

A BIBLIOMETRIC ANALYSIS OF ENTREPRENEURIAL ECOSYSTEMS FROM A SYSTEMS THINKING PERSPECTIVE

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Abstract: *This paper explores the integration of systems thinking into the study of entrepreneurial ecosystems (EEs), which are conceptualized as complex and adaptive environments comprising interdependent actors and contextual conditions that influence entrepreneurial activity within specific regions. The central research question addresses how systems thinking can deepen our understanding of the structure, dynamics, and evolution of EEs. To answer this, the study adopts a quantitative and empirical approach through a bibliometric analysis of over 1,500 peer-reviewed articles indexed in the Scopus database. The data was processed using Biblioshiny, a web-based interface of the R-based Bibliometrix package, which enabled the mapping of the intellectual structure of the field, including key trends, thematic clusters, co-authorship patterns, and citation networks. The findings reveal a marked increase in scholarly attention toward systemic approaches to entrepreneurship, especially in the past five years. Thematic analysis shows that topics such as innovation, sustainability, and institutional policy frameworks have gained significant prominence. Additionally, co-word analysis highlights the evolving conceptual landscape and the emergence of two dominant research streams: one focused on policy and regional development, and the other on entrepreneurial behaviour and firm strategy. Despite the growing body of work, the field remains fragmented, with a lack of unified theoretical frameworks and limited interdisciplinary integration. This study contributes by emphasizing the relevance of systemic thinking as a holistic analytical lens that captures feedback loops, adaptation, and co-evolution within entrepreneurial ecosystems. These insights are valuable for researchers aiming to build more integrative theories and for policymakers seeking to design resilient and effective support structures for regional entrepreneurship. Ultimately, the research demonstrates that adopting a systems thinking perspective is essential for advancing both academic and practical approaches to entrepreneurship in an increasingly complex global environment.*

Keywords: *entrepreneurial ecosystems; systems thinking; bibliometric analysis; economic development*

JEL Classification: L26; M13; O31; M20

1. Introduction

In recent years, entrepreneurial ecosystems have become a focal point in economic and innovation research, being regarded as essential drivers of sustainable development, job creation, and technological progress (Thai, Mai and Do, 2023). Scholarly sources highlight that entrepreneurial ecosystems (EEs) encompass interconnected element - such as infrastructure, institutions, and cultural norms - and key participants within a defined region, including entrepreneurs, investors, universities, and government bodies, which together influence and shape entrepreneurial activities (e.g., Cavallo, Ghezzi and Balocco, 2019). Due to the dynamic and multifaceted nature of entrepreneurial ecosystems (EEs), research highlights the need for a comprehensive framework capable of capturing the complex interactions among stakeholders, institutions, resources, and policies (Vince et al., 2024). Systemic thinking provides a framework that recognizes behaviors as stemming from structures, values self-organization, and acknowledges emergent properties arising from the interactions and relationships among individual components in a system, rather than being inherent to any single component alone (Monat and Gannon, 2015).

Despite the growing body of literature on EEs (Cavallo, Ghezzi and Balocco, 2019; Thai, Mai and Do, 2023), research remains fragmented, and a coherent understanding of the systemic interconnections within these ecosystems is still emerging. This creates a need for analytical approaches that can synthesize existing knowledge, identify dominant research themes, and highlight theoretical gaps. In this context, bibliometric analysis serves as a powerful tool to quantitatively map the evolution of research, uncovering influential contributors, thematic clusters, and the trajectory of scholarly attention over time (Ghorbani, 2024).

The primary objective of this study is to explore how systemic thinking has been integrated into the study of entrepreneurial ecosystems, using a bibliometric approach. Specifically, the analysis seeks to identify publication trends, thematic developments, collaboration networks, and citation patterns within the academic discourse on EEs. Moreover, it examines the extent to which the systemic perspective has shaped the understanding of entrepreneurial ecosystems, and the challenges faced in consolidating this approach.

The research methodology involves the use of bibliometric analysis techniques, applied to a dataset of over 1,500 scientific articles indexed in Scopus. The data was processed using Biblioshiny, part of the R-based Bibliometrix package, to generate insights into author influence, keyword co-occurrence, and the structural evolution of the research field.

Systemic thinking inherently implies an interdisciplinary orientation, combining insights from economics, management, public policy, and innovation studies (Roundy, Bradshaw, and Brockman, 2018). This interdisciplinary lens not only enriches the analysis of EEs but also supports the development of integrated frameworks capable of addressing the complexity and diversity of entrepreneurial environments (Mason & Brown, 2014).

The structure of this paper is organized as follows: the first section provides a conceptual overview of entrepreneurial ecosystems and the systemic thinking perspective; the second outlines the bibliometric methodology used in the study,

including data sources and analytical tools; the third presents the results of the bibliometric analysis, highlighting publication trends, collaboration networks, thematic areas, and research challenges.

2. Literature Review

The concept of entrepreneurial ecosystems has been widely explored to understand how different economic entities (start-ups, investors, universities, and governments) interact and shape the entrepreneurial environment. Isenberg (2010) emphasizes that a well-functioning EE requires access to funding, support infrastructure, and conducive economic policies. Stam (2015) highlights that EEs function based on a combination of local resources, relationships, and policy frameworks. Pitelis (2012) supports the view that EEs should be analyzed as co-creation processes between economic actors and institutions.

System thinking has emerged as a crucial methodology for analyzing EEs by focusing on interdependencies between components. Stam (2015) suggests that EEs should be viewed as complex adaptive systems, where regional success depends on actors' interactions and support structures. Spigel (2017) indicates that the relational structure of an EE directly impacts innovation and value creation. Similarly, Roundy, Bradshaw, and Brockman (2018) demonstrate that EEs behave as adaptive ecosystems, where knowledge transfer and co-innovation play key roles in economic development.

Entrepreneurial ecosystems are dynamic networks of interconnected stakeholders—including entrepreneurs, investors, academic institutions, policymakers, and support organizations—that collectively influence the development and sustainability of entrepreneurship within a given region (Isenberg, 2011). These ecosystems serve as complex environments where businesses emerge, scale, and adapt, driven by the availability of resources, supportive institutions, and collaborative relationships (Stam, 2015).

A key distinction within entrepreneurial ecosystems is between tangible resources, such as financial infrastructure, regulatory frameworks, and physical assets, and intangible enablers, including knowledge diffusion, cultural attitudes, and trust-based networks (Spigel, 2017). The interaction of these elements creates an adaptive system that evolves over time, shaped by policy interventions, technological advancements, and market dynamics (Autio et al., 2018).

From a systemic thinking perspective, entrepreneurial ecosystems are not static structures but rather fluid, nonlinear systems characterized by interdependencies and feedback loops. Mason and Brown (2014) highlight that entrepreneurial success is not solely the result of isolated efforts but emerges through a combination of resource accessibility, mentorship, and collaborative synergies within the ecosystem.

A Systemic Entrepreneurial Ecosystem Model (SEEM) integrates different components—human capital, innovation drivers, financial mechanisms, and institutional frameworks—into a holistic framework that enhances business sustainability. This model emphasizes the importance of knowledge-sharing

platforms, structured policy support, and strategic collaborations to reinforce the long-term growth of entrepreneurial ventures (Acs et al., 2017).

The effectiveness of an entrepreneurial ecosystem is highly dependent on its adaptability to external factors, including shifts in global markets, changes in regulatory landscapes, and technological disruptions. As a result, aligning local entrepreneurial strategies with broader economic and social trends is crucial for ensuring resilience, long-term impact, and competitiveness in an ever-evolving business environment (Feld, 2012).

3. Methodology

This study uses a bibliometric analysis to analyze the evolution, structure, and thematic dynamics of the academic literature on entrepreneurial ecosystems (EEs) through the lens of systemic thinking. Bibliometric methods offer a quantitative approach to mapping scientific production, allowing for the identification of influential works, collaboration networks, research hotspots, and emerging trends within a specific field.

The dataset was compiled from the Scopus database, chosen for its comprehensive coverage of peer-reviewed literature across multiple disciplines. A total of 1,515 relevant articles were selected based on a refined search strategy, focusing on the period 2006–2025. The search was conducted using a set of carefully selected keywords, including "Entrepreneurial Ecosystems," "Systemic Thinking," "Entrepreneurship," and "Artificial Intelligence", targeting the titles, abstracts, and keywords fields to maximize the relevance and coverage of the dataset.

The distribution of publications reveals an increasing scholarly interest in the subject, with a notable concentration of papers published in recent years: 302 articles in 2024, 215 in 2023, and 225 in 2022. This upward trend suggests a growing recognition of the complexity of entrepreneurial environments and the necessity of systemic approaches to their analysis and development.

The analysis was carried out using Biblioshiny, the web-based interface of the Bibliometrix R package (Ghorbani, 2024), a widely adopted tool in scientometric research. Biblioshiny allows for the interactive visualization and statistical analysis of bibliographic data, supporting both descriptive and network-based methodologies.

The study focused on several key bibliometric indicators: Author influence and productivity, including metrics such as H-index and total citations; Source impact, highlighting the most prolific journals in the field; Citation network analysis, to map the intellectual structure and identify key publications; Thematic evolution and co-word analysis, to uncover clusters of concepts and their development over time.

The dataset includes publications from some of the most reputable journals in entrepreneurship and innovation studies, such as:

Journal of Business Venturing (72 articles, highest citation density in EE research), Entrepreneurship Theory and Practice (50 articles),

Small Business Economics (40 articles), Journal of Technology Transfer (36 articles),

Technological Forecasting & Social Change (32 articles).

These sources contribute significantly to shaping the theoretical and empirical discourse on entrepreneurial ecosystems, particularly in relation to innovation systems, firm dynamics, and policy frameworks.

A key insight from the citation analysis is that the citation distribution follows a power law: a small number of publications receive a disproportionately high number of citations, while the majority of articles exhibit low citation counts. This reflects a common phenomenon in scientific literature, where seminal works act as conceptual anchors for the field (Mason & Brown, 2014).

Beyond citation metrics, the study applies co-word analysis to identify thematic clusters and the conceptual landscape of the field. This technique is instrumental in mapping the semantic proximity between recurring keywords, enabling the detection of research fronts and emerging topics. The results of this analysis are later visualized in the form of co-occurrence networks (see Figure 4), offering a graphical representation of how terms such as entrepreneurship, ecosystem and innovation, interrelate and shape the evolution of the field.

Through this multi-dimensional bibliometric approach, the study provides a comprehensive and data-driven overview of how entrepreneurial ecosystems are conceptualized and analyzed in contemporary scholarship, offering a foundation for deeper theoretical reflection and future research development.

4. Results

The bibliometric analysis provided valuable insights into the evolution of research on entrepreneurial ecosystems from a systemic thinking perspective. The study examined publication trends, key contributors, thematic clusters, and citation patterns, offering a comprehensive overview of the academic landscape in this field. The analysis revealed a significant increase in publications related to entrepreneurial ecosystems and systemic thinking over the past decade. The annual growth rate of publications has accelerated, particularly in the last five years, indicating a rising interest in understanding entrepreneurship through a systemic lens.

A closer examination of the time distribution of articles shows that early studies focused primarily on defining entrepreneurial ecosystems and their components, while more recent works emphasize dynamic interactions, adaptive capacities, and resilience mechanisms within these systems. The increasing number of collaborative international studies suggests that entrepreneurial ecosystem research is transitioning into a globally interconnected field of study. Citation metrics highlight the most influential publications in the field, with the highest citation counts found among foundational studies on entrepreneurial ecosystems. However, the average citation rate per article has declined in recent years, likely due to an expansion in the number of published papers, leading to a more fragmented citation distribution.

The analysis of journal impact factors indicates that high-quality research on entrepreneurial ecosystems and systemic thinking is primarily published in journals

specializing in entrepreneurship, innovation, and regional development. Figure 1 illustrates the annual growth of publications in this research field.

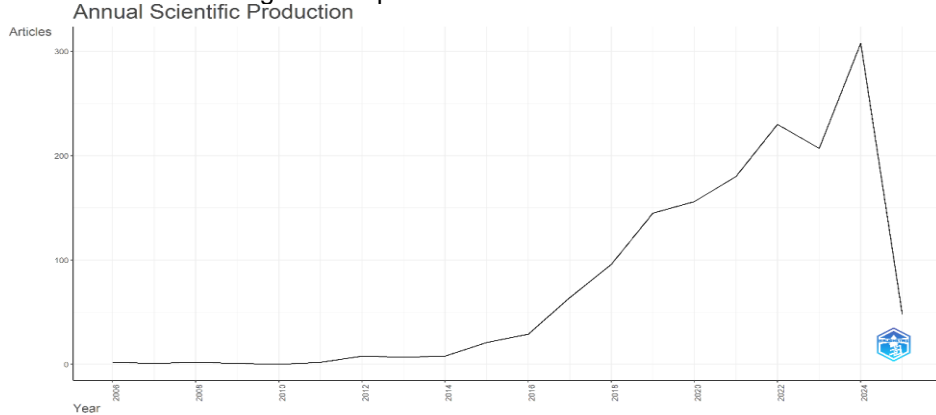


Figure 1: Evolution of Publications on Entrepreneurial Ecosystems (2006- 2025)

Source: Author's analysis /processing based on own data

This exponential growth trend—particularly in the last five years—demonstrates the increasing relevance of the entrepreneurial ecosystem perspective in both theoretical and applied research. The integration of concepts like systemic thinking, innovation, and resilience has broadened the scope of the field, attracting contributions from diverse disciplines such as economics, management, public policy, and regional development.

2006–2015: The field experienced a relatively low and stable volume of publications, suggesting that entrepreneurial ecosystems were still an emerging concept with limited theoretical consolidation.

2016–2021: A steady increase becomes visible, indicating the gradual recognition of the ecosystem approach as a valuable framework for understanding entrepreneurship in complex environments.

2022–2024: The most substantial growth occurs in this period, peaking in 2024 with over 300 articles, which confirms a strong surge of academic interest, possibly fueled by the integration of systemic thinking and the growing complexity of entrepreneurial challenges in the post-pandemic era.

2025 (incomplete): The sharp drop in publications visible in 2025 is not indicative of a real decline, but rather reflects the incomplete nature of the current publication year. As data collection was likely conducted early in the year, this trend is expected to normalize once the annual publishing cycle is complete.

The upward trajectory in publication volume is also aligned with global trends emphasizing cross-sectoral collaboration, digital transformation, and sustainable development goals (SDGs), all of which are deeply embedded in ecosystemic approaches to entrepreneurship.

Among the most frequently occurring keywords in EE research, the following stand out:

- Entrepreneurship (540 occurrences)
- Entrepreneurial ecosystem (460 occurrences)
- Entrepreneurial ecosystems (320 occurrences)
- Innovation (178 occurrences)
- Ecosystem (118 occurrences)

These terms emphasize the interdisciplinary nature of the field, integrating business, economics, and policy studies. Figure 2 illustrates the collaboration networks among authors, highlighting leading researchers and institutional partnerships.

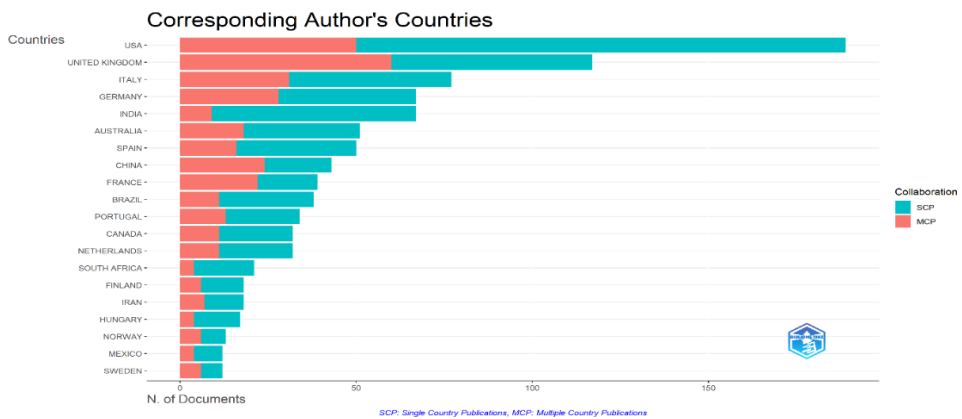


Figure 2: Collaboration Network among Authors in Entrepreneurial Ecosystem Research

Source: Author's analysis /processing based on own data

Figure 2 presents the country-level distribution of publications in the field of entrepreneurial ecosystems and systemic thinking, based on the affiliation of the corresponding authors. The chart differentiates between: SCP (Single Country Publications) — articles written by authors from the same country.

MCP (Multiple Country Publications) — articles written in international collaboration. The United States dominates the field, with the highest number of publications, most of which are produced in international collaboration. This suggests that U.S.- based researchers are central to the global knowledge network on entrepreneurial ecosystems.

The United Kingdom follows, also with a high proportion of MCPs, reinforcing its role as a key global player in collaborative entrepreneurship research.

Italy, Germany, and India exhibit relatively high research activity, but Italy and Germany show stronger international engagement than India, which tends to favor domestic (SCP) production.

Countries such as Australia, Spain, France, China, and Brazil also contribute significantly, but with varying degrees of internationalization.

The presence of countries like South Africa, Mexico, Hungary, and Iran demonstrates the geographical expansion of this research field beyond traditional academic hubs, albeit with a more limited volume.

The high proportion of Multiple Country Publications (MCPs) among leading countries reflects a strong international orientation in entrepreneurial ecosystem research. This is consistent with the systemic nature of the concept, which inherently involves cross-border learning, global innovation flows, and comparative institutional analysis.

Countries that combine high publication volume with high MCP ratios (such as the USA, UK, and Germany) tend to serve as nodes of international research collaboration, facilitating knowledge diffusion and network building across regions. Conversely, countries with a higher concentration of Single Country Publications may benefit from more active participation in global research networks, particularly in emerging economies where local ecosystems are rapidly evolving but remain underrepresented in international discourse.

Additionally, thematic analysis shows a shift towards integrating sustainability principles into EEs, as highlighted in recent literature (Mason & Brown, 2014). Figure 3 presents the most frequently used keywords, emphasizing research focal points.

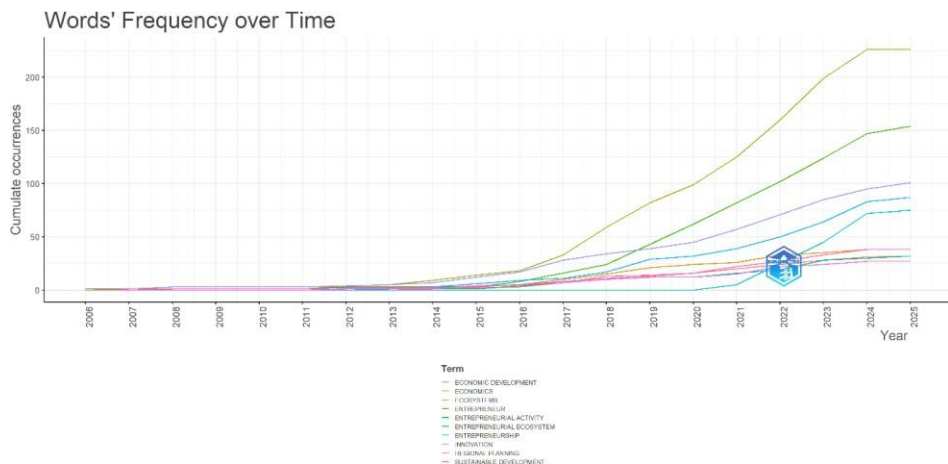


Figure 3: Most Frequent Keywords in Entrepreneurial Ecosystem Research

Source: Author's analysis /processing based on own data

Figure 3 illustrates the cumulative frequency of selected keywords used in the literature on entrepreneurial ecosystems and systemic thinking between 2006 and 2025. This visualization allows for an understanding of how certain concepts have

evolved in prominence over time, revealing thematic shifts and emerging research priorities.

The term “entrepreneurship” dominates the chart, showing a steady rise starting around 2010, with a sharp increase between 2020 and 2023, indicating its central role in academic discourse. Closely following is “innovation”, which exhibits a similar trajectory, reflecting the strong conceptual link between innovation and entrepreneurship in recent studies. Notably, the term “entrepreneurial ecosystem” begins to gain traction around 2015, growing rapidly in subsequent years. This signals the emergence and consolidation of the ecosystem approach as a major theoretical and analytical framework in the field. The term “ecosystem” also shows increasing frequency, often used either as a standalone concept or in combination with entrepreneurship.

Other relevant terms such as “entrepreneurial activity”, “sustainable development”, and “economic development” demonstrate more moderate yet consistent growth, suggesting their continued relevance as part of the broader discourse. Conversely, more traditional terms like “economics” appear less frequently in recent years, indicating a possible shift from classical economic frameworks toward more interdisciplinary and systemic paradigms.

Despite its growing prominence, the field of entrepreneurial ecosystems continues to face several conceptual and methodological challenges that hinder the consolidation of a cohesive research agenda:

Lack of a Unified Theoretical Framework: A wide array of models defines entrepreneurial ecosystems in different ways, leading to conceptual ambiguity and limited comparability across studies. This theoretical plurality, while enriching, also complicates the development of standardized analytical approaches (Isenberg, 2010; Stam, 2015).

Context-Specific Adaptability: Existing ecosystem models often struggle to capture regional and cultural variations. The application of general frameworks to diverse entrepreneurial contexts can result in limited policy relevance and poor scalability, especially in emerging economies or underrepresented geographic regions (Pitelis, 2012).

Fragmentation of Research Output: As illustrated in Figure 4, the growing volume of academic publications has not been matched by a proportional increase in citation impact, suggesting potential saturation or dispersion of knowledge. The network structure also reveals the presence of two main thematic clusters: one focused on ecosystem-level and policy-driven approaches, and the other on firm-level strategies and entrepreneurial behavior. While these clusters share some common terminology, their limited overlap highlights a fragmentation in the literature and the need for stronger interdisciplinary integration.

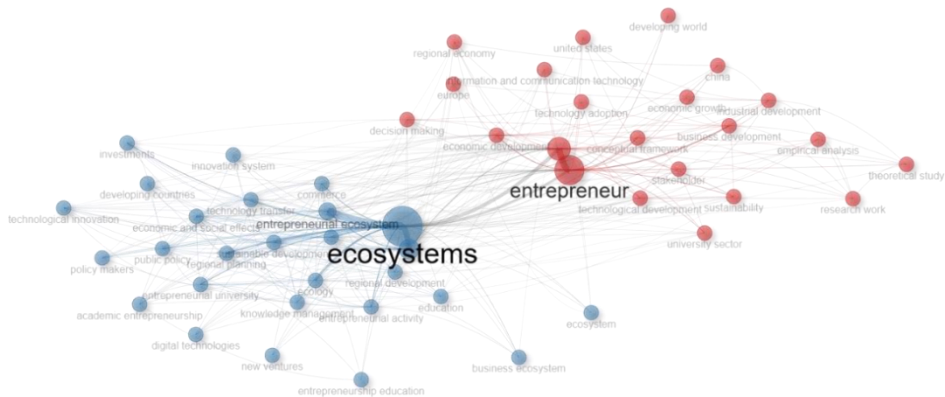


Figure 4: Keyword Co-occurrence Network

Source: Author's analysis /processing based on own data

The keyword co-occurrence network generated through Biblioshiny reveals two major thematic clusters within the academic literature on entrepreneurial ecosystems and systemic thinking. These clusters, visualized through color-coded communities (red and blue), illustrate the dominant research directions and their interrelationships.

The blue cluster, anchored around the term “entrepreneurial ecosystem”, reflects a systemic and policy-oriented approach. Keywords such as innovation, sustainability, governance, policy, and value creation suggest a strong focus on the institutional and infrastructural dimensions that support entrepreneurial activity. This cluster emphasizes the ecosystem as an enabling environment shaped by external factors, including policy frameworks, regional development strategies, and innovation ecosystems.

The red cluster, centered on the term “entrepreneurship”, represents a more organizational and behavioral perspective. Closely associated terms like entrepreneurial orientation, strategy, performance, and business models point to a micro-level analysis of entrepreneurial behavior, decision-making, and growth dynamics. This strand of research investigates how firms and individual entrepreneurs operate within or influence the broader ecosystem.

The structure of the network demonstrates that while these two clusters are thematically distinct, they are not isolated. Bridging terms such as entrepreneurship, ecosystem, and innovation form the connective tissue between them, indicating that current research increasingly embraces interdisciplinary perspectives. The network thus underscores the relevance of systemic thinking as a unifying framework capable of integrating structural, strategic, and institutional elements of entrepreneurial ecosystems.

5. Conclusions

This bibliometric analysis confirms the growing significance of systemic thinking in the study of entrepreneurial ecosystems. The findings highlight a steady and notable increase in academic interest in this field, especially over the past decade, reflecting a broader recognition of the complexity and interconnectivity that characterize entrepreneurial environments.

Through the identification of key trends, influential authors, collaborative networks, and thematic clusters, this study demonstrates how the integration of systemic thinking offers valuable insights into the dynamic structure and functioning of entrepreneurial ecosystems. The bibliometric evidence also underlines the fragmented nature of the field and the lack of a unified theoretical framework, which continues to challenge researchers and policymakers alike.

Moreover, the analysis reveals important disparities in the citation impact of publications, suggesting an uneven consolidation of knowledge. While certain foundational works continue to shape the discourse, the growing volume of literature calls for more synthesis, theory-building, and cross-disciplinary integration.

Going forward, research should focus on developing scalable and adaptable ecosystem models that can be applied across diverse regional and institutional contexts. Greater emphasis should be placed on the relational and adaptive nature of EEs, integrating perspectives from innovation studies, complexity theory, and public policy.

In conclusion, the systemic approach not only enhances the understanding of entrepreneurial ecosystems but also provides a solid foundation for designing more effective strategies, both in academic research and policy implementation. Future work should aim to bridge existing gaps by fostering interdisciplinary dialogue and constructing robust analytical models capable of guiding entrepreneurial growth in a rapidly changing global environment.

References

1. Acs, Z. J., Autio, E., & Szerb, L. (2017). National Systems of Entrepreneurship. *Small Business Economics*, 49(1), 31–54. <https://doi.org/10.1007/s11187-017-2. 9869-1>
2. Bratianu, C., & Bejinaru, R. (2020). Knowledge dynamics: A thermodynamics approach. *Kybernetes*, 49(1), 6–21. <https://doi.org/10.1108/K-02-2019-0122>
3. Carle, A., & Rayna, T. (2025). Exploring the coevolution of entrepreneurial ecosystems and institutional entrepreneurship: The case of sustainable entrepreneurship. *Creativity and Innovation Management*, 34(1), 180–196. <https://doi.org/10.1111/caim.12632>
4. Cavallo, A., Ghezzi, A., & Balocco, R. (2019). Entrepreneurial ecosystem research: Present debates and future directions. *International Entrepreneurship and Management Journal*, 15(4), 1291–1321. <https://doi.org/10.1007/s11365-018-0526-3>
5. 0526-3

7. Etzkowitz, H., & Leydesdorff, L. (2000). The Dynamics of Innovation: From National Systems and Mode 2 to a Triple Helix of University-Industry-Government Relations. *Research Policy*, 29(2), 109–123. [https://doi.org/10.1016/S0048-7333\(99\)00055-4](https://doi.org/10.1016/S0048-7333(99)00055-4)
8. Ghorbani, B. D. (2024). Bibliometrix: Science mapping analysis with R Biblioshiny based on Web of Science in applied linguistics. In H. Meihami & R. Esfandiari (Eds.), *A scientometrics research perspective in applied linguistics* (pp. 197–234). Cham: Springer. https://doi.org/10.1007/978-3-031-51726-6_8
9. Isenberg, D. (2010). How to Start an Entrepreneurial Revolution. *Harvard Business Review*. <https://hbr.org/2010/06/the-big-idea-how-to-start-an-entrepreneurial-revolution>
10. Krugman, P. (1991). *Geography and Trade*. MIT Press. <https://mitpress.mit.edu/9780262610865/geography-and-trade/>
11. Mason, C., & Brown, R. (2014). *Entrepreneurial Ecosystems and Growth-Oriented Entrepreneurship*. OECD Background Paper. <https://www.oecd.org/cfe/leed/Entrepreneurial-ecosystems.pdf>
12. Monat, J. P., & Gannon, T. F. (2015). What is systems thinking? A review of selected literature plus recommendations. *American Journal of Systems Science*, 4(1), 11–26.
13. Paray, Z. A., Dwivedi, A. K., & Sharma, A. (2025). Regional variation in entrepreneurial attitude and entrepreneurial ecosystem. *Journal of Entrepreneurship and Innovation in Emerging Economies*, 11(1), 102–122. <https://doi.org/10.1177/23939575241246887>
14. Pitelis, C. N. (2012). Clusters, Entrepreneurial Ecosystem Co-Creation, and Appropriability. *Industrial and Corporate Change*, 21(6), 1359–1388. <https://doi.org/10.1093/icc/dts008>
15. Pohlmann, J. R., Ribeiro, J. L. D., ten Caten, C. S., & da Rosa Pojo Santos, S. (2024). A micro and meso analysis of the role of principal investigators in entrepreneurial university ecosystems. *Technological Forecasting and Social Change*, 209, 123797. <https://doi.org/10.1016/j.techfore.2024.123797>
16. Qiang, L. J., Hock, O. Y., & Aigbogun, O. (2024). Exploration of entrepreneurship education and innovative talent training model: New normal perspective. *Contemporary Issues in Entrepreneurship Research*, 18B, 157–169. <https://doi.org/10.1108/S2040-72462024000018B011>
17. Rawhouser, H., Sutter, C., Holzaepfel, N., Conger, M., & Newbert, S. L. (2025). Knowledge-related resourcefulness for growth in weak entrepreneurial ecosystems. *Entrepreneurship Theory and Practice*, 49(1), 159–195. <https://doi.org/10.1177/10422587241259393>
18. Roundy, P. T., Bradshaw, M., & Brockman, B. K. (2018). The Emergence of Entrepreneurial Ecosystems: A Complex Adaptive Systems Approach. *Journal of Business Research*, 86, 1–10. <https://doi.org/10.1016/j.jbusres.2018.01.032>
19. Sharma, S., Khandelwal, N. K., & Mehta, A. (2025). An empirical study of factors contributing to entrepreneurial intention among students of higher education institutes. *Journal of Entrepreneurship and Innovation in Emerging Economies*, 11(1), 88–101. <https://doi.org/10.1177/23939575241252033>
20. Shatila, K., Nigam, N., & Mbarek, S. (2024). Seeds of change: Nurturing entrepreneurial ecosystems for sustainable enterprises in Lebanon and Jordan.

Journal of Entrepreneurship, 33(4), 897–924.

<https://doi.org/10.1177/09713557241307728>

21.Spigel, B. (2017). The Relational Organization of Entrepreneurial Ecosystems. *Entrepreneurship Theory and Practice*, 41(1), 49–72.

<https://doi.org/10.1111/etap.12167>

22.Stam, E. (2015). Entrepreneurial Ecosystems and Regional Policy: A Sympathetic Critique. *European Planning Studies*, 23(9), 1759–1769.

<https://doi.org/10.1080/09654313.2015.1061484>

23.Thai, Q. H., Mai, K. N., & Do, T. T. (2023). An Evolution of Entrepreneurial Ecosystem Studies: A Systematic Literature Review and Future Research Agenda. *SAGE Open*, 13(1), 1–24. <https://doi.org/10.1177/21582440231153060>

24.Vince, J., Fudge, M., Fullbrook, L., & Haward, M. (2024). Understanding policy integration through an integrative capacity framework. *Policy and Society*, 43(3), 381–395. <https://doi.org/10.1093/polsoc/puae027>