Hicham Saidi, Fatima Zahra Madhat,
Laboratoire Technologies et Services Industriels (LTSI),
Ecole Supérieure de Technologie de Fès, Université Sidi Mohamed Ben Abdellah

**COLLOQUE SUR LE MANAGEMENT DE LA CREATIVITE ET DES PRATIQUES INNOVANTES**

***Titre:***

# CREATIVITE ENTREPRENEURIALE ET INNOVATION OUVERTE : UNE ANALYSE SEMANTIQUE

Résumé: Cette étude explore la relation entre l'innovation ouverte et la créativité entrepreneuriale par le biais d'une analyse bibliométrique. L'innovation ouverte est devenue une stratégie clé pour les entreprises, leur permettant de tirer parti d'idées et de ressources externes pour stimuler l'innovation. La créativité entrepreneuriale, quant à elle, est essentielle pour développer de nouvelles solutions et s'adapter aux défis du marché. En analysant 129 articles de Scopus, cette étude identifie les principales tendances, les publications influentes et les groupes de recherche à l'intersection de l'innovation ouverte et de l'esprit d'entreprise. L'analyse révèle quatre groupes : "Innovation Bridge", "InnoGovern", "AcademicPrime" et "InnovateVibe", chacun soulignant des aspects différents de la relation entre l'innovation ouverte et l'esprit d'entreprise. Les résultats suggèrent que la créativité joue un rôle central dans la promotion de l'innovation et la stimulation de la croissance économique par le biais de l'innovation ouverte.

Mots-clés : Innovation ouverte; Entrepreneuriat; Créativité.

***Title:***

# ENTREPRENEURIAL CREATIVITY AND OPEN INNOVATION: A SEMANTIC NETWORK

Abstract: This study explores the relationship between open innovation and entrepreneurial creativity through a bibliometric analysis. Open innovation has become a key strategy for firms, enabling them to leverage external ideas and resources to drive innovation. Entrepreneurial creativity, on the other hand, is essential for developing novel solutions and adapting to market challenges. By analyzing 129 articles from Scopus, this study identifies key trends, influential publications, and research clusters in the intersection of open innovation and entrepreneurship. The analysis reveals four clusters: "Innovation Bridge," "InnoGovern," "AcademicPrime," and "InnovateVibe," each highlighting different aspects of the relationship between open innovation and entrepreneurship. The findings suggest that creativity plays a central role in fostering innovation and driving economic growth through open innovation.

Keywords: Open innovation; Entrepreneurship; Creativity.

## Introduction:

Over the past few decades, open innovation has emerged as a paradigm that has had a major influence on business across all sectors. This approach, based on the concept of interoperability, exploits the dynamics of networks to foster the creativity of innovative products and services (Tammela & Salminen, 2011). Essentially, it is a strategy that enables small and medium-sized enterprises and start-ups to harness internal and external ideas, providing them with the resources and flexibility they need to innovate (Chesbrough & Bogers, 2014; Enkel et al., 2009).

Open innovation is now one of the most hotly debated topics in the field of innovation management, highlighting the need to explore its relationship with entrepreneurship (Carvalho & Sugano, 2016). Although complex, open innovation provides valuable information to entrepreneurs, leading them to detect opportunities beyond their existing knowledge base (Gruber et al., 2013).

Entrepreneurship itself is conceived as a genuine creativity process involving generative learning and new knowledge acquisition (Miller & Friesen, 1982; Popper & Lipshitz, 1998). Researchers have shown that entrepreneurship contributes to stronger economic growth (Hills & LaForge, 1992; Georgelli et al., 2000), underlining the importance of learning and the acquisition of new knowledge in entrepreneurial activities (Popper & Lipshitz, 1998; Oguz, 2001). In this new field, open innovation is a multidimensional concept in constant progression (Spender et al., 2017).

In this context, studies have attempted bibliometric analyses of both open innovation and entrepreneurship, such as (Spender et al., 2017; Ortiz-de-Urbina-Criado et al., 2018; Flamini et al, 2021) but have not focused on the creativity between these two concepts. The main objective of our article is to provide a general overview of open innovation and entrepreneurship via the creative mindset with the help of a bibliometric study. research questions have therefore been defined notably: Who are the most influential papers, Affiliations or journals and countries? What is the structure of the research field in open innovation and entrepreneurship in terms of the creativity of an entrepreneurial ecosystem?

## 1. Methodology:

A bibliometric study analysed the relationship between entrepreneurship and open innovation using Scopus databases. This comprehensive analysis employed various bibliographic networks and semantic data. The research followed PRISMA guidelines (Page et al., 2021), including defining the research field, collecting publications, cleaning data, analysing results, and interpreting findings.

## 2. Research Strategy:

In the first phase, we introduced the search terms “Open innov*” and “entrepreneurship”, limiting the search to “titles, abstracts and/or keywords”, an initial result generated a total of 399 documents. Articles published in 2024 not included to focus the analysis on full calendar years.

In the second phase, to reduce the risk of including false positives with no complementary value to the constructed data set, further investigations were conducted and inclusion criteria agreed upon. The inclusion criteria were:

- scientific articles published in peer-reviewed journals (Podsakoff et al., 2005)

- ❖ Demonstration studies on social open innovation through the inclusion of the words in the titles, abstracts, and/or author keywords,
- ❖ written in English,
- ❖ published between the years 2006 and 2023.

These criteria of terms give us the opportunity to found all the articles that could be integrate the sense of creativity in their results, also the opportunity to collect more articles not just the ones in the field of creativity entrepreneurial and we selected from the year that research in our field start.

Through Scopus, this search algorithm selects articles that contain in the title, abstract, and/or keywords. The search was conducted during the last 2 weeks of February 2024. The resulting database consisted of 146 publications. Based on these selections and applying the above criteria, we have retained 129 articles.

| 1st phase | 2nd phase | 3rd phase |
|---|---|---|
| "Open innov*" and "Entrepreneurship " (Title, Keywords and Abstract) | Filter: Year; subject area; Articles; language | Review of 146 abstracts one by one, sometimes all the article in case of ambiguity, eliminating all the documents who treats our research superficially |
| **399 Documents** | **146 articles** | **129 articles selected** |

**Table 1: Research Protocol of Open innovation and Entrepreneurship**

## 3. Results and Discussion:

This study sheds light on the intersection of open innovation and entrepreneurship, revealing a growing body of literature with 129 published articles.

Firstly, key features were identified in the research domain. The Affiliation with the highest number of publications on this topic is the Universitat Ramon Llull, ESADE (5 articles) (fig. 1). The United States leads in the number of articles published on innovation and Entrepreneurship. Secondly, the most influential article, " The open innovation research landscape: established perspectives and emerging themes across different levels of analysis" (Bogers, 2017), with 673 citations, was published by the Journal of Industry and Innovation. Thirdly, a significant increase in the number of publications was detected during the analyzed period (2014-2023) (fig. 2).

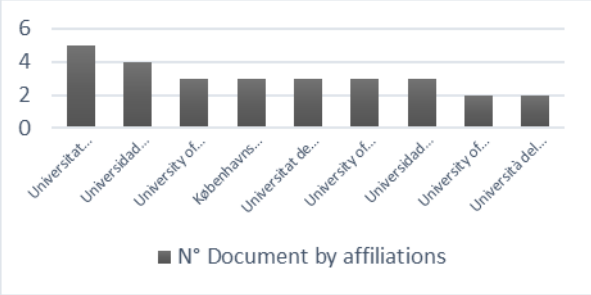



**Fig. 2 : Number of documents by affiliations on open innovation and entrepreneurship**


**Fig. 1 : Number of documents by years on open innovation and entrepreneurship**

### 3.1 Keyword co-occurrence analysis:

shows that various terms are linked together, enabling us to identify the most important research areas. Thus, employing different methods allowed us to identify the most influential publications, which may be significant for future researchers. Recent studies focus more on the challenges of open innovation and entrepreneurship and how we can endorse key factors that can support the creation and the development of start-ups and new enterprises. This analysis gives us 4 clusters:

**Cluster 1 (Red): "Innovation Bridge: Merging Open Innovation and Entrepreneurship":** Keywords in this group form a dynamic, interconnected ecosystem shaping the future of innovation and entrepreneurship. Related keywords include, as examples: absorptive capacity, business model innovation, commercialization, crowdfunding, effectuation, entrepreneurship, growth, human capital, innovation, innovation performance, internationalization, knowledge acquisition, knowledge transfer, etc.

**Cluster 2 (Green): "InnoGovern: Governance of Innovation and Sustainable Entrepreneurship":** This cluster focuses on business models to create an ecosystem conducive to economic and social development. Keywords include: business model, collaboration, coordination, crowdsourcing, ecosystems, governance, innovation management, open-source software, platforms, public policy, sustainable entrepreneurship.

**Cluster 3 (Blue): "AcademicPrime: Driving Digital Transformation and Academic Entrepreneurship":** Collaboration, management, and diffusion of knowledge can be effective elements for entrepreneurship and an innovative ecosystem. Keywords include: academic entrepreneurship, digital transformation, innovation ecosystems, knowledge collaboration, knowledge management, knowledge diffusion, technology transfer.

**Cluster 4 (Yellow)**: **"InnovateVibe: Inspiring Creativity and Social Entrepreneurship"**: Companies encourage creativity and innovation to support social entrepreneurship and startup development. Keywords include: corporate entrepreneurship, corporate investment, creativity, openness, social entrepreneurship, startups.

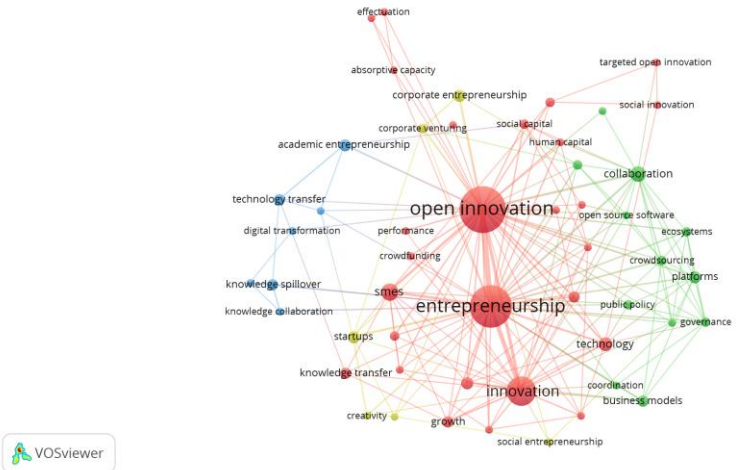



**Fig. 3: keywords Co-occurrence on open innovation and entrepreneurship:**

### 3.2 Semantic network analysis:

makes a map to organize and understand the relationships between key concepts. Creativity plays a central role in this analysis, as it is essential for generating novel ideas,

adapting to challenges, and implementing innovative strategies. The three clusters we identified provide a comprehensive framework for understanding the various dimensions of open innovation and entrepreneurship.

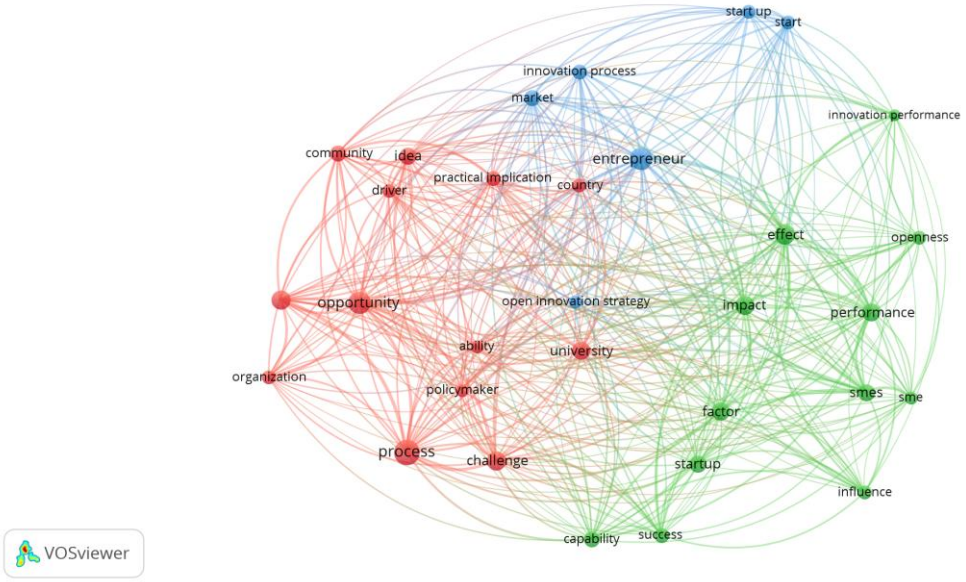
**Cluster 1: Ecosystem and Infrastructure for Open Innovation**: This cluster represents the foundational elements necessary for fostering open innovation and entrepreneurship. Concepts such as ability, challenge, community, country, driver, idea, management, opportunity, organization, policymaker, practical implication, process, and university indicate the complex interplay of factors at the macro level that shape the innovation ecosystem. This cluster highlights the importance of creativity in developing innovative solutions to all this keywords.

**Cluster 2: Building Capability and Assessing Impact in Open Innovation:** This cluster focus on the role of creativity in building the capabilities required for successful open innovation and the impact it has on various stakeholders. Concepts such as capability, effect, factor, impact, influence, innovation performance, SME, SMES, startup, and success suggest a focus on the internal and external factors that influence the ability of organizations, especially small and medium-sized enterprises (SMEs) and startups, to engage in open innovation.

**Cluster 3: Strategy and Execution Approaches to Open Innovation in Entrepreneurship:** This cluster revolves around the strategies and processes that entrepreneurs and startups employ to implement open innovation. Concepts such as entrepreneur, innovation process, market, open innovation strategies, start, and startup indicate a focus on the entrepreneurial mindset, the innovation processes involved, the market dynamics, and the specific strategies used to leverage open innovation for success.

Overall, our analysis emphasizes the critical role of creativity in open innovation and entrepreneurship. Creativity is not only about generating new ideas but also about building the capabilities and executing the strategies necessary for successful innovation. Understanding the role of creativity in these clusters can help organizations and policymakers develop more effective strategies for fostering innovation and driving economic growth.

**Fig. 4: Semantic network analysis on open innovation and entrepreneurship**




## Conclusion:

The intersection of open innovation and entrepreneurship represents a rich and evolving field of study with significant implications for both theory and practice. Through our bibliometric analysis, we have highlighted key trends, influential publications, and emerging research clusters that shed light on this dynamic relationship.

Our analysis revealed a growing body of literature on open innovation and entrepreneurship, with a notable increase in publications in recent years. This trend underscores the increasing importance of these concepts in the innovation landscape.

One of the key findings of our study is the identification of four distinct clusters that represent different aspects of open innovation and entrepreneurship. These clusters, namely "Innovation Bridge," "InnoGovern," "AcademicPrime," and "InnovateVibe," highlight the diverse dimensions of open innovation and entrepreneurship, ranging from innovation ecosystems to governance models and academic entrepreneurship.

Moreover, our analysis emphasizes the critical role of creativity in open innovation and entrepreneurship. Creativity emerges as a central theme across all clusters, underscoring its importance in generating novel ideas, adapting to challenges, and implementing innovative strategies. This finding has significant implications for both researchers and practitioners, highlighting the need to foster a creative mindset in entrepreneurial endeavors.

Despite these contributions, our study has several limitations. Firstly, our analysis is based on publications indexed in the Scopus database, which may not capture all relevant literature on open innovation and entrepreneurship. Additionally, our study focuses on English-language publications, potentially excluding valuable insights from non-English sources.

In conclusion, our study provides a comprehensive overview of the intersection of open innovation and entrepreneurship, highlighting key trends, influential publications, and emerging research clusters. By emphasizing the role of creativity in this relationship, our study contributes to a deeper understanding of how organizations can leverage open innovation and entrepreneurship to drive innovation and economic growth.

**Bibliography**:


1. Bogers, M., Zobel, A. K., Afuah, A., Almirall, E., Brunswicker, S., Dahlander, L., ... & Ter Wal, A. L. (2017). The open innovation research landscape: Established perspectives and emerging themes across different levels of analysis. *Industry and Innovation*, *24*(1), 8-40.
2. Carvalho, E. G., & Sugano, J. Y. (2016). Entrepreneurial orientation as driver for open innovation. *Revista ESPACIOS| Vol. 37 (Nº 05) Año 2016*.
3. Chesbrough, H. and Bogers, M. (2014), "Explicating open innovation: clarifying an emerging paradigm for understanding innovation keywords", New Frontiers in Open Innovation, pp. 3-28.
4. Enkel, E., Gassmann, O., & Chesbrough, H. (2009). Open R&D and open innovation: exploring the phenomenon. *R&d Management*, *39*(4), 311-316.
5. Flamini, G., Pellegrini, M. M., Manesh, M. F., & Caputo, A. (2021). Entrepreneurial approach for open innovation: opening new opportunities, mapping knowledge and highlighting gaps. *International Journal of Entrepreneurial Behavior & Research*, *28*(5), 1347-1368.
6. Georgelli, P., Joyce, B. and Woods, A. (2000), "Entrepreneurial action, innovation, and business performance: the small independent business", Journal of Small Business and Enterprise Development, Vol. 7 No. 1, pp. 7-17.
7. Gruber, M., I. C. MacMillan, and J. D. Thompson. (2013). "Escaping the Prior Knowledge Corridor: What Shapes the Number and Variety of Market Opportunities Identified before Market Entry of Technology Start-ups?" *Organization Science* 24 (1): 280–300.
8. Hills, G.E. and LaForge, R.W. (1992), "Research at the marketing interface to advance entrepreneurship theory", Entrepreneurship Theory and Practice, Vol. 23, pp. 33-59.
9. Miller, D. and Friesen, P.H. (1982), "Archetypes of strategy formulation", *Management Science*, Vol. 28, pp. 770-91.
10. Oguz, F. (2001), "How entrepreneurs learn? A practical interpretation", METU Studies in Development, Vol. 28 Nos 1/2, pp. 183-202.
11. Ortiz-de-Urbina-Criado, M., Nájera-Sánchez, J. J., & Mora-Valentín, E. M. (2018). A research agenda on open innovation and entrepreneurship: a co-word analysis. *Administrative Sciences*, *8*(3), 34.
12. Page, M. J., McKenzie, J. E., Bossuyt, P. M., Boutron, I., Hoffmann, T. C., Mulrow, C. D., Shamseer, L., Tetzlaff, J. M., Akl, E. A., Brennan, S. E., Chou, R., Glanville, J., Grimshaw, J. M., Hróbjartsson, A., Lalu, M. M., Li, T., Loder, E. W., Mayo-Wilson, E., McDonald, S., … Moher, D. (2021). The PRISMA 2020 statement: An updated guideline for reporting systematic reviews
13. Podsakoff, P. M., MacKenzie, S. B., Bachrach, D. G., & Podsakoff, N. P. (2005). The influence of management journals in the 1980s and 1990s. *Strategic Management Journal*, *26*(5), 473–488.
14. Popper, M. and Lipshitz, R. (1998), "Organizational learning mechanisms: a structural and cultural approach to organizational learning", Journal of Applied Behavioral Science, Vol. 34, pp. 161-79.
15. Spender, J. C., Corvello, V., Grimaldi, M., & Rippa, P. (2017). Startups and open innovation: a review of the literature. *European Journal of Innovation Management*, *20*(1), 4-30.
16. Tammela, J. & Salminen, V. (2008). Interoperability Concept Supporting Network Innovation. In F. Zhao (Ed.), *Information Technology Entrepreneurship and Innovation* (pp. 23-37). IGI Global.