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Risk Management in the Public Sector: A Bibliographic Literature Review

Nurkhat A. Ibadildin[a], Anel A. Malik[a], Zhaxat. B. Kenzhin[b]*, Gulsara S. Mukina[c], Aigul A. Shadiyeva[d]

[a] Astana IT University, C1 Mangilik El ave., Astana, Kazakhstan; [b]Academy of Physical Education and Mass Sport, B2 Mangilik el ave., EXPO business center, block B, Astana, Kazakhstan; [c]Toraighyrov University, 64 Lomova st., Pavlodar, Kazakhstan; [d]Central Asian Innovation University, 80 Baitursynov st., Shymkent, Kazakhstan

ABSTRACT

This bibliographic literature review investigates the state of risk management in the public sector, focusing on its evolution, current trends, and future directions. The study aims to systematically synthesize the literature, identifying critical areas such as risk governance, resilience, and emergency management as central themes. The methodology involved retrieving data from primary academic sources like Google Scholar, Web of Science, and Scopus. Data was curated using specific keywords, peer-reviewed filters, and a timeframe from 2001 to 2024, ensuring relevancy and high-quality outputs. The review highlights the increasing significance of risk management in the public sector, particularly in response to global challenges such as financial crises and the COVID-19 pandemic. Results reveal an expanding focus on public sector risk management, driven by recent global challenges and the integration of digital technologies. However, notable research gaps persist, particularly in areas such as advanced technology adoption, longitudinal impact studies, and cross-regional comparative analyses. Despite extensive research, gaps remain in integrating advanced technologies, longitudinal studies, and comparative analyses across different regions. This study provides valuable insights for policymakers and practitioners, emphasizing the need for innovative and adaptive risk management strategies to enhance public sector resilience. Future research should address these gaps, promoting resilience in public sector organizations and contributing to a more robust understanding of risk management dynamics in an increasingly uncertain world.

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* Corresponding author: Kenzhin Z. B. – PhD, Associate Professor, Academy of Physical Education and Mass Sport, Mangilik el ave., EXPO business center, block B, 010000, Astana, Kazakhstan, 87471075390, email: jaksat_22@mail.ru

Управление рисками в государственном секторе: библиографический обзор литературы

Ибадильдин Н.А.ᵃ, Малик А.А.ᵃ, Кенжин Ж.Б.ᵇ*, Мукина Г.А.ᶜ, Шадиева А.А.ᵈ

ᵃ Astana IT University, пр. Мангилик Ел C1, Астана, Казахстан; ᵇАкадемия физической культуры и массового спорта, пр. Мәңгілік ел B2, бизнес-центр EXPO, блок B, Астана, Казахстан; ᶜУниверситет Торайгырова, ул. Ломова 64., Павлодар, Казахстан; ᵈЦентрально-Азиатский инновационный университет, ул. Байтурсынова 80, Шымкент, Казахстан

АННОТАЦИЯ

В этом обзоре библиографической литературы рассматривается состояние управления рисками в государственном секторе с упором на его эволюцию, текущие тенденции и будущие направления. Цель исследования провести систематический синтез литературы, выделяя ключевые области, такие как управление рисками, устойчивость и управление чрезвычайными ситуациями. Методология включала сбор данных из основных академических источников, таких как Google Scholar, Web of Science и Scopus. Данные отбирались с использованием определённых ключевых слов, фильтров по рецензируемым статьям и временного диапазона с 2001 по 2024 годы, что обеспечило актуальность и высокое качество материалов. В обзоре подчеркивается растущая значимость управления рисками в государственном секторе, особенно в ответ на глобальные вызовы, такие как финансовые кризисы и пандемия COVID-19. К основным выявленным темам относятся управление рисками, устойчивость и управление чрезвычайными ситуациями. Несмотря на обширные исследования, сохраняются пробелы в интеграции передовых технологий, продольных исследований и сравнительных анализов в различных регионах. Данное исследование дает ценную информацию для политиков и практиков, подчеркивая необходимость инновационных и адаптивных стратегий управления рисками для повышения устойчивости государственного сектора. Будущие исследования могут быть направлены на устранение этих пробелов, способствуя повышению устойчивости государственных организаций и укреплению понимания динамики управления рисками в условиях возрастающей неопределенности.

* **Корреспондирующий автор: Кенжин Ж.Б.** – PhD, ассоциированный профессор, Академия физической культуры и массового спорта, пр. Мәңгілік ел, бизнес-центр EXPO, блок B, 010000, Астана, Казахстан, 87471075390, email: jaksat_22@mail.ru

INTRODUCTION

Risk management in the public sector has gained substantial attention over the past two decades, driven by the increasing complexity and unpredictability of global events. One of the critical aspects of the activities of government agencies is strict compliance with established standards and regulations. Failure to comply with these requirements can lead to severe risks that can cause significant damage. Public administration organizations should effectively manage their risks and consider the risks associated with public-private partnerships. From financial crises to natural disasters and health pandemics, public sector organizations face many risks that require effective management strategies to ensure continuity and resilience (Power, 2004). This bibliographic literature review aims to provide a comprehensive overview of the state of risk management in the public sector, examining its evolution, current trends, and future directions.

The relevance of this study lies in the pressing need for robust risk management frameworks in an era marked by uncertainty and rapid change. The public sector's unique challenges in risk management stem from its broad mandate to provide essential services, maintain public trust, and ensure governance and accountability (Hood & Rothstein, 2004). Unlike the private sector, where profit maximization is a primary goal, public sector organizations must balance multiple, often conflicting objectives. This complexity necessitates robust risk management frameworks that can adapt to diverse and dynamic environments (Renn, 2008).

Recent studies underscore the need to integrate digital technologies to bolster risk management capabilities in the public sector (Larsson & Teigland, 2019). Prior research has investigated various dimensions of public sector risk management, encompassing theoretical frameworks, empirical studies, and practical guidelines. Emerging advancements advocate for a proactive approach, leveraging data analytics to anticipate and mitigate risks (Fletcher & Stanton, 2019).

The instability of global political conditions, economic crises during and following the pandemic, environmental catastrophes, and shifts in commodity markets - all these factors ultimately influence the domestic landscape, generating risks that hinder the attainment of goals outlined in public administration's strategic documents. Adopting and effectively applying risk management tools is becoming increasingly critical in this context.

This review synthesizes findings from various sources to identify central themes, spotlight gaps in the literature, and propose areas for future inquiry. Specifically, it aims to systematically synthesize the literature, focusing on critical areas such as risk governance, resilience, and emergency management. This study seeks to contribute to the ongoing discourse on public sector risk management, offering valuable insights for policymakers and practitioners and emphasizing the essential role of innovative and adaptive risk management strategies in strengthening public sector resilience.

LITERATURE REVIEW

Risk management is a critical function within public sector organizations, ensuring that potential risks are identified, assessed, and mitigated to maintain stability, protect public resources, and deliver effective services. The evolving landscape of public administration, influenced by technological advancements, economic fluctuations, and societal expectations, necessitates a robust approach to risk management. This section delves into the core contributions of critical scholarly works, analyzing their impact on developing risk management theories and practices in the public sector.

A foundational piece in risk management literature is The Risk Management of Everything by Power (2004), which examines how risk management has become an overarching concern in both the public and private sectors. Power's work underscores the importance of a systematic and holistic approach to risk management, focusing on the need for organizations to integrate risk thinking into every aspect of their operations. This work contributed significantly to the discourse by emphasizing the shift from specific risk management practices to a broader culture of risk awareness, critical in the public sector where risks are multifaceted and often interconnected.

Similarly, Renn's (2008) risk governance provided a comprehensive framework for understanding how public institutions can manage uncertainty in an increasingly complex world. Renn's emphasis on participatory governance in risk decision-making has influenced how public sector organizations engage stakeholders in risk management strategies. His focus on societal values and public trust is particularly relevant for government entities under intense public scrutiny.

Drennan et al. (2024), in risk and crisis management in the public sector, made significant empirical contributions by analyzing case studies from public sector organizations that have successfully navigated crises. Their research demonstrated the importance of proactive risk assessments and the

development of contingency plans, showcasing how theoretical frameworks can be applied in real-world scenarios. This work emphasized the need for public institutions to move beyond reactive strategies and focus on building organizational resilience. This theme has become increasingly prominent in recent literature on risk management.

Another critical study is *Internal Control Systems: Effectiveness of Internal Audit in Risk Management at Public Sector Enterprises*, which explores the role of internal audits in mitigating risks. This work emphasizes how internal controls are essential for maintaining governance and accountability within public organizations. Through systematic evaluation of risk management practices, internal audits play a crucial role in fostering a culture of continuous improvement and risk awareness.

While earlier literature primarily focused on traditional risk management frameworks, recent studies have shifted towards incorporating advanced technologies into public sector risk management. Kunreuther's (2002) *Risk Analysis and Risk Management in an Uncertain World* introduced methodologies for quantifying and mitigating risks in uncertain environments. This work laid the groundwork for the current exploration of big data analytics, artificial intelligence, and predictive modeling as tools to enhance risk management capabilities in the public sector.

Aven (2015) further advanced this discourse by examining the role of technology in improving risk assessments and decision-making processes. His work highlighted the limitations of existing models and called for more longitudinal studies and comparative analyses to better understand the implications of technological integration in risk management. These studies are especially critical in the public sector, where resource constraints and bureaucratic structures often challenge the adoption of innovative risk management tools.

Despite the considerable body of research, several gaps remain. Many studies have emphasized frameworks and methodologies but have not fully addressed the complexities of implementation in the unique context of the public sector. Moreover, there is limited research on how organizational culture, leadership, and political factors influence risk management outcomes. Future studies must also address the ethical implications of using advanced technologies in risk management, particularly regarding data privacy and governance.

While the existing literature provides a solid foundation for understanding risk management in the public sector, there is a clear need for more in-depth empirical studies and further technolog-

ical integration. This review synthesizes key contributions and identifies areas for future research that could drive innovation and resilience in public sector organizations. In particular, it emphasizes the importance of conducting a systematic synthesis of literature on essential areas such as risk governance, resilience, and emergency management, thereby supporting the development of effective and adaptive risk management strategies.

Bibliometric reviews overview

Bibliometric analysis has emerged as a powerful tool for understanding the landscape of academic research in risk management in the public sector. By employing quantitative methods to analyze literature, bibliometric reviews provide insights into the trends, patterns, and key contributors in this field, enabling a comprehensive understanding of its development and current state. This chapter delves into the application of bibliometric methods in reviewing the literature on risk management in the public sector, highlighting significant studies, prevalent themes, and influential authors.

Bibliometric reviews utilize metrics such as citation analysis, co-citation analysis, and co-authorship analysis to evaluate the impact and interconnections of research works. One of the foundational studies in this realm is by Broadus (1987), who underscored the importance of citation analysis in mapping the influence of scholarly work. Citation analysis allows researchers to identify seminal papers and authors significantly contributing to the field. For instance, the work of Hood and Rothstein (2001) on "The Risk Regulation Regime" has been highly cited, reflecting its pivotal role in shaping discussions around risk management frameworks in the public sector.

Co-citation analysis, another critical bibliometric tool, helps identify how frequently pairs of documents are cited together, revealing the intellectual structure of a research field. Small (1973) pioneered this approach, which has been applied extensively to uncover the thematic clusters within risk management literature. For example, studies on disaster risk management and public health risk, often cited together, indicate a strong interrelation between these subfields, as evidenced by the works of Alexander (2002) and Walker et al. (2010).

Co-authorship analysis provides insights into collaboration patterns among researchers. Newman (2001) highlighted the significance of understanding these patterns to gauge the collaborative networks within a research domain. In the context of public sector risk management, high levels of collaboration are observed among researchers from different geo-

graphical regions and institutions, pointing to the global nature of this research area. Notable collaborative works include those by Comfort et al. (2010), which bring together diverse perspectives on crisis management and resilience.

The temporal analysis of publications also reveals the evolution of research themes over time. Early works in the 1980s and 1990s primarily focused on regulatory frameworks and risk assessment models (Fischhoff et al., 1978; Slovic, 2016). In contrast, more recent studies have expanded to encompass a broader range of risks, including cybersecurity, climate change, and financial risks (Aven, 2016; Renn, 2008). This shift reflects the dynamic nature of risk management challenges the public sector faces and the corresponding adaptation of research focus.

Another aspect explored through bibliometric analysis is the geographic distribution of research outputs. Most influential literature originates from Western countries, particularly the United States and Europe, where risk management policies and frameworks have been extensively studied and implemented (Hood et al., 2001; Power, 2004). However, there is a growing body of research from developing countries addressing region-specific risks and management strategies, such as the work by Boin and McConnell (2007) on disaster management in the Asia-Pacific.

To sum up, bibliometric reviews offer a detailed and quantitative overview of the risk management research landscape in the public sector. Citation analysis uncovers the most influential publications and foundational studies. In contrast, co-citation analysis reveals thematic clusters and interconnections that reflect how interdisciplinary influences have shaped risk management in the public sector. Meanwhile, co-authorship analysis highlights the field's collaborative nature, underscoring the importance of international and cross-institutional partnerships in addressing the complex challenges of public sector risk management. By identifying key authors, seminal works, and emerging trends, these reviews provide valuable insights that can guide future research directions and policy-making. Integrating various bibliometric methods ensures a holistic understanding of the field, highlighting its evolution, current state, and potential future developments.

RESEARCH METHODS

The methodology for this bibliographic literature review was designed to ensure a comprehensive and rigorous analysis of risk management practices in the public sector. The choice of methods and data sources is critical to achieving the objectives of this study, and this section provides a detailed explanation of the rationale behind these decisions.

To collect relevant academic publications, three significant databases Google Scholar, Lens.org, and Web of Science - were selected based on their comprehensive coverage, relevance to the research topic, and ability to provide a wide array of bibliometric data.

Google Scholar was chosen because of its extensive indexing of academic and gray literature, including journal articles, conference papers, theses, and reports. This platform provides access to a broad range of sources, many of which may not be available in more specialized databases. It is ideal for capturing a holistic view of public sector risk management literature.

Lens.org was included for its powerful citation analysis tools and detailed patent data, which are particularly useful for understanding the intersection of risk management and technological innovations. Lens.org's focus on open-access research also allowed for a more inclusive collection of publications, ensuring that less conventional but relevant studies were incorporated.

Web of Science was selected due to its rigorous peer-reviewed indexing, which ensures that only high-quality, academically vetted articles are included. It also offers advanced bibliometric tools to track citation patterns and research trends, making it ideal for analyzing the development of risk management literature over time.

These databases were selected for their comprehensive coverage and their ability to provide diverse types of literature, ensuring a balanced and multi-faceted view of the research landscape. Each database offers unique advantages in terms of coverage, citation metrics, and access to well-established and emerging field studies.

Data collection and search strategy

A systematic search strategy was employed using keywords such as 'risk management', 'public sector', 'governance' and 'resilience'. The search was refined using filters for peer-reviewed articles, publication year (2001–2024), and relevant disciplines to ensure the dataset focused on current and high-quality research.

By limiting the scope to the period between 2001 and 2024, the study aimed to capture the evolution of risk management practices in response to major global events such as the financial crises and the COVID-19 pandemic. This timeframe also allowed for an analysis of how technological advancements have influenced risk management strategies in the public sector.
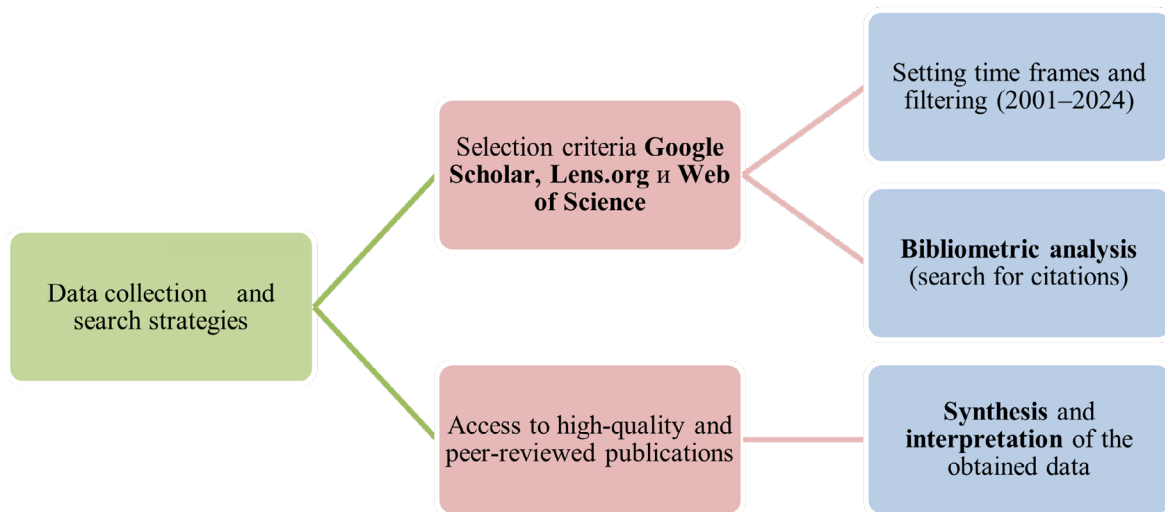
Figure 1 shows the stages of this study.

Figure 1. Step-by-step actions of scientific research

The collected data was subjected to a thorough bibliometric analysis, a method chosen for its ability to assess the research landscape quantitatively. Bibliometric methods, such as citation analysis, co-citation analysis, and keyword frequency analysis, were employed to identify influential authors, key publications, and emerging trends in the literature. These methods allowed for a nuanced understanding of the development of risk management theories and practices and the identification of research gaps.

Citation analysis was employed to track the influence of specific studies and authors within the field, helping to identify seminal works shaping the discourse on risk management. Co-citation analysis was also conducted to explore relationships between works frequently cited together, revealing the intellectual structure of the research domain. Additionally, keyword frequency analysis was used to identify dominant themes and areas of focus, such as governance, resilience, and emergency management, offering insights into the evolving priorities of public sector risk management.

The combination of these databases and bibliometric techniques was specifically chosen to ensure both breadth and depth in the literature review. By employing a variety of bibliometric tools, this study was able to map the intellectual landscape of public sector risk management, providing insights into both established theories and emerging trends. The selection of databases ensured that the study captured a broad spectrum of research, from high-impact journal articles to innovative approaches published in less conventional venues.

This methodology was designed to provide a robust and comprehensive analysis of risk management literature in the public sector. The careful selection of data sources and the use of advanced bibliometric tools ensure that this study offers valuable insights for academics and practitioners seeking to understand and improve risk management strategies.

RESULTS AND DISCUSSION

The analysis of bibliometric data on risk management in the public sector provides a comprehensive overview of the evolution and current state of research in this field. This section presents the findings from various bibliometric databases, including Google Scholar, Lens, and Web of Science. The analysis covers publication trends over time, the distribution of document types, prolific authors, key institutions, and the geographical distribution of research output. The findings are based on data collected using specific keywords related to risk management in the public sector.

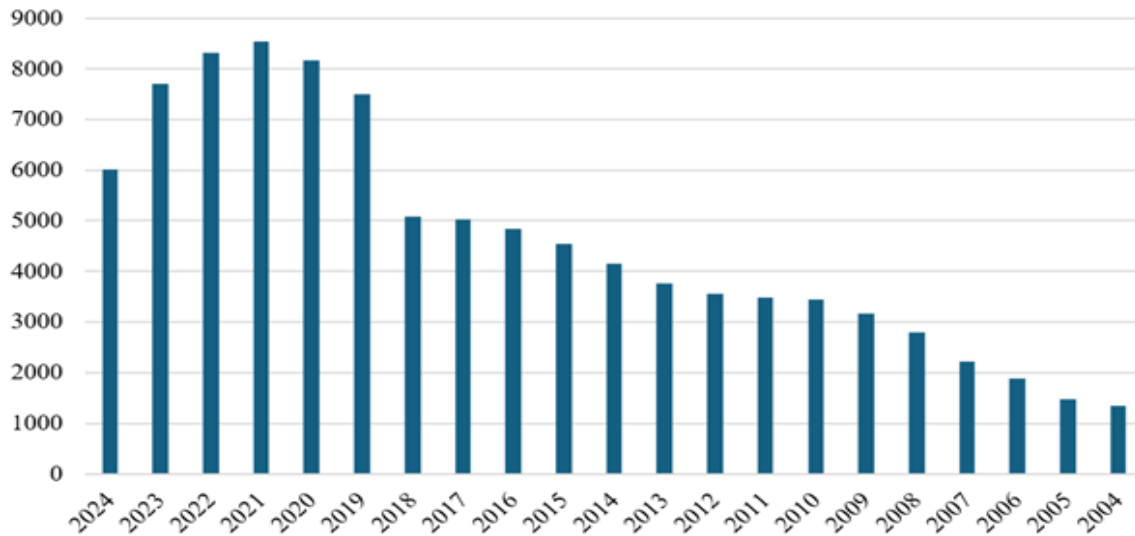Figure 2 illustrates the number of published works from 2004 to 2024.

Figure 2. Number of works from 2004 to 2024

An examination of publication trends reveals significant growth in research on risk management in the public sector over the past two decades. Data from the Web of Science identified 115,711 records from 2001 to 2024. The annual distribution of publications shows a steady increase, with notable spikes in recent years. As illustrated in Figure 1, the number of works published has consistently risen from 2004 to 2024, reflecting a growing academic and practical interest in this field.

A similar trend appears in the annual number of publications, which continues to rise and underscores the growing focus on risk management within public sector research. For example, in 2023, there were 7,352 publications, representing 6.354% of the total records. In 2022, 8,065 publications were recorded (6.970%), while in 2021, 8,296 publications were recorded (7.170%). In contrast, the earliest records from 2001 show only 899 publications (0.777%), illustrating the field's expansion over time (see Figure 3).
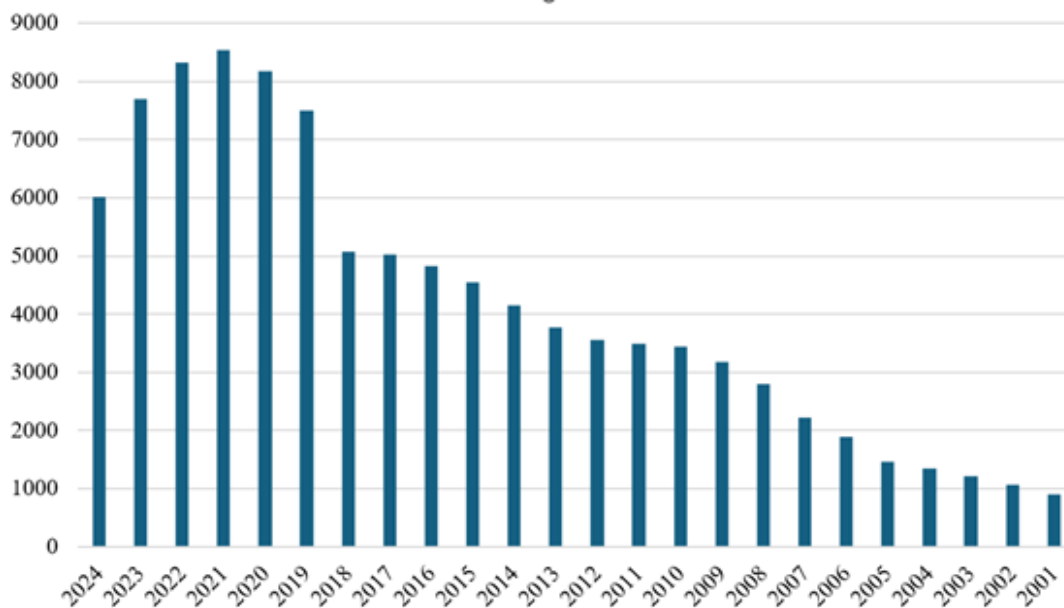

Figure 3. Number of works from 2004 to 2024

The analysis of document types offers valuable insight into the nature of scholarly output on this topic. As shown in Figure 3, journal articles account for most records (74.802%), reflecting a strong preference for disseminating research findings through peer-reviewed journals. Conference proceedings represent the second-largest category, comprising 17.562% of the total records, highlighting the importance of conferences and symposia for discussing recent risk management advancements. Other document types include book chapters (3.058%), review articles (4.579%), and editorial materials (2.250%), indicating a predominant emphasis on high-quality, peer-reviewed publications in the literature (see Figure 4).
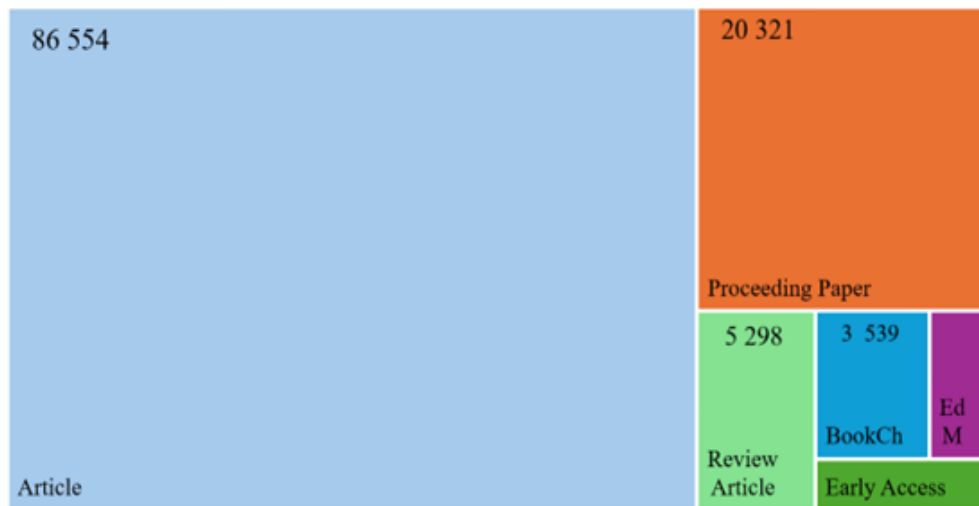

Figure 4. Number of works by the document type

Note: compiled by authors based on Tableau

The contributions of prolific authors in the field of risk management are highlighted by notable figures, with Vahtera J leading with 196 publications, followed by Kivimäki M with 189 publications and Li Y with 169 publications. Other significant contributors include Pentti J (162 publications), Wang Y (155 publications), and Zhang Y (150 publications). This substantial output underscores these authors' pivotal role in advancing research within the field (see Figure 5).
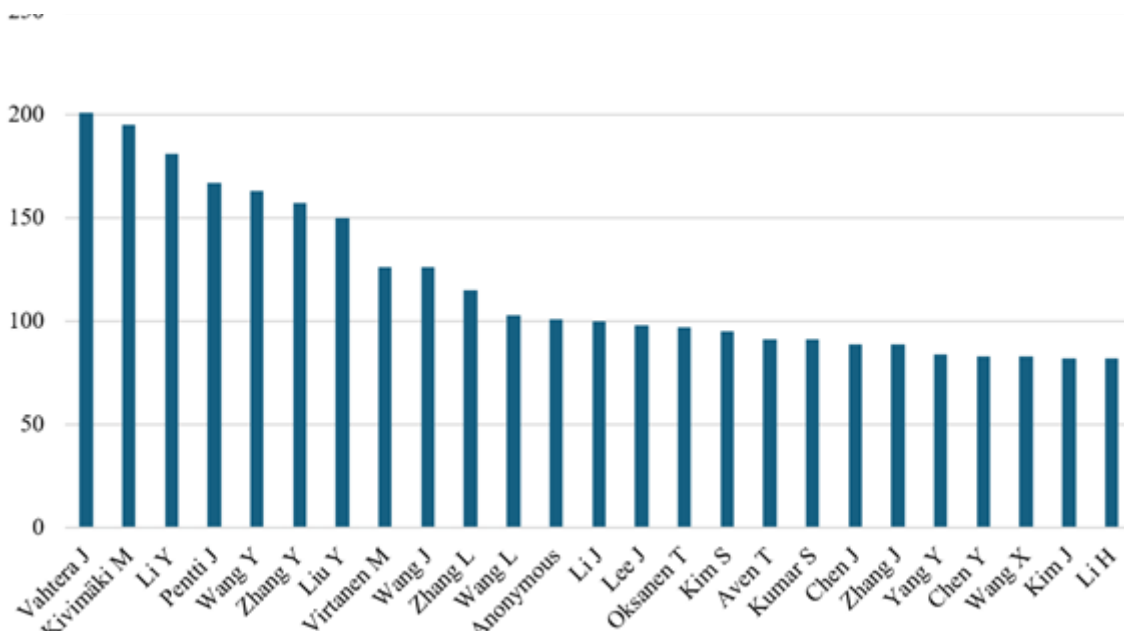

Figure 5. Number of works by their authors

Authors' institutional affiliations provide valuable insights into the research landscape on public sector risk management. Leading institutions in this field include the University of London, with 2,422 publications credited to its researchers, representing 2.093% of the total records. Other notable contributors are the University of California System (1,270 publications), Harvard University (971 publications), and University College London (845 publications). This distribution underscores the pivotal role of major academic institutions in advancing research within this domain (see Figure 6).
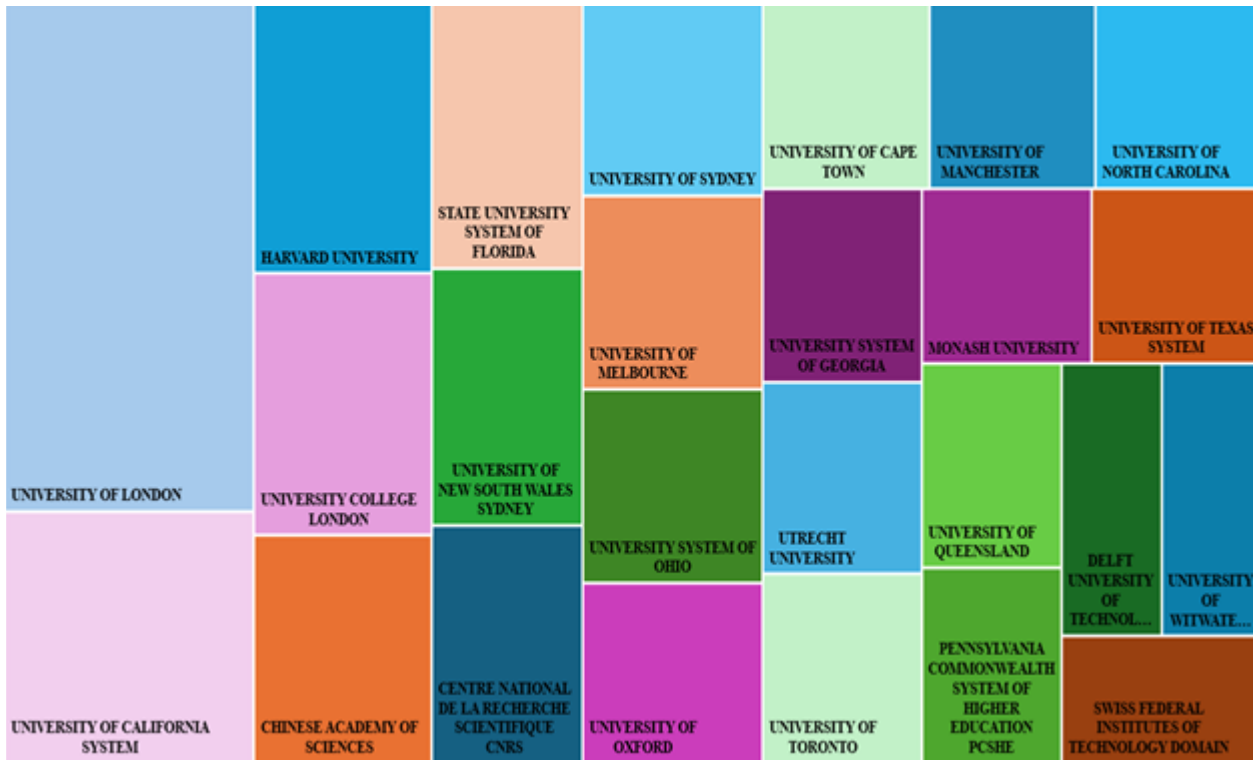

Figure 6. Number of works by the Universities

Note: compiled by authors based on Tableau

The research output on this topic is geographically diverse, with institutions across multiple countries contributing significantly. Institutions in the United States, the United Kingdom, and China are especially active in publishing within this field. Leading contributors from the United States include the University of California System and Harvard University, while the University of London and University College London are prominent in the United Kingdom. The Chinese Academy of Sciences is a major contributor in China, highlighting the country's growing emphasis on research and development in public administration and risk management (see Figure 7).

A keyword analysis was conducted to identify the literature's most frequently occurring terms and themes. Keywords such as 'risk management', 'public sector', 'governance', 'resilience' and 'emergency management' are prevalent, indicating the primary focus areas within this research domain. Data from Google Scholar reveal many relevant records: 4,510,000 results overall, with 155,000 results specifically from 2001 to 2024. In Lens, the total records amount to 29,830, with 28,556 entries from 2001 to 2024. Web of Science includes 311,194 results in total, of which 115,711 are from 2001 to 2024. The frequency of these keywords suggests core areas of interest, including understanding risk in the public sector, developing strategies for effective risk management, and enhancing resilience and governance through improved risk practices.
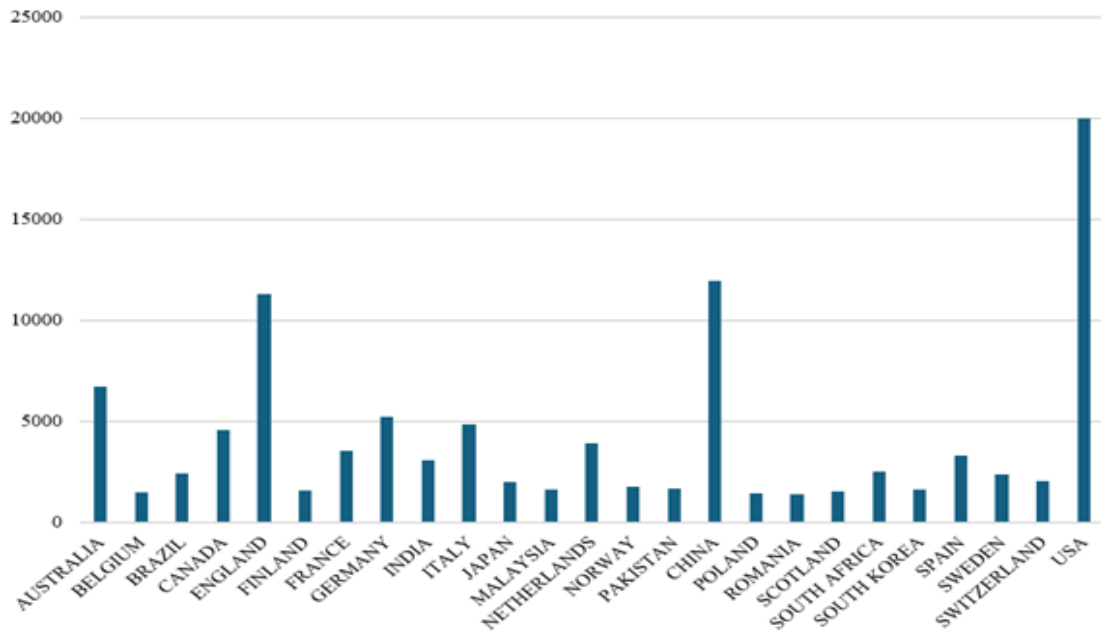
Figure 7. Number of works by Countries

Finally, Figure 8 provides a network visualization map that illustrates the interconnectedness of key themes and contributors within the literature.
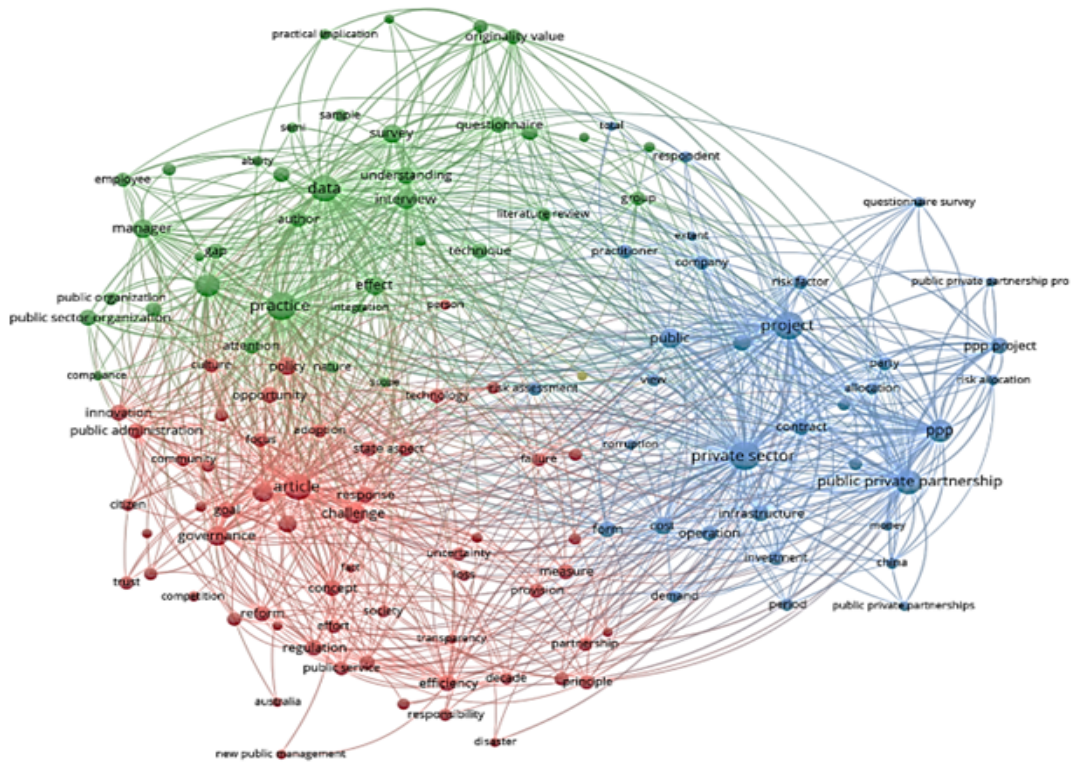

Figure 8. Network Visualization Map

Note: compiled by authors based on VOSViewer

This visualization highlights how various studies and authors are related, revealing the collaborative nature of research in the public sector's risk management field. Overall, the bibliometric analysis of risk management in the public sector highlights a significant and growing body of research. The increasing number of publications over the years reflects the rising importance of this field in both academic and practical contexts. Journal articles dominate the literature, indicating a preference for peer-reviewed dissemination of research findings. Prominent authors and leading institutions play crucial roles in advancing the knowledge base, with substantial contributions from major universities and research centers globally. Geographical distribution data underscores the widespread interest and investment in this research area, with notable contributions from the United States, the United Kingdom, and China.

The analysis of bibliometric data on risk management in the public sector offers a comprehensive overview of the evolution, current state, and future research directions in this field. The steady increase in publications over the past two decades underscores the growing importance of risk management, especially following global events such as financial crises and the COVID-19 pandemic. These developments highlight the vulnerability of public sector entities and the urgent need for effective risk management strategies to ensure resilience and continuity of services.

While existing literature provides valuable insights, many recommendations remain general and lack specificity. This study emphasizes the need for public sector organizations to develop tailored risk management frameworks that address their unique challenges, including political dynamics and regulatory environments. By conducting thorough risk assessments, organizations can identify specific vulnerabilities and create customized strategies to manage them effectively.

Moreover, integrating advanced technologies like artificial intelligence and big data analytics into risk management processes is essential. Such technological adoption can enhance risk identification, assessment, and mitigation capabilities. By investing in training and necessary tools, organizations will be better positioned to respond swiftly to emerging risks.

Collaboration among government agencies is vital for effective risk management. Establishing formal networks or task forces can promote knowledge-sharing and joint problem-solving, allowing organizations to tackle complex risks that extend beyond departmental boundaries. This cross-agency collaboration is crucial for developing cohesive strategies that address interconnected challenges.

Public sector organizations should implement continuous employee training programs to strengthen risk management practices. These programs should focus on best practices, scenario planning, and crisis response strategies, thereby enhancing organizational preparedness. Fostering a risk-aware culture is essential; encouraging proactive engagement from employees at all levels can improve outcomes.

Investing in longitudinal studies is also critical for understanding the long-term effectiveness of different risk management strategies. By tracking implementation and results over time, organizations can identify best practices and areas for improvement.

Incorporating stakeholder perspectives into risk management strategies has been shown to enhance the effectiveness of these initiatives, particularly in complex environments (Drennan et al., 2024). Public consultations and stakeholder engagement sessions can gather diverse perspectives, fostering ownership and support for risk management initiatives.

Finally, public sector organizations should establish mechanisms for regularly evaluating and adjusting their risk management strategies. This iterative process will enable them to remain agile and responsive to changing circumstances.

Additionally, current research shows that in order to respond to the dynamic nature of hazards that public organizations confront, adaptive management solutions are crucial. Public sector organizations can build resilience and adaptability in risk management strategies by implementing tailored frameworks, embracing technology, fostering collaboration, and engaging stakeholders. Addressing these recommendations will improve theoretical understanding and provide practical insights for policymakers and practitioners aiming to create more robust public sector organizations capable of navigating uncertainties.

CONCLUSION

This bibliographic literature review underscores the critical importance of effective risk management in the public sector. The increasing volume of research reflects a growing recognition of the need to develop robust frameworks and strategies to address the myriad risks facing public sector organizations. Key themes like risk governance, resil-

ience, and emergency management have emerged in the literature, highlighting the sector's response to global challenges like financial crises and the COVID-19 pandemic.

Despite significant advancements, the review identifies several gaps that warrant further investigation. Integrating advanced technologies, such as artificial intelligence and big data analytics, into risk management practices remains underexplored. Future research should focus on evaluating the practical applications of these technologies and addressing associated ethical and governance issues. Additionally, there is a need for more longitudinal studies to assess the long-term effectiveness of risk management strategies and for comparative analyses across different countries and regions to understand contextual influences.

Addressing these gaps will enhance the theoretical and practical understanding of risk management in the public sector. Policymakers and practitioners can benefit from these insights by developing more adaptive and innovative approaches to managing risks, ultimately building more resilient public sector organizations capable of withstanding and recovering from adverse events. This study contributes to the ongoing public sector risk management discourse, providing a foundation for future research and practical improvements in this critical area.

AUTHOR CONTRIBUTION

Conceptualization and theory: NI, AM, ZK, GM and AS; research design: NI; data collection: NI, AM, ZK, GM and AS; analysis and interpretation: AM; writing draft: NI; supervision: NI; correction of article: ZK; proofread and final approval of article NI and GM. All authors have read and agreed to the published version of the manuscript.

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Information about the authors

Nurkhat A. Ibadildin – Cand. Sc. (Technic.), Associate Professor, School of Creative Industries, Astana IT University, Astana, Kazakhstan, email: ibadildin.nurkhat@astanait.edu.kz, ORCID ID: https://orcid.org/0000-0002-6352-8713

Anel A. Malik – Bachelor of Education in IT Management, Astana IT University, Astana, Kazakhstan, email: anelekaatieva@gmail.com, ORCID ID: https://orcid.org/0000-0002-8313-5415

*Zhaxat B. Kenzhin – PhD, associate professor, Academy of Physical Education and Mass Sport, Astana, Kazakhstan, e-mail: jaksat_22@mail.ru, ORCID ID: https://orcid.org/0000-0001-6085-834

Gulsara S. Mukina – PhD, Associate Professor, Toraighyrov University, Pavlodar, Kazakhstan, email: gulsara.dyusembekova@mail.ru, ORCID ID: https://orcid.org/0000-0002-2451-4984

Aigul A. Shadiyeva – Cand. Sc. (Econ.), senior lecturer, Central Asian Innovation University, Shymkent, Kazakhstan, email: ms.shadieva@mail.ru, ORCID ID: https://orcid.org/0000-0002-1996-5342

Авторлар туралы мәліметтер

Ибадильдин Н.А. – т.ғ.к., қауымдастырылған профессор, Креативті индустриялар мектебі, Astana IT University, Астана, Қазақстан, email: ibadildin.nurkhat@astanait.edu.kz, ORCID ID: https://orcid.org/0000-0002-6352-8713

Малик А.А. – IT Менеджмент білім беру бағдарламасы бойынша бакалавр, Astana IT University, Астана, Қазақстан, email: anelekaatieva@gmail.com, ORCID ID: https://orcid.org/0000-0002-8313-5415

*Кенжин Ж.Б. – PhD, қауымдастырылған профессор, Дене шынықтыру және бұқаралық спорт академиясы, Астана, email: jaksat_22@mail.ru, ORCID ID: https://orcid.org/0000-0001-6085-834

Мукина Г.С. – PhD, қауымдастырылған профессор, Торайғыров университеті, Павлодар, Қазақстан, email: gulsara.dyusembekova@mail.ru, ORCID ID: https://orcid.org/0000-0002-2451-4984

Шадиева А.А. – э.ғ.к., аға оқытушы, Орта Азиялық-Инновациялық Университеті, Шымкент, Қазақстан, email: ms.shadieva@mail.ru, ORCID ID: https://orcid.org/0000-0002-1996-5342

Сведения об авторах

Ибадильдин Н.А. – к.т.н., ассоциированный профессор, Школа Креативных Индустрий, Astana IT University, Астана, Казахстан, email: ibadildin.nurkhat@astanait.edu.kz, ORCID ID: https://orcid.org/0000-0002-6352-8713

Малик А.А. – бакалавр по образовательной программе IT Менеджмент, Astana IT University, Астана, Казахстан, email: anelekaatieva@gmail.com, ORCID ID: https://orcid.org/0000-0002-8313-5415

*Кенжин Ж.Б. – PhD, ассоциированный профессор, Академия физической культуры и массового спорта, Астана, Казахстан, email: jaksat_22@mail.ru, ORCID ID: https://orcid.org/0000-0001-6085-834

Мукина Г.С. – PhD, ассоциированный профессор, университет Торайгырова, Павлодар, Казахстан, email: gulsara.dyusembekova@mail.ru, ORCID ID: https://orcid.org/0000-0002-2451-4984

Шадиева А.А. – к.э.н., старший преподаватель, Центрально-Азиатский Инновационный Университет, Шымкент, Казахстан, email: ms.shadieva@mail.ru, ORCID ID: https://orcid.org/0000-0002-1996-5342