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Entrepreneurship and innovation in business economics: A global bibliometric analysis from 2015 to 2024

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ABSTRACT

This study systematically examines global research trends on entrepreneurship and innovation in business economics. A dataset of 858 publications indexed on Web of Science from 2015 to 2024 was analyzed. The methodology applies Microsoft Excel for statistical aggregation and CiteSpace for citation network and keyword clustering analysis. Key findings reveal a steady annual increase in publications, with the United States leading both in output (215 publications) and academic influence (H-index 43). Core research fields include Management, Business, and Economics, with emerging topics such as entrepreneurial ecosystems, digital transformation, and open innovation. Policy and managerial implications suggest fostering comprehensive entrepreneurial ecosystems, strengthening corporate–startup collaborations, encouraging business model innovation through digital transformation, and aligning entrepreneurship strategies with the Sustainable Development Goals (SDGs) to promote sustainable and inclusive economic growth.

1. INTRODUCTION

In the context of an increasingly uncertain and fiercely competitive global economy, entrepreneurship and innovation are increasingly asserting their central roles in driving economic growth (Grimaldi & Grandi, 2005; Ordeñana et al., 2024), reshaping market structures, and enhancing the competitiveness of enterprises (Wu et al., 2024) . Entrepreneurship is not merely the process of establishing new businesses (Sabaruddin, 2024), , but also a powerful driver of value creation through experimentation with breakthrough ideas (Danneels & Colarelli-O'Connor, 2025), flexible business models (Gebrekidan et al., 2023), and growth strategies under high-risk conditions (Kilström & Roth,, 2024). Meanwhile, innovation—including product, process, technological, and operational model innovation—plays an essential role in helping businesses adapt to market fluctuations, respond to rapidly changing consumer demands, and maintain long-term competitive advantages (Kogabayev & Maziliauskas, 2017; Fernández-Portillo et al, 2022; Zhang et al., 2025).

Entrepreneurship and innovation in business economics generate benefits not only at the micro level—such as improving operational efficiency, increasing labor productivity, and expanding market reach—but also contribute positively to macroeconomic development goals and sustainable growth (Islam,, 2025; Khan et al., 2025). By adopting advanced technologies such as artificial intelligence (AI) (Gupta et al., 2023; Graham & Bonner,, 2024) , blockchain (Ahluwalia et al., 2020; Kumar et al., 2024), and big data (Yu et al., 2023), startups are helping to address numerous social and environmental challenges while redefining the

structure of the modern digital economy. Notably, emerging business models like the sharing economy and FinTech have led to profound changes in how services are delivered, how production is organized, and how value is distributed across society (Benoit et al., 2025; Chen et al., 2025; Huang et al., 2025).

From an academic perspective, research on entrepreneurship and innovation in business economics has witnessed significant growth over the past decade. Data collected from 858 scientific articles and conference proceedings in the Web of Science (WoS) database reveals a remarkable increase in both the quantity and quality of publications during the 2015–2024 period. These studies have contributed to affirming the foundational roles of entrepreneurial ecosystems, intellectual capital, institutions, digital transformation, and open innovation models in the formation and development of enterprises. In particular, the link between innovation and sustainable growth has been increasingly emphasized, as more businesses adopt technological initiatives to align with green, circular, and socially inclusive development goals.

Consolidating established research directions, several emerging research frontiers are also anticipated to significantly reshape the field of entrepreneurship and innovation in the coming years. The convergence of digital and physical technologies, exemplified by the Internet of Things (IoT), Industry 5.0, and smart manufacturing, presents a critical opportunity for future research to explore how these advancements redefine entrepreneurial opportunities, operational models, and competitive strategies. Moreover, the increasing emphasis on sustainable and inclusive entrepreneurship calls for deeper investigations into how entrepreneurial activities can contribute to social equity, environmental resilience, and the advancement of the United Nations' Sustainable Development Goals (SDGs). The integration of artificial intelligence (AI) into entrepreneurial decision-making is another key area of development, especially regarding opportunity recognition, resource mobilization, innovation management, and scaling strategies. In parallel, the heightened importance of entrepreneurial resilience following systemic disruptions—such as the COVID-19 pandemic and global financial crises—necessitates research on adaptive innovation strategies and crisis-driven entrepreneurial dynamics. Furthermore, the lack of comparative studies on entrepreneurial ecosystems across different institutional, cultural, and economic contexts remains a critical gap. Specifically, there is a pressing need for longitudinal and multi-method research designs, broader exploration of "deep tech" entrepreneurship beyond AI and blockchain, deeper integration with sustainability science, and greater representation of emerging and low-income economies. Addressing these gaps will foster a richer, more globally relevant understanding of entrepreneurship and innovation, supporting the evolution of the field in an increasingly interconnected and complex world.

Based on this foundation, the present study applies bibliometric analysis to examine 858 publications in the field of entrepreneurship and innovation within business economics, published during the 2015–2024 period. The analysis aims to provide a systematic and comprehensive overview of the field's development by evaluating publication trends, academic impact, leading countries, and prominent research themes, thereby offering relevant policy implications to enhance the effectiveness of innovation and startup support in the ongoing context of a knowledge-based and digitally driven economy.

While previous bibliometric studies have explored entrepreneurship and innovation separately or in limited sectoral contexts, few have comprehensively mapped the intersection of entrepreneurship and innovation within business economics on a global scale over the most recent decade (2015–2024). Existing studies often focus on regional analyzes or specific sectors without systematically linking entrepreneurial activities to emerging technological trends and sustainable development goals. Therefore, this study fills a critical gap by offering an integrated, interdisciplinary bibliometric analysis that not only maps global research trends but also highlights the evolution of entrepreneurial ecosystems, digital transformation, and open innovation in alignment with economic sustainability. This approach provides a novel and timely perspective for both academic advancement and policy formulation in the digital economy era.

2. MATERIALS AND METHOD

2.1. Research methodology

To provide a comprehensive and systematic overview of the development of research in the field of entrepreneurship and innovation within business economics, this study adopts bibliometric analysis as the primary methodological tool. This approach

facilitates the exploration of the intellectual structure, development trends, and academic impact of publications globally during the period from 2015 to 2024.

The research methodology is based on the theoretical framework proposed by Donthu et al. (2021), consisting of four fundamental steps: (1) defining the objectives and scope of the study, with a specific focus on entrepreneurship and innovation in business economics; (2) selecting appropriate analytical techniques, particularly the use of bibliometric indicators such as publication counts, citation metrics, and H-index; (3) collecting data from academic databases; and (4) processing and analyzing the data to identify research trends, leading countries, prominent keywords, and highly influential authors in the field.

The primary data source used in this study is the WoS, one of the most reputable and comprehensive academic databases available today. To ensure objectivity and reliability, the study applies strict selection criteria: (i) keywords are limited to core terms such as "start-up" and "innovation" within the Business Economics research area; (ii) the time frame is restricted to 2015–2024 to reflect trends from the most recent decade; (iii) only English-language publications are included to ensure consistency and international comparability; and (iv) the document types are limited to peer-reviewed journal articles and conference papers.

Following data collection, a thorough data cleaning process was conducted to remove duplicate records, correct technical errors, and standardize metadata to ensure the quality of the input for analysis. The cleaned dataset was then analyzed using two specialized tools:

– ***Microsoft excel***: used for statistical aggregation and data visualization through tables and charts;

– ***CiteSpace advanced***: employed to construct citation networks, analyze relationships between studies, identify influential keyword clusters, and assess knowledge concentration within the field, as shown in Figure 1.

Through this methodological approach, the study not only identifies key development trends in entrepreneurship and innovation but also enables comparative analysis of impact across countries, authors, and research domains. The findings are expected to provide strategic insights and a solid scientific basis for policy formulation, future research direction, and practical support for businesses in designing effective and sustainable innovation strategies in the current era of globalization and digital transformation.

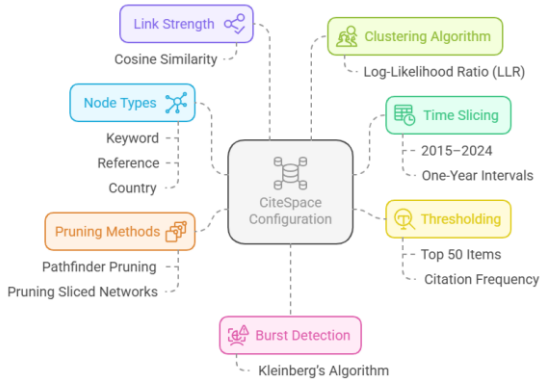

Figure 1. Keyword co-occurrence network visualization (CiteSpace Output)

2.2. Theoretical framework

This study is grounded in the theoretical foundations of bibliometric analysis, particularly the conceptual framework proposed by Donthu et al. (2021) (Donthu et al., 2021), which defines bibliometrics as an objective, systematic, and reproducible method to map the intellectual structure, thematic trends, and knowledge diffusion patterns within a scientific field.

The key analytical constructs guiding this study include:

– *Publication growth patterns:* Examining how the volume of entrepreneurship and innovation research has evolved over time.

– *Citation impact metrics*: Analyzing academic influence through citation counts and H-index values across countries and disciplines.

– *Thematic keyword clustering*: Identifying emerging themes and shifts in research focus areas through co-word analysis.

– *Interdisciplinary linkages*: Highlighting the convergence between entrepreneurship, innovation management, digital transformation, and sustainable development.

Unlike traditional bibliometric studies that focus narrowly on regional dynamics or sector-specific analysis, this study introduces a novel conceptual approach by integrating the domains of entrepreneurship, innovation, and sustainability. Specifically, this study suggests that entrepreneurship and innovation research are

increasingly interconnected with technological advancements and global sustainability goals—a conceptual shift that has not yet been systematically addressed in bibliometric studies within the business economics domain in prior bibliometric mappings. No explicit hypotheses are formulated given the exploratory nature of bibliometric research; however, the underlying theoretical proposition of this study is that entrepreneurship and innovation have become foundational drivers of socio-economic transformation in the digital economy era, with a growing emphasis on achieving the Sustainable Development Goals (SDGs)

2.3. Sampling approach

The sampling approach adopted in this study is non-probabilistic. Publications were selected based on predefined inclusion criteria:

(i) articles and conference papers indexed in the Web of Science database;
(ii) limited to the Business Economics subject category;
(iii) containing core keywords such as "*entrepreneurship*," "*innovation*," and related terms;
(iv) published in the period 2015–2024;
(v) written in English to ensure consistency and international comparability. These criteria align with established bibliometric methodologies and ensure that the dataset systematically captures relevant and high-quality research outputs.

The final sample comprises 858 publications, consisting of journal articles (88.7%) and conference proceedings (11.3%). Temporal distribution analysis shows a steady increase in publications, peaking in 2023. In terms of thematic composition, the sample covers research in Management (47%), Business (41%), Economics (15%), and minor intersections with Business Finance and Industrial Relations.

This structured sampling ensures comprehensive coverage of the global research landscape in entrepreneurship and innovation within business economics while maintaining methodological rigor and transparency

2.4. Critical evaluation of current research limitations

While bibliometric analysis reveals the rapid growth and diversification of entrepreneurship and innovation research, a critical evaluation highlights several limitations across the existing literature:

– Many studies rely heavily on case studies or surveys with limited generalizability. There is a lack of longitudinal and multi-method research designs that can better capture the dynamic evolution of entrepreneurial ecosystems and innovation processes.

– A significant portion of the literature focuses on developed economies (e.g., the United States, Western Europe), leading to underrepresentation of emerging markets. Consequently, findings may not be easily transferable to different cultural, institutional, or economic contexts.

– Although digital transformation is a recurring theme, current research often emphasizes a few technologies (e.g., AI, blockchain) while underexploring others such as Internet of Things (IoT), quantum computing, and biotechnology in entrepreneurship contexts.

– Many studies are descriptive and exploratory rather than theory-building. There remains a need for stronger integration with established theories from fields such as organizational behavior, institutional economics, and technology adoption.

– Although research identifies key drivers of innovation, relatively few studies translate these findings into actionable policy recommendations, particularly regarding scalability, inclusivity, and sustainability in entrepreneurial initiatives.

Addressing these limitations presents significant opportunities for future research to develop more robust, globally relevant, and theory-driven insights into the field of entrepreneurship and innovation

3. RESULTS AND DISCUSSION

3.1. Number of publications from 2015 to 2024

Between 2015 and 2024, a total of 858 publications—comprising two primary document types: journal articles and conference proceedings—were published in the field of entrepreneurship and innovation within business economics. Figure 2 illustrates the steady upward trend in research output over this period, reflecting the growing interest of both the academic community and policymakers in this area.

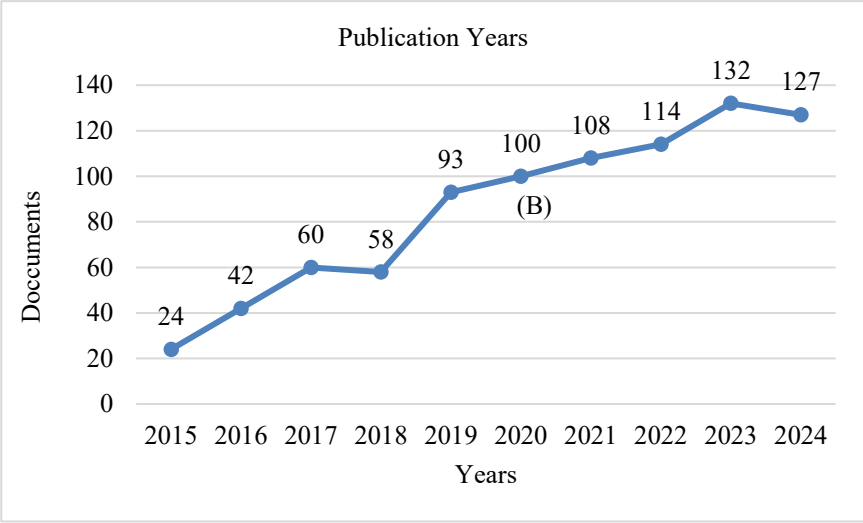

Figure 2. Number of publications in the field from 2015 to 2024

(Source: WoS)

Specifically, only 24 publications were recorded in 2015, marking the initial phase of modest academic engagement with the topic. However, the number of publications nearly doubled in each of the following years, reaching 42 in 2016 and 60 in 2017. Although there was a slight adjustment in 2018 with 58 publications, the field experienced a significant surge beginning in 2019, with 93 publications representing a nearly 60% increase compared to the previous year.

This upward trend continued consistently in the following years: 100 publications in 2020, 108 in 2021, and 114 in 2022. Notably, 2023 marked the peak year with 132 publications, indicating the highest level of academic interest in the past decade. Although the figure for 2024 shows a slight decrease to 127 publications, it still reflects a high level of sustained engagement with the topic, underscoring the enduring academic relevance of entrepreneurship and innovation.

Overall, the data demonstrates a sustained and significant upward trajectory in scholarly research related to entrepreneurship and innovation in business economics. This notable growth not only reflects the pressing demand for innovative business models and enhanced competitiveness, but also highlights the deepening integration of innovation into both corporate and national economic development strategies. Furthermore, this trend lays a solid foundation for more in-depth analyzes of research networks, keyword clusters, and the scientific impact of this evolving field.

3.2. Country-wise characteristics of research

The distribution of publications by country reveals a clear disparity in the level of academic contribution to the field of entrepreneurship and innovation in business economics. Based on data from 858 publications published during the 2015–2024 period, Table 1 illustrates the top 10 countries in terms of total publications, citation counts (excluding self-citations), and academic impact measured by H-index.

The United States leads the list with 215 publications, accounting for nearly 25% of the global total. In addition to having the highest number of publications, the U.S. also holds the top position in citation count (5,356) and H-index (43), indicating strong academic influence and high research quality. These results reflect the central role of the U.S. innovation ecosystem, which includes global technology and startup hubs, such as Silicon Valley, Boston, and Austin.

Following the U.S., Brazil ranks second with 73 publications, highlighting the rising prominence of Latin America in innovation research. Although its citation count (719) and H-index (12) are significantly lower than those of the U.S., the rapid growth in research output suggests Brazil is emerging as a noteworthy player in the global entrepreneurship landscape.

Italy (68 publications) and Germany (62 publications) continue to affirm the strong position of European countries in this domain, with high

citation counts (1,717 and 1,634, respectively) and respectable H-index scores (21 and 22). This indicates that not only the quantity but also the quality of research from these countries is highly recognized by the international academic community.

China, with 61 publications, demonstrates relatively high research output, yet the comparatively lower citation count (597) and H-index (15) reveals a gap between publication volume and academic impact. Similar patterns are observed in England (55 publications, 813 citations, H-index 15) and India (46 publications, 500 citations, H-index 13), reflecting ongoing efforts to strengthen research in this field, but also indicating room for improvement in research quality and global influence.

France and Spain, each with 40 publications, recorded 561 and 743 citations and H-indices of 14 and 11, respectively, suggesting a positive but modest contribution to the global knowledge network. Meanwhile, Canada, with 33 publications, garnered 563 citations and an H-index of 13, indicating consistent academic impact despite a smaller volume of output.

Table 1. Top 10 Countries by number of publications in the period 2015–2024

No.	Country	Total Publications	Total Citations (Excl. Self-Citations)	H-index
1	USA	215	5356	43
2	Brazil	73	719	12
3	Italy	68	1717	21
4	Germany	62	1634	22
5	China	61	597	15
6	England	55	813	15
7	India	46	500	13
8	France	40	561	14
9	Spain	40	743	11
10	Canada	33	563	13

In summary, the data reveals that developed countries with strong science and technology foundations—such as the United States, Germany, and Italy—tend to produce higher-quality research, as evidenced by higher citation rates and H-indices. Simultaneously, emerging economies such as Brazil, China, and India are demonstrating strong growth potential in research volume, reflecting a broader trend of globalization in entrepreneurship and innovation studies. These findings provide valuable insights for assessing national innovation capacity and serve as a foundation for future policymaking, international cooperation, and targeted support in this field.

In conducting the bibliometric analysis, particular attention was given to the handling of self-citations to enhance the accuracy and comparability of citation-based impact metrics. In this study, self-citations were defined as instances where authors cited their own previous works within the analyzed dataset. To exclude potential biases, self-citations were systematically identified and removed during the data processing phase. Specifically, the Web of Science Core Collection's citation analysis tool, which distinguishes total citations from citations excluding self-citations, was utilized to filter out self-citing instances automatically. Additionally, manual validation was performed for top-cited authors and institutions to ensure no residual inflation remained. An initial assessment revealed that self-citations represented approximately 8.5% of total citations across the dataset, which is considered relatively low compared to typical rates ranging between 10% and 20% reported in bibliometric studies in the social sciences and business research domains (Moed, 2005). The exclusion of self-citations thus enhances the reliability of the reported H-index values, total citation counts, and comparative analyzes of scholarly influence across countries and research fields within this study.

3.3. Research areas

An analysis by research area indicates that the topic of entrepreneurship and innovation in business economics is primarily concentrated within a few core academic disciplines. Specifically, data extracted from the Web of Science highlights five dominant fields, with significant differences in the number of publications and levels of academic impact, as summarized in Table 2.

Table 2. Publication statistics by research area

No.	Research area	Total Publications	Total Citations (Excl. Self-Citations)	H-index
1	Management	527	6389	44
2	Business	461	7157	48
3	Economics	171	1974	22
4	Business Finance	59	1182	15
5	Industrial Relations Labor	1	1	1

Management leads with a total of 527 publications, the highest among all areas, along with 6,389 citations (excluding self-citations) and an H-index of 44. This demonstrates that entrepreneurship and innovation are frequently approached from strategic, organizational, and operational management perspectives—critical factors in determining the success and scalability of startups.

Business ranks second with 461 publications, but surpasses Management in terms of citations (7,157) and H-index (48), reflecting strong academic interest and influence. This research area typically focuses on business model innovation, market strategy, scalability, and entrepreneurial ecosystem development. The overlap between Business and Management in entrepreneurship studies is unsurprising, as these fields often complement each other in organizational practice.

Economics stands third with 171 publications, 1,974 citations, and an H-index of 22. Studies in this domain primarily examine macro- and microeconomic impacts of entrepreneurship, resource allocation efficiency, public policy support for SMEs, and the long-term effects of innovation on productivity and economic growth.

Business Finance contributes a more modest volume with 59 publications, but still achieves 1,182 citations and an H-index of 15. Research in this field focuses on the financial aspects of entrepreneurship, including capital raising, venture capital, financial performance of startup models, and the influence of FinTech on new funding mechanisms such as blockchain-based ICOs and crowdfunding platforms.

Industrial Relations & Labor is represented by only one publication, indicating that the labor dimension of entrepreneurship remains an underexplored area, despite its critical influence on workforce sustainability and productivity in startups. This highlights a potential research gap deserving of future academic attention.

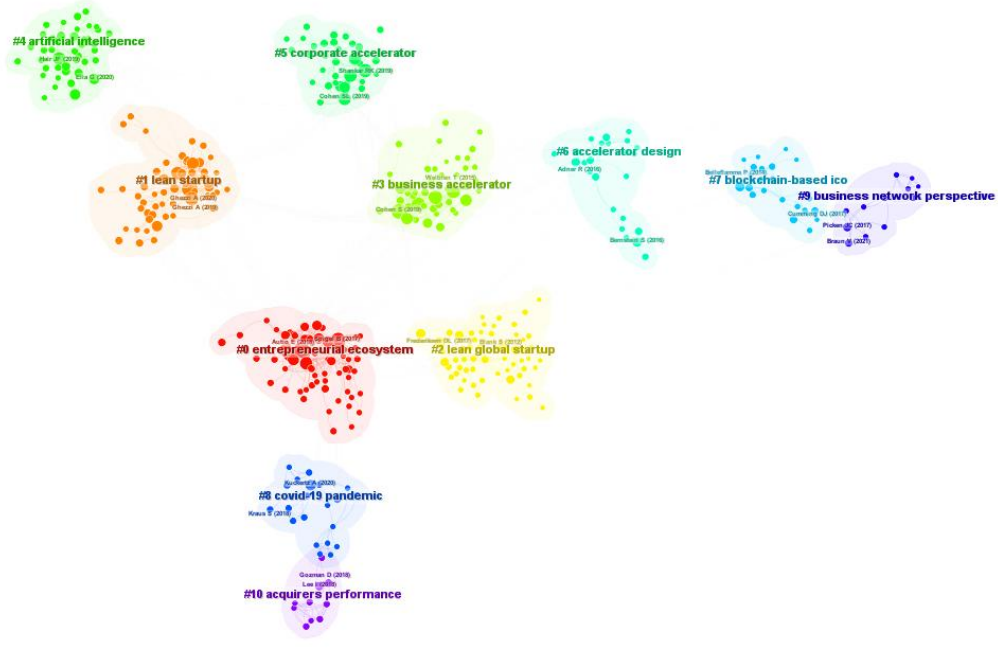

Figure 3. Key research themes in entrepreneurship and innovation in business economics

In addition to domain-based classification, an analysis of commonly used title words reveals current trending topics such as: *entrepreneurial ecosystem, lean startup, lean global startup, business accelerator, artificial intelligence, corporate accelerator, accelerator design, blockchain-based ICO, COVID-19 pandemic, business network perspective*, and *acquirers performance*. These themes reflect the convergence of business model innovation and advanced technology applications, alongside growing interest in firm resilience and adaptability in the face of global disruptions.

Overall, this analysis shows that the study of entrepreneurship and innovation extends beyond the realms of management and business, with significant intersections in economics, finance, technology, and strategic development. This reinforces the interdisciplinary nature of the field and affirms the central role of innovation in reshaping the structure of modern business economics.

The topics illustrated in Figure 3 represent the primary academic approaches currently shaping the research landscape on entrepreneurship and innovation in business economics. These themes reflect the convergence of strategy, technology, institutions, and human factors.

– ***Entrepreneurial ecosystems***: These refer to environments comprising institutional frameworks, infrastructure, financial capital, education and training systems, mentoring networks, and startup communities—designed to support the creation, growth, and success of startups. Studies in this area emphasize the dynamic interactions among ecosystem actors—including governments, universities, angel investors, and startups—in fostering experimentation, innovation, and product commercialization. Entrepreneurial ecosystems have become increasingly relevant in the era of open innovation and the knowledge-based economy.

– ***Business model innovation***: This concept goes beyond improving how value is created and delivered—it involves reconfiguring the entire organizational structure to adapt to emerging technologies, shifting consumer behavior, and global competition. In startups, business model innovation often entails identifying niche markets, leveraging digital technologies (e.g., AI, big data), or transitioning from B2B to B2C formats. The success of models such as the sharing economy and subscription-based services illustrates the transformative role of business model innovation in generating disruptive value.

– ***International entrepreneurship***: This domain explores startups that aim to expand into global markets from their early stages. With digitalization reducing geographic barriers and transaction costs, such ventures have become more prevalent. Research focuses on internationalization drivers, market entry strategies, regulatory hurdles, and the roles of cultural and technological capabilities in cross-border success.

– ***Open innovation***: Open innovation is a strategy where firms seek knowledge, technologies, and solutions from external sources—such as startups, research institutes, customers, or suppliers—rather than relying solely on internal R&D. This model accelerates product development, reduces innovation costs, and enhances commercialization. For startups, open innovation creates opportunities to participate in global value chains through strategic partnerships.

– ***Digital transformation***: Digital transformation involves more than just technology adoption; it requires reshaping operational models, customer interactions, and entire value chains using data and digital platforms. In startups, this transformation is driven by AI, blockchain, cloud computing, and big data. Effective integration of these technologies is key to accelerating innovation, optimizing operations, and expanding into new markets cost-efficiently.

– ***Corporate venturing / Corporate venture capital (CVC)***: CVC is a strategy where large corporations invest in startups or small businesses to access disruptive technologies, expand markets, and foster internal innovation. This creates a mutually beneficial partnership: corporations gain agility and novel insights, while startups receive financial resources, infrastructure, and access to broad networks. Research has shown that the success of CVC depends on strategic alignment, technical support, and effective risk-sharing mechanisms.

– ***Human capital theory***: This theory highlights that knowledge, skills, experience, and work attitudes—particularly those of founders—are crucial for startups' ability to innovate, manage risk, and develop strategic direction. Studies in this area examine the relationship between educational background, leadership capacity, resource mobilization, and startup performance and growth trajectories.

– ***Institutions***: In the context of entrepreneurship, "institutions" encompass not only administrative bodies but also the broader institutional environment—including laws, public policies, informal rules, and societal norms. Institutions shape the "rules of the game" for entrepreneurial markets, coordinating resources, mitigating risk, and stimulating innovation. Transparent legal systems, access to finance, intellectual property protection, and incentives for R&D are fundamental to building a sustainable startup ecosystem.

– ***Entrepreneurial well-being***: This emerging research area explores the emotional, mental, and overall well-being of entrepreneurs. Studies suggest that life satisfaction, stress levels, motivation, and work-life balance significantly impact decision-making, leadership effectiveness, and perseverance throughout the entrepreneurial journey.

– ***Business networks***: Business networks serve as soft resources that support startup survival and growth through knowledge sharing, partner referrals, capital access, and trust-building. Research indicates that both the breadth (number of connections) and depth (quality of relationships) of a startup's network influence its ability to access markets, technologies, and finance.

FinTech startups: Startups in the financial technology (FinTech) sector are a focal point of current research due to their pioneering role in transforming financial services—from payments and lending to insurance and wealth management. FinTech not only improves access to financial services for individuals and SMEs, but also challenges traditional institutions, enhancing competition, transparency, and market efficiency.

3.4. Leading journals in entrepreneurship and innovation research

An analysis of journal distribution within the dataset reveals that research on entrepreneurship and innovation is concentrated in a small group of prominent journals. Table 3 summarizes the top 10 journals ranked by the number of publications from 2015 to 2024.

Table 3. Leading journals publishing research on entrepreneurship and innovation (2015–2024)

No.	Journal Title	Number of Publications
1	Journal of Business Research	86
2	Small Business Economics	54
3	Technological Forecasting and Social Change	49
4	Journal of Small Business Management	42
5	International Entrepreneurship and Management Journal	37
6	Journal of Technology Transfer	32
7	Entrepreneurship Research Journal	29
8	Journal of Cleaner Production	26
9	Strategic Entrepreneurship Journal	24
10	Technovation	21

Notably, the *Journal of Business Research* leads by a significant margin, reflecting its interdisciplinary approach to entrepreneurship, innovation management, and business economics. *Small business economics, technological forecasting, and social change also play central roles, bridging entrepreneurship with economic theory and technological innovation studies.*

The results indicate that while traditional entrepreneurship journals remain dominant, interdisciplinary journals addressing sustainability, technology transfer, and strategic innovation are increasingly shaping the intellectual landscape of this research area. Identifying these "intellectual homes" provides valuable guidance for future researchers seeking publication venues and highlights the interdisciplinary expansion of entrepreneurship and innovation research in the digital economy era

3.5. Policy implications

The findings of this study indicate that entrepreneurship and innovation have become strategic pillars in the development of the modern economy, with widespread influence across countries, sectors, and organizational models. Based on these insights, several key policy implications can be proposed to foster a more effective and sustainable entrepreneurial and innovation ecosystem:

– ***Develop a comprehensive and effective startup support ecosystem***: Governments should play a facilitating role in establishing a multidimensional

entrepreneurial ecosystem, incorporating elements such as preferential tax policies, direct financial support, technological infrastructure, and training, incubation, and acceleration programs. A favorable institutional environment helps lower entry barriers, enhances experimentation capacity, and increases survival rates of early-stage startups. Additionally, there is a need to create mechanisms for close collaboration among the public sector, private enterprises, and intermediary organizations to ensure an interconnected and cohesive innovation ecosystem.

– ***Encourage business model innovation through digital transformation***: Policy efforts should focus on supporting businesses—especially startups—in adopting digital technologies, such as artificial intelligence, blockchain, big data, and digital platforms in their production, operations, and service delivery processes. Financial support for applied R&D, digital skill development, and the establishment of local innovation hubs will help diffuse innovation capacity across all sectors of the economy, not just high-tech industries.

– ***Strengthen collaboration between large corporations and startups***: Corporate Venture Capital (CVC) activities should be encouraged and appropriately regulated to promote deeper engagement of large enterprises in the startup ecosystem. CVC allows corporations to pursue internal innovation through access to new technologies and ideas, while offering startups valuable capital, market access, and managerial expertise. Therefore, policies should promote public–private–startup partnerships and establish risk- and benefit-sharing mechanisms to enhance collaborative outcomes.

– ***Promote the development of innovative human capital***: Human capital—specifically skills, knowledge, and creative thinking—is a critical factor in innovation. Educational programs should incorporate entrepreneurship and innovation training from the secondary to tertiary levels. Moreover, strong support is needed for capacity-building activities targeting entrepreneurs, founders, and startup teams, including training in strategic management, product development, fundraising, digital marketing, and international market expansion.

– ***Align policy orientation with the Sustainable Development Goals*** **(SDGs)**: Entrepreneurship and innovation should not only be directed toward economic growth but also aligned with the United Nations' SDGs, such as education, healthcare, gender equality, clean energy, sustainable consumption, and climate action. Governments should prioritize support for business models with positive social and environmental impacts—such as FinTech for financial inclusion, agtech for sustainable agriculture, greentech for environmental solutions, and edtech for quality education.

4. CONCLUSION

This study employed bibliometric analysis to provide a comprehensive overview of research trends in the field of entrepreneurship and innovation within the domain of business economics during the period 2015–2024. Data from 1,119 publications collected from the Web of Science database clearly reflect the strong growth in both publication volume and academic depth over the past decade. The analyzes revealed that the United States leads in terms of research output and academic influence, while emerging economies such as Brazil, China, and India are rapidly increasing their presence in the global knowledge ecosystem. Moreover, fields such as Management, Business, and Economics dominate entrepreneurship research, showing strong academic impact as evidenced by high citation counts and H-index values. The field's growing diversity and interdisciplinarity are highlighted by prominent research themes including entrepreneurial ecosystems, lean startup models, open innovation, digital transformation, and human capital. Notably, the strategic role of institutions and the growing involvement of large enterprises through Corporate Venturing models have been recognized as key enablers in creating an effective and sustainable innovation environment.

5. LIMITATIONS AND FUTURE RESEARCH DIRECTIONS

Despite providing valuable insights into global research trends in entrepreneurship and innovation, this study has several limitations.

First, the data was exclusively sourced from the Web of Science database, which, although comprehensive, may not capture all relevant publications indexed in other databases, such as Scopus or Google Scholar. This may slightly limit the generalizability of the findings.

Second, the sampling method was non-probabilistic, based on keyword and subject area filters, which could introduce selection bias by overlooking

interdisciplinary studies that did not explicitly label themselves under business economics.

Third, the study relies primarily on descriptive bibliometric techniques without testing explicit hypotheses or causal relationships. Therefore, while trends, rankings, and thematic evolutions are robustly observed, the findings should not be interpreted as establishing cause-and-effect linkages.

Finally, competing interpretations exist regarding the influence of emerging economies' contribution to entrepreneurship research. While increasing publication volume suggests growing engagement, differences in citation impact could also be attributed to systemic factors, such as language barriers, access to high-impact journals, and regional collaboration networks.

Future research could address these limitations by expanding data sources, applying probabilistic sampling methods where appropriate, combining bibliometric analysis with qualitative systematic reviews, and incorporating comparative analyzes between different regions or economic development levels

Additionally, we acknowledge several conceptual and methodological refinements in response to recent academic critiques. First, the exclusive reliance on WoS data may introduce a potential Western and Anglophone bias, thereby under-representing relevant research published in non-WoS databases such as Scopus, SpringerLink, or sources from international institutions like the OECD and WEF. To address this, future studies should consider integrating multiple databases to enhance global inclusivity and mitigate database-specific limitations.

Second, while this study asserts a lack of comprehensive bibliometric mappings on the intersection of entrepreneurship, innovation, and sustainable development, such claims are contextualized within the WoS-indexed literature in the business economics domain. We have revised our discussion to emphasize that this gap pertains specifically to systematic bibliometric analyzes, not to the totality of related research across all platforms.

Third, the use of the term "global" has been revised throughout the manuscript to "WoS-indexed global sample" to better reflect the actual scope of the dataset. Although publications from various countries are represented, we recognize that research from developing economies may be underrepresented due to language, indexing, or access barriers.

Finally, we acknowledge that bibliometric methods are inherently quantitative and may not fully capture deeper theoretical developments or the contextual richness of the studied domains. We therefore suggest that future research combines bibliometric analysis with qualitative content analysis or meta-synthesis to more holistically explore the intellectual structure and contextual evolution of entrepreneurship and innovation research.

CONFLICT OF INTEREST

Authors should disclose any financial or personal ties, in the manuscript, that could be perceived as inappropriately biasing their work.

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