Bridging open innovation and artificial intelligence: a systematic literature review with a marketing lens

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Abstract

This study examines the existing body of literature on open innovation and artificial intelligence (AI) in business and management research, with a particular focus on their intersection with marketing. A systematic literature review was conducted using two datasets drawn from the Scopus and Web of Science databases. The first dataset focused exclusively on open innovation and AI, while the second included an additional focus on marketing. The quantitative analysis highlights a growing number of contributions on open innovation and AI, identifying the most productive authors and journals in terms of publications and citations. The qualitative analysis of the first dataset revealed five main themes: (i) AI-enabled open innovation and competitive advantage; (ii) organizational learning and knowledge in AI-enabled open innovation; (iii) digital platforms, innovation, and collaborative ecosystems; (iv) behavioural and cultural dimensions of AI-open innovation; (v) governance and policy dimensions of AI-open innovation. For the second dataset, the analysis focused on individual records, examining how each study addresses the intersections of open innovation, AI, and marketing. The originality of this study lies in its exclusive focus on the intersection of AI, open innovation, and marketing, an area not specifically addressed in existing systematic literature reviews. From a managerial perspective, the findings highlight the need to develop data-driven yet relational marketing capabilities, balancing the analytical power of AI with the contextual and symbolic nuances of market relationships. Integrating AI and open innovation also requires marketing governance models that ensure transparency, openness in decision-making, and accountability in managing data and digital interactions. Additionally, the study identifies key avenues for future research.

Keywords Open innovation; Artificial intelligence; AI; Marketing; Systematic literature review

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1 Introduction

In the past twenty years, the limitations of traditional closed innovation models, where ideas, knowledge, and intellectual property remain confined within organisational boundaries, have become increasingly evident. In response, many firms have embraced open innovation, which combines internal efforts with external sources of knowledge to accelerate innovation and respond to rapidly evolving and dynamic environments (Bogers et al., 2018; Deloitte, 2023). Large firms, conventionally dependent on internal R&D, are now integrating open and closed approaches through hybrid models supported by advanced digital technologies (Andrade-Rojas et al., 2024). SMEs, on the other hand, often lack the resources to innovate independently and therefore depend more heavily on external partnerships and open innovation networks to access knowledge and sustain growth (Roberts and Spedale, 2025; Grama-Vigouroux et al., 2020). Despite their different paths, both must overcome cultural and structural barriers that can hinder collaboration and openness (Burger-Helmchen, 2024). The ongoing digital transformation, driven by the rise of artificial intelligence (AI), has profoundly reshaped how organisations engage in open innovation. AI enhances firms' ability to absorb and process external knowledge, shortens innovation cycles, and supports faster and more informed decision-making (Schiavone and Omrani, 2025; Bahoo et al., 2023). From a marketing perspective, this convergence reshapes how firms interpret market signals, engage stakeholders, and co-create value within open innovation ecosystems. Through AI-enabled platforms and ecosystems, firms can now integrate external ideas (Füller et al., 2021) and collaborate more effectively with external partners (Cricchio et al., 2025; Li et al., 2024; Steiber and Alvarez, 2024).

While several reviews have addressed these themes in connection with broader topics or through different keyword strings (e.g. Smolinski, 2024; Prasetyo et al., 2024; Kuzior et al., 2023; Cricelli et al., 2022), few studies focus exclusively on their direct interaction. This study conducts a systematic literature review specifically centred on open innovation and AI, with particular attention to their intersection with marketing. By doing so, it aims to fill a gap in the literature and provide a comprehensive understanding of how these domains interact, evolve, and influence marketing practices. By integrating bibliometric and qualitative analyses, this study contributes to consolidating a coherent conceptual framework linking AI capabilities, open innovation processes, and marketing governance.

Based on these insights, we pose the following research questions:

> RQ1: How have open innovation and artificial intelligence been studied in business and management research and what are the main trends and contributions?
> RQ2: How do open innovation and artificial intelligence interact in marketing and what areas require further investigation?

2 Methodology

The systematic literature review was carried out using the Scopus and Web of Science databases, extracting data on October 14th 2025. As part of our research protocol, we created two datasets. The first dataset focused on the keyword string *"open innovation" AND (artificial intelligence OR AI)* specifically in the Title, Abstract, and Keywords field. Initially, this search resulted in 323 records in Scopus and 130 in Web of Science. To maintain relevance, we filtered the results by category filters—leading to 110 and 45 publications being retained, respectively. The second dataset utilized the keyword string *"open innovation" AND (artificial intelligence OR AI) AND marketing* in the same field, generating 5 records in

Scopus and 19 in Web of Science. After applying the same category filters, we retained 5 publications from Scopus and 9 from Web of Science.

Table 1 (see the Appendix) presents the PRISMA Flowchart (Moher et al., 2009), which outlines the four phases used as a reference for the first dataset. In the identification phase, the initial database search produced n = 45 records from Web of Science and n = 110 from Scopus, while no additional sources were identified (n = 0), resulting in a total of 155 records. After removing duplicates (n = 36), 119 records remained for screening based on the predefined inclusion and exclusion criteria. During the screening phase, the 119 records were examined for relevance. Following the application of the exclusion criteria—which removed duplicates and conference reviews—111 records were included for the qualitative analysis. Specifically, from an initial 155 records, 36 were excluded as irrelevant, and a further 8 conference reviews were removed, resulting in 111 records. For the quantitative analysis, only the 8 conference reviews were excluded from the initial 155 records, leaving 147 records for inclusion. In the eligibility phase, the 111 records were further assessed for their explicit relevance to innovation, artificial intelligence, and digital technologies. Records not directly addressing these themes (n = 67) were excluded, leaving 44 studies included in the final qualitative analysis. Finally, the analysis phase consisted of both quantitative and qualitative assessments. The quantitative analysis considered n = 147 records (prior to duplicate removal) to examine publication years, authors, journals, author citations, and journal citations, whereas the subsequent qualitative analysis was carried out on both datasets, comprising n = 44 records.

3.1 Quantitative analysis

The quantitative analysis considered the temporal distribution of publications, the most prolific and most cited authors, the leading journals in terms of both publication volume and citation count, and the most frequently occurring keywords.

Figure 1 (see the Appendix) presents the evolution of scientific contributions on open innovation and artificial intelligence (AI). The first publication indexed in Scopus appeared in 2011 (n=1), while Web of Science records emerge much later, in 2020 (n=3). This gap of nearly a decade suggests that the topic has only more recently entered high-impact and widely indexed outlets, reflecting its gradual consolidation as a recognized area of research. From 2018 onward, the number of publications increases steadily, while between 2024 and 2025 there is a marked acceleration, with Scopus contributions rising from n=24 to n=33 and Web of Science from n=9 to n=18, marking a clear increase in scholarly output.

Figure 2 (see the Appendix) shows the authors with the highest number of contributions. Overall, the distribution shows a plurality of contributors, without a single dominant author, indicating that the field is still characterized by widespread collaboration.

Figure 3 (see the Appendix) reports the authors with the highest number of citations, according to Scopus and Web of Science data. The analysis highlights a group of scholars with significant impact in the literature, with citations exceeding n=50 and, in some cases, reaching values above n=170.

Figure 4 (see the Appendix) reports the journals that have published the highest number of contributions. In Scopus, the most prolific journals include the European Journal of Innovation Management with n=5 publications, followed by Technological Forecasting and Social Change (n=4 publications), and titles such as the Journal of Innovation and Knowledge, Business Process Management Journal, and Asia Pacific Business Review, each

with n=3 publications. In Web of Science, the European Journal of Innovation Management and Asia Pacific Business Review stand out with n=5 and n=3 publications, respectively. Journals such as the Journal of Innovation and Knowledge, Business Process Management Journal, California Management Review, Industrial Marketing Management, and Science Technology and Society also show significant presence, albeit to a lesser extent.

Figure 5 (see the Appendix) presents the journals with the highest number of citations. In Scopus, Technological Forecasting and Social Change stands out with a particularly high number of citations (n=396) while, in Web of Science, the most cited journals include Industrial Marketing Management (n=71 citations), California Management Review (n=44), European Journal of Innovation Management (n=20), International Journal of Innovation and Technology Management (n=19), and Science Technology and Society (n=50).

Figure 6 (see the Appendix) summarizes the most recurrent keywords in scientific contributions on open innovation and artificial intelligence (AI). The keywords reflect a shared interest in innovation management, digital technologies, and collaborative models, albeit with a different quantitative distribution compared to Scopus. Overall, the distribution of keywords indicates that research in open innovation and AI is strongly oriented towards strategic and technological concepts, with particular attention to digital transformation and collaborative processes. This suggests a growing interest in interdisciplinary scenarios where innovation, management, and technology intersect, offering significant insights for future developments in the field.

3.2 Qualitative analysis (dataset 1)

Cluster 1: AI–enabled open innovation and competitive advantage

AI is identified as a core enabler of open innovation, helping companies to co-create knowledge, automate decision-making, and thus create a competitive advantage (Hanschur and Henkel, 2025). AI-based business models are a result of combining proprietary and open innovation strategies, which are supported by formal and informal intellectual property mechanisms. These include patents that serve as facilitators for both protection and collaboration (Bader and Stummeyer, 2019; Zhang and Ming, 2023). In the business-to-business context, AI capabilities positively influence open innovation practices that lead to improved firm performance (Sahoo et al., 2024). AI integration with digital platforms and IoT infrastructures enables personalized solutions that, in turn, support the dynamic capabilities and knowledge recombination. In tourism (Ferràs-Hérnandez et al., 2020) and manufacturing (Yun et al., 2021) industries, AI-enabled systems give the way for firms to customize services and innovate in collaborative with multi-stakeholder (Qi et al., 2024). AI-powered analytics and crowdsourcing system also help the organization in the process of finding and selecting ideas, which pave the way to engaging only those with the highest potential for impact (Füller et al., 2021; Penter et al., 2020; Martínez-Torres and Olmedilla, 2016). AI functions help companies to function both as a technological and organizational resource that contributes to build advanced open innovation ecosystems. AI enhances startups' innovation capability, which leads to improved financial and operational performance (Hernandez et al., 2024). AI capabilities facilitate co-creation within innovation ecosystems which lead to breakthrough innovations that serve as a foundation for sustainable competitive advantage (Xu and Yuan, 2025). The combination of AI and open innovation assets strengthens a company's ability to adapt and respond to change by fostering resilience (Le and Behl, 2024). The use of AI technology lets businesses take on data-driven models, make cross-boundary learning a simpler process, and be able to hold on to their competitive

advantage in complex and rapidly evolving environments (Sandeep et al., 2025; Sahoo et al., 2024; Bader and Stummeyer, 2019).

Cluster 2: Organizational learning and knowledge in AI-enabled open innovation

Organizational learning and knowledge management remain crucial in AI-enabled open innovation scenario, where firms are required to absorb, integrate, and apply external knowledge for co-creating value and innovating efficiently. AI contributes to streamlining and enhancing the processes of matching and knowledge sourcing (Keicher and Ardilio, 2025). The synergy between human capabilities, AI, and organizational structures essentially governs how knowledge travels beyond boundaries and influences innovation practices (Jayasinghe, 2025; Bushuyev et al., 2024; Sun and Wang, 2011; Gonzalez, 2025). Research reveals that generative AI tools facilitate knowledge sharing and support open innovation practices (Jayasinghe, 2025; Komninos and Panori, 2019) as well as entrepreneurial learning and performance (Duong, 2025). Digital platforms and AI drive the exchange and accumulation of knowledge, enabling continuous organizational learning (Han, 2025; Barile et al., 2025; Barile et al., 2025). At the same time, brokers within AI ecosystems play a crucial role in disseminating this knowledge by acting as key structural channels that foster learning and innovation (Cricchio et al., 2025). AI-driven digital business ecosystems illustrate how organizational structures can embed AI to promote continuous learning, knowledge sharing, and joint value creation through open innovation practices (Steiber and Alvarez, 2024). The organizational culture, such as the willingness to share knowledge and adopt collaborative practices, largely determines the manner in which AI-driven insights are used and shared among teams (Formica and Curley, 2018; Sun and Wang, 2011). Knowledge management systems in SMEs play a vital role, as they allow firms to effectively plan open innovation activities despite being limited in resources (Sun and Wang, 2011). Research in fact shows that companies which deliberately merge AI with knowledge processes and human learning are the ones to realize higher innovation performance and will be in a better position to integrate dynamic capabilities into their routine operations (Gonzalez, 2025; Koch et al., 2025).

Cluster 3: Digital platforms, innovation and collaborative ecosystems

Business ecosystems and digital platforms have become the essential factors to the successful AI-driven open innovation, as they link stakeholders, facilitate the exchange of knowledge and allow for the joint solving of problems. Digital frameworks permit companies to decentralize decision-making, give autonomy to teams and co-create value not only within the industry but also beyond it (Steiber and Alvarez, 2024). In B2B firms, AI capabilities support open innovation by integrating external knowledge flows and leveraging digital platform mechanisms, enabling firm-level collaboration and driving innovation (Sahoo et al., 2024). These platforms enable companies to be the conductors of complex interactions of intra- and extra-actors which results in the creation of innovation (Steiber and Alvarez, 2024; Schiavone and Omrani, 2025). Crowdsourcing platforms identify high-potential target contributions from a diverse range of participants, while ecosystem-level analytics allocate resources efficiently and allow the scalability of solutions to different stakeholders (Füller et al., 2021; Penter et al., 2020). In financial and manufacturing sectors, Yun et al. (2021) show an ambidextrous open innovation model on how AI and digital technologies help drive collaborative service innovation and support practical open innovation efforts. In the tourism sector, AI shows how public and private institutions can collaborate through technology-driven ecosystems (Gómez and Frías, 2022). Open innovation communities serve as an example of this dynamics, as they enable the company to integrate external knowledge from users, professional designers, and AI systems (Qi et al., 2024). Ecosystemic models are capable of supporting sustainable

innovation through the integration of public policy, university-industry collaboration, and multi-stakeholder engagement into digital platforms which, in turn, leads to the innovation system being resilient and adaptable (Koch et al., 2025; Baban et al., 2021). These platforms constitute the technological as well as organizational enablers that are able to link AI capabilities with strategic governance so as to ensure the presence of continuous learning, experimentation, and competitive advantage throughout the network (Steiber and Alvarez, 2024; Schiavone and Omrani, 2025).

Cluster 4: Behavioural and cultural dimensions of AI-open innovation

The success of AI-driven open innovation depends largely on the behavioural and cultural aspects that influence the way knowledge sharing, understanding, and application occur across the organizational boundaries. Factors like organizational culture, employee motivation, and stakeholder engagement play a vital role in the setting up of AI tools in open innovation processes (Formica and Curley, 2018; Dellermann and Lipusch, 2018; Sahoo et al., 2024). Open innovation communities function through the participation of the crowd, idea generation, and evaluation mechanisms, which, in turn, determine the role of human behaviour in selecting the most potential innovations while discarding the less valuable contributions (Füller et al., 2021). The ambidextrous open innovation model proposed by Yun et al. (2021), demonstrates how integrating AI with human-technology interactions and a collaborative culture can strengthen innovation ecosystems. Another study shows that collaboration between organizations in tourism highlights how social and cultural behaviours influence AI adoption and co-innovation (Gomez and Frìas, 2022). The different cultural orientations, such as altruistic and egoistic values, influence the level of collaboration mainly when AI is used to mediate the interactions among participants (Formica and Curley, 2018). Companies that have a culture that supports and promotes innovation are more capable of utilizing AI in problem-solving, co-creation, and knowledge recombination with the collective. Such a cultural fit allows the organizations to use AI not as a mere tool but as a personalized and adaptive enabler of innovation, thus, providing solutions that not only satisfy specific user or market needs but also, facilitate organizational learning (Sahoo et al., 2024). Besides, the use of AI for user design and co-creation makes a case of how culture being receptive to technology can lead to customer participation, engagement, and value co-creation in both B2B and B2C scenarios (Qi et al., 2024).

Cluster 5: Governance and policy dimensions of AI-open innovation

Governance structures and public policy frameworks are the main factors that determine the effects of AI-enabled open innovation. The issues related to intellectual property management, ethics, regulatory compliance, and innovation-related public policies both limit and promote activities that support knowledge sharing, data protection, and the use of AI technologies in a responsible way (Bader and Stummeyer, 2019; Cricchio, 2025, Koch et al., 2025; Zhang and Ming, 2023). For instance, AI-driven ecosystems can be found in start-ups as well as in larger firms, where open and proprietary innovation strategies co-exist, IP thus can be both a source and a vehicle for innovation with formal and informal intellectual property instruments, such as patents, being used to facilitate both collaboration and protection of strategic assets (Bader and Stummeyer, 2019; Zhang and Ming, 2023). Governance structures and processes help in the implementation of AI applications in a responsible manner. This can be done by preventing misuse of data, bias, and unintended consequences situations. By defining the division of labor, responsibilities, and ethical duties among parties, inter-organizational collaboration is also facilitated, and this is very important in complex innovation ecosystems consisting of many stakeholders (Park and Johnston, 2017; Koch et al., 2025). Public policies that are made to support innovation ecosystems and that

provide funding, sustainability and, digital infrastructure, contribute to the overall efficiency of AI-driven open innovations in the way that they create an environment that is conducive to the exchange of knowledge, experimentation, and the scaling of innovative solutions (Park and Johnston, 2017; Koch et al., 2025). Therefore, governance mechanisms are a means of not only safeguarding strategic and societal interests but also deepening the interaction between technological power and human creativity, thereby enabling them to maintain sustainability and value creation in the long run.

3.3 Qualitative analysis (dataset 2)

The qualitative analysis of dataset 2 examined each record (n = 9, duplicates excluded), assessing the purpose of the study, its relation to open innovation, AI, and marketing (see Table 2 in the Appendix).

4 Conclusion

This research contributes to systematising the literature on the intersection between artificial intelligence (AI) and open innovation, highlighting how their convergence is redefining the paradigms of value creation and the relational logics that characterise contemporary markets. From the systematic review of 111 contributions, AI emerges not only as an enabling technology for open innovation but also as a cognitive infrastructure that transforms processes of knowledge generation, selection, and dissemination, affecting the ways in which companies understand, anticipate, and co-create value with their stakeholders.

In this perspective, marketing assumes a central role as a critical interface between AI, open innovation processes, and market relational dynamics. The adoption of AI-enabled open innovation models implies a rethinking of traditional marketing functions: shifting from activities oriented towards demand control and forecasting to interactive, dialogical, and adaptive learning processes based on networks of actors and collaborative platforms. This leads to a reconfiguration of the marketing function as a sense-making system capable of interpreting information complexity, generating trust, and directing the use of AI towards objectives of both social and competitive value.

The managerial implications suggest the need to develop data-driven yet relational marketing capabilities, able to balance the analytical efficiency of algorithms with the contextual and symbolic sensitivity of market relationships. The integration of AI and OI also necessitates marketing governance models that promote transparency, openness in decision-making processes, and accountability in the management of data and digital interactions.

In terms of future research, three main areas emerge: (i) Empirically analysing the role of marketing as a facilitator of co-creation processes in AI-driven ecosystems; (ii) Exploring the ethical and perceptual implications of using AI in building trust between businesses, consumers, and institutions; (iii) Developing integrated theoretical frameworks that link AI capabilities to open innovation practices and relational, sustainable marketing strategies.

From the perspective of this analysis, marketing represents the key to understanding how AI-enabled open innovation can evolve from a technological infrastructure into a relational and cultural device, capable of restoring meaning and direction to business activity in a context of growing complexity and uncertainty.

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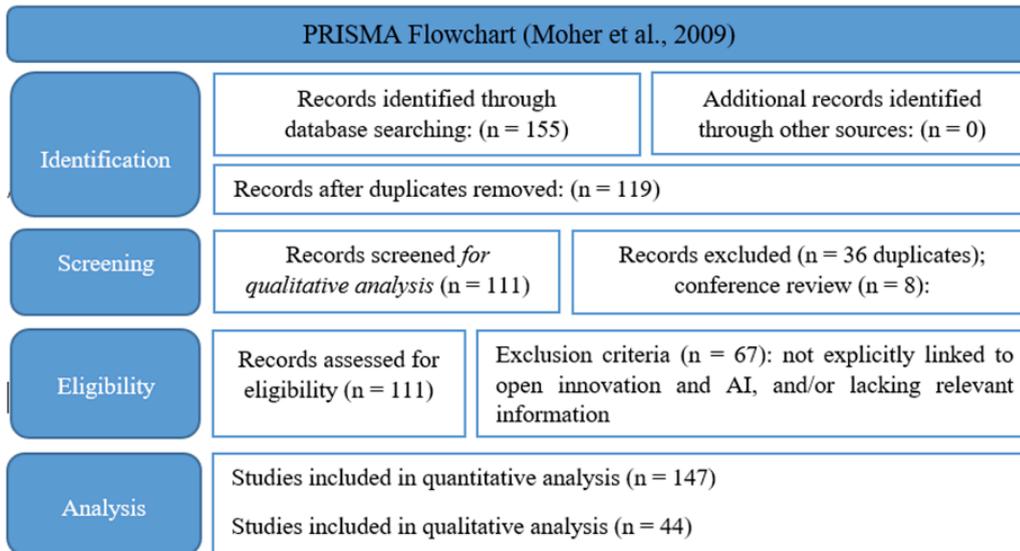
Appendix

PRISMA Flowchart (Moher et al., 2009)		
Identification	Records identified through database searching: (n = 155)	Additional records identified through other sources: (n = 0)
	Records after duplicates removed: (n = 119)	
Screening	Records screened *for qualitative analysis* (n = 111)	Records excluded (n = 36 duplicates); conference review (n = 8):
Eligibility	Records assessed for eligibility (n = 111)	Exclusion criteria (n = 67): not explicitly linked to open innovation and AI, and/or lacking relevant information
Analysis	Studies included in quantitative analysis (n = 147)	
	Studies included in qualitative analysis (n = 44)	

Table 1 PRISMA Flowchart (source: authors' own elaboration based on Moher et al., 2009)
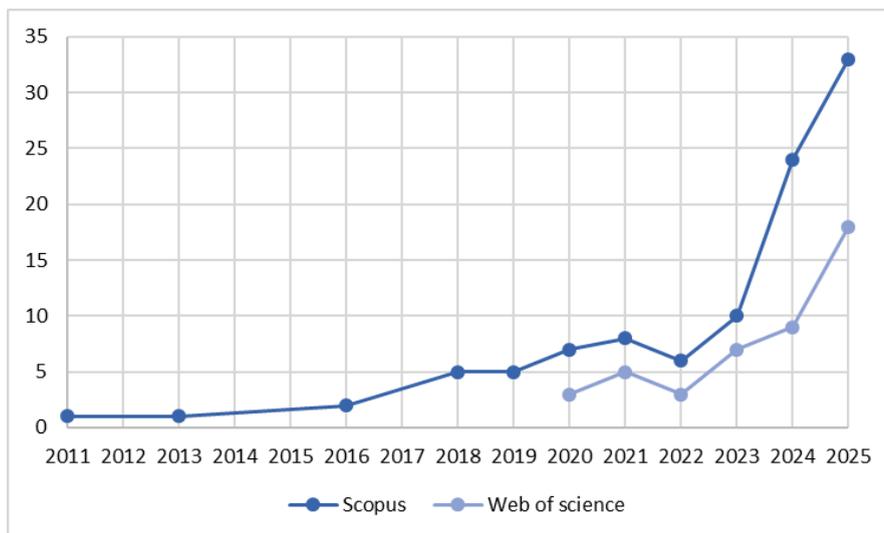
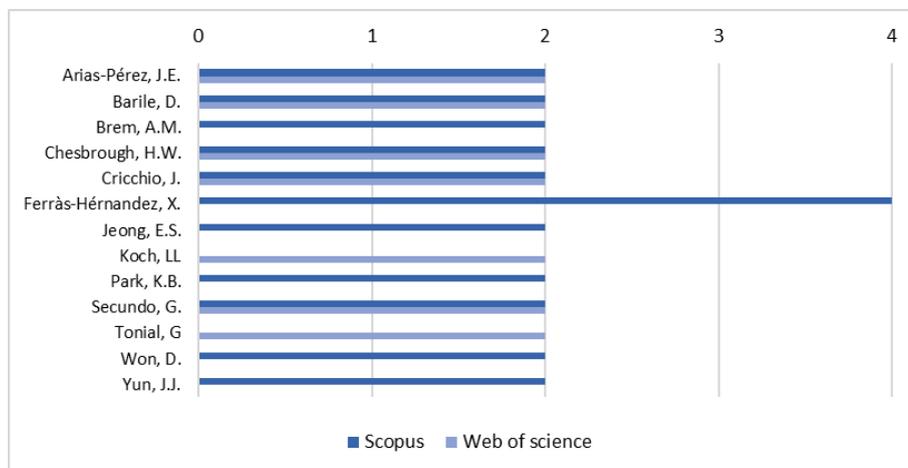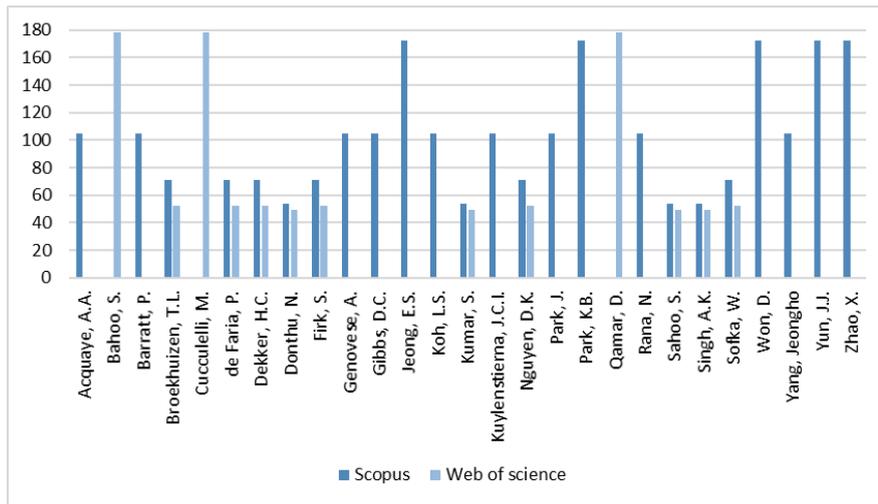*Figure 1 Temporal distribution (source: authors' own elaboration)*

Figure 2 Most productive authors in terms of number of contributions (source: authors' own elaboration)

3 Most influential authors in terms of citations ≥50 (source: authors' own elaboration)
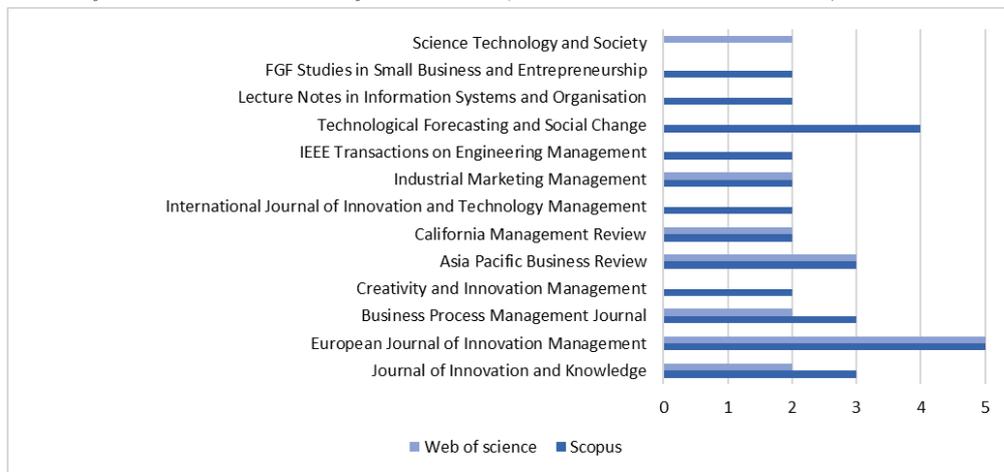

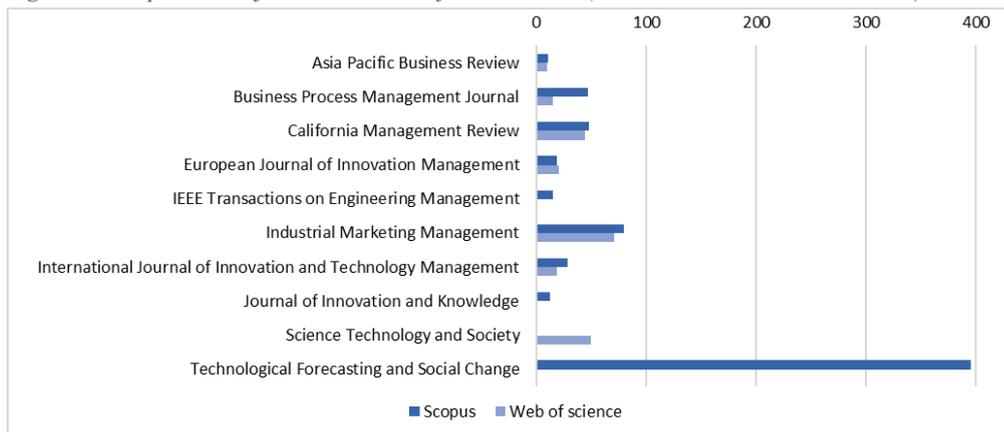*Figure 4 Most productive journals in terms of contributions (source: authors' own elaboration)*

Figure 5 Most influential journals in terms of citations (source: authors' own elaboration)
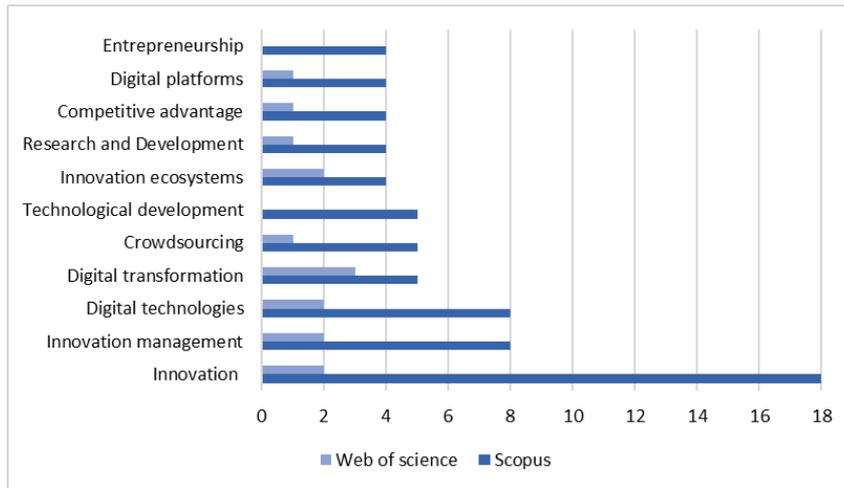
Figure 6 Most recurrent keywords ≥4 (source: authors' own elaboration)

Authors	Purpose	Open innovation (OI)	Artificial intelligence (AI)	Marketing-related
Wang and Zhao (2025)	Explores the effects of internationalization on corporate resilience and the mediating roles of open innovation and ESG	OI as a mediating organizational capability enhancing resilience	AI capacity moderates the positive effect of internationalization	Focus on firm resilience and internationalization
Duong (2025)	Analyses how AI innovation influences inbound and outbound open innovation alignment and entrepreneurial performance	Inbound and outbound OI alignment emphasized	AI is recognised as a driver of innovation alignment	Entrepreneurial performance as market outcome
Barile et al. (2025)	Investigates how a start-up orchestrates an AI-based digital innovation ecosystem	OI through collaboration in digital start-up ecosystem	AI, big data, streaming, and blockchain as technological foundations	Digital marketing and user engagement
Gonzalez (2025)	Analyses inventive and desorptive capacities in outbound OI and moderating role of absorptive capacity	Outbound OI via knowledge flows to external customers	AI not central (more about OI capacities)	Market performance as innovation outcome
Han (2025)	Conceptualizes Smart City (SC) as regional innovation ecosystem fostering entrepreneurship and openness	OI framed as collective innovation system and value networks	AI, IoT, big data as technological enablers	Customer and citizen engagement and co-creation
Rasheed (2024)	Explores OI effects on bio-entrepreneurship, mediated by commercialization	Inbound/outbound OI both positively affect entrepreneurship	AI not explicitly discussed (focus on OI processes)	Connects OI to green marketing and commercialization, bridging innovation

	capabilities and moderated by green promotion strategy			and sustainability-driven branding
Steiber and Alvarez (2024)	Explores Haier's ecosystem micro-community (EMC) model as AI-supported OI in DBEs	Open innovation in joint value creation via digital ecosystems	AI and data management enable digital ecosystems	Positions AI-driven OI as foundation for customer co-creation and digital ecosystem-based marketing
Bahoo et al. (2023)	Conducts review to classify AI –innovation intersections	Identifies "AI and open innovation" as one of eight focal domains	AI phases and roles in corporate innovation defined	Connects AI and OI to market performance
Yang et al. (2022)	Analyses inability to capture value from AI technology through an overly closed approach	Compares open vs. closed innovation in commercialization	AI as a general-purpose technology (GPT)	Openness affects commercialization success

Table 2 Qualitative analysis (dataset 2)