

Artificial Intelligence and Entrepreneurship: A Bibliometric Analysis of Intellectual Structure, Emerging Trends and Future Prospects (2021-2025)

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Abstract

This bibliometric study aims to explore and analyze the intellectual landscape and emerging trends at the intersection of artificial intelligence and entrepreneurship during the period 2021-2025. Responding to the rapid growth and fragmentation of intellectual output, the study employed the PRISMA methodology to extract and analyze 212 scholarly articles from the Scopus database, which possesses vast amounts of data in the fields of business and management. The results revealed the field's transition from an establishment phase to one of accelerated growth, with the United States leading in quantitative output, while European countries, such as Italy, are leading in qualitative impact. The bibliometric network analysis identified four main intellectual clusters and highlighted generative artificial intelligence as a modern research frontier. It also emphasized the role of sustainability as a pivotal knowledge bridge connecting technological innovation and management science. Furthermore, this paper underscored the urgent need to move beyond purely technical research aspects and focus on strategic and organizational dimensions to ensure the survival and growth of startups in the digital age, thus providing a valuable roadmap for researchers, practitioners, and decision-makers.

Keywords: Artificial intelligence, Bibliometrics, Digital age, Entrepreneurship, Startups.

1-Introduction

The intersection of artificial intelligence (AI) and entrepreneurship has garnered increasing attention in recent years, AI has transformed from a mere technological innovation into a strategic driver reshaping the business and startup landscape (Jia & Stan, 2021; Raneri et al., 2023). This transformation has revolutionized how entrepreneurs identify opportunities, develop business models, and interact with markets, making intelligent technologies a crucial element in achieving sustainable competitive advantage (Dabbous & Boustani, 2023). As this field continues to mature and expand rapidly, recent literature has focused on the multidimensional applications of AI in improving operational performance and assessing the risks associated with launching and developing entrepreneurial projects (Nenni et al., 2025; Sirait et al., 2025). Furthermore, these technologies are playing a pivotal role in guiding the dynamics of entrepreneurial financing and venture capital investment decisions (Stroube & Dushnitsky, 2025), in addition to their broad impact on entrepreneurial ecosystems from an economic perspective, And a comprehensive social one (Manogna et al., 2025). As the current literature has focused intensively on technical aspects, largely ignoring the deep strategic and organizational aspects that explain how to integrate these technologies to ensure the survival and growth of startups, in addition to the lack of studies that place sustainability as a central intellectual framework linking technological innovation and applied management science. Given the rapid development and fragmentation in intellectual production, the urgent need to conduct a comprehensive literature analysis is highlighted. This paper comes as a bibliometric study that aims to draw a knowledge map linking artificial intelligence and entrepreneurship, and to analyze the intellectual structure of this field to identify current trends, research gaps, and future prospects for researchers and practitioners.

Based on the foregoing, this study poses the following question: What are the structural characteristics or intellectual trends and thematic developments of the scientific literature that has addressed the intersection between artificial intelligence and entrepreneurship? From this stems a set of the following sub-questions:

- How has the volume and trajectory of scientific publishing in the field of artificial intelligence and entrepreneurship evolved over time?.
- Which countries and academic institutions are the most productive, both quantitatively and qualitatively, in this field of knowledge?.
- What schools of thought and theoretical clusters form the knowledge base of the discipline, based on authors' citation networks?.
- What are the most prominent current research topics and emerging technological trends identified through keyword analysis?.
- What are the most important scientific journals and reference sources driving publication in this field?.

2-Methodology

To achieve the study's objectives and test the conceptual model derived from a literature review concerning the intersections of artificial intelligence and entrepreneurship, this research paper adopts a quantitative explanatory approach. This approach allows for measuring the direct and indirect effects of variables and understanding the nature of the structural relationships between artificial intelligence and entrepreneurship by following these steps:

2.1. Resources and Methods

In this bibliometric review, the resources and methods used are divided as follows:

2.1.1. Research Design

This research paper presents a bibliometric analysis using Prisma 2020 software (Page, MJ, et al. 2021). This bibliometric analysis primarily aims to identify research trends in artificial intelligence and entrepreneurship studies, track the growth of scientific output in this field during the period 2021-2025, identify the most influential and contributing authors, identify leading scientific journals that stimulate publication activity in this field, identify leading countries in this specialization, and identify the conceptual links and keywords that form the knowledge framework for the terms artificial intelligence and entrepreneurship.

In conjunction with the PRISMA framework used in bibliometric analysis, this review relied heavily on Excel and Vosviewer software to display and analyze data, create and monitor bibliometric networks. Vosviewer also helped us map and analyze complex search networks in the field of artificial intelligence and entrepreneurship, identify prominent journals, publications and authors, display trends and understand academic topics, as well as identify key research trends and patterns in this field. The software also contributed to the geographical organization of publications, which enhanced our understanding of the global impact of artificial intelligence and entrepreneurship and research dynamics.

2.1.2. Definition

The definition includes how to select the database and search terms used in this bibliometric review, in the following sequence:

• Database Selection

This review was conducted on June 14, 2026 using the Scopus database, which provides comprehensive coverage of scientific articles, thanks to its accurate, high-quality data, which is easy to extract and analyze and represents better coverage than competing databases, particularly in the field of business administration, artificial intelligence and entrepreneurship.

• **Search terms**

To ensure the most relevant studies were extracted for this bibliometric review, a systematic search strategy was applied using the Scopus database. The following format was used in the title, abstract, and keyword fields: `TITLE-ABS-KEY(("Artificial Intelligence" or "AI") AND ("Entrepreneurship" or "Startups"))`, The analysis was limited to publications issued between 2021 and 2025 to track recent developments at the intersection of AI and entrepreneurship (`PUBYEAR = 2021–2025`), Furthermore, the analysis was limited to documents belonging to the fields of business, management, and accounting (`SUBJAREA = "BUSI") to ensure disciplinary consistency, To enhance the scientific rigor of the study, the review was limited to articles published in peer-reviewed journals (`DOCTYPE = "ar") and published in English (`LANGUAGE = "English"`), In addition, search results were further improved by narrowing down indexed keywords to the most relevant field concepts, including artificial intelligence, entrepreneurship, machine learning, digital entrepreneurship, and startups. This filtering process improved the relevance and accuracy of retrieved records and ensured the inclusion of relevant studies.

Table 1. Inclusion and exclusion criteria.

Inclusion Criteria	Exclusion Criteria
Specialized research in the field of artificial intelligence and entrepreneurship.	Research outside the specified subject areas
Publications from the years 2021 to 2025	Publications prior to 2021 and those from 2026
Articles published in English	Publications in other languages
Journal articles	Theses, conference papers, books, book chapters blogs
Journals as the source type	All other sources

Source of Table 1: Author's own work

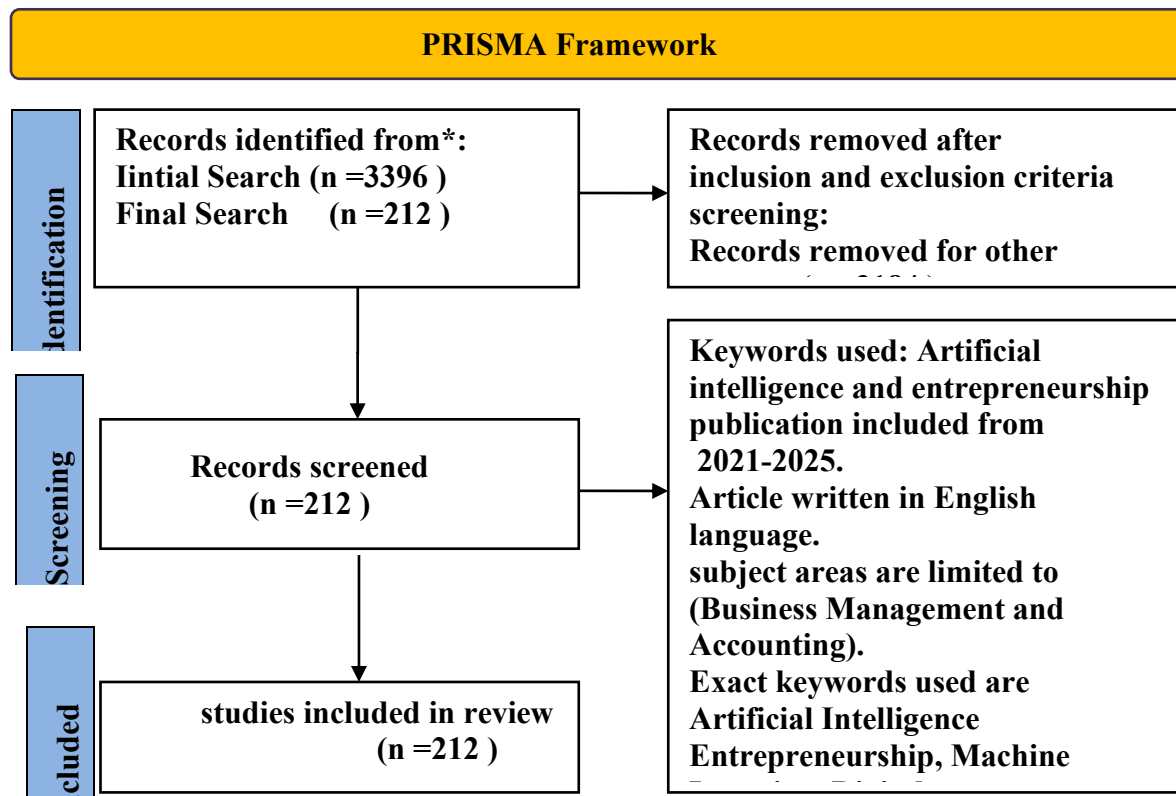
2.1.3.Sorting and Selection

The initial search was conducted in the Scopus database using the main keywords "artificial intelligence and entrepreneurship," resulting in the retrieval of 3396 articles. Using the inclusion and exclusion criteria outlined in Table 1, the number of relevant articles decreased when using the main keywords in the search, by excluding 3184 research papers that did not meet the specified criteria, These criteria included selecting specific keywords such as: artificial intelligence, entrepreneurship, machine learning, digital entrepreneurship, and startups. Meanwhile, 212 research papers that met the criteria were retained.

2.1.4.Inclusion and Reporting

The results of this bibliometric analysis are presented according to the PRISMA framework, as shown in Figure 1, The following section will begin to answer the research questions posed and present the results in a systematic and transparent manner.

Figure 1. Prisma Framework



Source of Figure 1: Prepared by the researchers with the assistance of Page, MJ, et al. (2021)

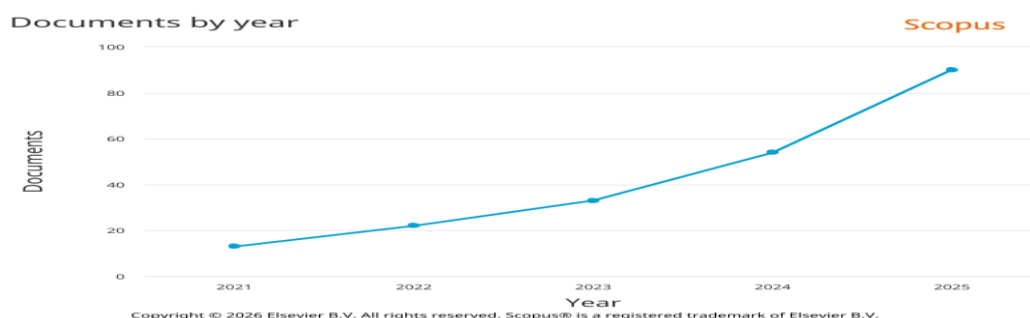
3- Analysis of results

This section deals with the results of a bibliometric study in the field of artificial intelligence and entrepreneurship, which includes the chronological development of scientific output, by providing valuable insights into various aspects of this constantly evolving discipline, The study also includes prominent thematic areas, such as an analysis of authors' contributions and influence, the most published scientific sources, the geographical distribution of scientific output, key search terms, and the most important academic and research institutions, This analysis aims to clarify the development of the field of artificial intelligence and entrepreneurship, and to identify the basic elements that drive scientific research in this field.

3.1. Timeline of the evolution of scientific output in the field of artificial intelligence and entrepreneurship.

Tracking the chronological publication of scientific works is a cornerstone of bibliometric studies, used to measure the vitality and dynamism of a field of knowledge, The importance of this analysis in literature review articles lies in establishing the legitimacy and strategic timing of the study, as illustrated in the figure:

Figure 2. Timeline of Scientific Production



source of Figure 2: Author's own work using the Scopus database

The timeline shows a sharp and rapid increase in the number of documents published and listed in the Scopus database, It started in 2021 with only about 13 documents, gradually rising to 22 documents in 2023, then the major leap between 2023 and 2024, with production jumping to 54 documents, reaching an estimated peak of 90 documents by 2025 This result is consistent with what (Chalmers et al, 2021) confirmed, who affirmed that artificial intelligence has become one of the main drivers of entrepreneurship in light of the Fourth Industrial Revolution. It is also supported by the results of the study by (Stefan et al 2025), which highlighted the emergence of new entrepreneurial ecosystems based on artificial intelligence, This trend is consistent with what (Moharrak et al, 2024), pointed out regarding the increasing reliance of startups on artificial intelligence technologies to enhance international expansion.

3.2.Geographical distribution of scientific output and the size of academic influence of the most prominent contributing countries

The geographical analysis of scientific output and its citation rates aims to map the global knowledge geography of the discipline and determine academic weight in systematic reviews, This is achieved not only by considering the numerical density of publications but also by combining it with the volume and percentage of citations to assess the knowledge impact of each country, as shown in the following table:

Table 2. Citation and Country

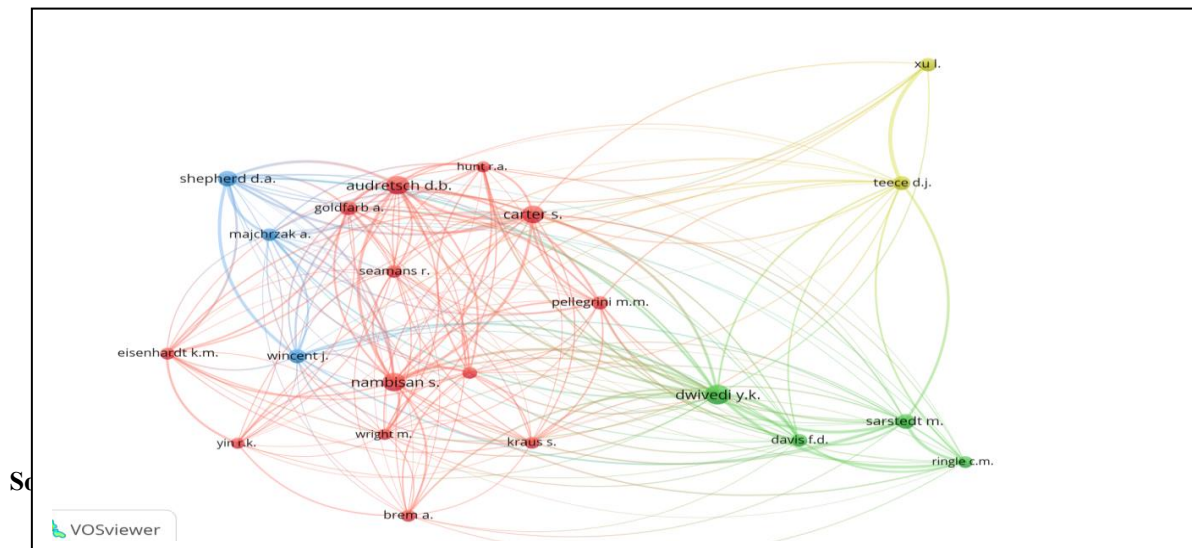
<i>NO</i>	<i>country</i>	<i>documents</i>	<i>Percentage (%)</i>	<i>citations</i>	<i>id</i>
1	united states	45	23.93	1942	65
2	united kingdom	24	12.76	1320	64
3	italy	21	11.17	1176	26
4	india	28	14.89	881	22
5	china	22	11.70	551	9
6	france	11	5.85	534	17
7	germany	11	5.85	495	18
8	saudiarabia	14	7.44	380	50
9	lebanon	5	2.65	340	32
10	jordan	7	3.72	309	28

Source of Table 2: Author's own work using Ms Excel

Table 2 reveals the global distribution of research power, with the United States of America leading the way in terms of output volume with 45 documents, achieving the highest number of citations with 1942 citations, representing 23.93% of the total impact. The United Kingdom follows in second place with 24 documents and 132 citations, representing 12.76%, On the Arab and regional level, the Kingdom of Saudi Arabia has a distinguished presence with 14 documents and 380 citations, representing 7.44%, followed by Jordan with 7 documents and 309 citations, and then Lebanon with 5 documents and 340 citations.

3.3.Author Citation Network Map

Co-citation analysis of authors using Vosviewer is the ideal tool for deciphering deep intellectual structures and identifying hidden words in the field of knowledge. This indicator maps the connections between research networks based on the frequency of citations of other research together, allowing scholars to be classified into intellectual groups, each representing a specific theoretical or methodological school that forms the fundamental principles upon which this discipline is based, as illustrated in the following figure:

Figure 3: Citation-Author Relationship Map

The network map of author citation relationships reveals the overlap of outputs from prominent research communities, divided into color-coded clusters with strategic significance:

1- The Red Cluster (Entrepreneurship and Inclusive Innovation): This is the largest cluster and features key researchers such as Audretsch D.B., Carter S., Nambisan S., Krus S., and Brem a. This cluster focuses on digital entrepreneurship and technological innovation strategies.

2- The Green Cluster (Technological Adoption and Quantitative Methodology): This cluster is strongly led by Dwivedi Y.K., along with Davis F.D., the creator of the Sarstedt M. model, Ringle C.M., and TAM, pioneers in PLS-SEM structural equation modeling.

3- The Blue Cluster (Cognition and Entrepreneurial Strategy): This cluster features Shepherd D.A., Majchrzak a., and Wincent j., and covers the cognitive aspects and behaviors of entrepreneurs in dynamic environments.

4- The Yellow Cluster (Dynamic Capabilities and Systems): It includes (Teece D.J. and Xu l), and it is dedicated to linking information systems with the strategic capabilities of organizations.

3.4. Institutional affiliation and qualitative impact rates of leading research organizations

Institutional affiliation in scientific publishing is a crucial evaluation tool for identifying academic authorities and universities that lead scientific research and development in a specific discipline, This indicator, especially when calculating the average citation per document, helps measure the efficiency of institutions and the quality of their output, thus guiding research funders to genuine centers of scientific excellence globally, as shown in the following table:

Table 3: Citation and Organization

<i>no</i>	<i>organization</i>	<i>documents</i>	<i>citations</i>	<i>Average citation per item</i>
1	it systems and analytics, indian institute of management jammu, jammu, india	2	300	150
2	lebaneseamerican university, beirut, 1102, lebanon	3	235	78.33
3	indian institute of management indore, india	2	203	101.5

4	center for interdisciplinary research at university of petroleum and energy studies (upes), uttarakhand, dehradun, india	2	203	101.5
5	kiel institute for the world economy, kiel, germany	2	156	78
6	madsclausen institute, university of southern denmark, denmark	2	138	69
7	africa business school, mohammed vi polytechnic university, avenue mohamed ben abdellahregragui, rabat, 10112, morocco	2	122	61
8	departement of digital business, university of raharja, indonesia	2	118	59
9	international business school, fuzhou university of international studies and trade, fuzhou, 350202, china	2	110	55
10	symbiosis centre for information technology (scit), symbiosis international university, pune, india	2	71	35.5

Source of Table 3: Author's own work using Ms Excel

Table 3 reveals qualitative bibliometric surprises, with the IT Systems and Analysis Department, India Institute of Management, Jammu Lebanese in India topping the list with a total of 300 citations for only two documents, recording the highest qualitative impact rate at an average of 150 citations per article, It is followed by the Lebanese American University India Institute from Lebanon with 2035 citations for 3 documents at an average of 78.33%. The list also includes prestigious European institutions such as the Kiel Institute for the World Economy in Germany at an average of 8% and the Mads Clausen Institute in Denmark at an average of 69, in addition to a distinguished Arab-African presence represented by the Mohammed VI Polytechnic University in Morocco (Africa Business School), with 122 citations for two documents at an average of 61.

3.5.Quantitative frequencies of the most prominent keywords

Keyword analysis is like DNA analysis of scientific literature, as it condenses the intellectual trends of thousands of pages into condensed terms in bibliometric review articles, This table allows for the identification of the core of the field of knowledge and the surrounding subtopics, as illustrated in the following table:

Table 4: Keyword

<i>no</i>	<i>keyword</i>	<i>Total occurrences</i>	<i>id</i>
1	artificial intelligence	147	48
2	entrepreneurship	88	397
3	machine learning	21	704
4	entrepreneur	18	372
5	digital entrepreneurship	14	276
6	startup	14	1060
8	artificial intelligence (ai)	11	49

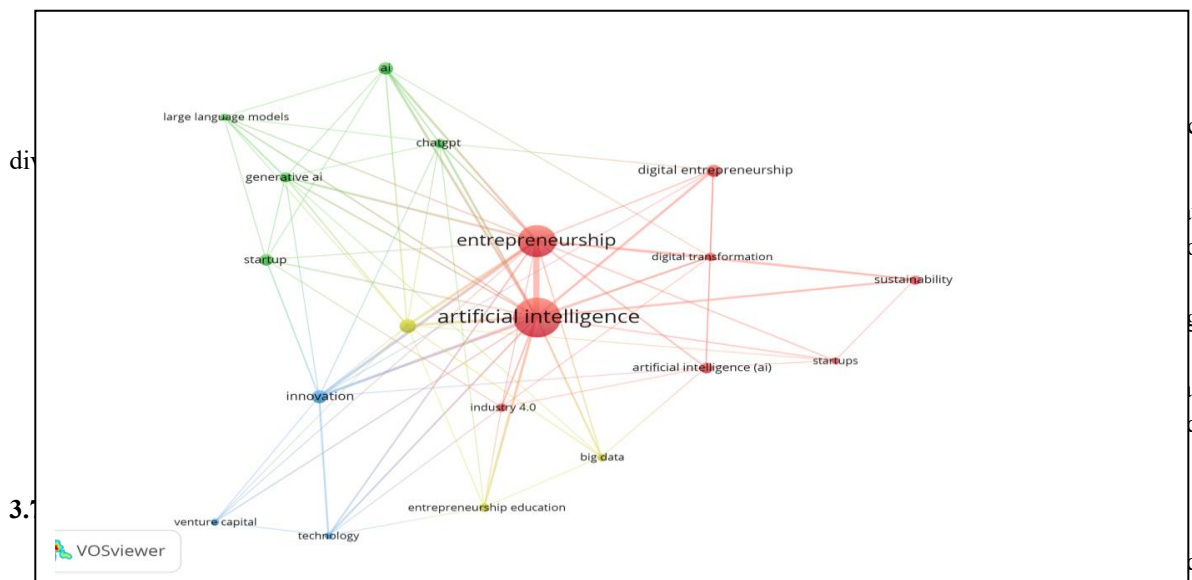
9	digital transformation	8	298
10	business models	6	118

Source of Table 4: Author's own work using Ms Excel

Table 4 shows the quantitative frequencies of the most prominent keywords, where the term artificial intelligence comes in first place with 147 frequencies, followed directly by the main dependent variable entrepreneurship with 88 frequencies, and the words startup and digital entrepreneurship are equal with 14 frequencies each, and at the bottom of the list come digital transformation with 8 frequencies and business models with only 6 frequencies.

3.6. Conceptual synchronization network map for keywords

The conceptual synchronization network analysis of keywords goes beyond the one-dimensional view of the frequency table to offer a two-dimensional structural view that illustrates how ideas are interconnected within the mind of the knowledge field. This figure, produced by Vosviewer, helps identify research hotspots and emerging research directions through studies of spatial proximity, node size, and the strength of links between different terms, as shown in the following figure:

Figure 4: Author's Keyword Map

guiding researchers towards the most efficient channels for publishing their contributions. This indicator highlights the most attractive and inclusive publishing channels for the discipline and measures the scientific community's confidence in the outputs of these fields by monitoring the total and average citations, thus revealing the identity of reference journals, as shown in the following table:

Table 5: Source and Citation Table

<i>no</i>	<i>source</i>	<i>documents</i>	<i>citations</i>	<i>Average citation per item</i>	<i>id</i>
1	technological forecasting and social change	13	737	56.69	112
2	international journal of entrepreneurial behaviour and research	8	407	50.86	44
3	technology in society	4	299	74.75	114
4	journal of business venturing insights	5	283	56.6	64

5	journal of business research	5	267	5.4	61
6	journal of risk and financial management	5	166	33.2	82
7	ieee transactions on engineering management	4	161	40.25	34
8	journal of entrepreneurship in emerging economies	6	107	17.83	72
9	international entrepreneurship and management journal	6	106	17.66	37
10	journal of innovation and entrepreneurship	8	90	11.25	77

Source of Table 5: Author's own work using Ms Excel

Table 5 reveals the most influential journals, with the journal Technological Forecasting and Social Change topping the list with a total of 1737 citations for 13 published articles and an average impact of 56.69 per article. The International Journal of Entrepreneurial Behavior and Research comes in second with 407 citations for 8 articles and an average impact of 50.86. Technology in Society ranks third with only 4 articles, but it records the highest average citation in the entire table at 74.75 with a total of 239 citations. The list also includes other prestigious journals such as the Journal of Business Venturing Insights with 283 citations and the Journal of Business Research with 267 citations.

3.8.An analytical comparison between quantitative productivity and qualitative impact of leading countries

The integration of authors' intellectual productivity data and direct citation rates, re-polarized across geographic ranges, serves as an advanced bibliometric auditing tool to correct abstract quantitative assessments. This indicator aims to differentiate between quantitatively productive and qualitatively influential countries, thus providing a deeper critical reading of the quality and scientific level of the research structure in academic discussions of systematic reviews, as shown in the following table:

Table 6: Author and Country Table

no	country	documents	Percentage (%)	citations	Average citation per item
1	united states	45	23.44	1942	43.16
2	india	28	14.58	881	31.46
3	united kingdom	24	12.50	1320	55
4	china	22	11.46	551	25.05
5	italy	21	10.94	1176	56
6	saudiarabia	14	7.29	380	27.14
7	france	11	5.73	534	48.55
8	germany	11	5.73	495	45
9	spain	8	4.17	128	16
10	sweden	8	4.17	185	23.13

Source of Table 6: Author's own work using Ms Excel

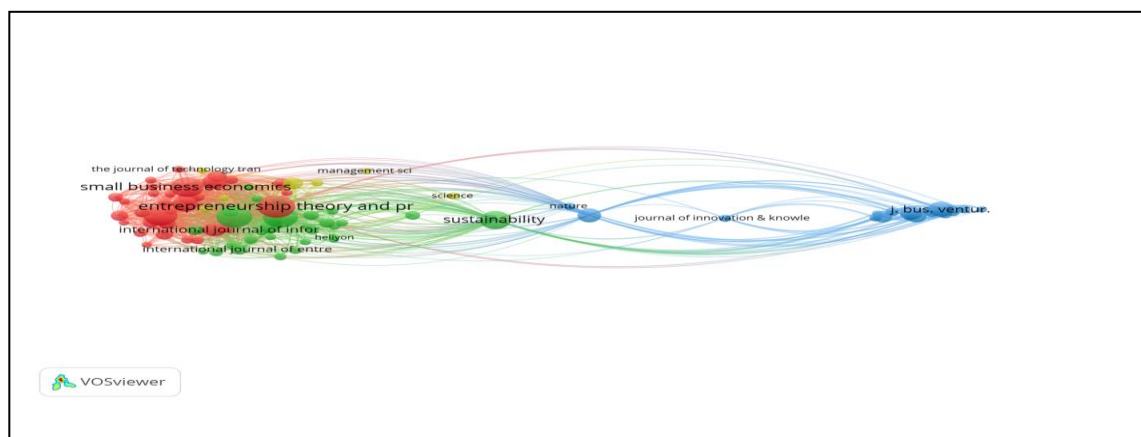
Table 6 shows that the United States maintains first place quantitatively with 45 documents and a production share of 23.44% with a total of 1942 citations, where its average impact records 43.16 citations per

article. In contrast, Italy excels qualitatively, achieving the highest average citation per article with 56 citations with 21 documents and a total of 1176, while Saudi Arabia maintains a stable pace with an average of 27.14, and Sweden and Spain enter the list with 8 documents each.

3.9.A Map of the shared citation network of sources and knowledge flow between interdisciplinary fields

Analyzing the shared citation network of sources through visual links is the ideal tool for mapping the flow of knowledge between different scholarly disciplines and identifying the intellectual channels that transmit ideas. This visual indicator helps clarify how fields from different disciplines, such as management science, innovation, and research sciences, integrate and intersect to build the knowledge framework of the studied field. This allows for the identification of vital journals that connect separate scientific communities, as shown in the following figure:

Figure 5: Citation-Source Relationship Map



Source of Figure 5: VOSviewer

The network exhibits a distinct, two-pole structure connected by a striking thematic bridge:

- 1- The left pole (traditional entrepreneurship and innovation – the dense red and green cluster) includes major historical journals in entrepreneurship such as Small Business Economics of Entrepreneurship
- 2- Theory and Practice, International Journal of Entrepreneurial Behavior, and The Journal of Technology Transfer.
- 2- The right pole (business strategies and applied sciences – the blue cluster) includes leading journals such as Journal of Business Venture Insights, Journal of Innovation, and Knowledge, extending to high-impact science journals like Nature and Science in the middle.
- 3-The central knowledge bridge (the Sustainability journal node): Sustainability occupies a central geographical position in the network, serving as a major node between the poles of traditional entrepreneurship and applied science and strategies.

4.Discussion of Results

The discussion of the results in this research paper aims to provide an in-depth interpretation of the structural implications and emerging trends at the intersection of artificial intelligence and entrepreneurship during the period (2021-2025), based on the outputs of the bibliometric analysis as follows:

4.1.Timeline of Scientific Production

This rapid increase reflects the field's transition from a foundational to a phase of accelerated growth. This indicates that the literature is still developing its theoretical frameworks despite the significant expansion in applied studies (Stefan et al., 2025 & Chalmers et al., 2021).

4.2.Citations and Countries

These results are consistent with the study presented by Amoako et al., 2021, which demonstrated that artificial intelligence has become an important tool for improving entrepreneurial decisions in emerging markets. The findings of the study by Saura&Bužinskienė, 2025, also confirm that emerging economies are increasingly focused on employing AI to enhance entrepreneurial performance and competitiveness.

4.3.Author Citation Map

This result is consistent with what Schiavonne et al. (2023) presented regarding the importance of artificial intelligence in the process of creating new projects, and it is also supported by the study of Chalmers et al. (2021), which emphasized the need to view artificial intelligence as a strategic resource in the entrepreneurial process.

4.4.Citations and Organizations

This can be explained by the focus of these institutions on applied issues related to market needs, which is consistent with the model of (Gbadegeshin, et al., 2022) regarding supporting emerging technology companies and overcoming the Death Valley stage, and with the results of (Cimino, et al., 2025), which confirmed the role of artificial intelligence in achieving sustainable growth for small and medium enterprises.

4.5.Keywords

This result indicates that the literature has focused on technical aspects compared to strategic and organizational aspects. This observation is consistent with the study by (Giuggioli, et al, 2025), which highlighted the role of artificial intelligence in developing entrepreneurial finance, and is supported by the results of (Rastogi, &Pandita, 2025), which emphasized the importance of reshaping business models through AI-driven transformation.

4.6.Keyword Map

This result is consistent with what (Bell, R., & Bell, H. 2023) concluded regarding the impact of generative artificial intelligence on entrepreneurship education, and it is also consistent with the study of (Kamalov, et al., 2025) which highlighted the growing role of intelligent chatbots in supporting entrepreneurial activities and decision-making.

4.7.Sources and citations

This result confirms the multidisciplinary nature of research in artificial intelligence and entrepreneurship, which is consistent with the framework presented by (Stefan, et al., 2025), and is supported by the results of (Cimino, et al., 2025), relating to the integration of technology and sustainability in entrepreneurial practices.

4.8.Authors and Countries

This result reflects the quality of European scientific contributions and their focus on advanced theoretical issues, and is consistent with the findings of (Vecchiarini, &Somia, 2023), relating to the development of entrepreneurial education in the age of artificial intelligence, as well as with the updated theoretical framework presented by (Saura, &Bužinskienė, 2025).

4.9.Citation Map

This result is consistent with the study by (Cimino, et al, 2025), which showed that the adoption of artificial intelligence is one of the most important outputs of sustainable growth for small and medium enterprises, and is supported by the result of the study by (Rastogi, &Pandita, 2025), which confirmed that sustainability has become an essential element in the success of entrepreneurial transformation supported by artificial intelligence.

The above shows that artificial intelligence studies in entrepreneurship have moved from the establishment phase to the accelerated growth phase, where regulatory frameworks are still under construction, despite the significant and noticeable expansion in this field. The results also show the interest of emerging economies in employing artificial intelligence, especially generative intelligence and chatbots, as a crucial tool for improving entrepreneurial decisions, enhancing competitiveness, and as a strategic resource for creating new projects. The results also show the trend of research and academic institutions to address applied issues related to the needs

of emerging technology companies. Despite the quantitative superiority of the United States, European contributions are characterized by high quality and excellence, based on updating theoretical frameworks and developing entrepreneurial education methods. The results confirm the multidisciplinary nature of this field of knowledge, which includes sustainability as a pivotal intellectual bridge and an essential element to ensure the success of the entrepreneurial transformation path supported by artificial intelligence and the achievement of sustainable growth.

5.Future prospects and promising research directions

Based on the research gaps and the analysis of keywords and knowledge networks revealed by the study, the following future research directions can be identified:

- There is a pressing need for in-depth studies that address how to restructure the administrative and organizational outcomes of startups to integrate artificial intelligence technologies, rather than focusing solely on the software and technical aspects.

- Exploring ways to employ and shape these technologies in identifying entrepreneurial opportunities, developing business models, and enhancing customer experience in startups.

- Utilizing in-depth research on how entrepreneurs can use artificial intelligence as a tool to achieve sustainable development and gain a competitive advantage.

- Studying the role of algorithms and artificial intelligence in guiding investors, assessing risks, and predicting the success or failure of entrepreneurial projects.

- The urgent need for research that addresses ethical challenges and the impact of legal regulations on the freedom of entrepreneurial innovation.

- Studying the impact of smart programs and tools on developing entrepreneurship education curricula in universities and research institutions to build the capabilities of the next generation of entrepreneurs.

Conclusion

Artificial intelligence is no longer just a passing technological innovation, but has become a strategic driver and the core of the entrepreneurial ecosystem and startups. This bibliometric review shows that the knowledge field that combines artificial intelligence and entrepreneurship is undergoing a rapid maturation phase, characterized by geographical diversity and remarkable institutional depth. Despite the quantitative dominance of some developed countries, the qualitative impact is distributed across a global network that includes emerging economies that recognize the importance of technology in bridging predictive gaps. Knowledge maps have shown that the future of entrepreneurship does not depend solely on possessing technology, but rather on integrating these technologies within strategic and sustainable frameworks. Finally, this paper serves as a reliable scientific compass that highlights what has been achieved and guides researchers and practitioners towards investing in artificial intelligence, not only to enhance operational efficiency, but also as a pivotal tool for creating sustainable economic and social value in a rapidly changing world.

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