

Artificial Intelligence and Economic Law: A Bibliometric Review of Research Trends, Key Themes, and Future Pathways

Al Milla Hamidah¹, Muhamad Subhi Apriantoro²

^{1,2}*Universitas Muhammadiyah Surakarta, Surakarta, Indonesia*

¹i000220102@student.ums.ac.id, ²msa617@ums.ac.id

Abstract

This study employs bibliometric analysis to explore the development and research direction of Artificial Intelligence (AI) in Economic Law, based on data from the Scopus database covering the period from 1972 to 2024. The intersection between AI and economic regulation has become a crucial area due to the transformative impact of AI on productivity, innovation, and efficiency across various economic sectors. Using tools such as VOSviewer and Microsoft Excel, this research identifies trends in publication volume, key contributors (countries, institutions, and authors), and thematic focus areas. The results indicate a significant increase in publication volume after 2016, with the United States and the United Kingdom as the primary contributors. Themes such as AI ethics, regulation, and economic impacts dominate discussions, while network analysis reveals emerging topics like explainability and automation. These findings underscore the importance of interdisciplinary approaches in addressing the ethical, legal, and economic challenges posed by AI advancements.

Keywords: Artificial Intelligence; Economic Law; AI regulation; AI ethics

Introduction

Artificial Intelligence (AI) is reshaping the global economy, influencing productivity, innovation, labor markets, and international trade (Echeberria 2022; Li 2021; Tavangari, Shakarami, and Taheri 2024; Zh, Thaariq, and Ardiansyah 2024). As AI technologies automate tasks and transform job structures, they also raise critical legal and economic questions, especially concerning competition, consumer protection, and market fairness (Abrardi, Cambini, and Rondi 2022; Li 2021; Lu and Zhou 2021; Zh 2025). Policymakers are increasingly challenged to adapt economic laws to ensure that AI-driven innovation aligns with principles of transparency, accountability, and ethical governance (Zukrowska 2021). The European Union has taken a leading role in proposing value-based regulatory frameworks to balance technological advancement with societal well-being (Vöpel 2024; Yawar 2022).

Despite this growing relevance, the field of AI Economic Law remains fragmented, with limited comprehensive reviews that map its evolution, themes, and emerging research pathways. Prior studies often focus on legal frameworks or policy implications in isolation, without analyzing the broader intellectual landscape (Badran 2021; Tzimas 2023). AI Economic Law is a dynamic field aimed at understanding and regulating the profound economic changes driven by AI technologies (Kovac 2021). Regulating AI involves applying legal rules to preserve opportunities associated with the technology, mitigate risks, ensure good digital governance, and manage the use of learning algorithms (Hoffmann-Riem 2019). The ethical and legal implications of AI have become increasingly prominent, leading to a growing consensus on the need for regulation to ensure safe and responsible AI deployment (Pintérová 2024). AI policy regulation emphasizes the importance of value-based policymaking, procedural mechanisms, and ethical considerations, with broad agreement on the necessity of addressing ethical issues in AI regulation (Du

2023). AI regulation seeks to balance fostering innovation with protecting the interests, rights, and well-being of individuals and societies, requiring ongoing adaptations to emerging ethical challenges (Choudhary, Narayanan, and Khan 2024). The unique technical characteristics of AI, such as speed, complexity, and unpredictability, challenge traditional administrative law tactics, necessitating new governance solutions to ensure that public values guide AI research, development, and deployment (Solow-Niederma 2020).

In summary, This study addresses that gap by conducting a bibliometric analysis of global publications related to AI and economic law. It aims to identify key contributors, thematic trends, and collaborative networks while offering a foundation for future research in this rapidly evolving field. Beyond providing a descriptive overview, the study also seeks to inform policymakers and legal scholars by mapping research priorities that can guide the development of responsive, ethical, and effective AI-related regulations.

Methods

This study employed bibliometric analysis to explore the development and direction of research on Artificial Intelligence (AI) in Economic Law, based on data from the Scopus database spanning the years 1972 to 2024. Information was gathered using Boolean search queries, with data collection conducted on September 27, 2024, at 3:26 PM. Researchers used tools such as R and RStudio, VOSviewer, and Microsoft Excel to analyze citations, document content, and networks. Version 4.3.3 of R and RStudio was utilized for processing bibliometric databases. Meanwhile, VOSviewer was employed to visualize networks of frequently occurring terms within the field of study. This tool also supported the analysis, evaluation, and visualization of data covering aspects such as institutions, journal publications, countries, keywords, and years. This research procedure referred to prior studies using bibliometric analysis to map research themes in various fields, such as Islamic education (Fiqria and Arifin 2019). Scopus was chosen due to its rigorous peer-review indexing standards, wide coverage across disciplines, and suitability for bibliometric studies, ensuring that the dataset reflects reputable and impactful research publications.

This study was conducted in three stages. In the first stage, the researchers performed a literature review to ensure the relevance of the research theme to the bibliometric topic. This review also helped identify appropriate and relevant keywords to describe the scope of the study. In the second stage, a search in the Scopus database was conducted using the Boolean operator TITLE-ABS-KEY (AI AND Economic AND Law) resulting in 395 documents. Further filtering was applied with the additional Boolean operator (LIMIT-TO (DOCTYPE, "Article") AND (LIMIT-TO (SOURCETYPE, "Journal") AND (LIMIT-TO (LANGUAGE, "English"))) to restrict the results to English-language journal articles. This filtering produced a final dataset of 150 documents. The decision to include only English-language journal articles was made to ensure consistency, accessibility, and reliability of the dataset, as English remains the dominant language in global academic publishing. Furthermore, limiting sources to peer-reviewed journal articles indexed in Scopus helps maintain academic rigor and reduce noise from less credible sources. However, this approach may inadvertently exclude valuable regional or non-English contributions, particularly from developing economies.

In the third stage, the final documents were analyzed using Scopus to determine the number of documents per year, country, affiliation, author, and source. Network analysis was performed using VOSviewer and data processing in Microsoft Excel. The visualization in VOSviewer presented data in the form of maps showing relationships between keywords and development opportunities. Additionally, the researchers analyzed keyword co-occurrence using VOSviewer and Microsoft Excel to map the development of research related to AI Economic Law.

It is also important to note that while bibliometric analysis effectively maps publication trends and patterns, it does not capture the depth of arguments or contextual richness found in qualitative content. Therefore, future studies should consider integrating systematic literature reviews or qualitative interviews to complement bibliometric findings and offer a more holistic understanding of AI Economic Law.

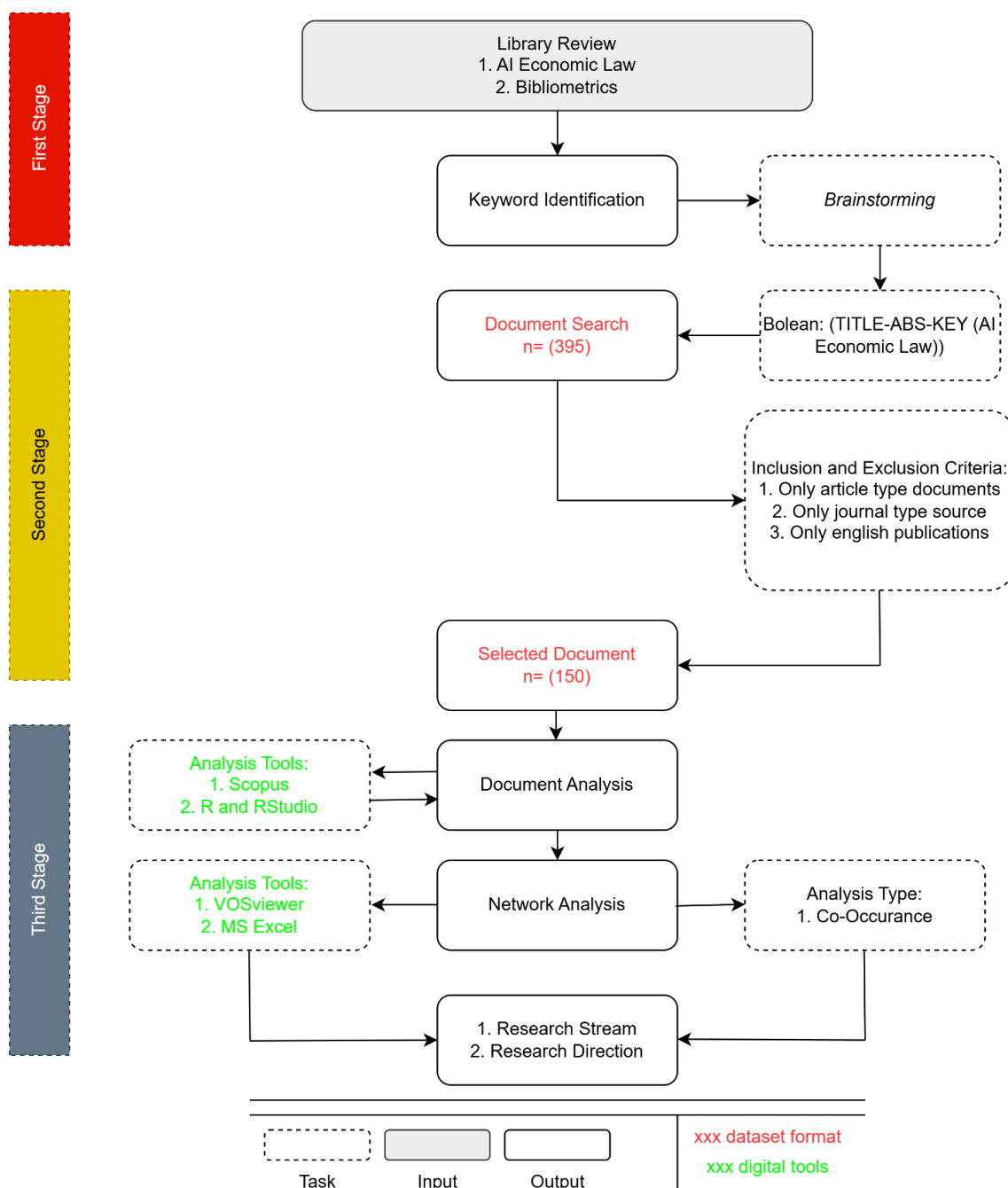


Figure 1 Research stages and detailed procedures for dataset preparation

Results

The publication trend of AI Economic Law research has shown significant changes over the past decades. As illustrated in Figure 2, between 1972 and 2015, the number of publications remained consistently low, averaging only one article per year. A noticeable surge occurred in 2016, with three articles published, marking a considerable increase compared to previous years. Although there were fluctuations in subsequent years, a general upward trend is evident, culminating in a peak of 27 publications in 2023. However, a notable decline was observed in 2024, with only seven articles recorded.

Regarding the geographical distribution of research output, the United States led with 21 publications, followed by the United Kingdom with 14 publications, and China with 9 publications, as depicted in Figure 3. Other significant contributors included France and India with 6 publications, while Australia, Belgium, Germany, the Netherlands, and Spain each contributed 4 publications.

Institutional analysis revealed that CNRS Centre National de la Recherche Scientifique and the University of Texas at Austin each produced 3 publications, representing the highest institutional contributions in Figure 4. Other notable institutions, including the University of Washington, De Montfort University, Northeastern University, University of Bath, University of Cambridge, Sumy National Agrarian University, and the University of Petroleum and Energy Studies, each contributed 2 publications.

Author analysis indicated a balanced distribution of contributions. Among the ten authors analyzed, Laptev, V.A., and Matulionyte, R. stood out with 2 publications of the total output in Figure 5. The remaining authors each contributed 1 publication, demonstrating a diverse range of contributors without a single dominant figure.

In terms of source analysis, Computer Law and Security Review emerged as the most prolific journal, publishing 6 articles in Figure 6. AI and Society, Artificial Intelligence and Law, and Sustainability Switzerland each contributed 3 publications. Meanwhile, journals such as Applied Mathematics and Nonlinear Sciences, Kutafin Law Review, Law Innovation and Technology, and Laws produced 2 publications each. Specialized journals like Access to Justice in Eastern Europe and Acta Baltica Historiae et Philosophiae Scientiarum contributed 1 publication each.

Figures and Tables

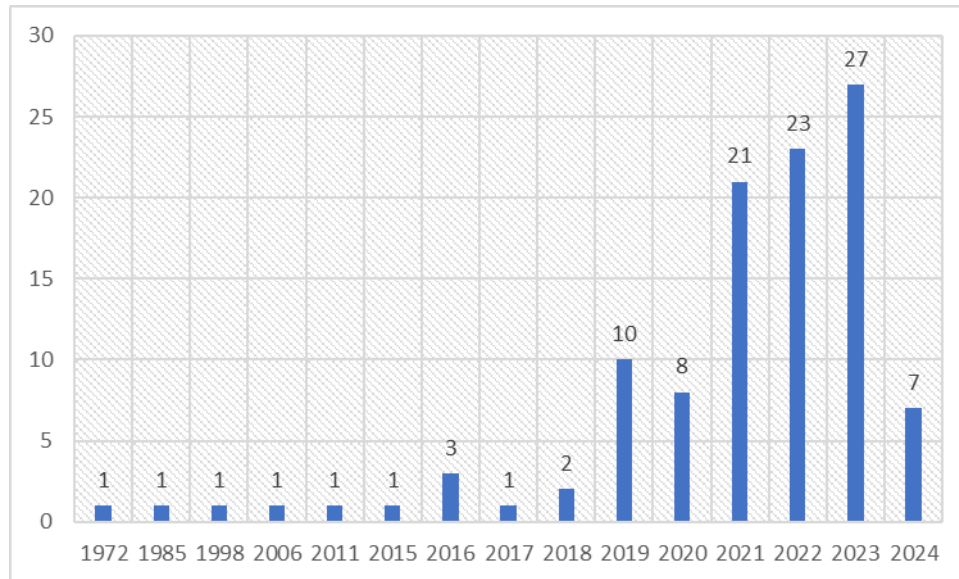


Figure 2 The development of publications based on the year

Figure 2 shows the annual growth of publications in the field of AI Economic Law, highlighting a significant increase after 2016.

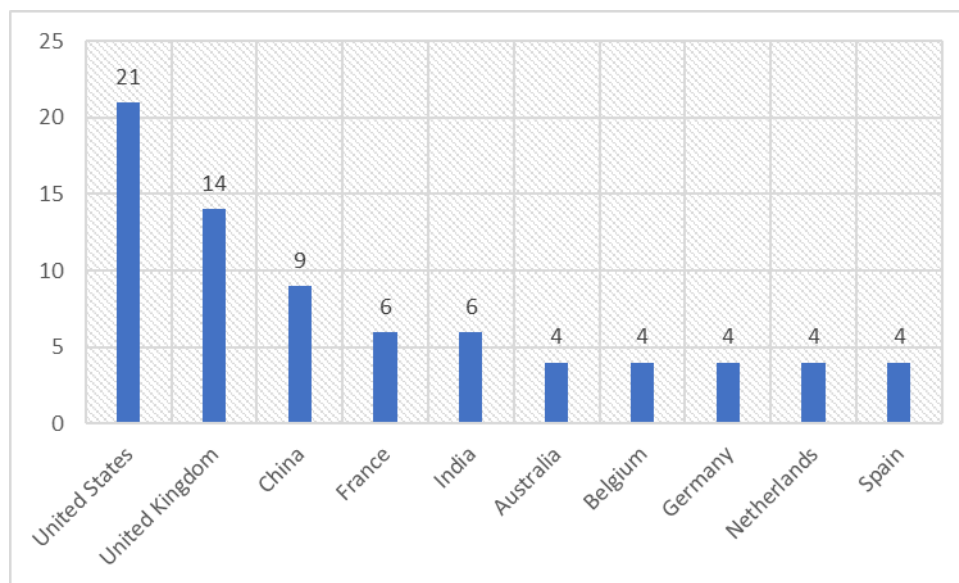


Figure 3 Most relevant countries contributing to AI Economic Law research.

Figure 3 compares the number of publications by country, with the United States leading, followed by the United Kingdom and China.

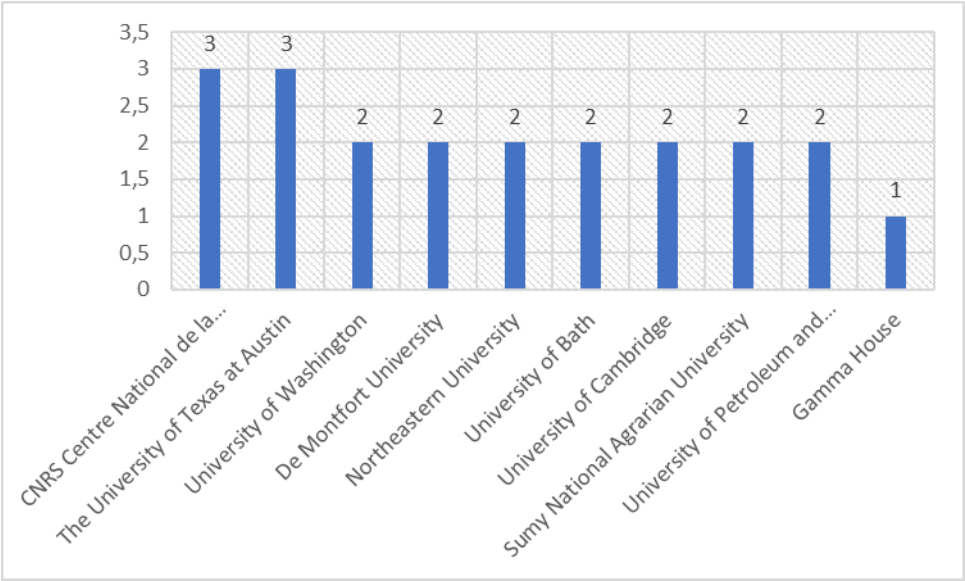


Figure 4 Most relevant affiliations contributing to AI Economic Law research.

Figure 4 illustrates the leading institutions, including CNRS and the University of Texas at Austin, based on their publication contributions.

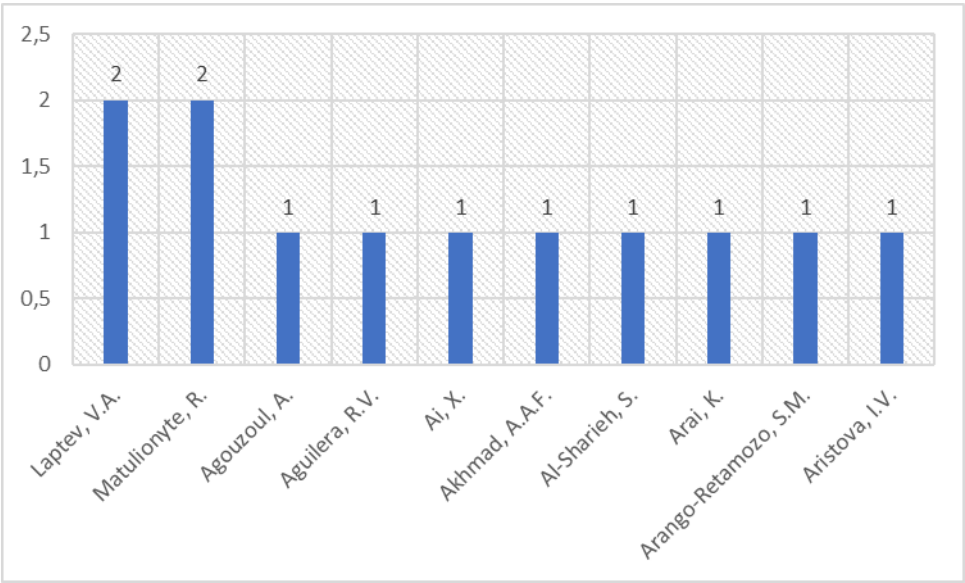


Figure 5 Most relevant authors in AI Economic Law research.

Figure 5 presents a comparison of author contributions, with Laptev, V.A. and Matulionyte, R. contributing the most.

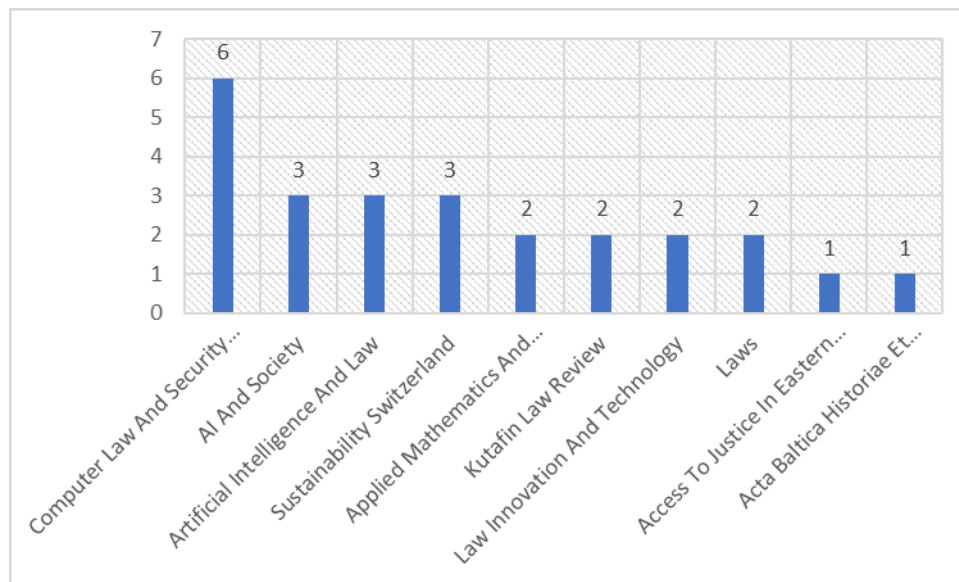


Figure 6 Most relevant sources publishing AI Economic Law studies.

Figure 6 highlights key journals, with Computer Law and Security Review as the dominant source.

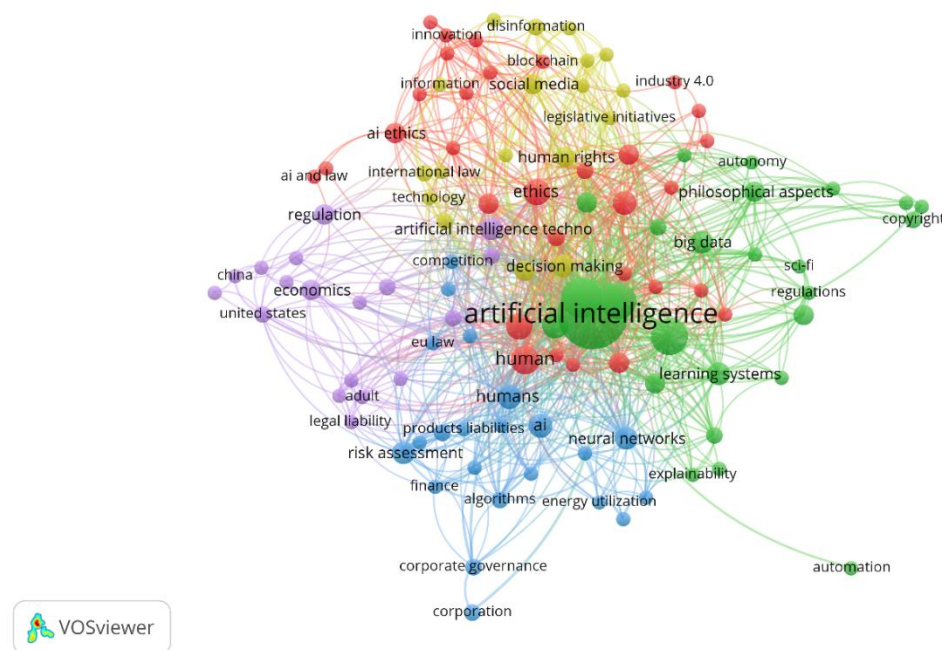


Figure 7 Network visualization of keyword occurrences.

This network map shows the thematic clustering of keywords related to AI Economic Law research.

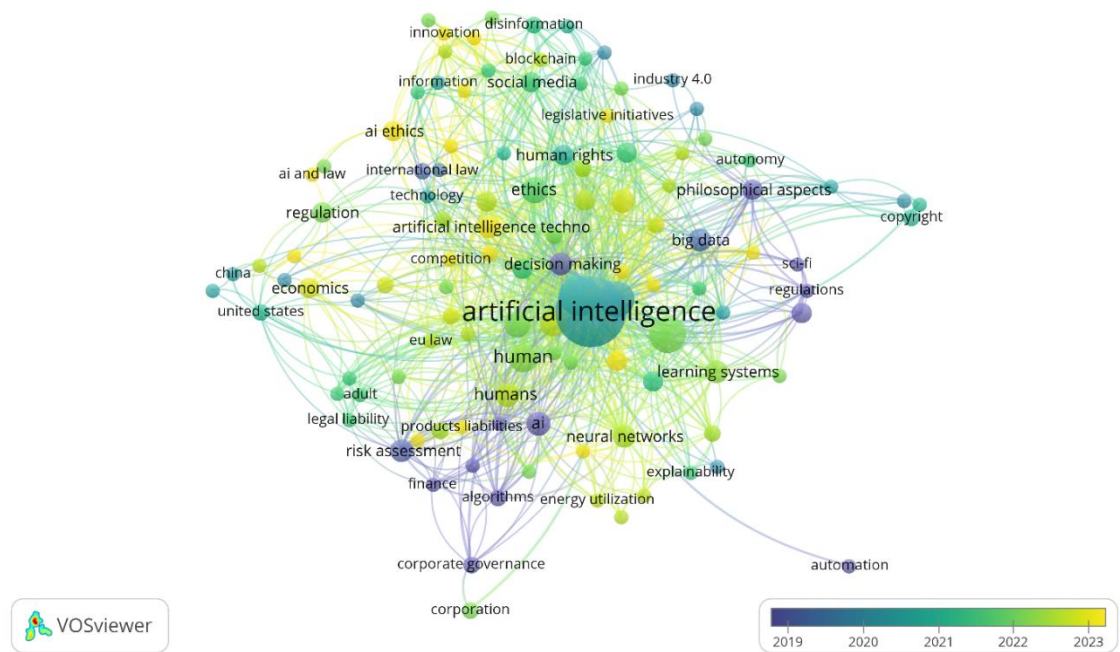


Figure 8 Overlay visualization of keyword trends over time.

Figure 8 demonstrates the evolution of research focus in AI Economic Law, highlighting emerging topics such as explainability and automation.

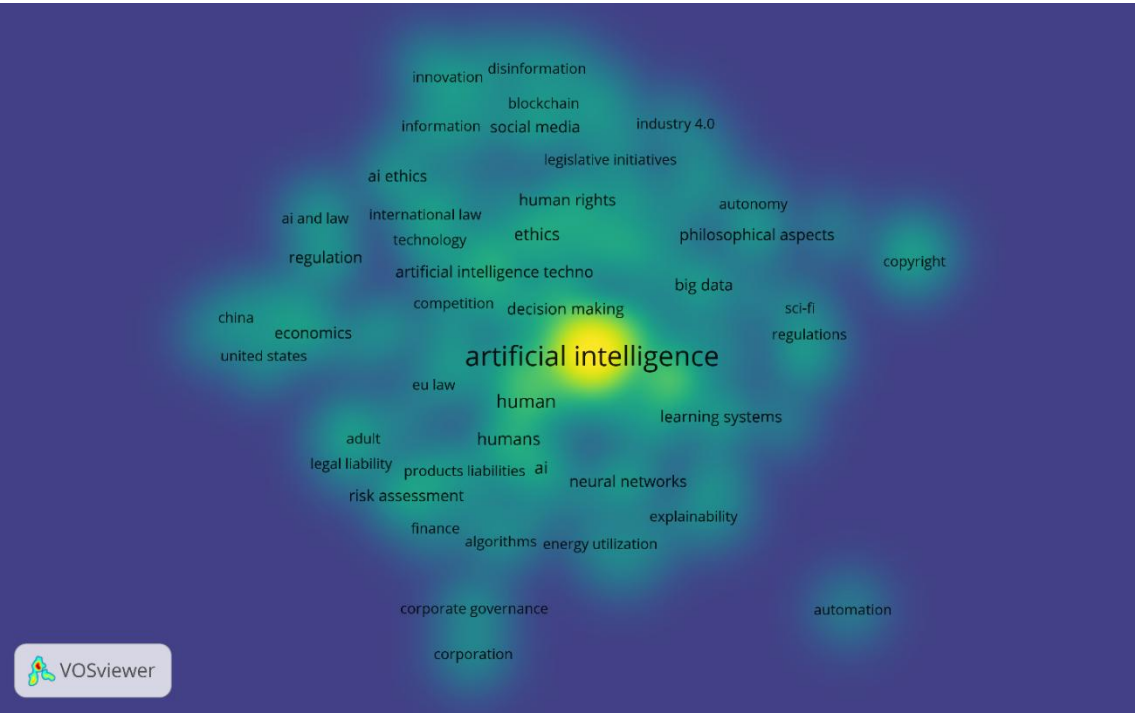


Figure 9 Density visualization of keyword importance.

This density map shows the central role of keywords such as Artificial Intelligence, Ethics, and Regulation in current research.

Discussion

This study highlights the evolving landscape of AI Economic Law research over the past decades. The analysis of publication trends reveals a significant surge in scholarly interest following 2016, suggesting that the rapid development and

adoption of AI technologies have catalyzed the need for updated legal and economic frameworks. The United States, United Kingdom, and China emerge as dominant contributors, reflecting their strong research infrastructures, technological advancements, and proactive regulatory initiatives in addressing AI's multifaceted impacts on the economy. These trends reflect growing academic concern over the legal uncertainty surrounding AI deployment, including issues such as algorithmic discrimination, cross-border data governance, and platform monopolies. They also underscore the urgency for evidence-based policymaking and adaptive legal frameworks that can respond to the disruptive nature of AI technologies across sectors.

The findings also show a shift in research focus from traditional economic and historical contexts to more contemporary themes centered on governance, legal regulation, and ethical considerations. The prominence of keywords such as "Islamic law," "positive law," "legislation," and "governance" underscores the growing academic attention towards the formalization of AI-related activities within existing legal structures. This transition signifies a broader recognition of the necessity for comprehensive regulatory mechanisms to manage AI's disruptive potential across various sectors.

Furthermore, the emergence of themes related to social dimensions, such as "civil society," "citizenship," and "education," reflects an increasing concern for the societal impacts of AI. These developments align with global discourses emphasizing the need for responsible innovation, ethical AI governance, and inclusive policy-making to ensure that technological progress benefits all layers of society.

The keyword network and overlay visualizations further demonstrate the interdisciplinary nature of current research, integrating technical, legal, economic, and social perspectives. Notably, the rising interest in topics such as "explainability," "automation," and "AI ethics" points to an expanding research frontier that addresses transparency, accountability, and human-centric AI systems. These trends indicate that future studies must continue to explore the balance between fostering innovation and safeguarding ethical standards and societal values.

Overall, this study confirms that AI Economic Law is an increasingly dynamic and multidisciplinary field. It highlights the necessity for ongoing collaboration between legal scholars, economists, technologists, and policymakers to develop holistic frameworks that can adapt to the rapid evolution of AI technologies while ensuring equitable and sustainable outcomes.

In addition to the upward trend and thematic shifts, the geographical analysis highlights the concentration of AI Economic Law research within a few dominant countries, primarily developed economies. This indicates that while AI has become a global phenomenon, the regulatory, legal, and economic scholarship on AI remains highly concentrated. Emerging economies, particularly within Southeast Asia, are beginning to contribute more actively, yet the overall representation is still limited. This suggests the need for greater inclusion of diverse legal systems and socio-economic contexts in future AI governance research.

The analysis of affiliations and author contributions shows that research in AI Economic Law is relatively dispersed among various institutions and scholars, with no single institution or author overwhelmingly dominating the field. This dispersion may reflect the interdisciplinary nature of the subject, which attracts expertise from law, economics, computer science, and public policy. However, it also indicates potential opportunities for establishing more structured research

networks, collaborations, and knowledge-sharing platforms to advance the field more systematically.

The network and overlay visualizations reinforce the dynamic evolution of research focus areas. Earlier studies predominantly examined AI within traditional economic and technological frameworks, whereas more recent literature addresses critical regulatory challenges such as transparency, human rights, liability, and ethical responsibility. The emerging emphasis on governance and explainability suggests that the field is moving toward not only understanding AI's capabilities but also ensuring that AI systems operate in a manner that is socially acceptable, legally compliant, and ethically sound.

Despite the significant findings, this study acknowledges certain limitations. The dataset was confined to English-language journal articles indexed in Scopus, potentially overlooking valuable research published in other languages or databases. Moreover, the bibliometric approach, while effective for mapping general trends and relationships, does not delve into the deeper qualitative aspects of the debates and arguments presented within individual studies. Future research could integrate systematic literature reviews or qualitative content analysis to complement the bibliometric insights and provide a more nuanced understanding of the evolution of AI Economic Law.

To address these limitations, future research is encouraged to adopt a mixed-method approach by combining bibliometric mapping with qualitative methodologies such as systematic literature reviews, content analysis, or expert interviews. This triangulation would offer deeper insights into the evolving normative debates, practical challenges, and regulatory gaps in AI Economic Law, especially from underrepresented legal and cultural contexts.

Looking ahead, several avenues for future research emerge. There is a pressing need to explore AI regulatory challenges in underrepresented regions, particularly in the Global South, to ensure that AI governance frameworks are truly global and equitable. Additionally, interdisciplinary collaborations should be strengthened to bridge gaps between technical innovation and legal, economic, and ethical considerations. Finally, as AI technologies continue to evolve, ongoing research must adapt to address new issues such as AI-generated content, algorithmic accountability, and the integration of AI within decentralized economic systems like blockchain.

Furthermore, the visual keyword maps presented in Figures 7 to 9 reveal several underexplored intersections. While dominant themes such as AI ethics, regulation, and automation have attracted considerable attention, clusters related to digital identity, labor rights, and AI in social welfare remain marginal in the current literature. These neglected subfields represent potential areas for future research that could broaden the scope of AI Economic Law, especially in regions and sectors where legal adaptation to AI remains nascent. The identification of such gaps through bibliometric visualization strengthens the paper's value not only in mapping existing knowledge but also in guiding the strategic direction of upcoming scholarship.

Although this study adopts a global scope, future research could contextualize AI Economic Law within specific legal traditions, including Islamic economic jurisprudence. In Southeast Asia, for example, the integration of AI technologies in areas such as digital Waqf management, Islamic financial services, and ethics-driven governance models reflects unique challenges and opportunities. Exploring how AI can be regulated through the lens of Shariah principles—such as fairness ('adl), accountability (mas'uliyah), and harm prevention (dar' al-

mafāsīd)—may enrich current discourses that are predominantly shaped by Western legal frameworks (Habib 2025; Mohadi and Tarshany 2023; Mustapha et al. 2025). Incorporating these perspectives would not only localize the debate but also bridge AI policy with Islamic ethical foundations and socio-religious institutions such as pesantren.

Conclusion

This bibliometric analysis highlights that AI Economic Law is rapidly emerging as a significant multidisciplinary field. Situated at the intersection of artificial intelligence, economic regulation, and global policy, the field reflects the profound impact of AI technology on various aspects of social and economic life. The findings reveal that countries with strong academic infrastructures, such as the United States, the United Kingdom, and China, dominate research contributions in this field. This underscores the vital role of research institutions and universities in driving the development of knowledge relevant to modern technological challenges. Research trends also indicate increasing attention to critical issues such as AI ethics, governance, and adaptive regulatory frameworks. Topics like transparency, accountability, and societal impact dominate discussions, emphasizing the importance of considering non-technical aspects in the development and application of AI. This reflects a growing awareness of the need for interdisciplinary approaches involving law, technology, and economics to address the challenges posed by AI advancements.

Furthermore, despite yearly fluctuations in publication volume, the research trajectory shows stable and significant growth in engagement with relevant topics. The findings also reveal the emergence of new themes, such as explainability (the ability to explain AI decisions) and automation, which point to a shift in focus toward more transparent, comprehensible, and practically relevant AI technologies. The combination of technical, ethical, and regulatory focus highlights the increasingly interdisciplinary nature of AI Economic Law research, blending technological innovation with social and legal considerations. Overall, this analysis demonstrates how AI research in Economic Law is evolving over time, adapting to global trends and new demands, and paving the way for more sustainable and inclusive advancements in this critical field.

Bibliography

- Abrardi, Laura, Carlo Cambini, and Laura Rondi. 2022. "Artificial Intelligence, Firms and Consumer Behavior: A Survey." *Journal of Economic Surveys* 36(4):969–91. doi:10.1111/joes.12455.
- Badran, Ahmed. 2021. *Thoughts and Reflections on the Case of Qatar: Should Artificial Intelligence Be Regulated?*
- Choudhary, Ekta, Santhi Narayanan, and Farheen Khan. 2024. *Legal and Regulatory Landscape*.
- Du, Mengdie. 2023. "Policy Regulation of Artificial Intelligence: A Review of the Literature." *Frontiers in Artificial Intelligence and Applications* 367:407–15. doi:10.3233/FAIA230041.
- Echeberria, Ana Landeta. 2022. *The Impact of AI on Business, Economics and Innovation*.
- Figria, Zulfa, and Zaenal Arifin. 2019. "Indonesian Journal of Islamic Education

- Studies (IJIES).” *Pengembangan Pembelajaran Pendidikan Agama Islam Melalui Pembelajaran Konstruktivistik Dan Sosiokultural* 2(1):104–14. doi:10.33367/ijies.v6i2.4276.
- Habib, Zainal. 2025. “Ethics of Artificial Intelligence in Maqāsid Al- Sharī’a ’ s Perspective Introduction Various Aspects of Human Life at a Speed Unprecedented in the History Of.” 33(1):105–34. doi:10.19105/karsa.v33i1.19617.
- Hoffmann-Riem, Wolfgang. 2019. *Artificial Intelligence as a Challenge for Law and Regulation*.
- Kovac, Mitja. 2021. “Autonomous Artificial Intelligence and Uncontemplated Hazards: Towards the Optimal Regulatory Framework.” *European Journal of Risk Regulation* 13(1):94–113. doi:https://doi.org/10.1017/err.2021.28.
- Li, Boxun. 2021. “Dynamic Evaluation and System Coordination Degree of the Integration of Artificial Intelligence and Real Economy.” *Complexity* 2021. doi:10.1155/2021/5539793.
- Lu, Yingying, and Yixiao Zhou. 2021. “A Review on the Economics of Artificial Intelligence.” *Journal of Economic Surveys* 35(4):1045–72. doi:10.1111/joes.12422.
- Mohadi, Mawloud, and Yasser Tarshany. 2023. “Maqasid Al-Shari’ah and the Ethics of Artificial Intelligence.” *Journal of Contemporary Maqasid Studies* 2(2):79–102. doi:10.52100/jcms.v2i2.107.
- Mustapha, Ramlan, Siti Norma, Aisyah Malkan, and Article Info. 2025. “Maqasid Al-Shariah In The AI Era : Balancing.” 3(3):1–21. doi:10.5281/zenodo.15381828.
- Pintérová, Dominika. 2024. “Law Regulation of Artificial Intelligence (Perspectives and Challenges).” 107(4):361–83. doi:10.31577/pravnyobzor.2024.4.02.
- Solow-Niederma, Alicia. 2020. “Administering Artificial Intelligence.” 93(4):633–95.
- Tavangari, Shirmohammad, Zahra Shakarami, and Reza Taheri. 2024. *Unleashing Economic Potential: Exploring the Synergy of Artificial Intelligence and Intelligent Automation*.
- Tzimas, Themistoklis. 2023. *AI-Generated Wealth Distribution and IP Protection: IP Norms Revisited under AI Ontology and Impact*.
- Vöpel, Henning. 2024. “The AI Revolution: A New Paradigm of Economic Order.” *Journal The Economists’ Voice*. doi:10.1515/ev-2024-0054.
- Yawar, Syed Mohammad. 2022. “Leveraging Artificial Intelligence for Enforcing Competition in the Digital Economy.” Pp. 403–10 in.
- Zh, Miftah Hur Rahman. 2025. “Pengembangan Strategi Blended Learning Berbantuan Flipbook Digital Berbasis Hypercontent Untuk Meningkatkan Hasil Belajar.” Universitas Negeri Malang.
- Zh, Miftah Hur Rahman, Zahid Zufar At Thaariq, and Arief Ardiansyah. 2024. “Mobile Learning: Future Learning Technologies for Islamic Formal Education (A Literature Study).” Pp. 370–77 in *Proceedings of International Conference on Education*. Vol. 2.
- Zukrowska, Katarzyna. 2021. *Artificial Intelligence (AI) and International Trade*.