Lokawati : Jurnal Penelitian Manajemen dan Inovasi Riset
Volume 4, Nomor 5, November 2026
E-ISSN .: 2988-5418 ; P-ISSN .: 2988-6031, Hal. 19-37
DOI: https://doi.org/10.61132/lokawati.v4i6.2800
Tersedia: https://journal.arimbi.or.id/index.php/Lokawati

Artificial Intelligence and Entrepreneurship: Trends, Challenges, and Future Directions

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Abstract. This study presents a comprehensive bibliometric analysis of the intersection between Artificial Intelligence (AI) and entrepreneurship, aiming to map its intellectual structure and global research trends from 2005 to 2025. Utilizing 878 peer-reviewed articles from the Scopus database, the research employs R-Biblioshiny to conduct citation, co-citation, co-author, and bibliographic coupling analyses. The findings reveal an exponential surge in publications, highlighting a strategic shift toward AI-enhanced entrepreneurial education and digital business models, particularly in emerging economies like China and India. Despite this rapid growth, the literature remains fragmented, with critical gaps in ethical AI governance, seamless human-AI integration, and methodological consistency. To address these limitations, this study proposes the integration of the Antecedents, Decisions, and Outcomes (ADO) and Theories, Contexts, and Methods (TCM) frameworks to guide future interdisciplinary research. Ultimately, this paper provides actionable implications for business leaders, policymakers, and educators to harness AI's transformative potential responsibly, fostering innovation, scalability, and sustainable entrepreneurial ecosystems in the modern digital era.

Keywords: Artificial Intelligence; Bibliometric Analysis; Digital Business Models; Entrepreneurship; Sustainable Entrepreneurship.

1. INTRODUCTION

The integration of Artificial Intelligence (AI) into entrepreneurship has emerged as a transformative force, fundamentally reshaping venture creation, strategic decision-making, and digital business models (Chalmers et al., 2021). As the Fourth Industrial Revolution accelerates, AI technologies are no longer mere operational tools but core enablers that drive innovation, efficiency, and competitive advantage in the entrepreneurial landscape (Iansiti & Lakhani, 2020). This synergy between AI and entrepreneurship has garnered significant attention from both academia and industry, highlighting the potential of intelligent algorithms to identify market opportunities, optimize resource allocation, and redefine traditional business paradigms (Li et al., 2022).

Recent literature underscores a rapid expansion in the application of AI across various entrepreneurial contexts, ranging from digital startups to traditional sectors undergoing industrial upgrading (Zou & Xiong, 2023). Entrepreneurs are increasingly leveraging AI for personalized customer experiences, predictive analytics, and streamlined supply chains, which significantly boosts business scalability and market responsiveness (Yadav et al., 2023). Furthermore, the global research output on this intersection has surged, reflecting a growing acknowledgment of AI's critical role in fostering digital entrepreneurship and enhancing

Naskah Masuk: 13 Juni 2026; Revisi: 22 Agustus 2026; Diterima: 15 September 2026; Terbit: 01 November 2026

entrepreneurial education, particularly in emerging economies like China and India (George et al., 2023; Li et al., 2022).

Despite this exponential growth, the academic literature on AI and entrepreneurship remains fragmented and methodologically inconsistent (Blanco-González-Tejero et al., 2023). Many studies offer superficial insights, lacking a comprehensive understanding of AI's holistic impact on entrepreneurial ecosystems, workforce dynamics, and economic disparities (Putri & Nurmalasari, 2024). Moreover, there is a pronounced gap in developing ethical frameworks and strategies for seamless human-AI integration, leaving critical questions about AI governance and the socio-ethical implications of automated entrepreneurial decision-making largely unaddressed (Obschonka et al., 2024).

To navigate this complex and rapidly evolving domain, there is a pressing need to systematically map the intellectual structure and global trends of AI-entrepreneurship research. Bibliometric analysis serves as a robust methodological approach to evaluate publication trajectories, identify core themes, and uncover hidden patterns within large volumes of scientific literature (Linnenluecke et al., 2020). By synthesizing existing knowledge, scholars can transition from isolated empirical studies to a cohesive theoretical paradigm that encompasses AI's multifaceted impact on entrepreneurial processes and business model innovation (Giuggioli & Pellegrini, 2023; Uriarte et al., 2025).

Therefore, this study aims to conduct an in-depth bibliometric analysis of research at the intersection of AI and entrepreneurship, utilizing Scopus-indexed publications from 2005 to 2025. By mapping the evolution of this field, identifying key contributors, and analyzing keyword co-occurrences, this research provides a comprehensive overview of the current scholarly landscape. Ultimately, this study offers a structured future research agenda, highlighting critical gaps and providing actionable implications for policymakers, educators, and practitioners to harness AI's potential for sustainable and ethical entrepreneurial innovation (Lévesque et al., 2022).

2. LITERATURE REVIEW

The Conceptual Foundation of AI in Entrepreneurship

The integration of Artificial Intelligence (AI) into entrepreneurship has emerged as a transformative force, fundamentally reshaping venture creation, strategic decision-making, and digital business models. In the context of the Fourth Industrial Revolution, AI technologies are no longer mere operational tools but core enablers that drive innovation, efficiency, and competitive advantage in the entrepreneurial landscape (Angelo et al., 2026; Shonubi, 2025;

Song & Sha, 2026). This synergy highlights the potential of intelligent algorithms to identify market opportunities, optimize resource allocation, and redefine traditional business paradigms that previously relied solely on human intuition (Aldoseri et al., 2024; Njuru et al., 2025; Okafor et al., 2025).

AI as an Enabler in Entrepreneurial Processes and Ecosystems

Recent literature underscores a rapid expansion in the application of AI across various entrepreneurial contexts, ranging from digital startups to traditional sectors undergoing industrial upgrading. Entrepreneurs increasingly leverage AI for personalized customer experiences, predictive analytics, and streamlined supply chains, which significantly boosts business scalability and market responsiveness (Al-Mamary, 2025; Ledro et al., 2025). Furthermore, there is a notable shift in research focus toward AI-enhanced entrepreneurial education and digital business models, particularly in emerging economies like China and India, where AI acts as a critical catalyst for improving overall company performance and identifying new market opportunities (Mumi et al., 2025; Uriarte et al., 2025).

Theoretical Framework: The ADO-TCM Approach

To systematically understand the multifaceted impact of AI on entrepreneurship, contemporary research advocates for the adoption of cohesive theoretical models, such as the integration of the *Antecedents, Decisions, and Outcomes* (ADO) framework with the *Theories, Contexts, and Methods* (TCM) approach. Within this paradigm:

1. Antecedents: Encompass individual, technological, and environmental factors that influence entrepreneurial decision-making regarding AI adoption.
2. Decisions: Involve the strategic and tactical choices made by entrepreneurs concerning the integration of AI into their business models and operations.
3. Outcomes: Capture the transformative impact of AI on entrepreneurial processes, including market responsiveness, innovation, and business resilience.

Utilizing the ADO-TCM framework allows scholars to organize fragmented contributions into a cohesive managerial and entrepreneurial literature paradigm, addressing the superficiality of existing academic research (Blanco-González-Tejero et al., 2023; Lévesque et al., 2022).

Research Gaps and Future Directions

Despite the exponential growth in publications, the academic literature on AI and entrepreneurship remains fragmented, methodologically inconsistent, and often superficial. Several critical research gaps persist:

1. Ethical and Social Implications: There is a distinct lack of deep understanding and comprehensive frameworks regarding the ethical use of AI, its governance, and its impact on workforce dynamics and economic disparities (Putri & Nurmalasari, 2024).
2. Human-AI Integration: Current literature lacks seamless integration models between AI technology and human actors in the development of entrepreneurial ventures, particularly concerning how AI can enhance human creativity and innovation (Gerling et al., 2022).
3. Methodological Advancement: There is a pressing need to bridge the gap between the ambiguity of the AI revolution and meaningful scientific contributions. Future research should adopt predictive AI methods, engage in "data games," and analyze large datasets on nascent entrepreneurs and ecosystems. Furthermore, bibliometric findings should be enriched with qualitative methods, such as case studies and expert interviews, to provide deeper insights into AI's practical applications (Donthu et al., 2021; Obschonka et al., 2024).

By addressing these gaps through interdisciplinary perspectives—such as behavioral economics, strategic management, and digital transformation theories—future research can establish robust scholarly AI frontiers and provide actionable implications for policymakers, educators, and practitioners (Linnenluecke et al., 2020; Obschonka et al., 2024).

3. RESEARCH METHOD

Bibliometric analysis, including citation and co-citation analyses, is an effective quantitative approach for identifying research trends, influential authors, journals, keywords, and the development of scholarly fields over time (Donthu et al., 2021; Ellegaard & Wallin, 2015; Zupic & Čater, 2015). In this study, bibliometric analysis was used to examine the relationship between Artificial Intelligence (AI) and Entrepreneurship by analyzing publications indexed in the Scopus Database using the keywords “Artificial Intelligence” and “Entrepreneurship.” The study also employed a qualitative literature review to gain deeper insights into how AI can be integrated into entrepreneurship and enhance entrepreneurial performance. Relevant academic articles, reports, and case studies published between 2005 and 2025 were reviewed, with emphasis on peer-reviewed and credible sources. The findings were used to identify emerging trends, challenges, global practices, and opportunities for AI adoption in entrepreneurship, as well as to formulate recommendations that support entrepreneurial development and the achievement of the Sustainable Development Goals (SDGs). The use of Scopus as the primary database represents a limitation, as other databases such as Web of Science, ScienceDirect, DOAJ, and JSTOR were not included due to access restrictions.

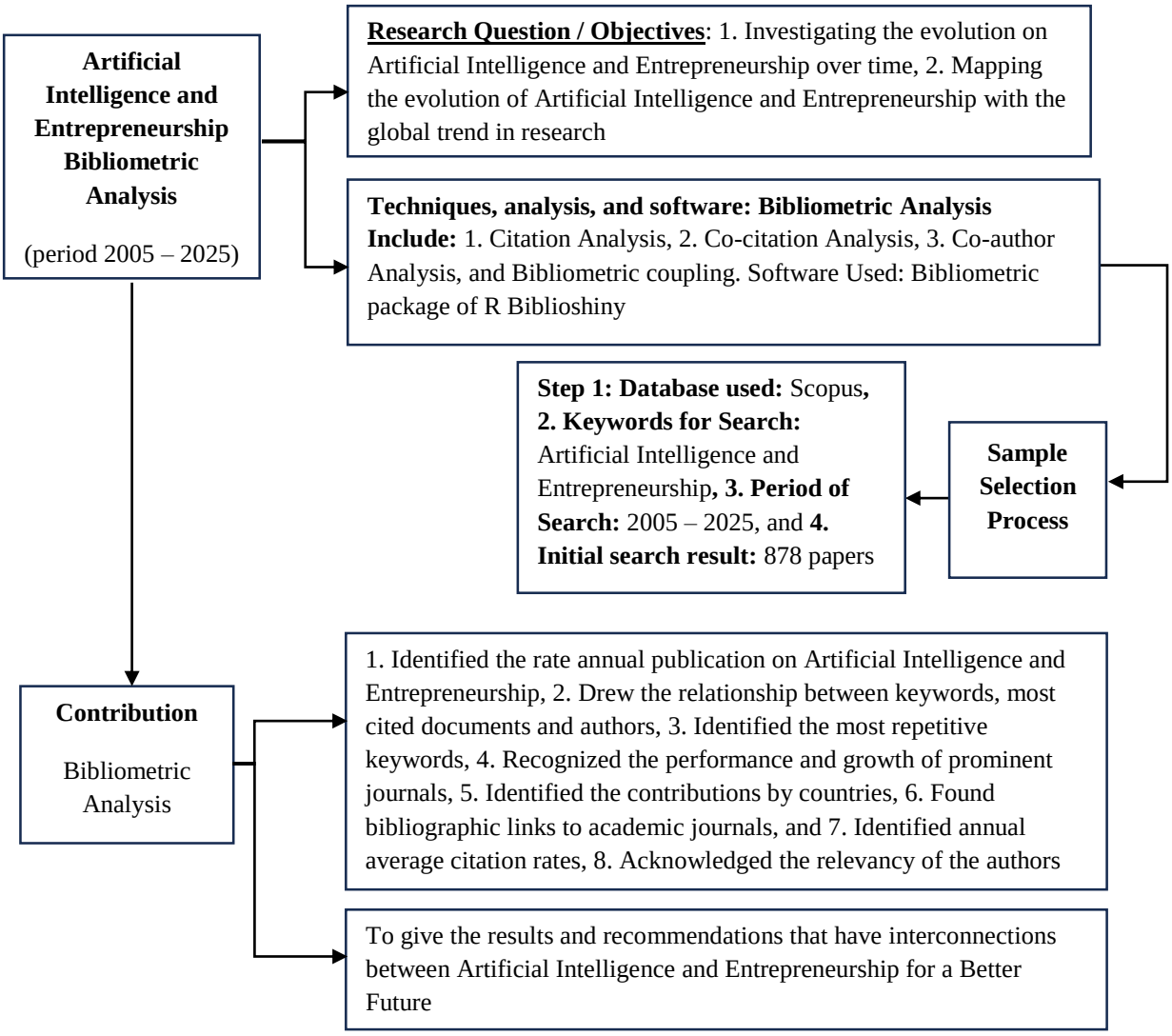


Figure 1. Outline of the methodology

After loading the database, the authors implemented a periodic filtering strategy to extract documents from 2005 to 2025. As a relatively new academic field, the database includes a total of 878 documents starting from 2005. The authors did not apply "Document Type" filters, as they aimed to consider all types of documents (e.g., articles, books, book chapters, conference papers, short surveys, and note previews) that are relevant for bibliometric analyses. To calculate the "Average citations per document," the researchers took into account both highly cited and less cited papers, which helps in identifying both strong and weaker studies. Furthermore, all sources of scholarly works were included to maximize the total number of papers. Using these filtration techniques, the authors retrieved 878 documents. The bibliometric package in R programming was utilized for the analysis of these documents from the Scopus Database.

4. RESULTS AND DISCUSSION

Summary Statistics

This study conducted a bibliometric analysis on 878 documents published from 2005 until 2025. There are 535 source type of documents. All the analysed documents are indexed in Scopus and discuss topics related to Entrepreneurship and Artificial Intelligence The data summary reveals several key insights into research activities in this field. Overall, research on these topics has contributed a total of 35,555 references, indicating a strong engagement with existing literature. There are 2,212 authors involved in this research area, with 173 Authors of single-authored docs, highlighting a significant trend of collaboration in this field. This collaboration is further evidenced by the fact that 22.55% of the documents have international co-authorship, with an average productivity of 2.83 documents per author.

Furthermore, the average age of the documents is relatively recent, at 3,18 years. This indicates sustained interest and continuous updates in this field. Additionally, each document has an average of 9,271 citations, demonstrating the influence of this research on subsequent studies. The variety of author keywords, totalling 2,215 underscores the diverse approaches and focus areas within studies on Entrepreneurship and Artificial Intelligence. The annual growth rate of publications reaching 19.62% shows a rapidly increasing interest and attention to these research topics.

The bibliometric analysis of Scopus-indexed scientific publications on Sustainable, reveals dynamic and continuously evolving research over the past decade. This phenomenon is supported by a high level of collaboration and the impact of globalization on the research world. The detailed summary available in the Scopus database can be seen in the Figure 2.



Figure 2. Artificial Intelligence and Entrepreneurship

Table 1. Summary Statistics

Description	Results
MAIN INFORMATION ABOUT DATA	
Timespan	2005:2025
Sources (Journals, Books, etc)	535
Documents	878
Annual Growth Rate %	19,62
Document Average Age	3,18
Average citations per doc	9,271
References	35555
DOCUMENT CONTENTS	
Keywords Plus (ID)	3263
Author's Keywords (DE)	2215
AUTHORS	
Authors	2212
Authors of single-authored docs	173
AUTHORS COLLABORATION	
Single-authored docs	189
Co-Authors per Doc	2,83
International co-authorships %	22,55
DOCUMENT TYPES	
article	383
book	33
book chapter	99
conference paper	256
conference review	50
editorial	10
erratum	1
note	10
retracted	5
review	26
short survey	5

Performance Analysis

Based on the publication data found on the topic of “Artificial Intelligence” and “Entrepreneurship” in the Scopus database, it is evident that the number of published articles has significantly increased from 2005 until 2025. In 2025, there were 36 published documents. The most rapid increase occurred from 2023 until 2024, with the number of articles rising from 145 in 2023 to 272 in 2024. This publication trend indicates growing interest and attention to the topics of Entrepreneurship and Artificial Intelligence. The increase in the number of publications also reflects the need for innovative and sustainable solutions to address global challenges, and it shows that these topics have become a key focus for both academic and

practical fields over the past decade. The details of publication performance can be seen in the Figure 3.

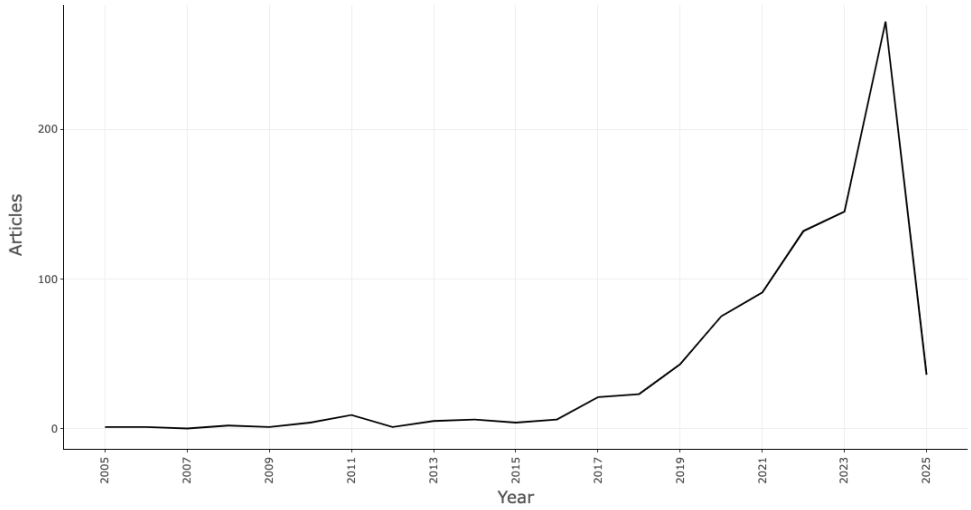


Figure 3. Publications from the last twenty years

Relationship between Keywords, Countries, and Sources

Subsequently, a three-field analysis was conducted on the data related to "Artificial Intelligence" and "Entrepreneurship". This analysis connects keywords, contributing countries, and sources of publication. In the Figure below, the contributing keywords are coded as "DE," the countries are coded as "AU_CO," and the publications are coded as "SO." The visualization from the three-field analysis shows that topics such as "artificial intelligence", entrepreneurship," "machine learning", and "innovation" are the most frequently researched keywords. The details of the analysis can be seen in the Figure 4.

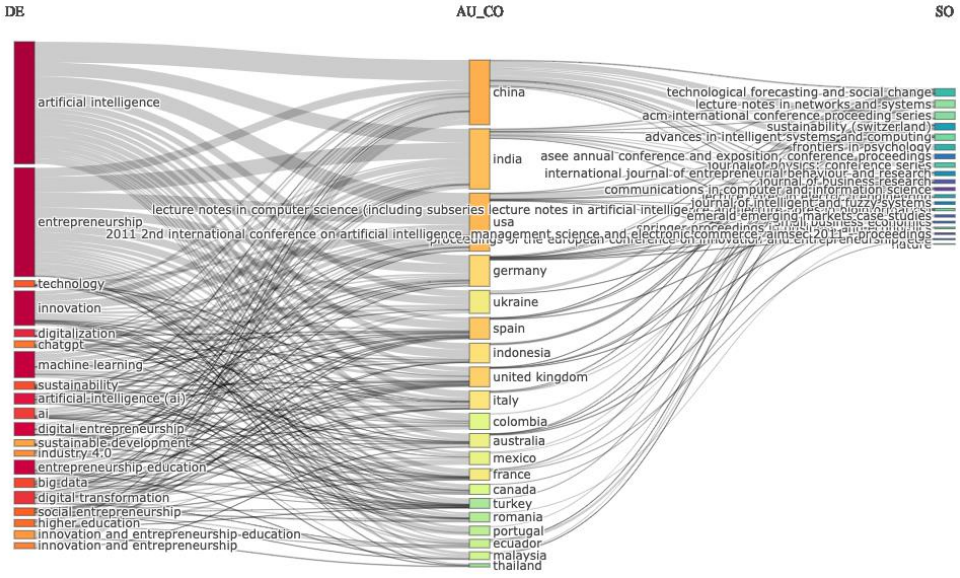


Figure 4. Three-Field Analysis

Based on the figure above, India and Chine emerge as the countries with the largest research contributions, demonstrating the dominance of these nations in this research topic.

China is a major contributor to AI research and entrepreneurship due to strong support from government policies such as *the National AI Strategy 2020-2045*, large investments in AI technology, and a growing innovation ecosystem. With the highest number of AI patent applications in the world, China is accelerating the adoption of AI in the industry, improving business efficiency, and driving digital transformation. Major cities with advanced infrastructure are serving as innovation hubs, while AI is helping to align the industrial structure and drive technology-driven economic growth (Zou & Xiong, 2023)

India is also a major contributor to entrepreneurship and intelligence research as it has great potential in *Prompt Engineering*, which combines natural language processing, machine learning, and creativity to optimize AI models like ChatGPT. Higher education in India plays a crucial role in preparing the AI workforce, with many universities starting to offer specialized courses in AI and programming techniques (George et al., 2023).

India is also adopting AI in Digital Entrepreneurship, especially in the handicraft sector. Many small entrepreneurs in India are starting to leverage digital platforms to sell products and innovate in online marketing. This acceleration of AI adoption in businesses is helping to create new opportunities for MSMEs and the creative industry, making India a hub for AI research in entrepreneurship (Yadav et al., 2023)

The following discussion is based on Bradford's Law, which is an important analysis in bibliometrics. Based on this law, if there is an increase in the number of publications on a "subject", then there is also an increase in the number of "publication sources". In Table 1 and Figure 4, the journals that are the main references for science on the topic of Artificial Intelligence and Entrepreneurship. The top 10 journals or proceedings included in Zone 1 are the most productive journals whose articles published cover most of the entire literature related to the topic of Artificial Intelligence and Entrepreneurship. Lecture Notes in Networks and Systems is ranked first with 32 articles, indicating that this journal is a very strong primary source. Followed by the ACM International Conference Proceeding Series, Advance in Intelligent System and Computing, Lecture Notes in Computer Sciences (Including Subseries Lecture Notes in Artificial Intelligence and Lectures Notes in Bioinformatics), Springer Proceedings in Business and Economics, Journal of Physics: Conference Series.

Table 2. Most Relevant Sources

No	SO	Rank	Freq	cumFreq	Zone
1	Lecture notes in networks and systems	1	32	32	Zone 1
2	Acm international conference proceeding series	2	17	49	Zone 1
3	Advances in intelligent systems and computing	3	13	62	Zone 1
4	Lecture notes in computer science (including subseries lecture notes in artificial intelligence and lecture notes in bioinformatics)	4	13	75	Zone 1
5	Springer proceedings in business and economics	5	12	87	Zone 1
6	Journal of physics: conference series	6	11	98	Zone 1
7	Nature	7	11	109	Zone 1
8	Technological forecasting and social change	8	11	120	Zone 1
9	Frontiers in psychology	9	10	130	Zone 1
10	Lecture notes in electrical engineering	10	9	139	Zone 1

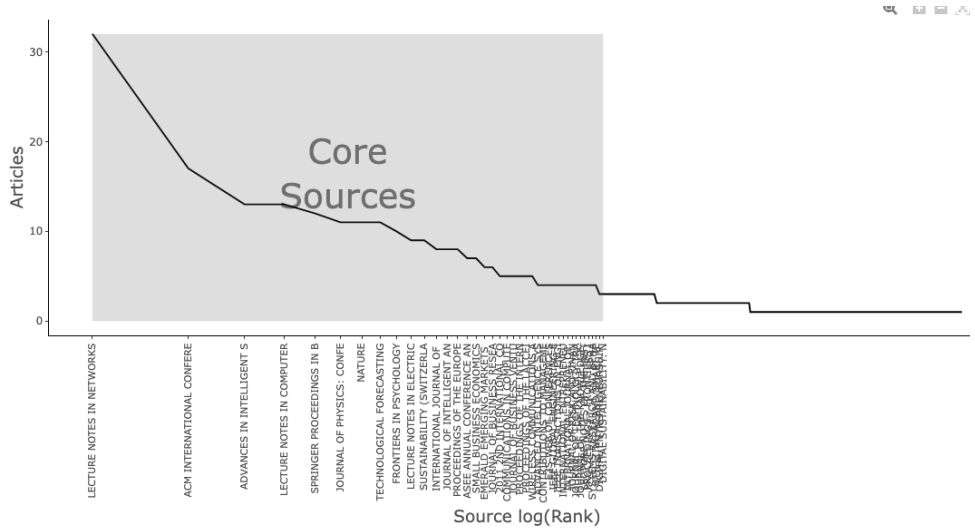


Figure 5. Sources Distribution According to Bradford Law

Furthermore, in Figure 6, a "word cloud" analysis is presented, showing the most frequently appearing keywords for the research topic According to the data, with the total occurrences in this keyword such as "artificial intelligence", "entrepreneurship", "students" and "entrepreneurship education". Other notable keywords include "engineering education", "innovation", "teaching", "curriculum", "entrepreneur", and "human" have the deep focus of researchers are on economic development, people, technology and planning in enhancing artificial intelligence and entrepreneurship. The attached visualization demonstrates the diversity of approaches and focuses taken by researchers in exploring the relationship between artificial intelligence and entrepreneurship.

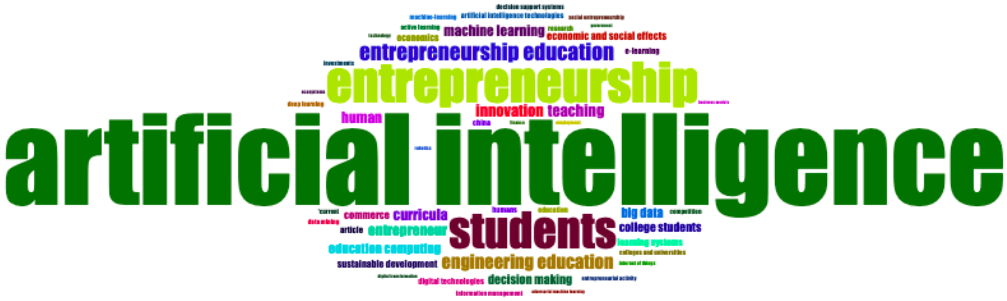


Figure 6. Word Cloud Analysis

Impact by Countries

Based on the obtained publication data, the countries with the most significant roles in the research on Artificial Intelligence and Entrepreneurship are presented in the Figure 7.

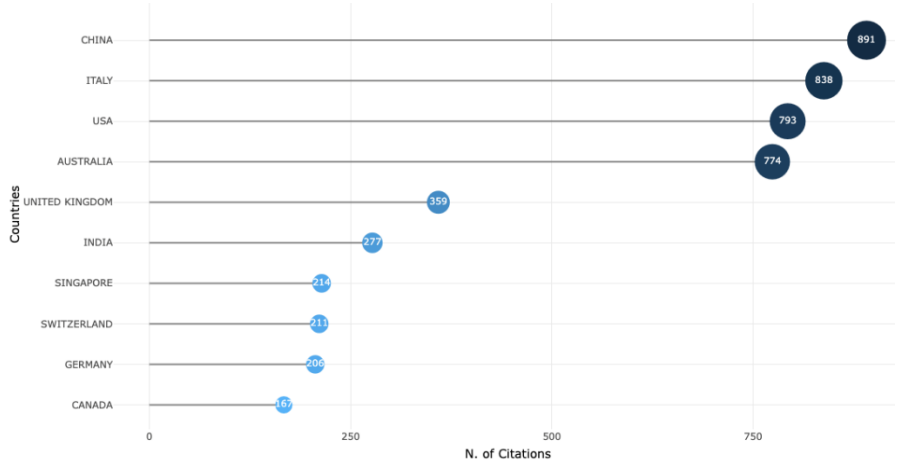


Figure 7. Countries with the Highest Number of Citations

China has the largest role with a total of 891 citations and an average of 6.00 citations per article, indicating that the research conducted is highly influential. Next, Italy ranks second with 838 citations and an average of 59.90 citations per article. Following is USA with 793 citations and an average of 16.20 citations per article. Australia also show significant influence, with 774 citation and average citations per article 48.40. United Kingdom has 359 citations per article and having average article citations 27.60. This data indicates that research from these countries has a substantial impact in this field, with the China, Italy, and USA as the main contributors to the academic literature related to Artificial Intelligence and Entrepreneurship

Network Approach

Based on data mining from the Scopus Database on research with the topics of Green Technology, Entrepreneurship, and Dynamic Capabilities an analysis of the co-occurrence network was carried out which can be seen in Figure 8.

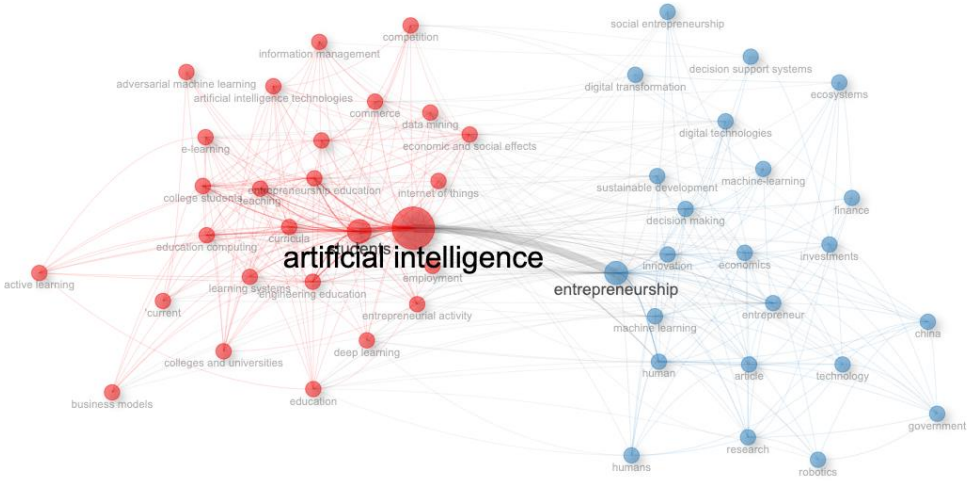


Figure 8. Key Research by Countries

The analysis results show a network map of the main concepts related to artificial intelligence and entrepreneurship. “artificial intelligence” is the most prominent concept and plays a central role in this network, indicating its importance in research. The keyword "students" also appears frequently, as shown by its significant node size and its strong connections to other terms like "entrepreneurship education," "engineering education," and "teaching." This indicates a strong thematic focus on how artificial intelligence relate with entrepreneurship activities in education learning through engineering. Other prominent keywords include "curriculum," "big data," "education computing," “college students” and "commerce."

Relevancy of the Authors in Artificial Intelligence and Entrepreneurship

Based on data from the Scopus database, an analysis of the relevance of the researchers was conducted, as presented in the Figure 8, Gupta V has 7 publications with 5,83 fractionalized, making him the most proclitic author and indicating that some of his research was conducted in collaboration with other researchers. The next researchers are Li Y, Li H, Liu Y, Wang H, Chen Y, Gupta BB, Liu J, Liu X, Obschahonka M showing their publication contributions on the topic of Artificial Intelligence by collaborating with other researchers as can be seen from their fractionalization scores. Fractionalization scores are important to show individual contributions more accurately in multi-researcher collaborations.

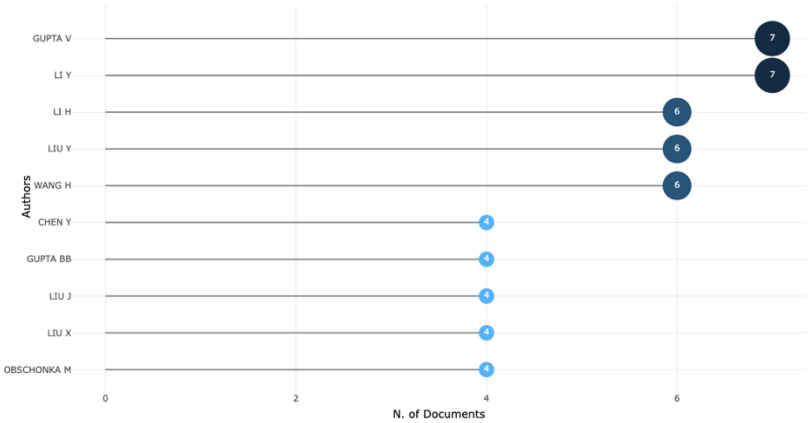


Figure 9. Most Relevant Authors in Artificial Intelligence and Entrepreneurship

Average Citations over Time

Figure 10 presents the numbers of total annual citations on Artificial Intelligence and Entrepreneurship, from 2005 to 2025. The proliferation of the citation of the papers written with the keyword "Artificial Intelligence" and "Entrepreneurship", and other related ones, started after 2005. The exponential growth in annual citation numbers remained visible from 2019 to 2020. The annual citation numbers become decreased from 2023 to 2024.

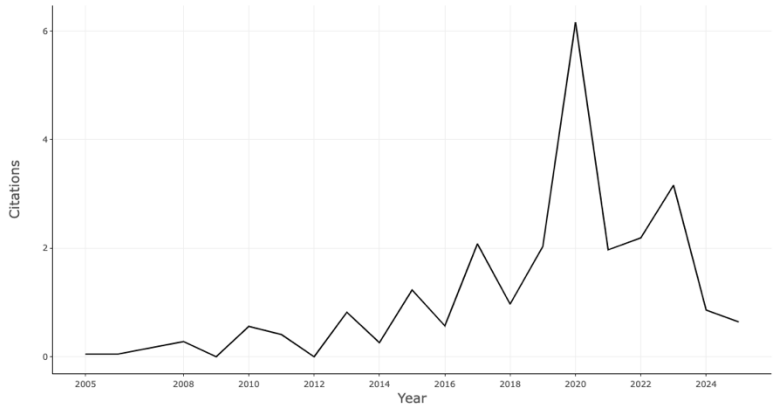


Figure 10. Annual citations on Artificial Intelligence and Entrepreneurship

Interconnections between Artificial Intelligence and Entrepreneurship for a Better Future

In the new era of the industrial revolution, businesses are moving from traditional methods to modern systems, and Artificial Intelligence (AI) has become a game-changer in entrepreneurship. Industry 4.0 emphasizes AI-driven automation, data analytics, and decision-making, fundamentally changing how entrepreneurs innovate, strategize, and grow their businesses (Putri & Nurmalasari, 2024). AI is transforming the business world by facilitating smart automation, predictive analytics, and tailored customer experiences, which in turn promotes agility and resilience among entrepreneurs. The combination of AI and entrepreneurship creates an environment where data-driven decision-making, algorithmic

efficiency, and insights from deep learning enable businesses to streamline operations, cut costs, and improve customer engagement. Tools like AI-powered chatbots, recommendation systems, and automated financial management are changing the way startups and larger companies connect with consumers, manage risks, and innovate new products. Additionally, AI-driven market intelligence helps businesses predict consumer needs and personalize their offerings, leading to highly customized business strategies (Pedro et al., 2019)

AI significantly contributes to making entrepreneurial opportunities more accessible by lowering barriers for startups and creating a more inclusive business landscape. Entrepreneurs can utilize AI tools for market research, analyzing customer sentiment, and improving operational efficiency, which helps to equalize competition in challenging industries (Giuggioli & Pellegrini, 2023). The rise of AI-driven platforms allows entrepreneurs to automate mundane tasks, freeing them up to concentrate on strategic decisions and creative solutions. This transition not only boosts productivity but also increases the potential for innovation, empowering entrepreneurs to investigate new business models and revenue opportunities (Lévesque et al., 2022).

AI-driven entrepreneurship goes beyond just making profits; it also plays a significant role in promoting sustainable business practices. By optimizing resources, reducing waste, and managing supply chains more efficiently, AI helps foster environmentally responsible entrepreneurship. When businesses combine AI with green technology, they can enhance sustainability efforts and align with global environmental objectives, highlighting AI's importance in ethical entrepreneurship (Obschonka et al., 2024).

While AI offers many advantages, its integration into entrepreneurship also brings challenges, especially regarding ethical issues, job displacement, and the need for regulatory measures. Tackling these challenges calls for a collaborative effort among scholars, policymakers, and business leaders. Future studies should investigate the lasting effects of AI on entrepreneurial environments, how the workforce can adapt, and the significance of human-AI partnerships in fostering business innovation. Creating governance models and ethical guidelines for AI will be essential to ensure that AI-driven entrepreneurship promotes fair economic growth and sustainable development. (Uriarte et al., 2025).

As AI technology advances, its role in entrepreneurship is set to transform business success and alter global economies. Entrepreneurs who adopt AI-driven strategies will find themselves better prepared to tackle market challenges, improve operational efficiency, and foster ongoing innovation. The collaboration between AI and entrepreneurship presents an

exciting opportunity for a more intelligent, adaptable, and resilient business environment, paving the way for a more inclusive and sustainable future for economies worldwide.

Table 4. Future Agenda

Authors	Research Title	Research Gap	Future Agenda
Putri & Nurmalasari (2024)	Artificial Intelligence-Entrepreneurship: Future Research and Opportunities for New Business Model	Lack of a deep understanding of the ethical and social implications of using AI in business	Further research on the development of an ethical framework for the use of AI in business, as well as a study on the impact of AI on the workforce and economic disparities
Gerling et al (2022)	AI meets Digital: A Critical Review on Artificial Intelligence in Digital Entrepreneurship	Lack of seamless integration between AI technology and humans in the development of entrepreneurial ventures	Development of models and strategies for better integration between AI and humans in the entrepreneurial process, as well as research on how AI can enhance creativity and innovation in digital ventures
(Giuggioli & Pellegrini, 2023)	Artificial intelligence as an enabler for entrepreneurs: a systematic literature review and an agenda for future research	Lack of a comprehensive understanding of how AI can support entrepreneurs at different stages of the entrepreneurial process	Further research on the development of a clear framework for understanding the impact of AI on entrepreneurship, as well as studies on how AI can be used to identify new opportunities, make better decisions, and improve company performance
(Blanco-González-Tejero et al., 2023)	A Systematic Literature Review on the Role of Artificial Intelligence in Entrepreneurial Activity	Lack of systematization in academic literature related to the positive influence of artificial intelligence on entrepreneurship6.	Offer a model for interpreting the impact of artificial intelligence on entrepreneurship, organizing contributions into the managerial and entrepreneurial literature paradigm.
(Obschonka et al., 2024)	Artificial Intelligence and Entrepreneurship: A Call for Research to Prospect and Establish the Scholarly AI Frontiers	The need to bridge the gap between the ambiguity of the AI revolution and meaningful scientific contributions7.	Adopt predictive AI methods by actively engaging in "data games" and discovering large amounts of existing data about nascent and new entrepreneurs, startups, entrepreneurial ecosystems, their cultures and policies.
(Uriarte et al., 2025)	Artificial intelligence technologies and entrepreneurship: a hybrid literature review	Most of the academic research on this subject is superficial	Future research based on antecedents, decisions, and outcomes and theories, contexts, and methods (TCM) frameworks. Using the ADO-TCM framework to understand the impact of AI on entrepreneurship and address identified gaps. Antecedents refer to individual, technological, and environmental factors that influence entrepreneurial decision-making, Decisions

	include strategic and tactical choices regarding AI integration, Results capture the transformative impact of AI on entrepreneurial processes.

5. CONCLUSION AND SUGGESTION

This study provides a comprehensive bibliometric analysis of the intersection between Artificial Intelligence (AI) and entrepreneurship, revealing a significant surge in publications, interdisciplinary collaborations, and a shifting focus toward AI-enhanced entrepreneurial education and digital business models, particularly in emerging economies like China and India. While the findings underscore AI's transformative potential in driving innovation, efficiency, and sustainability within the entrepreneurial landscape, they also highlight persistent challenges, including methodological inconsistencies, fragmented literature, and a superficial understanding of AI's holistic impact on entrepreneurial ecosystems. Ultimately, this research establishes a foundational mapping of the field's intellectual structure, demonstrating that AI is no longer merely an operational tool but a core enabler reshaping venture creation, resource allocation, and strategic decision-making in the digital era.

Moving forward, future research should transcend current methodological limitations by integrating qualitative approaches, such as case studies and expert interviews, and employing longitudinal designs to evaluate AI's long-term effects on entrepreneurial creativity, decision-making, and business resilience. Scholars are encouraged to adopt cohesive theoretical frameworks, such as the integration of Antecedents, Decisions, and Outcomes (ADO) with Theories, Contexts, and Methods (TCM), to systematically address existing literature gaps. Practically, business leaders must prioritize ethical AI governance and workforce training alongside technological adoption, while policymakers should foster AI-driven entrepreneurship through supportive regulatory frameworks and enhanced digital infrastructure. Furthermore, educational institutions are urged to integrate AI-centric curricula to equip future entrepreneurs with the critical skills necessary to navigate and leverage the evolving digital economy.

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