation has made strides, many unknowns remain. The intricacies of how different governance structures impact PPP efficiency and innovation, particularly in varying cultural and political contexts, require further exploration ([Essig and Batran, 2005](#); [Glas *et al.*, 2018](#)). Additionally, the role of grassroots initiatives in larger sustainability projects and how they can be effectively scaled and integrated with broader institutional frameworks still needs to be fully understood.

Future research could also examine the shifting landscape of global development and the implications of emerging actors from the Global South on traditional PPP models (Languille, 2017; Lund-Thomsen, 2009). There is a need to understand how these dynamics can be harmonised to meet global sustainability goals more effectively.

4.2 PPP in disaster-ready sustainable infrastructure

In the insurance domain, particularly concerning floods, significant attention emerges. Liesivaara and Myyrä (2017) discuss farmers' views on crop insurance, emphasising the balance between public relief and private insurance, cautioning against heavy taxpayer reliance through government-subsidised premiums. Kunreuther (2015) addresses the dilemmas in insuring against infrequent, high-impact events and advocates for risk-based premiums to promote disaster readiness. Meanwhile, Aerts and Botzen (2011) explore climate change's impact on flood insurance contracts, especially in the Netherlands. They raise issues about long-term contract feasibility and endorse a joint public-private strategy for robustness. Hudson *et al.* (2019) further, probe this strategy and predict a rise in risk-based flood insurance premiums in the EU by 2055 without risk reduction. This study champions risk mitigation via PPP methods and individual-level interventions. Luo *et al.* (2015) provide insights into flood policies in China and Japan, underscoring the need to adapt past policies for modern flood risks. Shifting the lens, Wang and Zhang (2018) utilise Bayesian analytics in PPP waste-to-energy projects and highlight the efficiency of a combined approach for risk prediction. Aguilar-Barajas *et al.* (2019) detail Monterrey's efforts in weather hazard resilience and underscore collaborative approaches post-disaster. Othman and Mahmoud (2022) emphasise the role of PPP in heritage conservation in Egypt and elucidate the potential and challenges of such collaborations. In synthesis, the studies collectively highlight the complexity of public-private collaborations in addressing and managing disaster risks, particularly those accentuated by climatic changes. The overarching narrative underscores the importance of evolving risk management strategies, policy interventions, and collaborative mechanisms to foster resilient societies in the face of growing uncertainties.

The current understanding of PPP in flood insurance and disaster risk management is evolving, yet gaps still need to be discovered. The effectiveness of risk-based premiums versus public relief, particularly in agriculture, needs further examination (Hudson *et al.*, 2016; Roder *et al.*, 2019). The feasibility of long-term insurance contracts amid climate change and the role of PPP in adapting policies to modern risks present unresolved questions (Buso and Stenger, 2018; Lee *et al.*, 2021). Integrating PPP in heritage conservation amid disaster risks is not fully explored (Liyana and Villalba-Romero, 2020). Future research should focus on these areas to enhance risk management strategies and develop robust and adaptive PPP frameworks for disaster resilience.

4.3 PPP impacts on urban development and service delivery

Topic 3, titled "PPP impacts in urban development and service delivery", delves into the transformative role of PPP in urban settings and policy-making. Central to this discourse is the significance of housing. Feather (2019) showcases Korea's successful policy-private sector collaboration model, effectively tackling housing shortages in emerging nations. Beyond mere housing structures, Fraser and Kick (2014) accentuate the intricacies of urban restructuring in the US and underline the trade-offs between economic growth and the preservation of neighbourhoods with gentrification looming large. Boyle (1993) traces Scotland's transition in the 1980s from dominant public-led initiatives to enhanced public-private-community collaborations and illustrates the fluid dynamics of urban partnerships.

Norris and Hearne's (2016) exploration of Dublin's public housing reveals the repercussions of enforcing PPP without substantial community representation. The pivotal role of local community involvement in urban redevelopment success is emphasised. Redmond and Russell (2008) critically assess urban regeneration strategies and caution against the impacts of redevelopment on established communities. Meanwhile, Coulson (2005) elucidates potential partnership challenges, particularly those stemming from imbalanced power relations. Moving eastward, Ozdemir (2011) narrates Turkey's evolution from a public-centric framework to a partnership-driven model, emphasising urban housing shifts. Blanco (2009) dissects the globally revered "Barcelona Model" and emphasises the specificity and adaptability of urban regeneration models. Mele (2013) intertwines urban redevelopment with racial discourses in the US, highlighting that urban strategies are deeply entrenched in larger socio-political narratives. Further emphasising PPP significance in modern urban agendas, Zhao (2015) focuses on Dali City, China, elaborating on the PPP's role in heritage conservation and city branding. Broadbent and Laughlin (1999) trace the UK's history of private finance in public sector advancement and underline the expanding influence of PPP across sectors.

Cumulatively, Topic 3 encapsulates the multifaceted impact of PPP in urban landscapes, bridging economic aspirations with social commitments. The implications of PPP in urban development are significant, yet the full spectrum of their impact remains partially uncharted. Research has highlighted housing and policy collaboration successes, but the nuanced effects on community dynamics, gentrification, and power distribution call for further study (Hodkinson, 2011; de Paula *et al.*, 2023). Additionally, the role of PPP in urban heritage conservation and the influence of socio-political narratives on urban redevelopment strategies present areas ripe for exploration (Abdou, 2023; Ferri and Zan, 2017). Future research must dissect these complexities to optimise PPP for urban enhancement while safeguarding social equity.

4.4 Financial and risk aspects of PPP infrastructure

Topic 4, "Financial and risk aspects of PPP infrastructure", dives into the complex realm of PPP within infrastructure development, honing in on the intertwined dimensions of finance and risk. Bonnafous (2010) explores the economic nuances of PPP and highlights the symbiotic relationship between toll revenues, subsidies, and the user surplus. The study emphasises the role of net present value (NPV) in determining the socio-economic efficacy of infrastructure investments. Concurrently, Wang and Wang (2022) highlight potential missteps in PPP and suggest the private sector could misappropriate resources. They introduce an optimal control model that underscores dynamic incentives, ensuring private sector alignment and dedication. Wu *et al.* (2018a) highlight the multifaceted bond between private investors and governmental entities and focus on compensation mechanisms amidst the uncertainties of PPP project revenues. Iyer and Sagheer (2011) provide a deep dive into India's build-operate-transfer (BOT) model and identify traffic demand as a pivotal risk. They propose a novel "traffic band" solution to counteract unforeseen traffic fluctuations, fortifying revenue assurance for investors.

The tricky waters of defaults and contract renegotiations within PPP are examined by Menezes and Ryan (2015). They unearth tactics wherein bidders may leverage the holdup problem via strategic debt, potentially coercing extra payments from the state. Xiong and Zhang (2016) view renegotiations as adaptable options that enhance PPP contract malleability. Song *et al.* (2018) weigh the significance of governmental guarantees in PPP toll projects and showcase the intricate dance between private profit, social welfare, negotiation leverage, and buyback costs. Closing the loop, Sharafi *et al.* (2022) present a game theory-based negotiation model tailored for inevitable contract adjustments within PPP projects.

In summation, Topic 4 meticulously unravels the intricate tapestry of finance, risks, and strategic incentives foundational to PPP in infrastructure. These studies offer a multi-faceted perspective on maximising PPP collaborations' efficacy and rewards through a blend of economic rationale, contract flexibility, and risk management. While Topic 4's insights on the financial and risk elements of PPP infrastructure are comprehensive, they open avenues for further inquiry into optimal financial models, risk mitigation strategies, and contract management (Klijn and Koppenjan, 2016; Rybnicek *et al.*, 2020). The economic interplay between toll revenues and user surplus, the safeguarding against resource misappropriation, the stability of revenue in uncertain environments, and novel solutions to PPP challenges such as traffic fluctuations and contract renegotiations are all areas meriting deeper investigation (Feng *et al.*, 2022; Sarmiento and Renneboog, 2021). Future research could enhance the understanding of these dynamics to improve PPP's financial and operational efficiency.

4.5 Healthcare in the PPP context

Topic 5, derived from the LDA model, delves into the intricate nexus of PPP, healthcare, urban development, policy nuances, and tech integration. This amalgamation in healthcare sets the stage for a rich dialogue, bridging policy, development, and patient care within a realm constantly reshaped by technology, market dynamics, and global influences. India's Rashtriya Swasthya Bima Yojna (RSBY) stands out as a cornerstone. Through analyses by Al Dahdah and Mishra (2020) and Taneja and Taneja (2016), the program's ambitious digital-first approach, epitomised by the RSBY Smart Card, is illuminated. While heralded for democratising healthcare access, the digital medium paradoxically risks engendering exclusivity. The studies accentuate the promises and pitfalls of the PPP model in healthcare financing, enrolment, and delivery.

As articulated by Knijn and Slabbert (2012), South Africa's trajectory contrasts global inclinations by transitioning from NGO-led care to a unified public system. Although laudable for championing healthcare equality, this shift grapples with integrating governance and sustaining service excellence. Additionally, Waring and Bishop (2018) undertake a spatial analysis of PPP and spotlight evolving identities within these collaborative realms, subtly redefining patients and professionals within healthcare ecosystems. The Queen Elizabeth Hospital in Greenwich, England, as depicted by Lethbridge (2014), epitomises challenges sprouting from policy shifts and market-oriented reforms within the NHS and underscores the significant ripple effects of legislative changes on healthcare operations. Meanwhile, Taiwan's path to Universal Health Coverage, discussed by Lu and Chiang (2018), exemplifies a masterful blend of PPP, incentives, and regulations, aiming for comprehensive and equitable health services. Hong Kong's foray into the Elderly Healthcare Voucher Scheme, explored by Fung *et al.* (2022), showcases a novel bridge between public and private healthcare sectors and triggers debates on its sustainability and universal coverage implications.

In essence, Topic 5 intricately dissects the interplay of PPP, policy shifts, and tech innovations within healthcare, highlighting the transformative potential of these collaborations. However, it uncovers a significant gap in the current understanding of the long-term impacts of technology on healthcare equity and the resilience of PPP models in adapting to fast-evolving healthcare needs (Dutta and Lahiri, 2015; Kosycarz *et al.*, 2019). Future research should investigate the sustainability of tech-integrated healthcare services provided through PPP and how they can contribute to or detract from equitable health outcomes (Ganapathy and Reddy, 2021). A focused exploration into how PPP can evolve to meet the challenges of global health trends without widening existing disparities is also needed.

4.6 Risk and performance metrics in PPP projects

PPP projects encapsulate the confluence of public aspirations and private sector proficiency. The pivotal terms unearthed from the topic—PPP, risk, management, infrastructure, and stakeholders—paint a tapestry of their intricate interrelations in project execution. Central to these terms is the pivotal role of comprehending and navigating risk to navigate the tumultuous waters of PPP undertakings. Delving into risk evaluation and distribution within PPP projects, a study from China offers enlightening perspectives. [Chan et al. \(2011\)](#) assert the indispensability of a systematic, credible, and actionable risk evaluation blueprint for steering projects to fruition. They spotlight governmental oversight, corruption, and subpar public decision making as towering challenges in Chinese PPP ventures, shedding light on overarching legislative and oversight hurdles. Notably, the findings hint at a harmonised stance between China's public and private spheres concerning risk discernment and sharing and pave the way for synergistic future collaborations. Augmenting the grasp on risk's intricate tapestry, [Babatunde et al. \(2019\)](#) elucidate the metamorphosis of risks across project stages. Their lens on Nigerian PPP infrastructure endeavours identifies nearly a third of the pinpointed risks as pivotal, spotlighting the urgency of meticulous risk navigation in developing economies.

Embracing a panoramic, life-cycle view is paramount to steer these risks. [Zou et al. \(2008\)](#) champion a blueprint that accentuates the consistent identification, evaluation, and mitigation of risks throughout the project's lifespan. Their panoramic approach, fortified by case studies from Australia and China, champions the harmonisation of interests amongst public-private collaborators. Deepening the discourse on risk discernment, [Gupta and Verma \(2020\)](#) unravel the variegated perceptions of financiers regarding PPP infrastructure project risks. Their insights underscore disparities in risk assessments among fiscal entities and stress the imperative for shared visions and harmonised strategies. This alignment is a bulwark against fragmented risk tactics that could imperil the project. In conclusion, the efficacy of PPP initiatives, especially under the Build-Operate-Transfer (BOT) paradigm, hinges on rigorous monitoring metrics. [Okudan et al. \(2020\)](#) unveil an avant-garde system centred on phase-specific Key Performance Indicators (KPIs) that grant stakeholders pivotal, actionable insights.

The nexus of adept risk management and precision-focused performance monitoring anchors PPP project successes. Yet, this understanding needs to cover a gap in the systematic application of these concepts throughout the lifecycle of PPP. Research has yet to fully explore how to maintain this focus from project inception to completion. Future studies should investigate the creation of advanced risk management frameworks and robust performance indicators that can be applied consistently across various PPP projects ([Ke et al., 2012](#); [Mazher et al., 2022](#); [Wu et al., 2018b](#)). Such research would provide valuable insights into ensuring that PPP can navigate risks effectively and meet performance expectations, achieving their intended outcomes.

5. Discussions

5.1 Theoretical implications

The theoretical implications derived from the analysis of the six LDA-identified topics on PPP enrich the current theoretical landscape by offering a broad framework encompassing various sectors and their interconnections. By integrating LDA with bibliometric analysis, our approach provides a more comprehensive understanding of the PPP-related discourse. This integration enables the mapping of key research trends and the identification of seminal works, thereby offering a richer context for our findings. Examining socio-economic innovation dynamics, these topics augment the current understanding of the multidimensional role of PPP in facilitating integrated solutions that harness the strengths

of public, private, and social sectors. The focus on disaster-ready sustainable infrastructure and urban development, along with financial and risk aspects, expands the PPP dialogue to include resilience and transformative impacts on cities and communities while balancing economic efficiency with public accountability (Forrer *et al.*, 2010; Stafford and Stapleton, 2017). The healthcare context adds depth to the role of PPP in complex service delivery and examining risk and performance metrics contributes new insights into success benchmarks in PPP projects. These topics advocate for a theoretical evolution towards a holistic and interdisciplinary understanding that aligns with contemporary challenges and goals.

5.2 Practical implications

The insights garnered from this extensive review of PPP literature hold significant implications for practitioners, policymakers, and stakeholders involved in public-private endeavours. Understanding the evolving academic narrative around PPP can guide real-world implementations in several ways. Firstly, the identified synergy between public policy and private sector dynamism within socio-economic innovation offers policymakers a blueprint. It emphasises the need to craft policies conducive to private-sector participation and align with broader public welfare objectives. The findings related to disaster-ready sustainable infrastructure underscore the pressing need for public and private entities to prioritise environmental resilience. For practitioners, this highlights the necessity to incorporate sustainability measures right from the project conception stage, ensuring eco-friendly and disaster-resistant infrastructures.

The emphasis on urban development and service delivery directs urban planners and private developers to collaborate seamlessly. In practical scenarios, this could translate into transparent bidding processes, clear delineation of roles, and shared responsibility in urban PPP projects. Moreover, the spotlight on financial, risk and performance metrics offers invaluable insights into private entities that are pondering participation in PPP. By understanding the intricacies and nuances of PPP financing and associated risks, they can make informed decisions, ensuring profitability and project success. This also nudges financial institutions to develop tailored financing models for PPP projects, considering their unique risk-reward profiles. Finally, the emerging focus on healthcare within the PPP context serves as a clarion call for healthcare providers and policymakers alike. As the world grapples with evolving health challenges, there is an imperative to explore innovative partnership models that harness the efficiencies of the private sector while ensuring equitable healthcare delivery.

5.3 Future research agenda

The combined application of bibliometrics and LDA presents a powerful approach for dissecting extensive textual data in PPP literature, providing a two-fold analytical perspective. LDA is instrumental in unveiling the underlying thematic structures within the literature, highlighting key trends and patterns that shape the field. Simultaneously, bibliometrics plays a crucial role in quantifying these themes, offering a data-driven perspective on the literature's evolution. This includes tracking publication trends, authorship patterns, and citation analyses, which are fundamental for understanding the field's progression and influence.

LDA's role is to unearth thematic nuances and emerging topics in PPP theory, particularly in exploring the role of PPP within socio-economic contexts, hybrid governance, and cooperative infrastructure mechanisms. This exploration is vital for understanding the multi-faceted nature of PPP, including the evolving role of technology and stakeholder engagement. Meanwhile, bibliometrics complements this by mapping the scholarly landscape of PPP research and providing insights into key academic journals.

The necessity of investigating resilience and sustainability in PPP frameworks, especially in disaster management (Bajracharya *et al.*, 2020; Osei-Kyei *et al.*, 2023), is a prime area where the synergy of LDA and bibliometrics is evident. LDA helps in pinpointing relevant themes and patterns pertaining to resilience and sustainability, while bibliometrics offers a longitudinal view, tracking how these themes have developed and gained prominence over time. This dual approach is essential for developing theoretical models that address the challenges in regions prone to natural disasters, integrating risk management with sustainable development practices. Through this, future research can provide a robust and empirically grounded blueprint for PPP that are capable of facing environmental challenges and achieving long-term socio-economic goals (Akomea-Frimpong *et al.*, 2020; Nisar, 2007).

The phenomenon of rapid urbanisation presents another fertile ground for research (Anwar *et al.*, 2017; Xiong *et al.*, 2020). The focus should be on the delicate equilibrium between public welfare and private profitability within urban PPP. Theoretical exploration in this context has the potential to illuminate the dynamics of successful urban PPP and create adaptable models for varying urban scenarios. These models would account for the complex socio-political fabric of cities and propose strategies for aligning diverse stakeholder interests. Finance, risk, and performance remain pivotal themes within PPP literature. Future studies should aim to develop risk-assessment models tailored to PPP's unique financial landscapes (Amović *et al.*, 2020; Choudhry *et al.*, 2013). By exploring the intersections of financing structures, risk perceptions, and project outcomes, researchers can contribute to creating risk management frameworks that enhance the financial stability and success rates of PPP projects.

As a topic identified in the LDA model, healthcare is particularly relevant. Integrating public health objectives with business efficiency through PPP opens up a domain where research can make a significant impact. With global health challenges on the rise (Buse and Tanaka, 2011; Ruckert and Labonté, 2014; Storeng *et al.*, 2021), developing PPP models in healthcare could lead to efficient and cost-effective solutions. Research in this area may reveal partnership structures that are resilient, patient-centred, and conducive to public health priorities (Longo, 2015; Pietrantonio and Scotti, 2017). In summary, the theoretical implications of the LDA model's findings suggest an enriched research agenda for PPP. This includes constructing comparative governance models, devising disaster-resilient frameworks, balancing urban development needs, innovating financial and risk management strategies, and transforming healthcare delivery. Collectively, these research directions promise to augment the PPP discourse and contribute to creating robust partnerships that serve the evolving needs of societies globally.

6. Conclusions and limitations

PPP have firmly established themselves as instrumental frameworks in socioeconomic and infrastructural development. Their central role within academic literature emphasises their importance and the intricate challenges and dimensions inherent in such collaborations. Based on a review of 3,057 journal articles through LDA, this study sought to detail and clarify the comprehensive scholarly trajectory and key thematic areas of PPP.

Analysing the historical development of PPP research reveals distinct phases of academic engagement. The research landscape transitioned from initial sporadic interest in the late 20th century to an expansive body of work in recent years. The delineated epochs, characterised by introductory exploration, progressive recognition, and significant scholarly output, demonstrate the impact of global shifts, particularly the move towards hybrid governance and cooperative infrastructural strategies, on PPP research. This is further substantiated by the pronounced increase in research outputs in 2022. The prominence of journals, such as the *Journal of Construction Engineering and Management* and the

International Journal of Project Management, indicates the merging of multiple disciplines within PPP. This interdisciplinary nature of PPP, encompassing engineering, management, and financial considerations, emphasises its comprehensive nature, necessitating an amalgamation of technical, managerial, and fiscal expertise.

Upon detailed examination of the six identified topics, the diverse influence of PPP across sectors emerges lucidly. The dynamics of PPP in socio-economic innovation suggest a synergistic approach where public policy goals intertwine with the agility of the private sector, fostering new paradigms for development. This intersects with the role of PPP in creating disaster-ready sustainable infrastructure, a domain highlighting the intersection of environmental consciousness and disaster resilience, perhaps signalling a nascent yet vital area for future research. Meanwhile, the significance of PPP in urban development and service delivery cannot be understated, particularly in an age of rapid global urbanisation. Such collaborations solve multifaceted urban challenges by merging public oversight with private sector efficiency. The conspicuous emphasis on the financial, risk, and performance metrics within the literature indicates the intricacies of financing PPP endeavours and the critical importance of understanding associated risks. This is intertwined with the performance evaluation in PPP initiatives and emphasises the need for clear metrics and robust monitoring mechanisms. Lesser emphasis on healthcare within the PPP context, while pointing to an embryonic stage in research, also hints at the potential for deeper exploration, especially in light of current global health challenges. These themes underscore the expansive terrain influenced by PPP, shedding light on the opportunities and complexities inherent in these collaborations.

Like all scholarly endeavours, this review of PPP literature has its limitations. First, the analysis is confined to the 3,057 journal articles selected, which might not encapsulate the entirety of the discourse on PPP. There might be valuable contributions in other forms, like books, conference papers, or grey literature, not captured in this review. Additionally, using LDA for topic modelling, though powerful, operates based on predefined parameters. Some nuanced insights or overlapping themes might have been overlooked due to the inherent constraints of this technique. Moreover, the temporal scope of the study, from 1985 to 19 May 2023, provides a rich historical perspective, but might need to reflect more recent developments or emerging trends in PPP research after the cut-off date. These limitations notwithstanding, the review offers a robust overview of the PPP landscape and sets the stage for further explorations and analyses in the domain.

References

- Abdou, M. (2023), "Heritage conservation and the limitation of public-private partnerships", *Cultural Trends*, Vol. 0 No. 0, pp. 1-17, doi: [10.1080/09548963.2023.2189514](https://doi.org/10.1080/09548963.2023.2189514).
- Aerts, J.C.J.H. and Botzen, W.J.W. (2011), "Climate change impacts on pricing long-term flood insurance: a comprehensive study for the Netherlands", *Global Environmental Change*, Vol. 21 No. 3, pp. 1045-1060, doi: [10.1016/j.gloenvcha.2011.04.005](https://doi.org/10.1016/j.gloenvcha.2011.04.005).
- Aguiar-Barajas, I., Sisto, N.P., Ramirez, A.I. and Magaña-Rueda, V. (2019), "Building urban resilience and knowledge co-production in the face of weather hazards: flash floods in the Monterrey Metropolitan Area (Mexico)", *Environmental Science and Policy*, Vol. 99, pp. 37-47, doi: [10.1016/j.envsci.2019.05.021](https://doi.org/10.1016/j.envsci.2019.05.021).
- Ahmadabadi, A.A. and Heravi, G. (2019), "The effect of critical success factors on project success in public-private partnership projects: a case study of highway projects in Iran", *Transport Policy*, Vol. 73, pp. 152-161, doi: [10.1016/j.tranpol.2018.07.004](https://doi.org/10.1016/j.tranpol.2018.07.004).
- Akomea-Frimpong, I., Jin, X. and Osei-Kyei, R. (2020), "A holistic review of research studies on financial risk management in public-private partnership projects", *Engineering, Construction and Architectural Management*, Vol. 28 No. 9, pp. 2549-2569, doi: [10.1108/ECAM-02-2020-0103](https://doi.org/10.1108/ECAM-02-2020-0103).

-
- Al Dahdah, M. and Mishra, R.K. (2020), "Smart cards for all: digitalisation of universal health coverage in India", *Science, Technology and Society*, Vol. 25 No. 3, pp. 426-443, doi: [10.1177/0971721820912920](https://doi.org/10.1177/0971721820912920).
- Amović, G., Maksimović, R. and Bunčić, S. (2020), "Critical success factors for sustainable public-private partnership (PPP) in transition conditions: an empirical study in Bosnia and Herzegovina", *Sustainability*, Vol. 12 No. 17, p. 7121, doi: [10.3390/su12177121](https://doi.org/10.3390/su12177121).
- Ampratwum, G., Osei-Kyei, R. and Tam, V.W.Y. (2022), "A scientometric review of public-private partnership in critical infrastructure resilience", *IOP Conference Series: Earth and Environmental Science*, Vol. 1101 No. 5, 052007, doi: [10.1088/1755-1315/1101/5/052007](https://doi.org/10.1088/1755-1315/1101/5/052007).
- Anderson, M.B., Petrie, M., Alier, M.M., Cangiano, M.M. and Hemming, M.R. (2006), *Public-Private Partnerships, Government Guarantees, and Fiscal Risk*, International Monetary Fund, Washington, DC.
- Andonova, L.B. and Piselli, D. (2022), "Transnational partnerships, domestic institutions, and sustainable development. The case of Brazil and the Amazon Region protected areas program", *World Development*, Vol. 157, 105809, doi: [10.1016/j.worlddev.2021.105809](https://doi.org/10.1016/j.worlddev.2021.105809).
- Anwar, B., Xiao, Z., Akter, S. and Rehman, R.-U. (2017), "Sustainable urbanization and development goals strategy through public-private partnerships in a South-Asian metropolis", *Sustainability*, Vol. 9 No. 11, p. 1940, doi: [10.3390/su9111940](https://doi.org/10.3390/su9111940).
- Babatunde, S.O., Perera, S. and Adeniyi, O. (2019), "Identification of critical risk factors in public-private partnership project phases in developing countries: a case of Nigeria", *Benchmarking*, Vol. 26 No. 2, pp. 334-355, doi: [10.1108/BJJ-01-2017-0008](https://doi.org/10.1108/BJJ-01-2017-0008).
- Bajracharya, B., Hastings, P., Childs, I. and McNamee, P. (2020), "Public-private partnership in disaster management: a case study of the gold coast", *The Australian Journal of Emergency Management*, Vol. 27 No. 3, pp. 27-33, doi: [10.3316/ielapa.735787010783150](https://doi.org/10.3316/ielapa.735787010783150).
- Blanco, I. (2009), "Does a 'Barcelona Model' really exist? Periods, territories and actors in the process of urban transformation", *Local Government Studies*, Vol. 35 No. 3, pp. 355-369, doi: [10.1080/03003930902854289](https://doi.org/10.1080/03003930902854289).
- Blei, D.M. (2012), "Probabilistic topic models", *Communications of the ACM*, Vol. 55 No. 4, pp. 77-84, doi: [10.1145/2133806.2133826](https://doi.org/10.1145/2133806.2133826).
- Boardman, A.E. and Vining, A.R. (2012), "The political economy of public-private partnerships and analysis of their social value", *Annals of Public and Cooperative Economics*, Vol. 83 No. 2, pp. 117-141, doi: [10.1111/j.1467-8292.2012.00457.x](https://doi.org/10.1111/j.1467-8292.2012.00457.x).
- Bonnafous, A. (2010), "Programming, optimal pricing and partnership contract for infrastructures in PPPs", *Research in Transportation Economics*, Vol. 30 No. 1, pp. 15-22, doi: [10.1016/j.retrec.2010.10.003](https://doi.org/10.1016/j.retrec.2010.10.003).
- Boyle, R. (1993), "Changing partners: the experience of urban economic policy in West Central Scotland, 1980-90", *Urban Studies*, Vol. 30 No. 2, pp. 309-323, doi: [10.1080/00420989320080311](https://doi.org/10.1080/00420989320080311).
- Broadbent, J. and Laughlin, R. (1999), "The private finance initiative: clarification of a future research agenda", *Financial Accountability and Management*, Vol. 15 No. 2, pp. 95-114, doi: [10.1111/1468-0408.00076](https://doi.org/10.1111/1468-0408.00076).
- Bull, B. and Miklian, J. (2019), "Towards global business engagement with development goals? Multilateral institutions and the SDGs in a changing global capitalism", *Business and Politics*, Vol. 21 No. 4, pp. 445-463, doi: [10.1017/bap.2019.27](https://doi.org/10.1017/bap.2019.27).
- Buse, K. and Tanaka, S. (2011), "Global public-private health partnerships: lessons learned from ten years of experience and evaluation", *International Dental Journal*, Vol. 61 No. s2, pp. 2-10, doi: [10.1111/j.1875-595X.2011.00034.x](https://doi.org/10.1111/j.1875-595X.2011.00034.x).
- Buso, M. and Stenger, A. (2018), "Public-private partnerships as a policy response to climate change", *Energy Policy*, Vol. 119, pp. 487-494, doi: [10.1016/j.enpol.2018.04.063](https://doi.org/10.1016/j.enpol.2018.04.063).
- Busom, I. and Fernández-Ribas, A. (2008), "The impact of firm participation in R&D programmes on R&D partnerships", *Research Policy*, Vol. 37 No. 2, pp. 240-257, doi: [10.1016/j.respol.2007.11.002](https://doi.org/10.1016/j.respol.2007.11.002).

- Caputo, A., Pizzi, S., Pellegrini, M.M. and Dabić, M. (2021), "Digitalization and business models: where are we going? A science map of the field", *Journal of Business Research*, Vol. 123, pp. 489-501, doi: [10.1016/j.jbusres.2020.09.053](https://doi.org/10.1016/j.jbusres.2020.09.053).
- Chan, A.P.C., Yeung, J.F.Y., Yu, C.C.P., Wang, S.Q. and Ke, Y. (2011), "Empirical study of risk assessment and allocation of public-private partnership projects in China", *Journal of Management in Engineering*, Vol. 27 No. 3, pp. 136-148, doi: [10.1061/\(ASCE\)ME.1943-5479.0000049](https://doi.org/10.1061/(ASCE)ME.1943-5479.0000049).
- Chen, X., Xie, H., Cheng, G. and Li, Z. (2022), "A decade of sentic computing: topic modeling and bibliometric analysis", *Cognitive Computation*, Vol. 14 No. 1, pp. 24-47, doi: [10.1007/s12559-021-09861-6](https://doi.org/10.1007/s12559-021-09861-6).
- Choudhry, S.A., Li, J., Davis, D., Erdmann, C., Sikka, R. and Sutariya, B. (2013), "A public-private partnership develops and externally validates a 30-day hospital readmission risk prediction model", *Online Journal of Public Health Informatics*, Vol. 5 No. 2, p. 219, doi: [10.5210/ojphi.v5i2.4726](https://doi.org/10.5210/ojphi.v5i2.4726).
- Coulson, A. (2005), "A plague on all your partnerships: theory and practice in regeneration", *International Journal of Public Sector Management*, Vol. 18 No. 2, pp. 151-163, doi: [10.1108/09513550510584973](https://doi.org/10.1108/09513550510584973).
- de Paula, P.V., Marques, R.C. and Gonçalves, J.M. (2023), "Public-private partnerships in urban regeneration projects: a review", *Journal of Urban Planning and Development*, Vol. 149 No. 1, 04022056, doi: [10.1061/JUPDDMUPENG-4144](https://doi.org/10.1061/JUPDDMUPENG-4144).
- Dutta, S. and Lahiri, K. (2015), "Is provision of healthcare sufficient to ensure better access? An exploration of the scope for public-private partnership in India", *International Journal of Health Policy and Management*, Vol. 4 No. 7, pp. 467-474, doi: [10.15171/ijhpm.2015.77](https://doi.org/10.15171/ijhpm.2015.77).
- Essig, M. and Batran, A. (2005), "Public-private partnership—development of long-term relationships in public procurement in Germany", *Journal of Purchasing and Supply Management*, Vol. 11 No. 5, pp. 221-231, doi: [10.1016/j.pursup.2006.01.001](https://doi.org/10.1016/j.pursup.2006.01.001).
- Fahimnia, B., Sarkis, J. and Davarzani, H. (2015), "Green supply chain management: a review and bibliometric analysis", *International Journal of Production Economics*, Vol. 162, pp. 101-114, doi: [10.1016/j.ijpe.2015.01.003](https://doi.org/10.1016/j.ijpe.2015.01.003).
- Feather, C. (2019), "The two million housing drive in Korea: a supply solution for affordable housing in the developing world", *International Journal of Housing Markets and Analysis*, Vol. 12 No. 5, pp. 906-933, doi: [10.1108/IJHMA-01-2019-0004](https://doi.org/10.1108/IJHMA-01-2019-0004).
- Feng, X., Cao, J., Wu, G. and Duan, K. (2022), "A critical review of studies on renegotiation within the public-private partnerships (PPPs) scheme", *Engineering, Construction and Architectural Management*, Vol. 30 No. 8, pp. 3674-3695, doi: [10.1108/ECAM-09-2021-0790](https://doi.org/10.1108/ECAM-09-2021-0790).
- Ferri, P. and Zan, L. (2017), "Partnerships for heritage conservation: evidence from the archeological site of Herculaneum", *Journal of Management and Governance*, Vol. 21 No. 1, pp. 1-25, doi: [10.1007/s10997-015-9332-2](https://doi.org/10.1007/s10997-015-9332-2).
- Forrer, J., Kee, J.E., Newcomer, K.E. and Boyer, E. (2010), "Public-private partnerships and the public accountability question", *Public Administration Review*, Vol. 70 No. 3, pp. 475-484, doi: [10.1111/j.1540-6210.2010.02161.x](https://doi.org/10.1111/j.1540-6210.2010.02161.x).
- Fraser, J.C. and Kick, E.L. (2014), "Governing urban restructuring with city-building nonprofits", *Environment and Planning A*, Vol. 46 No. 6, pp. 1445-1461, doi: [10.1068/a46169](https://doi.org/10.1068/a46169).
- Fung, V.L.-H., Lai, A.H.-Y., Yam, C.H.-K., Wong, E.L.-Y., Griffiths, S.M. and Yeoh, E.-K. (2022), "Healthcare vouchers for better elderly services? Input from private healthcare service providers in Hong Kong", *Health and Social Care in the Community*, Vol. 30 No. 2, pp. e357-e369, doi: [10.1111/hsc.13203](https://doi.org/10.1111/hsc.13203).
- Ganapathy, K. and Reddy, S. (2021), "Technology enabled remote healthcare in public private partnership mode: a story from India", in Latifi, R., Doarn, C.R. and Merrell, R.C. (Eds), *Telemedicine, Telehealth and Telepresence: Principles, Strategies, Applications, and New Directions*, Springer International Publishing, Cham, pp. 197-233, doi: [10.1007/978-3-030-56917-4_14](https://doi.org/10.1007/978-3-030-56917-4_14).

- Glas, A.H., Gaus, J. and Essig, M. (2018), "Effects of governance structures on sustainability-oriented supplier behaviour: analysis of national action plans and their effects in public procurement", *International Journal of Business Environment*, Vol. 10 No. 1, pp. 75-94, doi: [10.1504/IJBE.2018.093325](https://doi.org/10.1504/IJBE.2018.093325).
- Guo, Y., Barnes, S.J. and Jia, Q. (2017), "Mining meaning from online ratings and reviews: tourist satisfaction analysis using Latent Dirichlet allocation", *Tourism Management*, Vol. 59, pp. 467-483, doi: [10.1016/j.tourman.2016.09.009](https://doi.org/10.1016/j.tourman.2016.09.009).
- Gupta, P.K. and Verma, H. (2020), "Risk perception in PPP infrastructure project financing in India", *Journal of Financial Management of Property and Construction*, Vol. 25 No. 3, pp. 347-369, doi: [10.1108/JFMPC-07-2019-0060](https://doi.org/10.1108/JFMPC-07-2019-0060).
- Hessevik, A. (2022), "Network-led advocacy for a green shipping transformation: a case study of governance networks in the Norwegian maritime sector", *Regulation and Governance*, Vol. 16 No. 4, pp. 1101-1118, doi: [10.1111/rego.12386](https://doi.org/10.1111/rego.12386).
- Hodge, G.A. and Greve, C. (2007), "Public-private partnerships: an international performance review", *Public Administration Review*, Vol. 67 No. 3, pp. 545-558, doi: [10.1111/j.1540-6210.2007.00736.x](https://doi.org/10.1111/j.1540-6210.2007.00736.x).
- Hodkinson, S. (2011), "Housing regeneration and the private finance initiative in England: unstitching the neoliberal urban straitjacket", *Antipode*, Vol. 43 No. 2, pp. 358-383, doi: [10.1111/j.1467-8330.2010.00819.x](https://doi.org/10.1111/j.1467-8330.2010.00819.x).
- Hoppe, E.I. and Schmitz, P.W. (2013), "Public-private partnerships versus traditional procurement: innovation incentives and information gathering", *RAND Journal of Economics*, Vol. 44 No. 1, pp. 56-74, doi: [10.1111/1756-2171.12010](https://doi.org/10.1111/1756-2171.12010).
- Hudson, P., Botzen, W.J.W., Feyen, L. and Aerts, J.C.J.H. (2016), "Incentivising flood risk adaptation through risk based insurance premiums: trade-offs between affordability and risk reduction", *Ecological Economics*, Vol. 125, pp. 1-13, doi: [10.1016/j.ecolecon.2016.01.015](https://doi.org/10.1016/j.ecolecon.2016.01.015).
- Hudson, P., Botzen, W.J.W. and Aerts, J.C.J.H. (2019), "Flood insurance arrangements in the European Union for future flood risk under climate and socioeconomic change", *Global Environmental Change*, Vol. 58, 101966, doi: [10.1016/j.gloenvcha.2019.101966](https://doi.org/10.1016/j.gloenvcha.2019.101966).
- Iyer, K.C. and Sagheer, M. (2011), "A real options based traffic risk mitigation model for build-operate-transfer highway projects in India", *Construction Management and Economics*, Vol. 29 No. 8, pp. 771-779, doi: [10.1080/01446193.2011.597412](https://doi.org/10.1080/01446193.2011.597412).
- Janmajaya, M., Shukla, A.K., Muhuri, P.K. and Abraham, A. (2021), "Industry 4.0: Latent Dirichlet allocation and clustering based theme identification of bibliography", *Engineering Applications of Artificial Intelligence*, Vol. 103, 104280, doi: [10.1016/j.engappai.2021.104280](https://doi.org/10.1016/j.engappai.2021.104280).
- Ke, Y., Wang, S. and Chan, A.P.C. (2012), "Risk management practice in China's public-private partnership projects", *Journal of Civil Engineering and Management*, Vol. 18 No. 5, pp. 675-684, doi: [10.3846/13923730.2012.723380](https://doi.org/10.3846/13923730.2012.723380).
- Klijn, E.H. and Koppenjan, J. (2016), "The impact of contract characteristics on the performance of public-private partnerships (PPPs)", *Public Money and Management*, Vol. 36 No. 6, pp. 455-462, doi: [10.1080/09540962.2016.1206756](https://doi.org/10.1080/09540962.2016.1206756).
- Knijjn, T. and Slabbert, M. (2012), "Transferring HIV/AIDS related healthcare from non-governmental organizations to the public healthcare system in South Africa: opportunities and challenges", *Social Policy and Administration*, Vol. 46 No. 6, pp. 636-653, doi: [10.1111/j.1467-9515.2012.00860.x](https://doi.org/10.1111/j.1467-9515.2012.00860.x).
- Kolk, A., van Tulder, R. and Kostwinder, E. (2008), "Business and partnerships for development", *European Management Journal*, Vol. 26 No. 4, pp. 262-273, doi: [10.1016/j.emj.2008.01.007](https://doi.org/10.1016/j.emj.2008.01.007).
- Kosycarz, E.A., Nowakowska, B.A. and Mikołajczyk, M.M. (2019), "Evaluating opportunities for successful public-private partnership in the healthcare sector in Poland", *Journal of Public Health*, Vol. 27 No. 1, pp. 1-9, doi: [10.1007/s10389-018-0920-x](https://doi.org/10.1007/s10389-018-0920-x).
- Kozłowski, D., Semeshenko, V. and Molinari, A. (2021), "Latent Dirichlet allocation model for world trade analysis", *PLoS One*, Vol. 16 No. 2, e0245393, doi: [10.1371/journal.pone.0245393](https://doi.org/10.1371/journal.pone.0245393).

- Kunreuther, H. (2015), "The role of insurance in reducing losses from extreme events: the need for public-private partnerships", *Geneva Papers on Risk and Insurance: Issues and Practice*, Vol. 40 No. 4, pp. 741-762, doi: [10.1057/gpp.2015.14](https://doi.org/10.1057/gpp.2015.14).
- Languille, S. (2017), "Public private partnerships in education and health in the global south: a literature review", *Journal of International and Comparative Social Policy*, Vol. 33 No. 2, pp. 142-165, doi: [10.1080/21699763.2017.1307779](https://doi.org/10.1080/21699763.2017.1307779).
- Lee, W.J., Juskenaitė, I. and Mwebaza, R. (2021), "Public-private partnerships for climate technology transfer and innovation: lessons from the climate technology centre and network", *Sustainability*, Vol. 13 No. 6, p. 3185, doi: [10.3390/su13063185](https://doi.org/10.3390/su13063185).
- Lethbridge, J. (2014), "Public enterprises in the healthcare sector – a case study of Queen Elizabeth Hospital, Greenwich, England", *Journal of Economic Policy Reform*, Vol. 17 No. 3, pp. 224-235, doi: [10.1080/17487870.2014.909314](https://doi.org/10.1080/17487870.2014.909314).
- Lewis, S., Damarell, R.A., Tieman, J.J. and Trenerry, C. (2018), "Finding the integrated care evidence base in PubMed and beyond: a bibliometric study of the challenges", *International Journal of Integrated Care*, Vol. 18 No. 3, p. 11, doi: [10.5334/ijic.3975](https://doi.org/10.5334/ijic.3975).
- Li, R.-T., Khor, K.A. and Yu, L.-G. (2016), "Identifying indicators of progress in thermal spray research using bibliometrics analysis", *Journal of Thermal Spray Technology*, Vol. 25 No. 8, pp. 1526-1533, doi: [10.1007/s11666-016-0445-1](https://doi.org/10.1007/s11666-016-0445-1).
- Liesivaara, P. and Myyrä, S. (2017), "The demand for public-private crop insurance and government disaster relief", *Journal of Policy Modeling*, Vol. 39 No. 1, pp. 19-34, doi: [10.1016/j.jpolmod.2016.12.001](https://doi.org/10.1016/j.jpolmod.2016.12.001).
- Liu, J., Love, P.E.D., Smith, J., Regan, M. and Sutrisna, M. (2014), "Public-private partnerships: a review of theory and practice of performance measurement", *International Journal of Productivity and Performance Management*, Vol. 63 No. 4, pp. 499-512, doi: [10.1108/IJPPM-09-2013-0154](https://doi.org/10.1108/IJPPM-09-2013-0154).
- Liyana, C. and Villalba-Romero, F. (2020), "Disaster risk reduction compliance framework for public private partnership (PPP) port projects", *International Journal of Disaster Resilience in the Built Environment*, Vol. 12 No. 5, pp. 484-499, doi: [10.1108/IJDRBE-05-2020-0053](https://doi.org/10.1108/IJDRBE-05-2020-0053).
- Longo, M.C. (2015), "Good practices in health care 'management experimentation models': insights from an international public-private partnership on transplantation and advanced specialized therapies", *International Best Practices in Health Care Management*, Vol. 17, pp. 71-115, doi: [10.1108/S1474-823120140000017005](https://doi.org/10.1108/S1474-823120140000017005).
- Lu, J.-F.R. and Chiang, T.-L. (2018), "Developing an adequate supply of health services: Taiwan's path to universal health coverage", *Social Science and Medicine*, Vol. 198, pp. 7-13, doi: [10.1016/j.socscimed.2017.12.017](https://doi.org/10.1016/j.socscimed.2017.12.017).
- Lund-Thomsen, P. (2009), "Assessing the impact of public-private partnerships in the global south: the case of the Kasur Tanneries Pollution Control Project", *Journal of Business Ethics*, Vol. 90 No. 1, pp. 57-78, doi: [10.1007/s10551-008-9914-x](https://doi.org/10.1007/s10551-008-9914-x).
- Luo, P., He, B., Takara, K., Xiong, Y.E., Nover, D., Duan, W. and Fukushi, K. (2015), "Historical assessment of Chinese and Japanese flood management policies and implications for managing future floods", *Environmental Science and Policy*, Vol. 48, pp. 265-277, doi: [10.1016/j.envsci.2014.12.015](https://doi.org/10.1016/j.envsci.2014.12.015).
- Ma, L., Li, J., Jin, R. and Ke, Y. (2019), "A holistic review of public-private partnership literature published between 2008 and 2018", *Advances in Civil Engineering*, Vol. 2019, e7094653, doi: [10.1155/2019/7094653](https://doi.org/10.1155/2019/7094653).
- Madzík, P. and Falát, L. (2022), "State-of-the-art on analytic hierarchy process in the last 40 years: literature review based on Latent Dirichlet Allocation topic modelling", *PLoS One*, Vol. 17 No. 5, e0268777, doi: [10.1371/journal.pone.0268777](https://doi.org/10.1371/journal.pone.0268777).
- Mazher, K.M., Chan, A.P.C., Choudhry, R.M., Zahoor, H., Edwards, D.J., Ghaithan, A.M., Mohammed, A. and Aziz, M. (2022), "Identifying measures of effective risk management for public-private partnership infrastructure projects in developing countries", *Sustainability*, Vol. 14 No. 21, 14149, doi: [10.3390/su142114149](https://doi.org/10.3390/su142114149).

-
- McCallum, A.K. (2002), "Mallet: a machine learning for language toolkit", available at: <http://mallet.cs.umass.edu> (accessed 31 01 2024).
- Mele, C. (2013), "Neoliberalism, race and the redefining of urban redevelopment", *International Journal of Urban and Regional Research*, Vol. 37 No. 2, pp. 598-617, doi: [10.1111/j.1468-2427.2012.01144.x](https://doi.org/10.1111/j.1468-2427.2012.01144.x).
- Menezes, F. and Ryan, M. (2015), "Default and renegotiation in public-private partnership auctions", *Journal of Public Economic Theory*, Vol. 17 No. 1, pp. 49-77, doi: [10.1111/jpet.12102](https://doi.org/10.1111/jpet.12102).
- Moro, S., Cortez, P. and Rita, P. (2015), "Business intelligence in banking: a literature analysis from 2002 to 2013 using text mining and Latent Dirichlet allocation", *Expert Systems with Applications*, Vol. 42 No. 3, pp. 1314-1324, doi: [10.1016/j.eswa.2014.09.024](https://doi.org/10.1016/j.eswa.2014.09.024).
- Nisar, T.M. (2007), "Risk management in public-private partnership contracts", *Public Organization Review*, Vol. 7 No. 1, pp. 1-19, doi: [10.1007/s11115-006-0020-1](https://doi.org/10.1007/s11115-006-0020-1).
- Norris, M. and Hearne, R. (2016), "Privatizing public housing redevelopment: grassroots resistance, co-operation and devastation in three Dublin neighbourhoods", *Cities*, Vol. 57, pp. 40-46, doi: [10.1016/j.cities.2015.12.006](https://doi.org/10.1016/j.cities.2015.12.006).
- Okudan, O., Budayan, C. and Dikmen, I. (2020), "Development of a conceptual life cycle performance measurement system for build-operate-transfer (BOT) projects", *Engineering, Construction and Architectural Management*, Vol. 28 No. 6, pp. 1635-1656, doi: [10.1108/ECAM-01-2020-0071](https://doi.org/10.1108/ECAM-01-2020-0071).
- Osei-Kyei, R., Tam, V.W.Y., Komac, U. and Ampratwum, G. (2023), "Review of the relationship management strategies for building flood disaster resilience through public-private partnership", *Sustainability*, Vol. 15 No. 13, 10089, doi: [10.3390/su151310089](https://doi.org/10.3390/su151310089).
- Othman, A.A.E. and Mahmoud, N.A. (2022), "Public-private partnerships as an approach for alleviating risks associated with adaptive reuse of heritage buildings in Egypt", *International Journal of Construction Management*, Vol. 22 No. 9, pp. 1713-1735, doi: [10.1080/15623599.2020.1742626](https://doi.org/10.1080/15623599.2020.1742626).
- Özdemir, D. (2011), "The role of the public sector in the provision of housing supply in Turkey, 1950-2009", *International Journal of Urban and Regional Research*, Vol. 35 No. 6, pp. 1099-1117, doi: [10.1111/j.1468-2427.2010.00974.x](https://doi.org/10.1111/j.1468-2427.2010.00974.x).
- Parra, D.C., Dauti, M., Harris, J.K., Reyes, L., Malta, D.C., Brownson, R.C., Quintero, M.A. and Pratt, M. (2011), "How does network structure affect partnerships for promoting physical activity? Evidence from Brazil and Colombia", *Social Science and Medicine*, Vol. 73 No. 9, pp. 1365-1370, doi: [10.1016/j.socscimed.2011.08.020](https://doi.org/10.1016/j.socscimed.2011.08.020).
- Pietrantonio, F. and Scotti, E. (2017), "Internal medicine network: a new way of thinking hospital-territory integration and public-private partnership", *Italian Journal of Medicine*, Vol. 11 No. 2, pp. 85-94, doi: [10.4081/itjm.2016.764](https://doi.org/10.4081/itjm.2016.764).
- Polonioli, A. (2020), "In search of better science: on the epistemic costs of systematic reviews and the need for a pluralistic stance to literature search", *Scientometrics*, Vol. 122 No. 2, pp. 1267-1274, doi: [10.1007/s11192-019-03333-3](https://doi.org/10.1007/s11192-019-03333-3).
- Pu, W., Xu, F. and Marques, R.C. (2021), "A bibliometric and meta-analysis of studies on public-private partnership in China", *Construction Management and Economics*, Vol. 39 No. 9, pp. 773-789, doi: [10.1080/01446193.2021.1958356](https://doi.org/10.1080/01446193.2021.1958356).
- Redmond, D. and Russell, P. (2008), "Social housing regeneration and the creation of sustainable communities in Dublin", *Local Economy*, Vol. 23 No. 3, pp. 168-179, doi: [10.1080/02690940802197283](https://doi.org/10.1080/02690940802197283).
- Rejeb, A., Rejeb, K., Simske, S. and Treiblmaier, H. (2021), "Blockchain technologies in logistics and supply chain management: a bibliometric review", *Logistics*, Vol. 5 No. 4, p. 72, doi: [10.3390/logistics5040072](https://doi.org/10.3390/logistics5040072).
- Rejeb, A., Rejeb, K., Appolloni, A., Jagtap, S., Iranmanesh, M., Alghamdi, S., Alhasawi, Y. and Kayikci, Y. (2023a), "Unleashing the power of internet of things and blockchain: a comprehensive analysis and future directions", *Internet of Things and Cyber-Physical Systems*, Vol. 4, pp. 1-18, doi: [10.1016/j.iotcps.2023.06.003](https://doi.org/10.1016/j.iotcps.2023.06.003).

- Rejeb, A., Rejeb, K., Appolloni, A., Kayikci, Y. and Iranmanesh, M. (2023b), "The landscape of public procurement research: a bibliometric analysis and topic modelling based on Scopus", *Journal of Public Procurement*, Vol. 23 No. 2, pp. 145-178, doi: [10.1108/JOPP-06-2022-0031](https://doi.org/10.1108/JOPP-06-2022-0031).
- Rejeb, A., Rejeb, K., Simske, S. and Keogh, J.G. (2023c), "Exploring blockchain research in supply chain management: a Latent Dirichlet Allocation-driven systematic review", *Information*, Vol. 14 No. 10, p. 557, doi: [10.3390/info14100557](https://doi.org/10.3390/info14100557).
- Roder, G., Hudson, P. and Tarolli, P. (2019), "Flood risk perceptions and the willingness to pay for flood insurance in the Veneto region of Italy", *International Journal of Disaster Risk Reduction*, Vol. 37, 101172, doi: [10.1016/j.ijdrr.2019.101172](https://doi.org/10.1016/j.ijdrr.2019.101172).
- Ruckert, A. and Labonté, R. (2014), "Public-private partnerships (PPPS) in global health: the good, the bad and the ugly", *Third World Quarterly*, Vol. 35 No. 9, pp. 1598-1614, doi: [10.1080/01436597.2014.970870](https://doi.org/10.1080/01436597.2014.970870).
- Rybnicek, R., Plakolm, J. and Baumgartner, L. (2020), "Risks in public-private partnerships: a systematic literature review of risk factors, their impact and risk mitigation strategies", *Public Performance and Management Review*, Vol. 43 No. 5, pp. 1174-1208, doi: [10.1080/15309576.2020.1741406](https://doi.org/10.1080/15309576.2020.1741406).
- Saad, S.K., Elshaer, I.A. and Ghanem, M. (2021), "Relational risk and public-private partnership performance: an institutional perspective", *Journal of Destination Marketing and Management*, Vol. 20, 100614, doi: [10.1016/j.jdmm.2021.100614](https://doi.org/10.1016/j.jdmm.2021.100614).
- Sarmiento, J.M. and Renneboog, L. (2021), "Renegotiating public-private partnerships", *Journal of Multinational Financial Management*, Vol. 59, 100661, doi: [10.1016/j.mulfin.2020.100661](https://doi.org/10.1016/j.mulfin.2020.100661).
- Shahbaz, M., Raghutla, C., Song, M., Zameer, H. and Jiao, Z. (2020), "Public-private partnerships investment in energy as new determinant of CO₂ emissions: the role of technological innovations in China", *Energy Economics*, Vol. 86, 104664, doi: [10.1016/j.eneco.2020.104664](https://doi.org/10.1016/j.eneco.2020.104664).
- Sharafi, A., Amalnick, M.S. and Taleizadeh, A.A. (2022), "Optimal readjustment of contract variables and the financial outcome of PPP projects in the operation period", *Construction Management and Economics*, Vol. 40 No. 2, pp. 87-103, doi: [10.1080/01446193.2021.2007536](https://doi.org/10.1080/01446193.2021.2007536).
- Sievert, C. and Shirley, K. (2014), "LDavis: a method for visualizing and interpreting topics", *Proceedings of the Workshop on Interactive Language Learning, Visualization, and Interfaces*, Association for Computational Linguistics, Baltimore, MD, pp. 63-70.
- Song, J., Zhao, Y., Jin, L. and Sun, Y. (2018), "Pareto optimization of public-private partnership toll road contracts with government guarantees", *Transportation Research Part A: Policy and Practice*, Vol. 117, pp. 158-175, doi: [10.1016/j.tra.2018.08.019](https://doi.org/10.1016/j.tra.2018.08.019).
- Stafford, A. and Stapleton, P. (2017), "Examining the use of corporate governance mechanisms in public-private partnerships: why do they not deliver public accountability?", *Australian Journal of Public Administration*, Vol. 76 No. 3, pp. 378-391, doi: [10.1111/1467-8500.12237](https://doi.org/10.1111/1467-8500.12237).
- Storeng, K.T., de Bengy Puyvallée, A. and Stein, F. (2021), "COVAX and the rise of the 'super public private partnership' for global health", *Global Public Health*, Vol. 0 No. 0, pp. 1-17, doi: [10.1080/17441692.2021.1987502](https://doi.org/10.1080/17441692.2021.1987502).
- Tallaki, M. and Bracci, E. (2021), "Risk allocation, transfer and management in public-private partnership and private finance initiatives: a systematic literature review", *International Journal of Public Sector Management*, Vol. 34 No. 7, pp. 709-731, doi: [10.1108/IJPSM-06-2020-0161](https://doi.org/10.1108/IJPSM-06-2020-0161).
- Taneja, P.K. and Taneja, S. (2016), "Rashtriya Swasthya Bima Yojana (RSBY) for universal health coverage", *Asian Journal of Management Cases*, Vol. 13 No. 2, pp. 108-124, doi: [10.1177/0972820116653335](https://doi.org/10.1177/0972820116653335).
- Ullah, F., Ayub, B., Siddiqui, S.Q. and Thaheem, M.J. (2016), "A review of public-private partnership: critical factors of concession period", *Journal of Financial Management of Property and Construction*, Vol. 21 No. 3, pp. 269-300, doi: [10.1108/JFMPC-02-2016-0011](https://doi.org/10.1108/JFMPC-02-2016-0011).

-
- von Malmborg, F. (2007), "Stimulating learning and innovation in networks for regional sustainable development: the role of local authorities", *Journal of Cleaner Production*, Vol. 15 No. 17, pp. 1730-1741, doi: [10.1016/j.jclepro.2006.08.014](https://doi.org/10.1016/j.jclepro.2006.08.014).
- Wang, D.-Y. and Wang, X. (2022), "Dynamic incentives for inhibiting private sectors' opportunistic effort diversion in infrastructure PPP projects: an optimal control perspective", *Engineering, Construction and Architectural Management*, Vol. 30 No. 9, pp. 3957-3975, doi: [10.1108/ECAM-10-2021-0876](https://doi.org/10.1108/ECAM-10-2021-0876).
- Wang, L. and Zhang, X. (2018), "Bayesian analytics for estimating risk probability in PPP waste-to-energy projects", *Journal of Management in Engineering*, Vol. 34 No. 6, doi: [10.1061/\(ASCE\)ME.1943-5479.0000658](https://doi.org/10.1061/(ASCE)ME.1943-5479.0000658).
- Waring, J. and Bishop, S. (2018), "Transforming professional and service user identities in the heterotopian 'hybrid spaces' of public-private partnerships", *Policy and Politics*, Vol. 46 No. 4, pp. 663-679, doi: [10.1332/030557318X15333033267699](https://doi.org/10.1332/030557318X15333033267699).
- Williamson, A.J., Short, J.C. and Wolfe, M.T. (2021), "Standing out in crowdfunded microfinance: a topic modeling approach examining campaign distinctiveness and prosocial performance", *Journal of Business Venturing Insights*, Vol. 16, e00261, doi: [10.1016/j.jbv.2021.e00261](https://doi.org/10.1016/j.jbv.2021.e00261).
- Wilson, E., Nielsen, N. and Buultjens, J. (2009), "From lessees to partners: exploring tourism public-private partnerships within the New South Wales national parks and wildlife service", *Journal of Sustainable Tourism*, Vol. 17 No. 2, pp. 269-285, doi: [10.1080/09669580802495774](https://doi.org/10.1080/09669580802495774).
- Wu, X., Peng, Y., Liu, X. and Zhou, J. (2018a), "Validity of generalized compensation contract for PPP project with consideration of private fair reference depending on concession profit", *China Finance Review International*, Vol. 8 No. 1, pp. 43-68, doi: [10.1108/CFRI-06-2016-0071](https://doi.org/10.1108/CFRI-06-2016-0071).
- Wu, Y., Song, Z., Li, L. and Xu, R. (2018b), "Risk management of public-private partnership charging infrastructure projects in China based on a three-dimension framework", *Energy*, Vol. 165, pp. 1089-1101, doi: [10.1016/j.energy.2018.09.092](https://doi.org/10.1016/j.energy.2018.09.092).
- Xiong, W. and Zhang, X. (2016), "The real option value of renegotiation in public-private partnerships", *Journal of Construction Engineering and Management*, Vol. 142 No. 8, doi: [10.1061/\(ASCE\)CO.1943-7862.0001130](https://doi.org/10.1061/(ASCE)CO.1943-7862.0001130).
- Xiong, W., Chen, B., Wang, H. and Zhu, D. (2020), "Public-private partnerships as a governance response to sustainable urbanization: lessons from China", *Habitat International*, Vol. 95, 102095, doi: [10.1016/j.habitatint.2019.102095](https://doi.org/10.1016/j.habitatint.2019.102095).
- Xu, L., Liu, N., Zhou, L. and Lu, L. (2023), "Fiscal risk management of public-private partnership projects: a multidimensional identification and assessment framework", *Engineering Management Journal*, Vol. 0 No. 0, pp. 1-27, doi: [10.1080/10429247.2023.2231490](https://doi.org/10.1080/10429247.2023.2231490).
- Xue, J., Chen, J., Chen, C., Zheng, C., Li, S. and Zhu, T. (2020), "Public discourse and sentiment during the COVID 19 pandemic: using Latent Dirichlet Allocation for topic modeling on Twitter", *PLoS One*, Vol. 15 No. 9, e0239441, doi: [10.1371/journal.pone.0239441](https://doi.org/10.1371/journal.pone.0239441).
- Zhao, Y. (2015), "'China's leading historical and cultural city': branding Dali City through public-private partnerships in Bai architecture revitalization", *Cities*, Vol. 49, pp. 106-112, doi: [10.1016/j.cities.2015.07.009](https://doi.org/10.1016/j.cities.2015.07.009).
- Zou, P.X.W., Wang, S. and Fang, D. (2008), "A life-cycle risk management framework for PPP infrastructure projects", *Journal of Financial Management of Property and Construction*, Vol. 13 No. 2, pp. 123-142, doi: [10.1108/13664380810898131](https://doi.org/10.1108/13664380810898131).

Further reading

- Blei, D.M., Ng, A.Y. and Jordan, M.I. (2003), "Latent Dirichlet allocation", *The Journal of Machine Learning Research*, Vol. 3, pp. 993-1022.

Appendix

Description	Results
<i>Main information about data</i>	
Timespan	1985:2023
Sources (Journals)	622
Documents	3,057
Average years from publication	8.28
Average citations per document	31.51
Average citations per year per doc	3.298
References	149,467
<i>Document types</i>	
Article	2,927
Review	130
<i>Document contents</i>	
Keywords plus (id)	6,675
Author's keywords (de)	6,948
<i>Authors</i>	
Authors	5,691
Author appearances	7,877
Authors of single-authored documents	617
Authors of multi-authored documents	5,074
<i>Author collaboration</i>	
Single-authored documents	694
Documents per author	0.537
Authors per document	1.86
Co-authors per document	2.58
Collaboration index	2.15

Table A.
Main bibliometric
results

Corresponding author

Abderahman Rejeb can be contacted at: abderrahmen.rejeb@gmail.com

For instructions on how to order reprints of this article, please visit our website:

www.emeraldgrouppublishing.com/licensing/reprints.htm

Or contact us for further details: permissions@emeraldinsight.com