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Bibliometric Approach of Artificial Intelligence Applications in Risk Management of Emerging Technology

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ABSTRACT: Artificial intelligence (AI) is transforming risk management in the context of emerging technologies, offering advanced tools for identifying, assessing, and mitigating risks. This study conducts a bibliometric analysis of AI applications in risk management of emerging technologies, focusing on trends, impact, and collaboration. A collection of 4978 papers from the Scopus database (2000-2024) was analysed using content analysis, VOS Viewer and R studio software. Results show a 4.75% annual growth rate, with 11,484 authors contributing. Co-citation networks reveal international collaboration and common research themes, with top sources including Energy Economics and Resource Policy. The analysis reveals a high level of international collaboration, with visualizations such as co-citation networks highlighting key research themes and intellectual organization. Keyword analysis highlights a focus on risk management, commerce, finance, and AI. Challenges include system malfunctions and data privacy. The study provides insights into the global research landscape of AI in risk management and informs future research directions.

KEYWORDS: Artificial intelligence (AI), Co-citation networks, risk management, Keyword analysis.

I. INTRODUCTION

Artificial intelligence (AI) is revolutionizing the way we approach risk management, particularly in the context of emerging technologies. New technologies come with special risks and concerns as they develop, such as blockchain, the Internet of Things (IoT), and biotechnology. Artificial Intelligence provides advanced instruments for recognising, evaluating, and alleviating these hazards, augmenting the processes involved in making decisions and refining comprehensive risk management approaches. This study examines the various ways that artificial intelligence (AI) can be used to mitigate the risks that come with developing technology. It emphasises how AI can boost operational effectiveness, advance predictive analytics, and facilitate proactive risk management techniques. Supply chain risk management is being transformed by artificial intelligence (AI), which makes it possible to identify, evaluate, mitigate, and track unforeseen events.(Baryannis et al., 2018) .It plays a crucial role in risk management by providing sophisticated analytical capabilities that enhance the knowledge of risk management specialists.(Biolcheva, 2021) .Organisations may perform in-depth studies and obtain insightful knowledge by utilising AI, which will help them make better decisions. Artificial intelligence (AI) lowers labour costs while improving data processing speed and depth of analysis in financial risk management.(Zhao, 2022) These developments highlight the crucial role artificial intelligence plays in contemporary risk management techniques by greatly increasing the effectiveness of financial risk control procedures. Artificial intelligence (AI) technology has transformed financial risk management, introducing both advantages and challenges. (Liu & Hong, 2021).While AI can enhance risk assessment and decision-making processes, its implementation can also create new tail risks and exacerbate existing ones. Factors such as procyclicality, endogenous complexity, and the need to trust the AI engine can introduce vulnerabilities in risk management frameworks.(Dańielsson et al., 2020). Additionally, challenges such as system malfunctions, privacy protections, and consent to data repurposing require close collaboration with computer scientists, bio informaticists, information technologists, and data privacy and security experts.(Banja, 2020). Addressing these challenges is crucial for the future success of AI applications in risk management, ensuring they deliver on their promise while mitigating potential risks.(Ramachandran et al., 2023)

ISSN: 2350-0328
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Vol. 11, Issue 8, August 2024

However, the development of artificial intelligence has raised a number of potential advantages, resulting in a number of open research questions that need further clarification. The bibliometric analysis provides evidence for the research questions. Co-citation structures, geographic analyses, and bibliometric indicators offer valuable perspectives on the state of a certain field's research as well as trends When examining the relationship between artificial intelligence applications in risk management of emerging technology one can explore the impact of AI on decision-making processes and overall risk control efficiency, these analyses can be useful in pinpointing important researchers, important research questions, patterns of collaboration, and the geographic distribution of research activities. Based on this the research questions are: RQ 1) Who are the key authors and institutions contributing to the research on AI applications in this field?

RQ 2) Which are the geographical analysis, co-citation structure, and important bibliometric variables are relevant to this field?

RQ 3) How has the volume of research on AI applications in risk management of emerging technologies evolved over time?

The objective of this study is to conduct a comprehensive bibliometric analysis of artificial intelligence (AI) applications in risk management of emerging technologies. This analysis aims to identify key authors and institutions contributing to this field, analyze the geographical distribution of research, explore the co-citation structure to reveal collaborative networks, and investigate important bibliometric variables such as citation counts and impact factors. Additionally, the study seeks to understand the evolution of research in this area over time by examining trends in publication output and types of publications. while AI has shown remarkable capabilities in predicting financial indicators and identifying reasons for deviations, it faces challenges in uncovering hidden risks and understanding human risk attitudes and perceptions.(Svistunova & Muzalev, 2021) .Integrating AI into risk management processes and addressing data privacy concerns are critical steps in harnessing its potential.(Covello, 1983) .However, challenges remain in modelling and measuring risks, ensuring data consistency and quality, and managing data effectively.(Gorrod, 2004). Overcoming these obstacles will require firms to adopt suitable data management policies, prioritize transparency, and develop the necessary skill sets to leverage AI effectively in risk management.(Aziz & Dowling, 2018)

II. MATERIALS AND METHODS

In the study of bibliometrics, publications, citations, and other bibliographic data are quantitatively analysed in order to assess and comprehend the trends, influence, and impact within the academic and scientific community.(Jrad, 2023). The present study focuses on the quantity assess methodology. This research paper represents the collection of 4978 papers obtained from the scope database with the time span of 2000–2024. The data has been collected through particular terms which includes the keywords like risk management, artificial intelligence, AI in risk management. As per established guidelines, the selection of the Scopus database was based on an extensive and varied variety of references, abstracts, and study summaries.(Fink, 2019).For metrological approach, content analysis is used, where VOSViewer use program (version 1.6 .20) was used(J. E. Hirsch, 2005).And R studio is used to quantitatively analyze publications, citations, and other bibliographic data. (Verzani, 2011).

Various bibliometric methods have been used to evaluate trends, impact, and influence in the scientific and academic communities, such as keyword analysis, co-citation analysis, and citation analysis. In order to gauge the volume of publications and citations and to comprehend the patterns and implications of research in the field, the study concentrated on the quantity assess methodology. In addition to assessing trends, impact, and influence in the scientific and academic communities, bibliometric methods can also help in understanding the relationships between different areas of research. For example, keyword analysis can reveal common themes and topics that are frequently studied together, indicating areas of research interest or emerging trends. Co-citation analysis can identify connections between different authors or publications, highlighting influential works or collaborative networks within the field. Citation analysis can show how research has evolved over time, with newer studies building upon earlier ones. The study's conclusions guide future research directions in this field and offer insightful information about the state of the field's investigation into AI applications in emerging technology risk management.

ISSN: 2350-0328
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Vol. 11, Issue 8, August 2024

III. RESULTS AND FINDINGS

In bibliometrics, study results and discoveries frequently give quantitative insights into articles and conference papers. These conclusions are based on the study of publication and citation data. Here are some typical conclusions and findings from bibliometric investigations. Individual publications, journals, authors, or institutions' influence can be measured using bibliometrics, which count the number of citations they obtain. Bibliometrics can indicate patterns in multidisciplinary collaboration by demonstrating how diverse disciplines of study are linked via shared references and co-citations. Bibliometric analysis can help identify geographic areas or institutions that are highly active in specific research fields.

The geographic distribution of co-authored publications may be used by bibliometrics to assess the level of international collaboration. Visualizations, like as co-citation networks and keyword maps, can show the intellectual organization of a field. Researchers can compare research production and citation effect across nations, providing insights into global research contributions. Bibliometric analysis can help determine the overall effect and influence of specific scholars. Scopus gathered data from 4978 published publications between 2000 and 2024 using certain keywords. From table 1 and figure 1, exhibits an average annual growth rate of 4.75%. With 833 single-authored papers and 191,894 internationally co-authored ones, it has contributions from 11,484 authors, or an average of 2.92 co-authors each document. The dataset contains 191,894 references and 12,637 author keywords. The documents have been cited roughly 19.96 times apiece and are 7.58 years old on average. Figure 2 shows the Annual scientific productions which has been increasing till 2023. All analyses were carried out using VosViewer and RStudio software.

MAIN INFORMATION ABOUT DATA	
Description	**Results**
Timespan	2000:2024
Sources (Journals, Books, etc)	1517
Documents	4978
Annual Growth Rate	4.75 %
Document Average Age	7.58
Average citations per doc	19.96
References	191894
DOCUMENT CONTENTS	
Keywords Plus (ID)	20322
Author's Keywords (DE)	12637
AUTHORS	
Authors	11484
Authors of single-authored docs	833
AUTHORS COLLABORATION	
Single-authored docs	905
Co-Authors per Doc	2.92
International co-authorships	23.87
DOCUMENT TYPES	
Article	3425
Conference paper	1553

Table 1. Shows the main information about the data.

ISSN: 2350-0328
International Journal of AdvancedResearch in Science, Engineering and Technology
Vol. 11, Issue 8, August 2024

Figure 1. Shows the main information about the data.

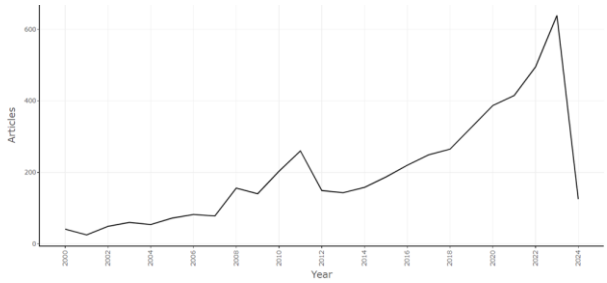

Figure 2. Annual scientific productions

Co-Citation Analysis

Co-citation analysis is a bibliometric technique that examines the connections between academic papers by determining which other documents have cited each one of them. It seeks to identify relationships and synergies among works in a specific field of study. When analysing co-citations, two documents are regarded as co-cited if a third document cites both of them, suggesting a possible conceptual or thematic connection between them.

Co-Citations of Journals

A bibliometric technique called co-citation analysis of journals is determining and assessing the connections between scholarly journals by looking at the common citations that their articles have with other works. The objective of this analysis is to identify themes, linkages, and commonalities among publications that are part of a particular discipline or field of study. It can shed light on scholarly communication patterns, journal influence, and the intellectual architecture of a topic.

Table 2 represent the top 10 most active sources with the articles. The first top sources of the table are energy economics with 145 articles. The second most sized is resource policy with 117 articles. The third source is sustainability (Switzerland) with, 112 citations. There are total of 1517 entries. Figure 3 shows the most productive source with publication, represents the most top sources with size, colours and nodes. Figure 4 shows the graphical representation of the Annual scientific productions where X axis shows the number of documents while Y axis shows the sources.

MOST ACTIVE SOURCES	
Energy Economics	145
Resources Policy	117
Sustainability (Switzerland)	112
Management Science	111
Journal Of Cleaner Production	96
2011 2nd International Conference on Artificial Intelligence, Management Science and Electronic Commerce, Aimsec 2011 - Proceedings	78
International Journal of Production Economics	72

ISSN: 2350-0328
International Journal of AdvancedResearch in Science, Engineering and Technology
Vol. 11, Issue 8, August 2024

Technological Forecasting and Social Change	58
Safety Science	52
International Journal of Production Research	47

Table 2. Shows the most active sources

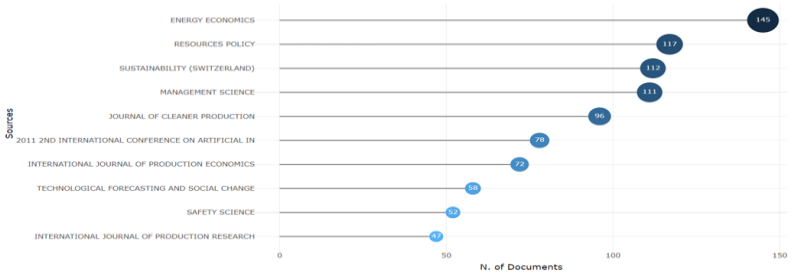

Figure 3. Shows the Annual scientific productions

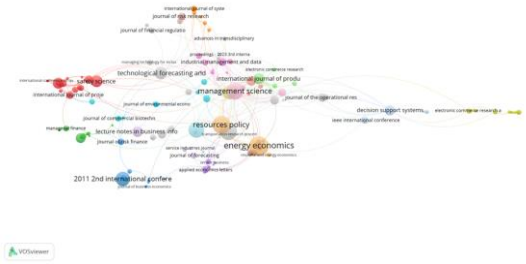

Figure 4. Shows the most productive source

Co-Citation of Authors

Focusing on the co-citation patterns of authors' works, the co-citation of authors is a type of bibliometric analysis. It entails determining and evaluating the relationships between writers based on the instances in other publications when their individual works are cited together. Within a certain study topic or discipline, this analysis seeks to identify linkages, collaborations, and conceptual associations between writers.

Table 3 shows the representation of top ten cited authors with articles fractionalized, figure 5 Shows the most productive authors with six different colours, size and nodes. While figure 6 shows the graphical representation of the most relevant authors. Where li Y have 40 number of documents, Wang Y and Zhang Y have 33 documents followed by Liu Y with 31 documents.

Most Cited Authors		
Authors	Articles	Articles Fractionalized
LI Y	40	13.19
WANG Y	33	9.72
ZHANG Y	33	11.45
LIU Y	31	10.14
WANG X	29	9.68
LI J	28	9.16
WANG J	25	9.03
LI X	24	8.20

ISSN: 2350-0328
International Journal of AdvancedResearch in Science, Engineering and Technology
Vol. 11, Issue 8, August 2024

ZHANG H	23	7.20
ZHANG J	22	7.19

Table 3. shows most cited authors

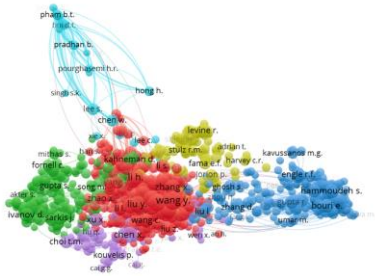

Figure 5 Shows the most productive authors

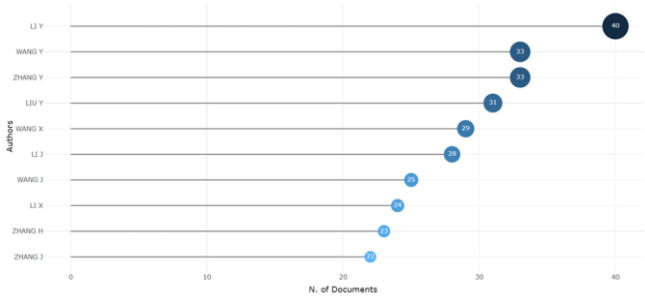

Figure 6. Shows the most relevant authors.

Co-Keywords Analysis

Co-keyword analysis, sometimes referred to as keyword co-occurrence analysis, serves as a bibliometric method for examining the connections between terms or keywords in a set of academic publications. The task at hand is to conduct an analysis of the frequency with which specific keywords occur together in the same page. Co-keyword analysis can show how several concepts relate to one another, reveal research patterns, and shed light on the thematic organisation of an area of study. Co-keyword analysis is a useful tool for tracking shifts in research focus over time, identifying major concepts and themes, and gaining a deeper knowledge of the intellectual landscape of an area of study.

In table 4 the keyword frequencies suggest a strong focus on risk management with 1643 keywords, commerce with 1414 keywords, and finance with 1366 keywords, with particular emphasis on risk assessment and artificial intelligence. Decision making and investments are also key themes, highlighting a focus on strategic financial decisions. Information management appears to be important, likely for handling data crucial for risk assessment and decision making. The inclusion of financial markets and costs indicates a holistic approach to financial management, encompassing market dynamics and cost control. Figure 7. Represents the most frequent keywords with six different colour variations.

MOST FREQUENT KEYWORDS	
Risk management	1643
Commerce	1414
Risk assessment	1366
Finance	1083
Artificial intelligence	675
Decision making	574

ISSN: 2350-0328
International Journal of AdvancedResearch in Science, Engineering and Technology
Vol. 11, Issue 8, August 2024

Investments	533
Information management	454
Financial markets	379
Costs	364

Table 4. shows most frequent keywords

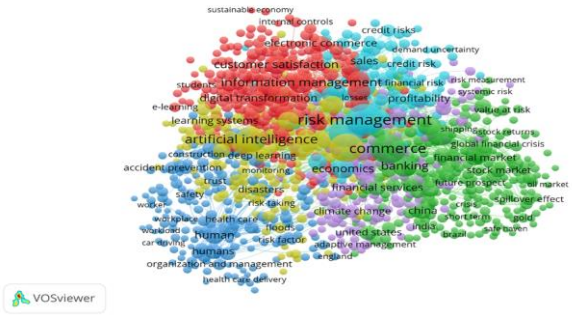

Figure 7. Shows the most frequent keywords

Geographical Analysis

Understanding patterns, correlations, and trends in geographic space is the main goal of geographic analysis, sometimes referred to as spatial analysis. To learn more about spatial distributions, relationships, and changes, geographic data must be examined. Geographical analysis is frequently employed in many disciplines, such as social sciences, geography, economics, urban planning, environmental science, and epidemiology. The purpose of this analysis is to provide answers to queries about the geographical dimensions of occurrences and their interrelationships at various locations. In many academic fields, geographic analysis helps researchers make well-informed decisions and policy recommendations by offering insightful information on spatial trends.

The table 5 provides a breakdown of top ten articles in the field of bibliometrics related to risk management categorized by the corresponding author's country. China leads with 836 articles, followed by the USA with 493, the United Kingdom with 247, India with 131, Italy with 122, and Australia with 118. The 'SCP' column represents the number of single-country publications, 'MCP' is the number of multi-country publications, 'Freq' is the frequency of publications, and 'MCP Ratio' is the ratio of multi-country publications to total publications. The data highlights China's significant contribution, with a notable proportion of multi-country collaborations in the field. And figure 8 indicates the corresponding authors country. The X axis denotes the number of documents and Y axis denotes the countries where the collaboration of pink colour indicates MCP and blue colour represents the SCP. Figure 9 shows the countries specific productions where the dark colour represents the most productive countries and light colours represent less productive countries.

Country Total of Articles

Most relevant countries by the corresponding author					
Country	Articles	SCP	MCP	Freq	MCP_Ratio
CHINA	836	682	154	0.168	0.184
USA	493	381	112	0.099	0.227
UNITED KINGDOM	247	163	84	0.050	0.340
INDIA	131	106	25	0.026	0.191
ITALY	122	94	28	0.025	0.230
AUSTRALIA	118	70	48	0.024	0.407
GERMANY	117	88	29	0.024	0.248

ISSN: 2350-0328
International Journal of AdvancedResearch in Science, Engineering and Technology
Vol. 11, Issue 8, August 2024

CANADA	103	63	40	0.021	0.388
SPAIN	72	51	21	0.014	0.292
FRANCE	66	39	27	0.013	0.409

Table 5. shows most relevant countries by the corresponding author.

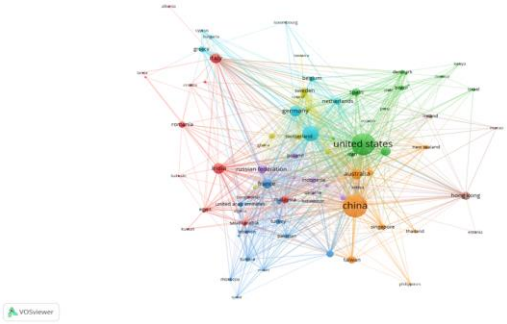

Figure 8. Shows most publications county

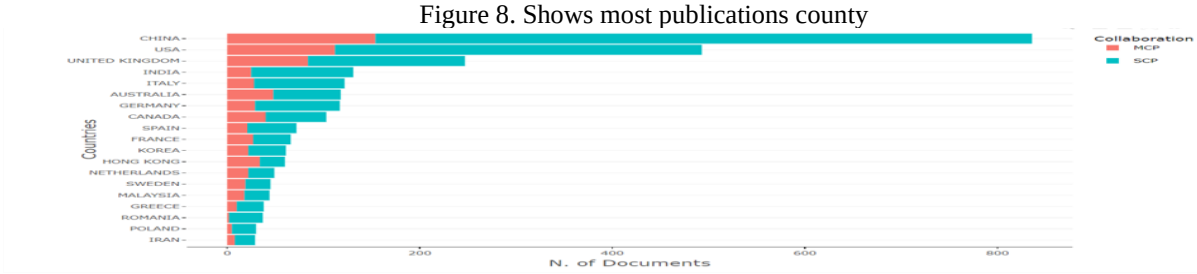

Figure 9. Corresponding Author's Countries

Thematic Analysis

In bibliometrics, thematic analysis addresses research question and explores the meaning and underlying substance of scholarly papers, giving quantitative analyses more depth. It can offer insights into the themes, patterns, and conceptual frameworks that are prevalent in an area, enhancing the quantitative insights obtained by means of bibliometric approaches. Thematic analysis puts quantitative bibliometric results into context. Analysing the themes and subjects covered in academic literature aids in providing an explanation for why particular trends or patterns are developing. It reveals new or developing research themes that may not be immediately clear from quantitative analysis alone. It highlights subjects that are becoming more popular in the literature. Thematic analysis identifies similar topics that unite academics from many fields and geographical regions, which aids in explaining patterns of collaboration.

Table 6. shows thematic analysis the analysis includes various occupations and their associated words, clustered under the label 'risk management.' Additionally, the high between centrality of terms like "artificial intelligence" and "project management" suggests their potential role in influencing the flow of information within the thematic network. It also shows the top 10 words with a cluster value and co-occurrence the word which management has the highest co-occurrence value of 1602 followed by the risk management with concurrent is of 1241, finance 1060 and so on. Figure 10 represents the thematic map titled "Thematic map of financial markets and risk management " illustrates the key themes and subthemes within financial markets. The central green circle represents the overarching theme of financial markets, while the two blue circles branching out from it denote the subthemes of risk management and risk assessment. The text labels further elaborate on these subthemes, with "risk assessment" detailed as "risk assessment, finance," and "risk management" as "risk management, risk assessment, and risk controls." The map also indicates a focus on niche, emerging, basic, and declining themes within financial markets, although the specific emerging and declining themes are not shown in the provided image. Overall, the map provides a concise visual summary of the complex landscape of financial markets, emphasizing the importance of risk management and assessment within this domain. Figure 11 shows Thematic map by keywords often called a cluster map, a themed map by clusters shows regions that have been categorised

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International Journal of AdvancedResearch in Science, Engineering and Technology
Vol. 11, Issue 8, August 2024

according to specific traits or similar characteristics. Table 7 and 8 in bibliometrics, factorial analysis allows scholars to investigate the underlying structures and trends in the scholarly literature, going beyond mere descriptive statistics. It provides important insights for comprehending the terrain of scientific knowledge by aiding in the identification of research trends, collaboration networks, and theme clusters. Figure 13 and 14 shows the factorial analysis In bibliometrics, factorial analysis allows scholars to investigate the underlying structures and trends in the scholarly literature, going beyond mere descriptive statistics. Thematic maps, like this one, are a way to simplify complex information by using visuals to show relationships between different concepts. This particular map shows that risk management and risk assessment are two important subthemes within the broader theme of financial markets. Figure 15 enables to visualise and discuss international research partnerships and collaborations in a particular field or area of interest by displaying a map of collaboration across countries.

Thematic analysis						
Occu.	**Words**	**Cluster**	**Cluster Label**	**btw_centrality**	**clos_centrality**	**clos_centrality**
1602	risk management	2	risk management	0	0.001109878	0.050323964
1241	risk assessment	2	risk management	0	0.001392758	0.041004247
1060	finance	2	risk management	0.513166463	0.001647446	0.029805756
624	artificial intelligence	2	risk management	13.29775994	0.002024291	0.018717169
519	decision making	2	risk management	0.959929484	0.001618123	0.019530285
452	information management	2	risk management	36.7371302	0.002114165	0.014464816
322	economics	2	risk management	39.13377912	0.002132196	0.011739004
280	project management	2	risk management	88.29484409	0.002188184	0.009133971

Table 6. shows thematic analysis

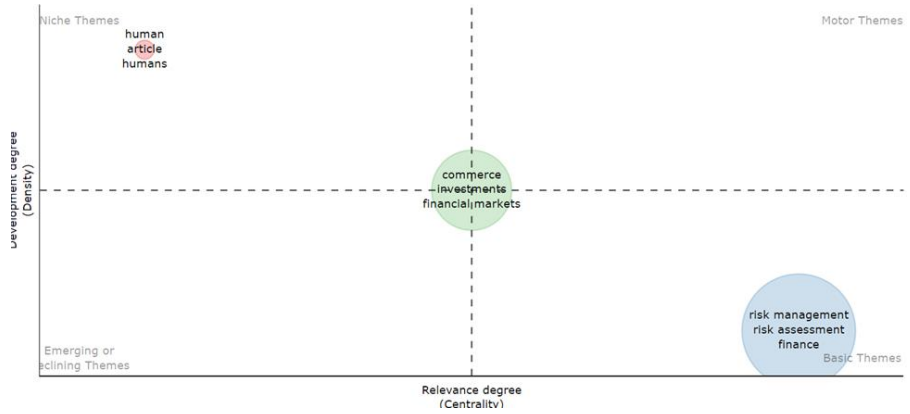

Figure 10. Thematic map

ISSN: 2350-0328
International Journal of AdvancedResearch in Science, Engineering and Technology
Vol. 11, Issue 8, August 2024

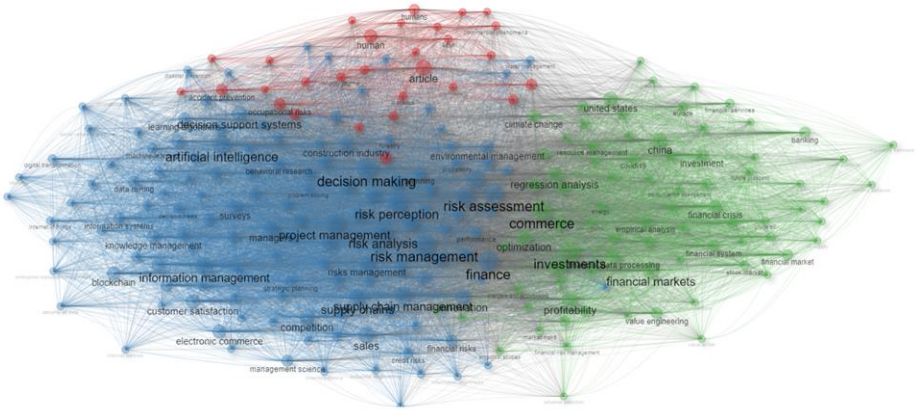

Fig. 11. Thematic map by clusters

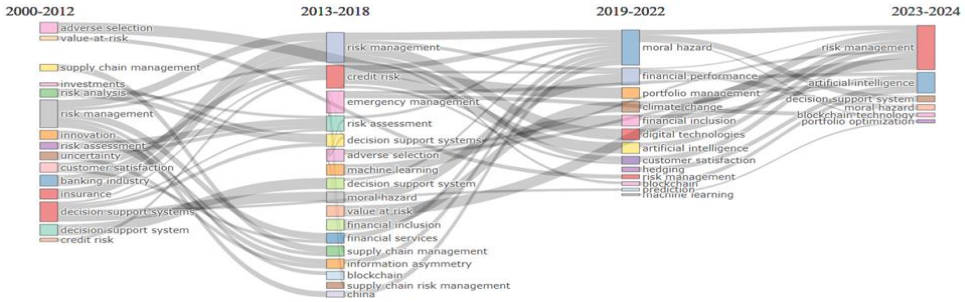

Figure 12. Thematic map by keywords

Factorial Analysis by words			
Word	**Dim.1**	**Dim.2**	**Cluster**
Risk Management	0.67	-0.17	1
Artificial intelligence	-0.93	-1	1
Blockchain	-1.28	0.25	1
Banking	1.38	-0.07	1
Finance	0.79	0.53	1
Risk	0.46	1.26	1
Digital transformation	-0.84	1.08	1
Supply chain management	-1.04	0.81	1
Machine learning	-1.41	-2.12	1
Digitalization	-0.53	1.62	1

Table 7. shows factorial analysis by words

Factorial Analysis by Clusters					
Documents	**dim1**	**dim2**	**contrib**	**TC**	**Cluster**
Diebold fx, 2014, j econom	0.14	-0.12	0.05	2032	1
Khatri n, 2018, int j inf manage	-0.38	0.31	0.32	1115	1
Ivanov d, 2019, int j prod res	-0.39	0.35	0.36	927	1
Braunscheidel mj, 2009, j oper manage	-0.13	0.1	0.03	834	1

ISSN: 2350-0328
International Journal of AdvancedResearch in Science, Engineering and Technology
Vol. 11, Issue 8, August 2024

Eisenberg l, 2001, manage sci	0.05	-0.1	0.02	692	1
Nicholson n, 2005, j risk res	0.24	0.42	0.33	623	1
li b, 2005, constr manage econ	-0.02	-0.03	0	567	1
Chang hh, 2008, online info rev	-0.09	0.05	0.01	555	1
Hallikas j, 2004, int j prod econ	-0.03	0.07	0.01	542	1
Chan fts, 2008, int j prod res	-0.17	0.13	0.06	540	1

Table 8. shows factorial analysis by clusters

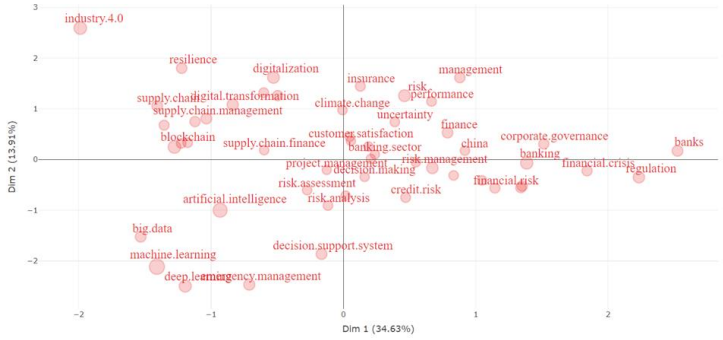

Figure 13 Factorial analysis

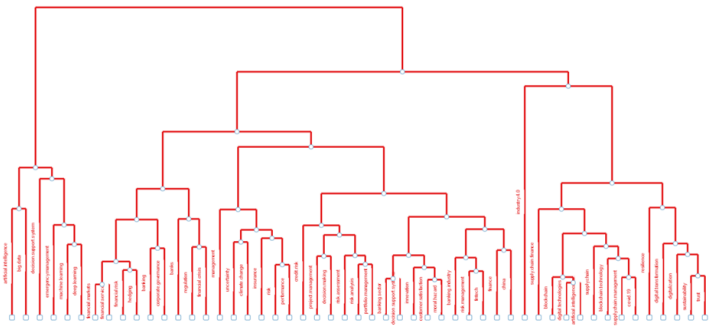

Figure 14. Show factorial analysis.

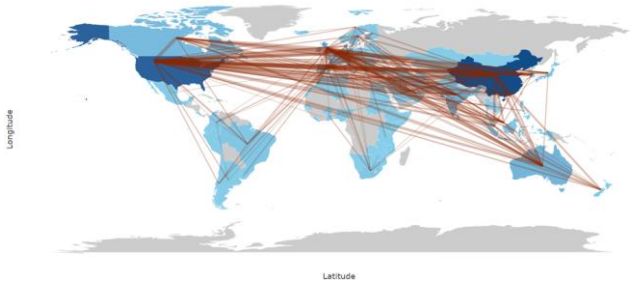

Figure 15. Shows the country collaboration map

ISSN: 2350-0328
International Journal of AdvancedResearch in Science, Engineering and Technology
Vol. 11, Issue 8, August 2024

IV . CONCLUSION

In conclusion, the bibliometric analysis of AI applications in risk management of emerging technologies reveals several key findings. The geographic distribution of co-authored publications indicates a high level of international collaboration, highlighting the global nature of research in this field. Visualizations such as co-citation networks and keyword maps provide insights into the intellectual organization of the field, showing common themes and research interests.

The analysis also reveals a consistent, average yearly growth rate of 4.75% in the creation of research over time. With 11,484 authors contributing to the dataset, each document has an average of 2.92 co-authors, suggesting a collaborative research environment. The most productive sources include journals such as Energy Economics, Resource Policy, and Sustainability, with a focus on risk management, commerce, finance, and artificial intelligence.

Overall, the findings suggest a strong emphasis on risk management strategies, particularly in the context of emerging technologies. The inclusion of keywords related to decision making, investments, information management, and financial markets indicates a holistic approach to financial risk management. These insights can guide future research directions in the field, helping researchers and practitioners develop more effective risk management strategies for emerging technologies.

REFERENCES

Aziz, S., & Dowling, M. (2018). Machine Learning and AI for Risk Management. *Disrupting Finance*.
Banja, J. (2020). How Might Artificial Intelligence Applications Impact Risk Management? *AMA Journal of Ethics*, *22*(11), E945-951.
Baryannis, G., Validi, S., Dani, S., & Antoniou, G. (2018). Supply chain risk management and artificial intelligence: state of the art and future research directions. *International Journal of Production Research*, *57*, 2179–2202.
Biolcheva, P. (2021). The place of artificial intelligence in the risk management process. *SHS Web of Conferences*.
Covello, V. (1983). The perception of technological risks: A literature review. *Technological Forecasting and Social Change*, *23*, 285–297.
Dańıelsson, J., Macrae, R., & Uthemann, A. (2020). Artificial Intelligence and Systemic Risk. *Artificial Intelligence - Law*.
Fink, A. (2019). Conducting research literature reviews: From the internet to paper. *Sage Publications.*
Gorrod, M. (2004). *The risk management challenge*. 29–59.
J. E. Hirsch. (2005). An index to quantify an individual's scientific research output. *Proceedings of the National Academy of Sciences*, *102*(46), 16569-16572.
Jrad, M. (2023). A Role of Artificial Intelligence in the Context of Economy: Bibliometric Analysis and Systematic Literature Review. *International Journal of Membrane Science and Technology*, *10*(3), 1563–1586. https://doi.org/10.15379/ijmst.v10i3.1756
Liu, W., & Hong, Y. (2021). Research on the Challenge of Computer Artificial Intelligence Technology to Financial Risk Management. *Journal of Physics: Conference Series, 1992*.
Ramachandran, K., Vinjamuri, Al-Taee M, & Alazzam, M. (2023). Using AI for Risk Management and Improved Business Resilience. *Using AI for Risk Management and Improved Business Resilience*, 978-982.
Svistunova, S., & Muzalev, S. (2021). USAGE OF MACHINE LEARNING IN THE PROCESS OF RISK-MANAGEMENT. *Russian Journal of Management*.
Verzani, J. (2011). *Getting started with RStudio. " O'Reilly Media, Inc."*
Zhao, M. (2022). Research on Financial Risk Assessment Based on Artificial Intelligence. *SHS Web of Conferences* .