Journal of Innovation & Knowledge 9 (2024) 100538

Journal of Innovation & Knowledge

https://www.journals.elsevier.com/journal-of-innovation-and-knowledge

# Mapping research in the *Journal of Innovation & Knowledge* to sustainable development goals

Raghu Raman[a,*], Debidutta Pattnaik[b], Krishnashree Achuthan[c], Laurie Hughes[d], Adil S. Al-Busaidi[e,f], Yogesh K Dwivedi[g], Maneesha Vinodini Ramesh[h], Prema Nedungadi[i]

[a] *Amrita School of Business, Amrita Vishwa Vidyapeetham, Amritapuri, Kerala 690525, India*
[b] *International Management Institute, Bhubaneswar 751 003, India*
[c] *Center for Cybersecurity Systems and Networks, Amrita Vishwa Vidyapeetham, Amritapuri, Kerala 690525, India*
[d] *School of Business and Law, Edith Cowan University, JO 2.331, 270 Joondalup Drive, Joondalup WA 6027, USA*
[e] *Director, Innovation & Technology Transfer Center, Sultan Qaboos University, Oman*
[f] *Department of Business Communication, Sultan Qaboos University, Oman*
[g] *Digital Futures for Sustainable Business & Society Research Group, School of Management, Swansea University – Bay Campus, Swansea, UK*
[h] *Amrita School for Sustainable Futures, Amrita Vishwa Vidyapeetham, Amritapuri 690525, India*
[i] *Amrita School of Computing, Amrita Vishwa Vidyapeetham, Amritapuri, Kerala 690525, India*

ARTICLE INFO

*Article History:*
Received 8 April 2024
Accepted 5 August 2024
Available online 12 August 2024

*Keywords:*
Sustainable development goal
Innovation
Knowledge
Digital transformation
Entrepreneurship
Topic modeling
Citation clusters

*JEL Code:*
O30
Q01

ABSTRACT

This study critically evaluates the contributions of the *Journal of Innovation & Knowledge* (*JIK*) toward advancing research aligned with the Sustainable Development Goals (SDGs), employing the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) protocol for systematic literature review. We meticulously examine *JIK*'s interdisciplinary research patterns, thematic focuses, and topic evolution, emphasizing the journal's engagement with SDG 9 (Industry, Innovation, and Infrastructure), SDG 8 (Decent Work and Economic Growth), and SDG 4 (Quality Education). By utilizing advanced techniques such as co-citation mapping and BERTopic modeling, this study identifies six major topics within the *JIK*, aligning with specific SDGs: "EcoTech Revolution" highlights 'green technology,' "Entrepreneurial Innovation" focuses on 'innovation management,' "Economy 4.0" centers on 'digital transformation,' "Effectual Innovation" involves 'technological innovation capability,' "Collaborative Economy" addresses 'sharing economy sustainability,' and "Green Innovation" explores 'eco-innovation.' These topics underscore *JIK*'s role in advancing interdisciplinary research across key areas such as technology, entrepreneurship, the digital economy, practical innovation applications, collaborative consumption models, and environmental sustainability. Our findings highlight gaps, particularly in addressing SDG 5 (Gender Equality) and SDG 15 (Life on Land), presenting opportunities for *JIK* to diversify its research agenda toward a more inclusive sustainability discourse. Contributions from a global array of authors underscore *JIK*'s international impact and its role in fostering diverse sustainability perspectives.



## Introduction

In commemorating the tenth anniversary of the *Journal of Innovation & Knowledge* (*JIK*) and its substantial contributions to sustainable development goals (SDGs), this article delves into the previously uncharted territories of the intricate linkages, extent of impact, and scope of *JIK*'s coverage of the 17 SDGs. These unexplored areas underscore the need for a focused review that not only encapsulates *JIK*'s contributions but also contextualizes them within the broader agenda of sustainable development.

Amidst escalating global challenges such as social disparities, environmental shifts, emerging health threats, and population growth, the pursuit of the SDGs has never been urgent or critical. Innovation and knowledge serve as the twin pillars for progress, touching every aspect of human experience. They drive economic growth (Kraus et al., 2021), foster social inclusion, and promote environmental stewardship (Ferasso et al., 2020). Equally vital, they underpin technology integration (Duan et al., 2019; Dwivedi et al., 2021) and facilitate digital transformation (Pappas et al., 2019; Benavides-Espinosa et al., 2024). Thus, together, they contribute to

* Corresponding author.
*E-mail address:* raghu@amrita.edu (R. Raman).

https://doi.org/10.1016/j.jik.2024.100538

creating a resilient framework for a sustainable and prosperous future (Sachs et al., 2022).

*JIK* has served as a cornerstone in providing rigorous analysis and deep insights into the multifaceted aspects of innovation and knowledge. This has been evidenced by systematically exploring the antecedents of innovation, elucidating the factors that initiate and accelerate the innovation process, positing diverse influences shaping its trajectory, and positing strategic imperatives for sustaining innovation. The journal's contributions have been pivotal to knowledge management, showcasing the mechanisms of creation, sharing, and application of knowledge.

The establishment of the SDGs in 2015 marked a critical shift toward a global agenda focused on sustainable and equitable development (Gupta & Vegelin, 2016). This transition underscores the critical role of innovation in addressing complex challenges across the environmental, social, and economic domains. In this context, innovation encompasses not only technological advancements but also novel approaches (Sachs et al., 2019), systems thinking (Barbier & Burgess, 2017; Missimer et al., 2017), and collaborative models that drive sustainable outcomes. *JIK*'s rigorous publications echo this ethos and serve as a comprehensive repository of studies that have examined the symbiotic relationships among innovations, knowledge management, and sustainability. Notable examples include green innovations (Wang et al., 2022; Shahzad et al., 2022) aimed at sustainable growth, technological innovations that foster high-tech industry development, frugal innovations suited for developing economies, radical innovations that disrupt existing markets, social innovations that address complex societal challenges, and entrepreneurial innovations that drive new business creation and market opportunities. The global reach of studies featured within *JIK* provides critical insights into the complex interrelations between policy frameworks, cultural influences, technological advancements, and, more importantly, the scalability of innovation and knowledge management practices across diverse contexts (Li et al., 2023).

*JIK* not only championed groundbreaking and forward-thinking concepts but also upheld the highest standards of academic rigor with the dedicated efforts of 94 editors, including 6 regional editors and 88 area editors, hailing from a global network of 22 countries. In just 10 years since its inception, according to Scopus, the journal is ranked 12th in the subject areas of Economics, Econometrics, and Finance (among 705 sources) and 9th in Management of Technology and Innovation (among 281 sources), while also being rated as an "A" category journal on the Australian Business Deans Council (ABDC) Journal Quality List (JQL). Furthermore, the journal has a CiteScore of 14.9 and a source normalized impact per paper (SNIP) of 4.673, two key metrics indicative of its superiority in attracting citations that translate to quality. This means that articles published between 2019 and 2022 received an average of 14.9 citations in 2022 alone, which is 4.673 times the average number of citations articles in the subject area received. *JIK* has an impact factor of 18.1, meaning that the total number of citations received in 2022 was 18.1 times the number of articles published in 2020 and 2021. The remarkable surge in Web of Science (WoS) impact metrics of >300 % between 2019 and 2022 is symptomatic of its growing influence and academic significance.

Despite the impressive metrics that underscore the journal's remarkable success and influence, it is surprising that no previous attempt has been made to map its contributions to the SDGs. Addressing this gap, it becomes essential to examine *JIK*'s impact and its role in advancing knowledge, particularly concerning the SDGs. Understanding the contributions of the journal in this direction can offer valuable insights for researchers and policymakers, guiding future scholarly endeavors.

Several key contributions distinguish our work. First, we provide a comprehensive synthesis by distilling the vast array of insights from *JIK* publications since the journal started in 2016. This synthesis not only highlights seminal works and emerging trends but also delineates how *JIK* publications have been instrumental in advancing research surrounding the SDGs, setting the stage for future scholarly endeavors. Second, our analysis pays tribute to *JIK*'s decade of excellence, a period that, despite its relative brevity, has seen *JIK* ascend to notable prominence in its field. Through a scientometric examination, we reveal the evolving publication trends, key articles, and dominant themes that have shaped *JIK*'s discourse on sustainable development. Third, we provide an in-depth assessment of *JIK*'s engagement with the SDGs. This involves identifying which SDGs have been most and least emphasized, assessing the interdisciplinary nature of the research, and pinpointing the major topics and terms that define *JIK*'s contributions. Fourth, our work seeks to uncover the research hotspots within *JIK*'s publications, offering insights into the most influential topics and how they correlate with the SDGs. This analysis not only highlights the areas of greatest academic interest but also suggests pathways for future research. To the best of our knowledge, this is the first retrospective review of *JIK* in relation to the SDGs.

The research questions explored in this context include the following:

- RQ1: In what ways does *JIK*'s research showcase interdisciplinary approaches, particularly in the context of addressing the SDGs?
- RQ2: Which SDGs received the most and least emphasis in *JIK*'s publications, and how are these priorities reflected in the most highly cited works?
- RQ3: What are the predominant research themes within *JIK*, and which terms most accurately encapsulate these topics?
- RQ4: What emerging research hotspots can be identified in *JIK*, and how do these hotspots align with or diverge from major research topics and SDG coverage?

## Research framework

The research framework for analyzing SDG coverage within *JIK* between 2016 and 2023 is shown in Fig. 1. The presented framework follows a structured process using the PRISMA framework, co-citation mapping, and BERTopic modeling to develop key insights into the *JIK* literature.

### *PRISMA protocol*

This investigation applied the PRISMA framework to guide this systematic review, adhering to a five-step process that included identifying research questions, formulating a search strategy, conducting and screening the literature search, and analyzing the findings (Page et al., 2021). This structured approach enhances the reliability of the review, making PRISMA a reliable protocol for diverse fields of research (Raman et al., 2023; Rama et al., 2023).

This study commenced with a comprehensive search of the Dimensions database, which was chosen for its extensive journal coverage, which significantly outstrips the Web of Science and Scopus (Singh et al., 2021). This search, which targeted the period from 2016 to 2023, identified 451 publications. During the screening phase, all 451 publications were meticulously evaluated for completeness, with none disqualified on the basis of missing author details or DOIs. The subsequent eligibility phase leverages proprietary algorithms within Dimensions to map publications to the 17 SDGs. This was informed by various SDG mapping initiatives, including the Aurora-Network-Global's SDG-Queries, the University of Auckland's SDG mapping, and Elsevier's SDG Mapping Initiatives. These mappings facilitated the identification of 215 publications directly related to the 17 SDGs. Ultimately, all 215 eligible publications were included for detailed analysis, underscoring the efficacy of the PRISMA framework in

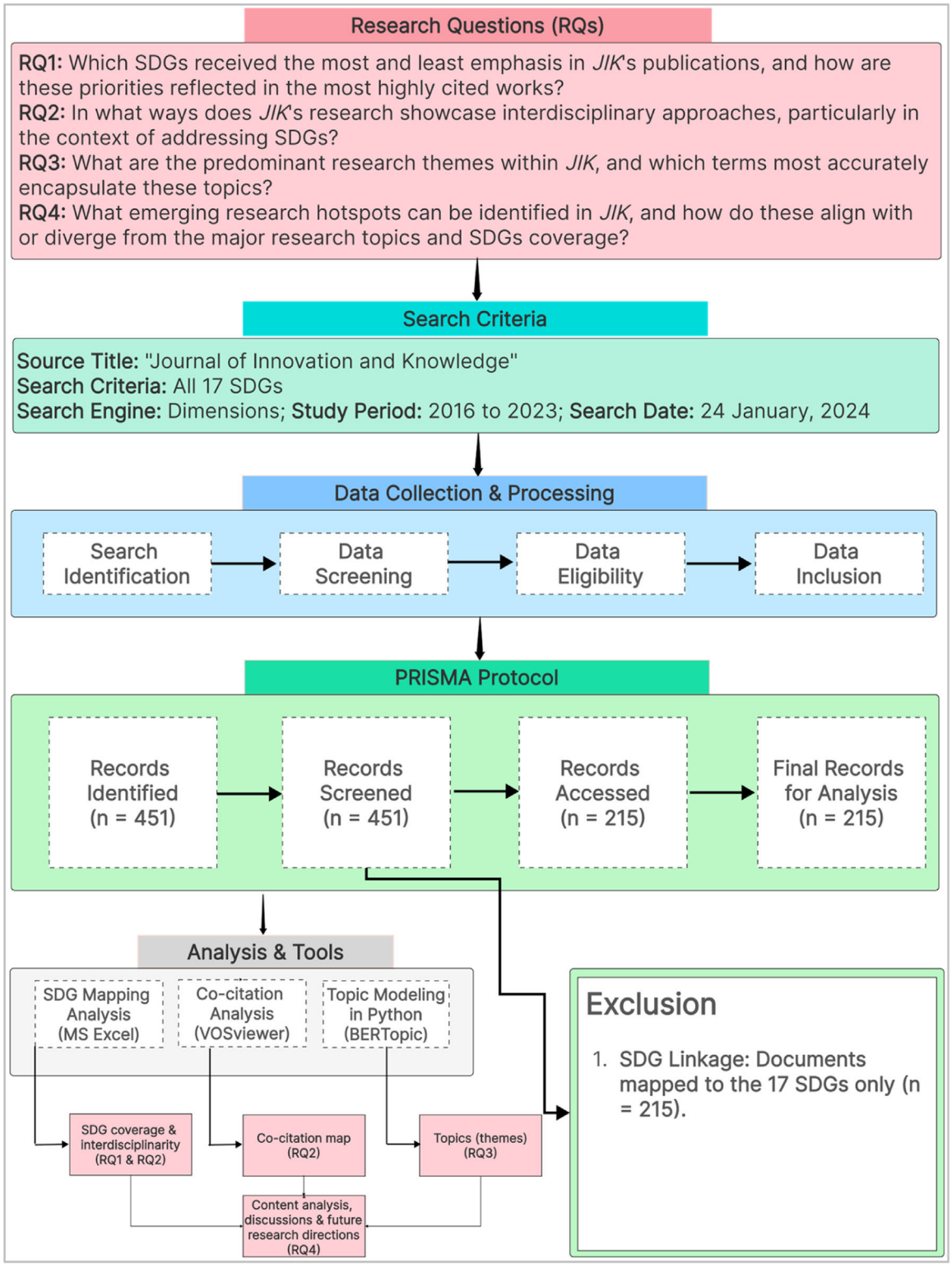


**Fig. 1.** Research framework.

conducting a systematic and comprehensive review of literature pertinent to SDGs.

*SDG framework*

To gauge the extent of interdisciplinary research published in *JIK*, we utilize the SDGs as a framework (Raman et al., 2022, 2024). In analyzing the intricate web of SDGs, it becomes evident that the success of one goal is often intertwined with advancements in others. Network analyses by Le Blanc (2015) and Allison et al. (2016) reveal a varied landscape of interconnections among the SDGs, with some demonstrating strong links across numerous targets and others showing less pronounced connections. Emphasizing the need for an integrated approach, Griggs et al. (2013) recommended embedding individual sustainability goals within a comprehensive framework that reflects the synergies between the environmental, social, and

economic domains. By mapping the *JIK*'s research outputs to the SDGs, we aim to show how well the journal's publications align with these interdisciplinary goals, thereby reflecting on the journal's contribution to tackling complex, multifaceted global challenges.

*Co-citation mapping*

Our examination uses a co-citation mapping technique to visualize the interconnectedness of SDGs (Raman et al., 2023). Employing the visualization tool VOSviewer (van Eck & Waltman, 2010), we illustrate the semantic proximity between SDGs on the basis of their joint citation frequency within the same collection of publications. The resulting map portrays each SDG as a node whose size indicates its prevalence in research, whereas the connecting lines' thickness represents the co-citation frequency between goals, thereby highlighting the network of SDGs as a complex yet cohesive structure guiding global sustainability efforts.

*Topic modeling*

This research adopts the BERTopic technique for topic modeling, leveraging state-of-the-art transformer models and the Class-Tf-idf-Transformer for effective topic cluster formation (Gomes et al., 2023). BERTopic is a cutting-edge technique that uses contextual embeddings from the BERT language model for robust topic modeling (Grootendorst, 2022). It not only excels in capturing nuanced semantic relationships within textual data but also provides a quantitative measure of intertopic distance, offering insights into the thematic cohesion and divergence present in the content. The methodological advantage of BERTopic lies in its ability to discern subtle contextual nuances, ensuring a more accurate representation of topic clusters. This method ensures the extraction of coherent topics while preserving essential terms, significantly improving the clarity and relevance of the topics identified (Grootendorst, 2022). The initial step involves comprehensive data preprocessing, incorporating text cleaning, the application of natural language processing (NLP) techniques, and tokenization to refine the dataset's quality and uniformity. Further enhancement is achieved through sentence embeddings and dimensionality reduction techniques, facilitating more precise topic extraction and visualization (McInnes et al., 2020). The BERTopic model uses probability metrics to assign topics to documents, thereby improving the interpretability of the results. This approach not only guarantees the robustness and validity of the study's outcomes but also highlights the meticulousness and sophistication inherent in the topic modeling process.

## Findings

*Interdisciplinary research*

In the period spanning from 2016 to 2023, *JIK* demonstrated robust performance, with a total of 215 publications, of which 198 were cited, resulting in a total of 5854 citations (refer to Table 1 in the Appendix). The average number of citations per publication was 27, contributing to an impressive h-index of 41 and a g-index of 69, reflecting the significant impact of the journal's publications. Over the course of eight active years, *JIK* maintained consistent productivity, with an average of 27 publications per active year. In terms of coauthorship, the journal exhibited high collaboration, with 721 contributing authors and 671 affiliated authors, resulting in an average of four authors per coauthored article. Notably, 657 authors contributed to coauthored documents, whereas 17 contributed to single-authored documents, showing a collaborative approach in the scholarly endeavors reported in *JIK*.

Furthermore, when RQ1 is addressed in assessing *JIK* research alignment with SDGs, a distinct pattern emerges, highlighting the journal's focal areas (refer to Panel C, Table 1 in the Appendix). The most researched SDG within *JIK* is SDG 9 (Industry, Innovation, and Infrastructure), which commands the forefront with 112 publications and a remarkable citation count of 3746. This pre-eminence underscores the journal's dedication to advancing research in innovations critical to sustainable development. The next most common are SDG 8 (Decent Work and Economic Growth) and SDG 4 (Quality Education), with 33 and 25 publications and 875 and 480 citations, respectively, indicating a robust interest in the economic and educational dimensions of sustainability.

Conversely, SDG 7 (Affordable and Clean Energy), SDG 12 (Responsible Consumption and Production), and SDG 13 (Climate Action) also receive considerable attention, reflecting a moderate level of research engagement and citation impact, in line with global energy and environmental concerns. Other SDGs, such as SDG 11 (Sustainable Cities and Communities), SDG 2 (Zero Hunger), and SDG 3 (Good Health and Well-Being), depict a more modest level of research output, suggesting areas for potential growth within the journal's scope.

At the lower end of the spectrum, SDGs such as 1 (No Poverty), 10 (Reduced Inequalities), 16 (Peace, Justice, and Strong Institutions), 14 (Life Below Water), and notably, 5 (Gender Equality) and 15 (Life on Land) receive the least scholarly attention, both in terms of publications and citations. This may provide an opportunity for *JIK* to broaden its research agenda to encompass a wider array of sustainability goals in the future.

*SDG co-citation map*

In examining the contributions of *JIK* to SDGs, the cocitation map (Fig. 2), alongside the journal keywords, we address RQ2 in understanding the interplay between various SDGs and the thematic focus of the research within *JIK*. Keywords such as 'Industry 4.0,' 'technological innovation,' 'entrepreneurship,' and various forms of innovation (frugal-, financial-, green-, eco-, and open-innovation) are instrumental in deciphering the connections and thematic concentrations in the SDG clusters.

The broader red cluster, led by SDG 9 (Industry, Innovation, and Infrastructure), incorporates keywords such as 'green innovation,' 'sustainable supply chains,' and 'eco-innovation' (Shahzad et al., 2022). This implies a research trajectory that not only prioritizes industrial and infrastructural advancements but also emphasizes sustainable and environmentally conscious practices. The presence of SDGs such as 7 (affordable and clean energy), 12 (responsible consumption and production), and 13 (climate action) within this cluster reflects *JIK*'s focus on 'sustainability-oriented innovation' and 'green knowledge management,' underscoring the critical intersection of technology, environmental stewardship, and sustainable development (Aslam et al., 2021; Dabbous & Tarhini, 2021).

The green cluster, led by SDG 8 (Decent Work and Economic Growth), resonates strongly with keywords such as 'Industry 4.0' and 'technological innovation.' This suggests a research focus where advanced industrial technologies and innovative practices are seen as drivers of economic growth and employment. The inclusion of SDGs such as 10 (reduced inequality), 14 (life below water), and 1 (no poverty) within this cluster aligns with *JIK*'s exploration of 'entrepreneurship' and 'social innovation,' highlighting the role of innovative business models in addressing social and environmental challenges (Hussain et al., 2023).

The linkages between SDGs, particularly between SDG 9 and SDGs 8, 13, 7, and 12, are further enriched by keywords such as 'financial development' and 'financial innovation.' These findings suggest that fiscal strategies and innovative financing are pivotal in bridging industry, infrastructure, and sustainable development goals. *JIK*'s focus on 'open innovation' and 'responsible innovation' aligns with the interconnected and cross-sectoral nature of these SDGs,

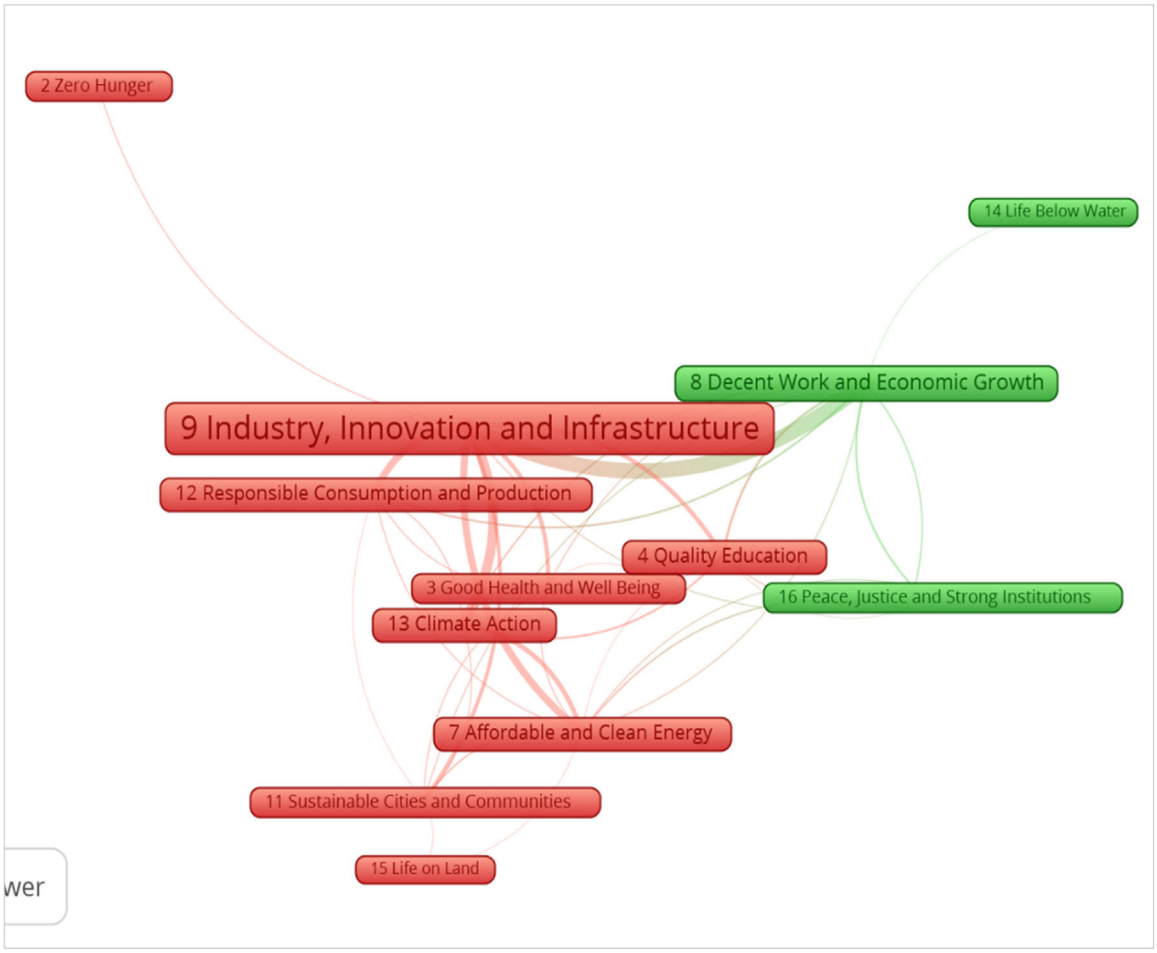


**Fig. 2.** Interdisciplinary research in *JIK* as measured by a network of SDGs.

highlighting the importance of collaborative and ethical approaches in pursuing sustainable development.

Thus, the co-citation analysis, combined with *JIK*'s thematic keywords, presents a comprehensive picture of how research in *JIK* intersects with the SDGs. It underscores the critical role of various forms of innovation—from industry-focused to green and social—in driving progress across a spectrum of sustainable development goals.

The co-citation overlay map provided illustrates the evolving focus of research within *JIK* between 2018 and 2023, mirroring global sustainability trends and highlighting the dynamic interplay between various SDGs (Fig. 3).

Between 2018 and 2023, *JIK*'s research emphasis transitioned from SDG 2 (Zero Hunger) to SDG 14 (Life Below Water), subsequently moving toward SDG 16 (Peace, Justice, and Strong Institutions) and then pivoting to SDG 9 (Industry, Innovation, and Infrastructure). Most recently, the focus has shifted to SDG 12 (responsible consumption and production), SDG 13 (climate action), and SDG 7 (affordable and clean energy). This trajectory aligns with the heightened global discourse on sustainable practices, as encapsulated by high-profile events such as COP26, COP27, and COP28, underscoring the urgency of addressing climate change through clean energy initiatives and sustainable practices.

The overlay map suggests that as the journal's research progressed, there was a notable pivot toward the themes of innovation, industry, and infrastructure, which are central to catalyzing progress across multiple SDGs. This shift is indicative of the journal's alignment with the broader global agenda, which increasingly prioritizes sustainability in industrial development and the green transition as a foundation for achieving the overarching goals of health, well-being, and equitable growth. The recent concentration of SDGs related to clean energy (Dabbous & Tarhini, 2021), climate action, and responsible consumption (Aslam et al., 2021) reflects a growing consensus on the need for sustainable transformation of our energy systems and consumption patterns. This shift is particularly pertinent considering recent climate summits, which have brought these issues to the forefront of international policy and research agendas.

### *Major topics of* JIK *research*

Employing a dataset of *JIK* articles mapped to various SDGs, we apply the BERTopic modeling method to identify six major topics to answer RQ3. Table 2 in the Appendix summarizes the topics extracted, and Fig. 4 shows the word clouds generated by representative terms. Conversely, Figs. 5 and Fig. 6 (Appendix) visualize the intertopic distance and illustrate the distribution of *JIK* articles across the extracted topics, offering insights into the thematic cohesion and divergence present in the topics extracted, thereby facilitating a more comprehensive understanding of the research landscape.

Essentially, Figs. 5 and Fig. 6 reveal distinct clusters among the extracted topics, with certain themes exhibiting closer proximity to each other than to others. Notably, the topics of "Entrepreneurial Innovation," "Economy 4.0." and "green innovation" appear to be closely related, as indicated by their proximity in Fig. 5. This clustering suggests a potential interconnectedness or thematic overlap between these topics, possibly stemming from shared concepts, methodologies, or research paradigms. Conversely, the topics of "collaborative economy" and "effectual innovation" emerge as distinct clusters, exhibiting greater distance from the themes above. This

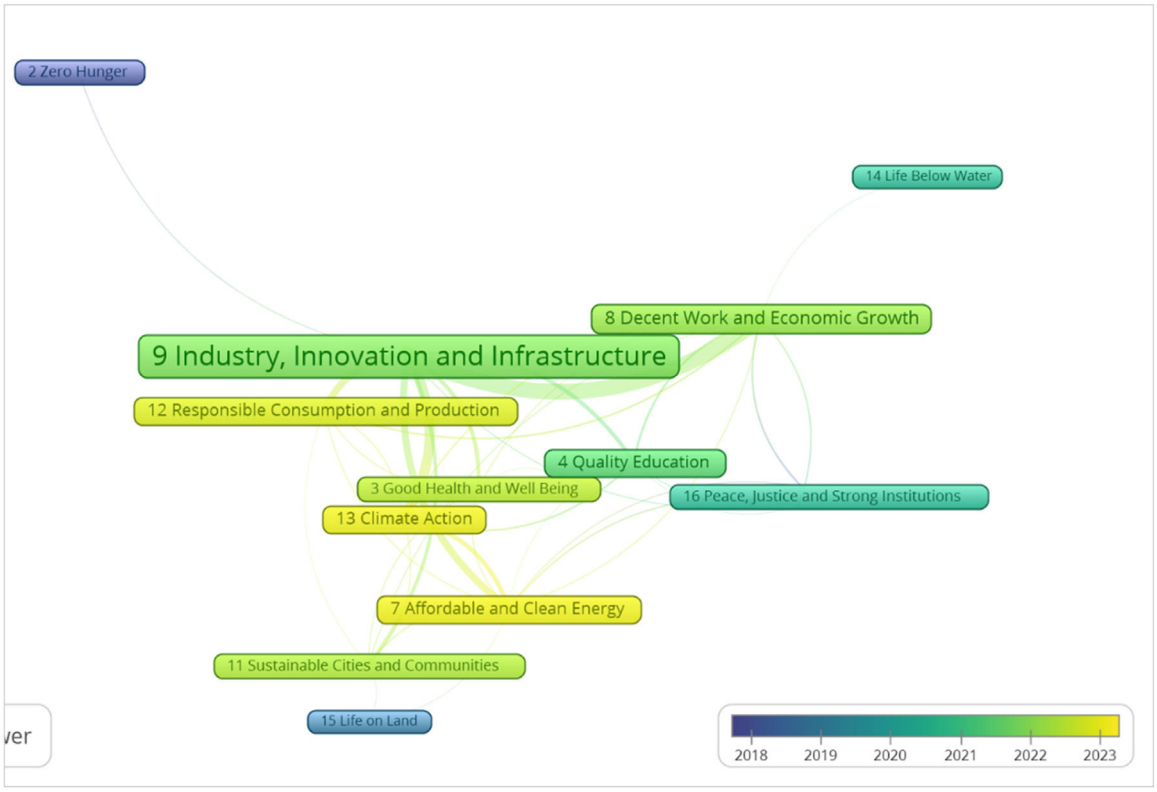


**Fig. 3.** Evolution of interdisciplinary research measured by a network of SDGs.

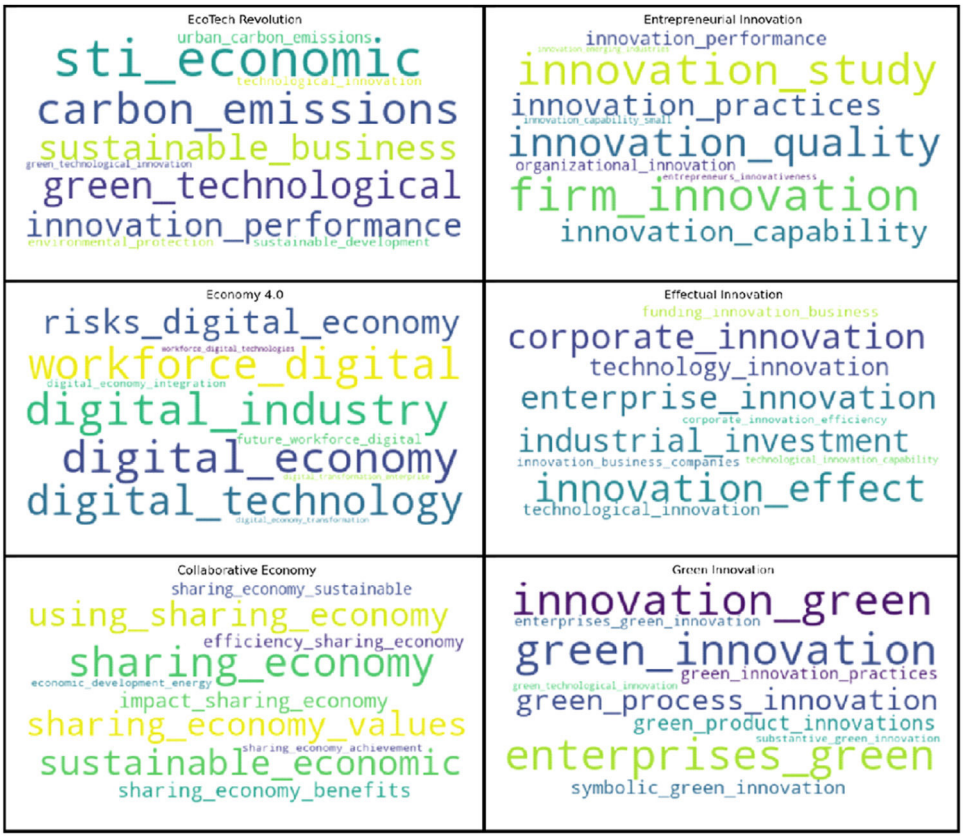


**Fig. 4.** Word clouds of key terms representing the major topics.

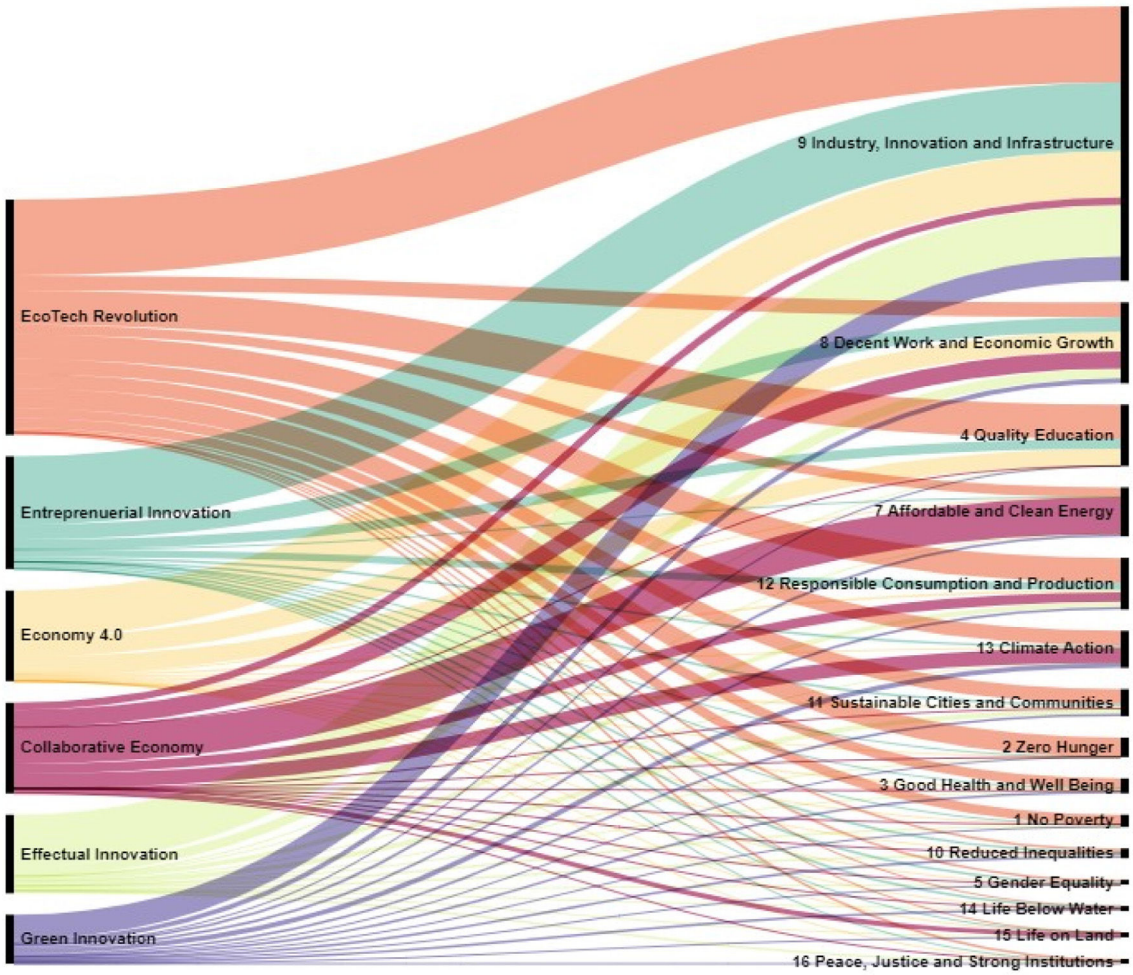


**Fig. 5.** Major topics and their SDG focus.

divergence in proximity indicates a clear separation or differentiation in the underlying concepts or research focus of these topics compared with "Entrepreneurial Innovation," "Economy 4.0," and "Green Innovation."

Our initial topic, termed the "EcoTech Revolution," encompassing 81 *JIK* articles cited 1491 times at 18 average citations, prominently addresses SDGs 9 (Industry, Innovation, and Infrastructure), 4 (Quality Education), and 12 (Responsible Consumption and Production). The APY of 2021.2 indicates significant scholarly interest and impact. Similarly, the topic "entrepreneurial innovation," consisting of 38 articles cited 2376 times at 63 average citations, revolves around SDGs 9, 8 (decent work and economic growth), and 4 (quality education). It has an APY of 2020.6. Conversely, "Economy 4.0," represented by 33 articles, focuses primarily on SDGs 9 (Industry, Innovation, and Infrastructure), 8 (Decent Work and Economic Growth), and 4 (Quality Education). The 579 total citations, averaging 18 citations per article, underscore its scholarly impact, whereas the APY of 2022.3 reveals that the topic is current and trending.

The fourth topic, "Effectual Innovation," encompassing 28 articles cited 295 times at 18 average citations, centers around SDGs 9 (Industry, Innovation, and Infrastructure), 8 (Decent Work and Economic Growth), and 11 (Sustainable Cities and Communities). The APY of 2022.7 suggests a contemporary focus on effectual innovation and its implications within the research content of *JIK*. The subsequent topic, "collaborative economy," comprising 23 articles cited 467 times at 20 average citations, focuses on SDGs 7 (affordable and clean energy), 8 (cent work and economic growth), and 13 (climate action). The APY of 2022.6 suggests a recent emphasis on collaborative economy models within the context of sustainability.

Finally, "Green Innovation," encompassing 12 *JIK* articles cited 646 times at 54 average citations, prominently addresses SDGs 9 (Industry, Innovation, and Infrastructure), 13 (Climate Action), and 7 (Affordable and Clean Energy). An APY of 2021.8 indicates a sustained interest in green innovation practices and their alignment with sustainable development in *JIK*.

The analysis of six topics spanning various SDGs reveals *JIK*'s diverse scholarly exploration and the temporal relevance captured by the APY.

This connection between the thematic alignment with the SDGs and the contemporaneity reflected in the APY underscores the ongoing commitment of the academic community to address and contribute to the evolving landscape of sustainable development while contributing to the discourse of *JIK*.

The subsequent sections explore the diverse thematic dimensions of the major topics, allowing for a comprehensive understanding of the innovative and knowledge-centric discourse within *JIK*.

*EcoTech revolution*

*JIK* articles on the EcoTech Revolution encapsulate a transformative era marked by green technological innovation and its profound implications for sustainable development. Through a nuanced examination of its key elements, this discourse reveals pivotal aspects such

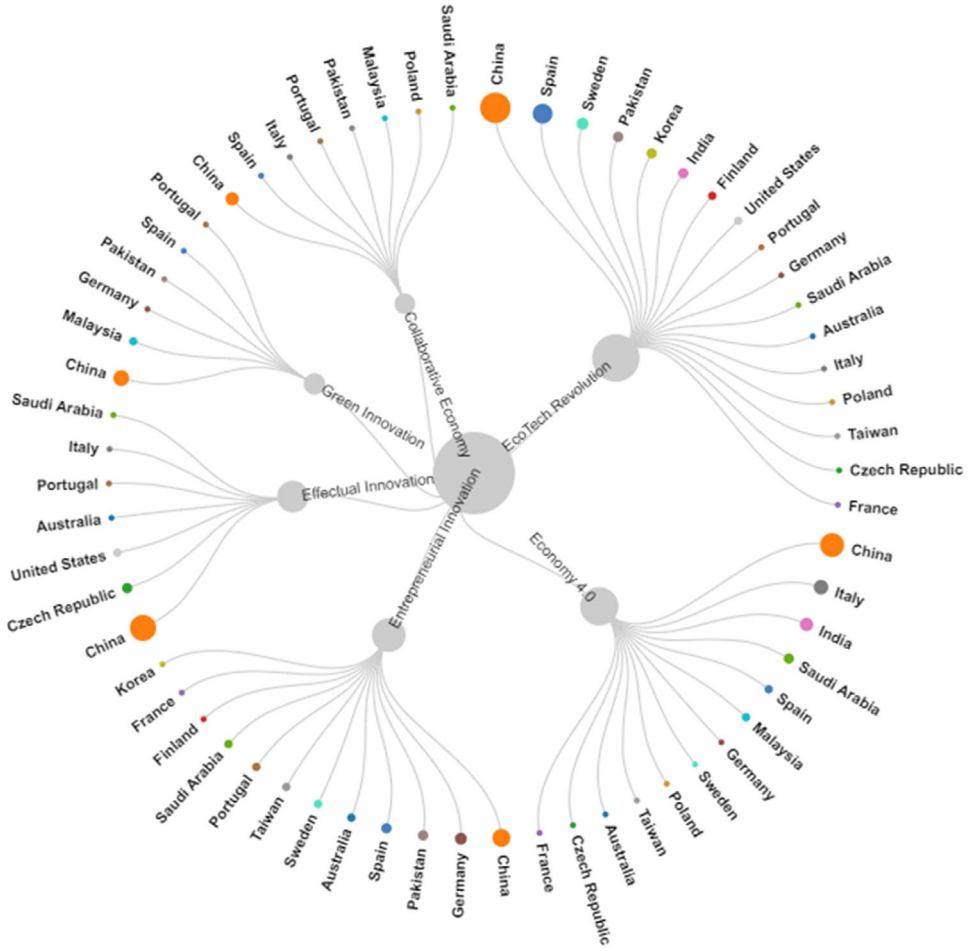


**Fig. 6.** Research hotspots of the major topics.

as 'green technological innovation,' 'innovation performance,' 'urban carbon emissions,' 'sustainable business,' 'sustainable development,' 'environmental protection,' and 'technological innovation.' Together, these studies underscore the symbiotic relationship between technological advancements, sustainability, and societal well-being in the ongoing EcoTech Revolution. Through interdisciplinary research and collaborative endeavors, stakeholders can navigate this transformative landscape, fostering innovation and resilience for a more sustainable future.

One notable facet explored within this discourse is the integration of blockchain technology within supply chains, as proposed by Aslam et al. (2021). Their framework for enhanced supply chain practices not only addresses concerns of environmental protection but also aligns with the objectives of SDG 12 (Responsible Consumption and Production). Concurrently, López-Cabarcos et al. offered insights into the resilience of the gaming industry amidst the COVID-19 pandemic, revealing intriguing dynamics between market volatility and returns, which are pertinent to SDG 3 (Good Health and Well Being). Moreover, Al-Omoush et al.'s exploration in Jordan underscores the importance of social capital in fostering collaborative innovation and organizational sustainability, thereby contributing to the advancement of SDG 9 (Industry, Innovation, and Infrastructure). This emphasis on collaborative endeavors echoes the ethos of sustainable development, wherein collective action is paramount for meaningful progress. Furthermore, the integration of AI in healthcare, as reviewed by Ali et al., emerges as a focal point within this discourse. Their systematic review highlights the myriad benefits of AI in medical processes, aligning with the objectives of SDG 3. Conversely, Sun et al. delve into the intricate relationships among knowledge management, blockchain adoption, supply chain visibility, and sustainable organizational performance in Chinese manufacturing. These findings contribute valuable insights for SDGs 9 and 12, providing pathways toward enhanced efficiency and environmental stewardship.

This topic focuses on green technological innovation and explores themes such as innovation performance, urban carbon emissions, and sustainable business practices. Key studies highlight blockchain integration in supply chains for environmental protection, AI applications in healthcare for enhanced medical processes, and social capital in fostering collaborative innovation. These themes contribute to advancing green technology by promoting sustainable development, environmental stewardship, and technological resilience. Through interdisciplinary research, this topic underscores the crucial role of green technology in achieving sustainability and societal well-being, which aligns with several SDGs, including SDG 9, SDG 12, and SDG 3.

*Entrepreneurial innovation*

Entrepreneurial innovation emerges as a focal point within the scholarly discourse in *JIK*, capturing the dynamism and ingenuity inherent in entrepreneurial endeavors. Through a diverse array of studies, this discourse highlights the intricate interplay between innovation performance, innovation capability, firm innovation, entrepreneurial innovativeness, innovation practices, organizational innovation, and innovation quality, shedding light on their implications for sustainable development. Collectively, these studies illuminate the multifaceted nature of entrepreneurial innovation while

distinctly contributing to the broader sustainability goals encapsulated in SDG 9. Through interdisciplinary research and collaborative efforts, stakeholders can harness the transformative potential of entrepreneurship to drive innovation, foster economic growth, and advance sustainable development agendas.

For example, Ode & Ayavoo's empirical investigation into knowledge management practices and firm innovation in developing country service firms underscores the pivotal role of knowledge application as a mediator. Their findings contribute significantly to SDG 9 (Industry, Innovation, and Infrastructure), emphasizing the importance of leveraging knowledge assets to drive innovation in emerging economies. Similarly, by offering valuable insights for understanding innovation, Saunila's systematic review addresses the lacuna in innovation capability reviews for small businesses. By delineating precepts for enhancing innovation capability, their work aligns with the objectives of SDG 9, fostering an ecosystem conducive to entrepreneurial innovation and growth. Furthermore, Taques et al.'s theoretical advancements in organizational innovation indicators enrich our understanding of innovation dynamics within firms. Their contributions not only deepen scholarly discourse but also align with the broader objectives of SDG 9, nurturing a culture of innovation and creativity across organizational boundaries. Moreover, Chaithanapat et al.'s investigation into customer knowledge management, knowledge-oriented leadership, and innovation quality in Thai SMEs offers nuanced insights into the intricate dynamics within these enterprises. By elucidating the determinants of innovation quality, their research contributes to SDG 9 while shedding light on sustainable practices within the SME sector. On the other hand, Khan et al.'s exploration of consumer resistance to green innovation products underscores the imperative of sustainable industry practices in addressing environmental challenges. Their findings emphasize the need for innovation-driven solutions to foster sustainable development, aligning with the objectives of SDG 9 and beyond.

This topic dives into innovation management, offering a roadmap for businesses and policymakers. The above studies explore how knowledge management, understanding innovation capabilities, and fostering a culture of creativity can drive sustainable growth. This research helps businesses improve innovation practices, while policymakers can use these insights to build ecosystems that support entrepreneurial innovation and economic development, ultimately aligning with SDG 9.

*Economy 4.0*

Economy 4.0 represents a pivotal shift toward a digital-centric economic landscape, marked by the pervasive influence of the digital industry and digital economy integration. Within this paradigm, a collection of studies from *JIK* offer nuanced insights into the transformative forces at play, each contributing to the broader discourse on the 'digital industry,' 'digital economy,' 'digital economy transformation,' 'digital economy integration,' 'risks of the digital economy,' 'workforce in digital technologies,' 'future workforce,' 'digital transformation enterprise,' and 'digital technology.' Together, these studies provide a comprehensive understanding of the transformative forces of Economy 4.0, illuminating the potential for digital technologies to foster sustainable industry practices and economic growth. Through interdisciplinary research and strategic policymaking, stakeholders can navigate the complexities of the digital economy while advancing progress toward the SDGs.

For example, in investigating the impact of digital transformation on enterprise performance, Peng & Tao underscore its significant role in driving innovation performance and fostering resilience. Their findings, aligning with SDG 9 (Industry, Innovation, and Infrastructure), highlight the transformative potential of digital technologies in reshaping traditional business models and enhancing productivity. Similarly, examining the relationship between the digital economy and the labor share, Chen et al. shed light on the dynamics of employment and economic growth in the digital age. By elucidating countervailing forces at play, their research contributes valuable insights to SDG 8 (Decent Work and Economic Growth), emphasizing the importance of inclusive economic policies amidst technological disruption. Moreover, Li et al. (2023) delve into collaborative innovation practices in public higher education during Industry 4.0, emphasizing the identification and evaluation of challenges. Their work, aligning with SDG 9, underscores the importance of knowledge exchange and partnership-building in fostering a culture of innovation and entrepreneurship. By further exploring the effects of robotization, digitization, and innovation quality on productivity and employment, Ballestar et al. elucidate the complexities of digital transformation within firms. By addressing both SDG 9 and SDG 8, their research highlights the need for adaptive strategies to harness the opportunities presented by Economy 4.0 while mitigating potential risks. Conversely, Liu et al.'s investigation into the dynamic mechanism of regional integration in promoting corporate innovation underscores the synergistic relationship between regional cooperation and innovation-driven strategies. Their findings, aligned with SDG 9, emphasize the role of collaborative networks in driving sustainable industry practices and economic growth.

This topic addresses the challenges and opportunities of digital transformation by exploring its impact on enterprise performance, employment dynamics, and regional innovation. The above studies highlight the transformative potential of digital technologies in reshaping business models and enhancing productivity while also acknowledging the risks of technological disruption. By examining factors such as digital economy integration and collaborative innovation, this research provides valuable insights into adapting to technological advancements, fostering resilience, promoting inclusive economic growth, and aligning with SDG 9 and SDG 8.

*Effectual innovation*

The examination of effectual innovation within *JIK* reveals a diverse array of studies intricately linked to specific SDGs. Each study sheds light on various dimensions of innovation, such as the "innovation effect," "funding innovation business," "technological innovation capability," "enterprise innovation," "corporate innovation efficiency," "industrial investment," and "technology innovation," and offers valuable insights into the intersection of technological advancement and sustainable development. Jointly, these studies offer nuanced perspectives on fostering effectual innovation for sustainable development, emphasizing the importance of supportive policies, inclusive financial systems, and sustainable urban development strategies. Through interdisciplinary collaboration and strategic policymaking, stakeholders can harness the transformative potential of innovation to advance progress toward the SDGs and create a more sustainable and inclusive future.

For example, with a keen focus on the moderating effect of accounting information quality, Zuo & Lin scrutinize the impact of government R&D subsidies on fostering innovation within firms. Their findings, which resonate with SDG 9 (Industry, Innovation and Infrastructure), underscore the importance of supportive policies in nurturing enterprise innovation. Similarly, Xiong et al. delve into the impact of Digital Inclusive Finance on corporate innovation, contributing to both SDGs 9 and 8 (Decent Work and Economic Growth). Their research highlights the transformative potential of inclusive financial systems in fostering technological innovation and promoting inclusive economic growth. Furthermore, by examining the role of high-quality development in improving total factor productivity at the city level, Xu & Deng offer insights into SDGs 8 and 11 (Decent Work and Economic Growth; Sustainable Cities and Communities). Their exploration underscores the importance of sustainable urban development in fostering enterprise innovation and driving economic prosperity. Shao & Wang, on the other hand, investigated the impact of government subsidies on enterprise innovation,

emphasizing the moderating role of entrepreneurial spirit. These findings contribute to SDG 9 by highlighting the importance of fostering a conducive environment for corporate innovation through supportive policies and entrepreneurial initiatives. While exploring the technological innovation effect of capital goods imports on regional development quality, Liao et al. provide additional insights into SDG 11. Their research underscores the interconnectedness between international trade, technological advancement, and sustainable urban development.

*Collaborative economy*

Within various studies featured in *JIK*, the exploration of the collaborative economy sheds light on its potential implications for the SDGs. These studies offer nuanced insights into the role of collaborative consumption models in driving positive outcomes across multiple SDGs, such as in 'sharing economy,' 'sharing economy sustainability,' 'sharing economy efficiency,' 'sharing economy benefits,' 'sharing economy values,' 'sharing economy achievement,' 'sharing economy impact,' and 'sustainable economy.'

For example, emphasizing the positive impact of the sharing economy on sustainable economic development and energy efficiency, Dabbous and Tarhini's (2021) research aligns with SDG 7 (Affordable and Clean Energy). Their findings underscore the transformative potential of collaborative consumption models in mitigating energy consumption and promoting sustainable economic practices. Expanding on this notion, Chien's research in China demonstrates the positive links between sharing economy benefits, improved energy efficiency, and SDGs 7 and 9 (Affordable and Clean Energy; Industry, Innovation, and Infrastructure). By elucidating the synergies between the sharing economy and sustainable development objectives, Chien's work provides valuable insights into the role of collaborative consumption in advancing energy efficiency initiatives. Similarly, Zhang et al. delved into the Asian context, revealing positive associations between the sharing economy, energy efficiency, and sustainable economic development, thus contributing to SDGs 8 and 7 (Decent Work and Economic Growth; Affordable and Clean Energy). Their findings underscore the potential of collaborative consumption models to drive positive economic and environmental outcomes in the region. Examining the moderating role of income inequality in the impact of the sharing economy, Hussain et al.'s (2023) research aligns with SDG 10 (reduced inequalities). By assessing the distributional implications of collaborative consumption, their work sheds light on the socioeconomic dynamics within sharing economy ecosystems. Furthermore, by quantitatively assessing the impacts of the sharing economy in China, Zhu et al. highlighted its positive contributions to sustainable development and energy efficiency, thereby supporting SDGs 7 and 8. Their findings underscore the importance of collaborative consumption in driving positive environmental and economic outcomes at both local and global scales. Thus, studies representing this cluster provide valuable insights into the collaborative economy's potential to drive positive outcomes across multiple SDGs, emphasizing its role in promoting sustainable economic development and energy efficiency and reducing inequalities. Through interdisciplinary research and strategic policymaking, stakeholders can leverage the collaborative economy to advance progress toward a more sustainable and inclusive future.

*Green innovation*

The exploration of green innovation within *JIK* studies offers valuable insights into how companies can harmonize economic success with sustainable practices. These studies underscore the multifaceted nature of green innovation, such as 'enterprises' green innovation,' 'green innovation practices,' 'green technological innovation,' 'substantive green innovation,' 'green process innovation,' 'green product innovations,' and 'symbolic green innovation,' and its potential positive contributions to both economic success and sustainable development.

For instance, Rauter et al. highlight the importance of diverse open innovation partners, including NGOs, in improving economic and sustainability innovation performance, thus aligning with SDG 9 (Industry, Innovation, and Infrastructure). Their research emphasized the role of collaborative approaches in fostering green innovation practices and driving progress toward sustainable development objectives. Shahzad et al. (2022) offer a model grounded in the unified theory of acceptance and use of technology (UTAUT) to drive green innovation adoption, contributing to SDGs 9 and 3 (Industry, Innovation and Infrastructure; Good Health and Well Being). By elucidating the factors influencing the adoption of green technologies, their work provides valuable insights into the mechanisms underlying sustainable innovation processes. Wang et al. (2022) propose a risk-based optimal bidding strategy for energy aggregators in green energy markets, addressing challenges in managing green energies and promoting SDG 7 (Affordable and Clean Energy). Their research underscores the importance of strategic planning and risk management in advancing green technological innovation and fostering the transition toward renewable energy sources. Xie et al. highlight a U-shaped relationship between green process innovation and financial performance, indicating a nuanced impact moderated by green social capital and tacit green needs, thus contributing to SDG 9. These findings underscore the need for organizations to consider social and environmental factors in innovation strategies to maximize positive outcomes. Finally, Ilg explores the potential of a virtuous circle in the construction industry, emphasizing that green product innovations can strengthen efficiency and core competencies, aligning with SDG 9. Their research underscores the transformative potential of green technologies in enhancing competitiveness and driving sustainable development. Thus, the articles representing this semantic cluster underscore the importance of green innovation in driving economic success while advancing progress toward sustainable development goals. By embracing green innovation practices and fostering collaboration across sectors, organizations can harness the transformative potential of green technologies to build a more sustainable and resilient future.

*SDG focus of major topics*

Fig. 5 provides an insightful mapping of the SDG focus across six distinct topics extracted from the *JIK* articles analyzed. All the themes, namely, the EcoTech Revolution, Entrepreneurial Innovation, Economy 4.0, Effectual Innovation, Collaborative Economy, and Green Innovation, correlate with specific SDGs. Noteworthy patterns include a strong emphasis on SDG 9 (Industry, Innovation, and Infrastructure) across all themes, with the EcoTech Revolution and Entrepreneurial Innovation. Additionally, SDG 8 (Decent Work and Economic Growth) is prominently addressed in the themes of the EcoTech Revolution, Entrepreneurial Innovation, and Economy 4.0. SDG 7 (Affordable and Clean Energy) is a key focus within the Collaborative Economy theme. Responsible consumption and production (SDG 12) is distinctly addressed in the themes of the EcoTech Revolution and Collaborative Economy. These findings underscore the alignment of *JIK* with specific SDGs, providing valuable insights into the thematic distribution of research contributions toward achieving sustainable development goals.

The EcoTech Revolution delves into the intersection of technological innovation, sustainability, and societal well-being. Aslam et al.'s exploration of blockchain aligns with SDG 12, emphasizing responsible consumption and production. López-Cabarcos et al.'s study on the gaming industry during the COVID-19 pandemic aligns with SDG 3, which focuses on good health and well-being. Al-Omoush et al.'s work in Jordan contributed to SDG 9, emphasizing collaborative innovation and organizational sustainability. The systematic review on AI

in healthcare by Ali et al. connects with SDG 3. Sun et al.'s investigation into knowledge management, blockchain adoption, and sustainable organizational performance in Chinese manufacturing provides insights for SDGs 9 and 12. Together, these studies underscore the dynamic landscape of the EcoTech Revolution and its impact on sustainability and societal well-being.

Conversely, entrepreneurial innovation, as explored in *JIK*, has emerged as a catalyst for sustainable development, particularly in terms of SDG 9. Ode & Ayavoo's study established a positive relationship between knowledge management practices and firm innovation, contributing to SDG 9. Saunila's systematic review addresses the innovation capabilities of small businesses, providing ideas for better understanding innovation in this context and aligning with SDG 9. Taques et al.'s theoretical perspectives on organizational innovation indicators contribute to a comprehensive understanding of innovation in firms, supporting SDG 9. Chaithanapat et al.'s investigation into customer knowledge management in Thai SMEs sheds light on intricate dynamics within enterprises while adding to SDG 9. Khan et al.'s exploration of consumer resistance to green innovation products directly addresses sustainable industry practices and aligns with SDG 9. Collectively, these studies highlight how entrepreneurial innovation aligns with SDG 9 goals and contributes to broader sustainability goals.

Within the context of Economy 4.0, *JIK* presents a collection of studies contributing diverse insights and connections to specific SDGs. Peng & Tao's investigation into the impact of digital transformation on enterprise performance aligns with SDG 9. Chen et al.'s examination of the relationship between the digital economy and the labor share provides valuable insights into SDG 8. Li et al.'s (2023) study on collaborative innovation systems in public higher education during Industry 4.0 connects with SDG 9. Ballestar et al.'s exploration of the effects of robotization, digitization, and innovation on productivity and employment contributes to SDGs 9 and 8. Liu et al.'s research on the dynamic mechanism of regional integration in promoting corporate innovation aligns with SDG 9. Collectively, these studies provide nuanced perspectives on the transformative forces of Economy 4.0, contributing to sustainable industry practices and economic growth.

Effectual innovation, as explored in *JIK*, is a critical theme connected to specific SDGs. Zuo & Lin's study on government R&D subsidies aligns with SDG 9, emphasizing the role of subsidies in fostering innovation within firms. Xiong et al.'s exploration of the impact of digital inclusive finance on corporate innovation contributes to both SDGs 9 and 8. Xu & Deng's examination of high-quality development at the city level offers insights into SDGs 8 and 11. Shao & Wang's investigation into the impact of government subsidies on enterprise innovation aligns with SDG 9. Liao et al.'s exploration of the technological innovation effect of capital goods imports on regional development quality provides insights into SDG 11. Collectively, these studies offer nuanced perspectives on fostering effectual innovation for sustainable development.

The Collaborative Economy, as explored in *JIK*, sheds light on its potential implications for various SDGs. Dabbous & Tarhini emphasized the positive impact of the sharing economy on sustainable economic development and energy efficiency, aligning with SDG 7. Chien's research in China demonstrated positive links between sharing economy benefits, improved energy efficiency, and SDGs 7 and 9. The exploration of Zhang et al. in the Asian context revealed positive associations between the sharing economy, energy efficiency, and sustainable economic development, contributing to SDGs 8 and 7. Hussain et al.'s examination of the moderating role of income inequality in the impact of the sharing economy aligns with SDG 10. Zhu et al.'s quantitative assessment of the impact of the sharing economy in China highlights positive contributions to sustainable development and energy efficiency, supporting SDGs 7 and 8. Collectively, these studies provide nuanced insights into the collaborative economy's potential to drive positive outcomes across multiple SDGs.

Finally, *JIK*'s contributions to green innovation offer valuable insights into aligning economic success with sustainable practices, addressing various SDGs. Rauter et al.'s emphasis on diverse open innovation partners, including NGOs, aligns with SDG 9. Shahzad et al.'s model, grounded in the unified theory of acceptance and use of technology (UTAUT), contributes to SDGs 9 and 3, which drive green innovation adoption. Wang et al.'s proposal of a risk-based optimal bidding strategy for energy aggregators in green energy markets addresses challenges in managing green energies and promotes SDG 7. Xie et al.'s highlighting of a U-shaped relationship between green process innovation and financial performance, moderated by green social capital and tacit green needs, contributes to SDG 9. Ilg's exploration of the potential of a virtuous circle in the construction industry aligns with SDG 9. Collectively, these studies underscore the multifaceted nature of green innovation and its potential positive contributions to both economic success and sustainable development.

### *Research hotspots*

Fig. 6 maps the major topics across the leading authors' affiliated countries to decipher RQ4. Notably, authors' affiliating countries from both the Global North and Global South make significant contributions to condense *JIK*'s efforts to achieve the SDGs. *JIK* authors affiliated with institutions based in China have emerged as leading contributors, particularly in terms of the theme of the EcoTech Revolution, with 34 articles. Spain has demonstrated substantial engagement in the EcoTech Revolution and Entrepreneurial Innovation, leading in the former with 16 articles. Pakistan actively participates in the EcoTech Revolution, entrepreneurial innovation, and the Collaborative Economy, with a focus on the former with four articles. With five articles, India predominantly contributed to the EcoTech Revolution and Economy 4.0, holding a notable position in the former. Germany shows diverse involvement in the EcoTech Revolution, Entrepreneurial Innovation, and Economy 4.0, notably contributing to the EcoTech Revolution theme, with two articles. This summary underscores the diverse and impactful contributions from both the Global North and Global South in advancing knowledge and innovation aligned with the SDGs.

## Discussion

The findings related to *JIK* and the alignment with SDGs highlighted a number of areas of interest that serve to offer an enhanced understanding of the focus on the UN Goals within the *JIK* corpus of publications.

The substantial focus on SDG 9, supported by a high volume of publications and citations, highlights its pivotal role in advancing research on innovations crucial for sustainable development and SDG alignment within *JIK*. The application of advanced analytic techniques such as BERTopic modeling and co-citation mapping has unveiled *JIK*'s dynamic engagement with sustainability themes, offering a nuanced perspective on its research contributions. This methodological innovation enriches the academic discourse by demonstrating the effectiveness of combining BERTopic modeling and co-citation mapping to uncover nuanced understandings of SDG-related topics (Grootendorst, 2022). The journal's focus is further evidenced by the integration of themes such as technological and green innovations, which resonate with global agendas aimed at technological and infrastructural advancement for sustainability. SDG 8 (Decent Work and Economic Growth) and SDG 4 (Quality Education) are also well represented, reflecting the journal's broader interest in the economic and educational aspects of sustainability. However, there is a notable opportunity for *JIK* to extend its focus to less represented SDGs, such as gender equality (SDG 5), life on land (SDG 15), and peace, justice,

and strong Institutions (SDG 16), which signals a potential gap in addressing some of the more foundational aspects of societal and environmental sustainability, which could be critical in driving holistic and inclusive progress. By promoting an interdisciplinary approach and focusing on underexplored SDGs, *JIK* can increase its contribution to global sustainability efforts, offering valuable insights for both the academic community and policymakers.

The interdisciplinary nature of *JIK* research is highlighted through co-citation analysis and thematic exploration of publications, which demonstrate robust engagement with a range of SDGs. Unlike broader assessments in the literature, this approach highlights *JIK*'s unique position in advancing sustainability research through an integrative, forward-looking agenda (Barbier & Burgess, 2017). The diverse topics of the EcoTech Revolution, Entrepreneurial Innovation, Economy 4.0, Effectual Innovation, Collaborative Economy, and Green Innovation highlight the journal's interdisciplinary approach, highlighting the interconnectedness of industry, innovation, environmental stewardship, and sustainable development. The predominant research themes within *JIK* include technological and green innovations, entrepreneurship, the digital economy (Economy 4.0), collaborative economies, and the educational underpinnings of sustainable development. These themes, represented by terms such as 'Industry 4.0,' 'green innovation,' 'entrepreneurship,' and 'digital transformation,' signify the journal's focus areas and their relevance to advancing the SDGs. Emerging research hotspots identified through bibliometric modeling and geographic analysis of authors' affiliations reveal a growing interest in the EcoTech Revolution, Entrepreneurial Innovation, and Economy 4.0, with significant contributions from both the Global North and South. The geographical diversity of contributions underscores *JIK*'s global impact and enriches the sustainability discourse with a broad spectrum of perspectives, advocating for a research agenda that is responsive to the multifaceted nature of global sustainability challenges (Le Blanc, 2015). These hotspots align with the SDGs' focus on innovation, economic growth, and education but also suggest a burgeoning interest in energy efficiency, climate action, and responsible consumption and production. The analysis underscores the importance of collaborative and cross-national research efforts in addressing global sustainability challenges. This aspect of *JIK*'s contributions emphasizes its role in fostering a richer, more inclusive dialog across regions, advocating for a research agenda that anticipates future sustainability trends while responding to current challenges (Sachs et al., 2019).

By encouraging submissions that focus on gender equality and environmental conservation, *JIK* can fill these gaps and contribute to a more comprehensive understanding of sustainability. Moreover, *JIK*'s thematic focus on technological and green innovations, digital transformation, and entrepreneurial activities aligns well with global sustainability goals. However, expanding research to include underrepresented SDGs will enhance the journal's impact and ensure a more balanced approach to addressing global sustainability challenges. By strategically promoting research in these areas, *JIK* can strengthen its role in fostering interdisciplinary solutions and driving holistic progress toward achieving the SDGs.

### *Theoretical contributions and implications*

The integration of BERTopic modeling and co-citation mapping in analyzing the contributions of *JIK* to SDGs signifies a novel methodological approach in the landscape of sustainability research. This methodological approach refines the analysis by enhancing thematic clarity and enabling a detailed exploration of sustainability topics. The BERTopic method involves the extraction of coherent topics while preserving essential terms that significantly improve the clarity and relevance of the topics identified (Grootendorst, 2022). The analysis of sustainability-aligned research within *JIK* offers a new perspective on the evolution and significant range of research articles within *JIK*. The application of co-citation mapping and BERTopic modeling to develop insights into the history of publications focused on SDGs offers unique insight into the sustainability-related research published in *JIK*.

This study's methodological framework offers several theoretical contributions to the field of sustainability and innovation research. First, by employing BERTopic modeling, the research underscores the potential of using state-of-the-art topic modeling techniques to dissect and categorize extensive bodies of literature. This approach facilitates a more granular understanding of the thematic evolution within specific research domains, highlighting the dynamic interplay between innovation, knowledge, and sustainability goals over time. Second, the use of co-citation mapping as a tool to visualize and analyze the interconnections among the SDGs within *JIK* publications introduces a novel perspective on the interdisciplinary nature of sustainability research. This technique illuminates the synergistic relationships and thematic clusters that emerge from the journal's engagement with the SDGs, thereby contributing to the broader discourse on integrated sustainability research.

Furthermore, the findings derived from this methodological approach have implications for theory, practice, and policy formulation. Theoretically, this study enriches the academic discourse on how innovation and knowledge dissemination within scholarly journals can be aligned with global sustainability agendas. It provides empirical evidence of the thematic areas and SDG focuses that have dominated the research landscape in *JIK*, offering insights into potential future directions for sustainability research. For practitioners and policymakers, the detailed thematic mapping and SDG alignment presented in this study can serve as a valuable resource for identifying research gaps, setting priorities, and formulating strategies that address the multifaceted challenges of sustainable development.

### *Implications for practice and policy*

Our analysis of the *JIK* data reveals several implications that are relevant to editors, authors, practice, and policy.

**Strategic expansion and interdisciplinary SDG research collaboration -** The implications of our analysis illustrate the necessity for a strategic reorientation toward strengthening and enhancing the interdisciplinary research agenda within the *JIK* to a broader spectrum of SDGs. *JIK* should articulate specific themes within the targeted calls for papers to ensure clarity on the underrepresented SDGs and subtargets within the SDGs. This would guide potential contributors toward precise topics of interest and encourage submissions that directly address these areas. *JIK*'s commendable focus on SDG 9 presents an opportunity to expand its research agenda to include underrepresented SDGs, such as gender equality (SDG 5); life on land (SDG 15); and peace, justice, and strong institutions (SDG 16). Incorporating a wider array of SDGs could offer a more comprehensive exploration of sustainability issues, enhancing the journal's role in addressing global challenges.

**Establishing a structured framework for collaboration between *JIK* and sustainability experts** could include the formation of advisory panels and special issue editors comprising experts from diverse disciplines related to sustainability to guide the journal's strategic direction and thematic focus. Recognizing the critical role of interdisciplinary research in addressing the complexity of the SDGs, *JIK* could deepen the integration of diverse disciplines. This will further enrich the journal's contribution to global sustainability discourse and set a precedent for academic publications striving for impactful research. Our analysis reveals a need for enhanced interdisciplinary approaches to promote interdisciplinary research. *JIK* could organize special issues that encourage collaboration across various academic domains, thereby fostering innovative approaches to sustainability challenges. This approach is essential for understanding

the interconnectedness of sustainability issues and for devising innovative solutions.

**Enhancing research impact and inclusivity -** To better inform policy, *JIK* should actively promote emerging SDG-aligned research areas. *JIK* can establish thematic research clusters or networks to promote dialog and collaboration among researchers, thus enhancing the journal's role in identifying and developing new areas of inquiry. The identification of emerging research hotspots within *JIK*'s scope underscores the dynamic nature of sustainability research. Capitalizing on these areas can guide future research priorities and bridge gaps in sustainability discourse. A greater focus on global collaboration and inclusivity can also influence policy. This can be achieved by implementing mentorship programs and research grants that can foster inclusivity in partnerships between researchers from different regions, promoting equity and broadening the spectrum of perspectives on sustainability. The global contributions to *JIK*'s sustainability discourse highlight the importance of incorporating diverse perspectives. Strengthening collaboration between researchers from various geographical backgrounds can enhance *JIK*'s inclusivity and global impact.

**A holistic approach to SDG research** - The analysis of *JIK*'s contributions to the SDGs reveals the critical role of academic journals in advancing sustainability research. By adopting a more inclusive, interdisciplinary, and globally collaborative research agenda, journals such as *JIK* can significantly enhance their impact on the pursuit of global 2030 goals. This requires a concerted effort from editors, authors, practitioners, and policymakers to embrace a holistic approach to sustainability that recognizes the interconnectedness of social, economic, and environmental challenges. Through strategic initiatives, funding policies, and collaborative platforms, the academic community can contribute to a more sustainable future that addresses the urgent needs of our planet and its inhabitants.

### *Implications for practice*

Practitioners are encouraged to adopt an SDG-aligned research agenda that fosters innovation and addresses the multifaceted challenges of sustainability. By broadening the focus to include underrepresented SDGs, practitioners can contribute to filling critical research gaps and advancing knowledge in areas that are pivotal for achieving comprehensive sustainability. The collaboration across various academic domains, as found by this research, serves as a model for practitioners to pursue interdisciplinary projects that leverage diverse expertise for innovative solutions to sustainability challenges. Furthermore, the emphasis on emerging research areas and the establishment of thematic research clusters encourage practitioners to engage in cutting-edge research that addresses timely and relevant sustainability issues, thereby enhancing the applicability and impact of their work.

### *Implications for policy*

From a policy perspective, the recommendations to actively promote SDG-aligned research and foster global collaboration have profound implications. External funding sources and institutional priorities often influence research agendas, potentially limiting practitioners' ability to shift focus. Policies that support research funding, partnerships, and initiatives aligned with the SDGs can significantly accelerate progress toward sustainability goals. The call for inclusivity and diversity in research collaboration highlights the need for policies that facilitate international cooperation and knowledge exchange among researchers from different regions and backgrounds. This can be supported through policies that provide funding for international research projects, create platforms for knowledge sharing, and establish frameworks for collaborative research that crosses disciplinary and geographical boundaries. Moreover, the identification of emerging research hotspots within *JIK* publications signals important areas for policy focus and investment. By aligning research funding priorities with these emerging areas, policymakers can ensure that resources are directed toward research that has the potential to make significant contributions to sustainability challenges. The thematic research clusters found from *JIK* research can serve as a policy tool for fostering interdisciplinary research and innovation ecosystems that are responsive to the evolving needs of sustainable development.

### *Limitations and future research directions*

Our research introduces a novel approach to correlating *JIK* publications with SDGs, although it has limitations. The methodological blend of thematic clustering and BERTopic modeling provides a detailed analysis but may not capture the field's full richness and complexity—risking oversimplification. Additionally, the subjective interpretation of themes and topics, despite the use of advanced models, may introduce bias or misinterpretation, highlighting the need for expert validation (Merton, 1988; McCain, 2014). Our study's dependence on citation analysis to evaluate publication impact inherits the method's flaws, such as affirmative citation bias, potentially skewing perceptions toward preferred ideas and sidelining meaningful critique or dissent (Letrud & Hernes, 2019). The presence of various SDG mapping efforts could also lead to discrepancies in assessing journals, institutions, and publications (Raman et al., 2023), emphasizing the demand for uniform methodologies and greater collaboration. Despite these hurdles, our study provides valuable insight by linking *JIK* publications to the SDGs, offering meaningful contributions to the discipline.

To further enhance its impact, *JIK*'s editorial team should consider several specific recommendations. First, *JIK* can issue special calls for papers that focus on underrepresented SDGs, such as SDG 5 (Gender Equality) and SDG 15 (Life on Land). This approach will help diversify the research agenda and address current gaps, ensuring more comprehensive coverage of sustainability issues. Additionally, publishing special issues that highlight interdisciplinary research connecting multiple SDGs can promote a holistic approach to tackling complex sustainability challenges. Examining practices from other top sustainability-related journals can provide valuable examples. These journals frequently publish special issues on specific SDGs and invite submissions for thematic issues on interdisciplinary approaches to sustainable development. By adopting similar practices, *JIK* can encourage targeted research contributions and highlight the importance of interdisciplinary collaboration.

Drawing from our analysis of the findings from the *JIK* publication, policy propositions should advocate for further SDGs, emphasizing the importance of a focus on sustainability, ethics, and global collaboration to ensure that technology acts as a catalyst for achieving the SDGs. This broad engagement across a spectrum of SDGs underscores *JIK*'s role in promoting interdisciplinary research that bridges various facets of sustainability. To further its impact, *JIK* is encouraged to explore the interconnections between these SDGs, fostering integrated solutions to complex sustainability challenges. The journal has established itself as a pivotal platform for advancing research aligned with SDGs, notably SDG 9 (Industry, Innovation, and Infrastructure). However, to amplify its impact and breadth of contribution, *JIK* can strategically broaden its focus and adopt innovative approaches that address the multifaceted nature of sustainability challenges.

## Conclusions

*JIK*'s interdisciplinary research significantly contributes to advancing the SDGs, particularly in areas related to industry, innovation, and infrastructure. The use of advanced techniques such as co-citation mapping and BERTopic modeling has allowed this study to

systematically identify and align *JIK*'s research with specific SDGs. Co-citation mapping revealed interdisciplinary research patterns, whereas BERTopic modeling highlighted thematic focuses and topic evolution. The emphasis on technological and green innovation themes, alongside the journal's engagement with diverse SDGs, echoes the global urgency in fostering sustainable development through knowledge and innovation. The analysis points to opportunities for *JIK* to broaden its research agenda to encompass a wider array of sustainability goals, ensuring a more inclusive and comprehensive approach to addressing global challenges. By incorporating a wider spectrum of SDGs, especially those less represented, such as Gender Equality (SDG 5), Life on Land (SDG 15), and Peace, Justice, and Strong Institutions (SDG 16), *JIK* can significantly enhance its contribution to addressing global sustainability challenges. Emphasizing interdisciplinary research and global collaboration, *JIK* has the opportunity to set a standard for academic journals, illustrating how scholarly platforms can effectively contribute to the sustainability discourse. To achieve this, *JIK* should focus on actionable strategies that facilitate this expansion and collaboration, be mindful of practical limitations, and aim to leverage its unique position to foster impactful research.

The insights derived from examining the *Journal of Innovation & Knowledge* offer valuable lessons for academic journals at large. To amplify their impact on sustainability research, journals should consider expanding their thematic scope to encompass additional SDGs, particularly prioritizing those goals that are underrepresented in their current research outputs. Embracing an interdisciplinary approach and fostering global research collaboration can further enhance the role of journals in facilitating comprehensive and impactful sustainability studies. Journals can serve as crucial platforms for advancing the sustainability agenda by encouraging contributions that bridge disciplinary divides and by promoting inclusive research practices that integrate diverse perspectives. Implementing these strategies requires careful consideration of each journal's specific context and constraints, with a focus on innovative solutions to navigate these challenges effectively.

## Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

## CRediT authorship contribution statement

**Raghu Raman:** Writing – review & editing, Writing – original draft, Visualization, Project administration, Methodology, Data curation, Conceptualization. **Debidutta Pattnaik:** Writing – review & editing, Writing – original draft, Visualization, Conceptualization. **Krishnashree Achuthan:** Writing – review & editing, Writing – original draft. **Laurie Hughes:** Writing – review & editing, Writing – original draft. **Yogesh K Dwivedi:** Writing – review & editing, Writing – original draft, Supervision, Methodology. **Maneesha Vinodini Ramesh:** Writing – review & editing, Writing – original draft. **Prema Nedungadi:** Writing – review & editing, Writing – original draft, Visualization, Methodology, Investigation, Conceptualization.

## Data availability statement

Data associated with our study is available as supplementary file

## Funding Statement

This research received no specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

## Supplementary materials

Supplementary material associated with this article can be found, in the online version, at doi:10.1016/j.jik.2024.100538.

## References

Aslam, J., Saleem, A., Khan, N. T., & Kim, Y. B. (2021). Factors influencing blockchain adoption in supply chain management practices: A study based on the oil industry. *Journal of Innovation & Knowledge, 6*(2), 124–134.

Barbier, E. B., & Burgess, J. C. (2017). The Sustainable Development Goals and the systems approach to sustainability. *Economics, 11*,(1) 20170028.

Benavides-Espinosa, M. M., Ribeiro-Soriano, D., & Gieure, C. (2024). How can agrifood businesses improve their performance? The role of digital transformation. *British Food Journal*.

Le Blanc, D. (May 2015). "Toward integration at last? The sustainable development goals as a network of targets. *Sustainable Development, 23*(3), 176–187. doi:10.1002/SD.1582.

Dabbous, A., & Tarhini, A. (2021). Does sharing economy promote sustainable economic development and energy efficiency? Evidence from OECD countries. *Journal of Innovation & Knowledge, 6*(1), 58–68.

Duan, Y., Edwards, J. S., & Dwivedi, Y. K. (2019). Artificial intelligence for decision making in the era of Big Data–evolution, challenges and research agenda. *International journal of information management, 48*, 63–71.

Dwivedi, Y. K., Hughes, L., Ismagilova, E., Aarts, G., Coombs, C., Crick, T., Duan, Y., Dwivedi, R., Edwards, J., Eirug, A., & Galanos, V. (2021). Artificial Intelligence (AI): Multidisciplinary perspectives on emerging challenges, opportunities, and agenda for research, practice and policy. *International Journal of Information Management, 57*, 101994.

Allison, E. H., et al. (2016). Policy: Map the interactions between sustainable development goals. *Nature, 534*, 7607. doi:10.1038/534320a vol. 534, no. 7607, pp. 320–322, Jun. 2016.

Ferasso, M., Beliaeva, T., Kraus, S., Clauss, T., & Ribeiro-Soriano, D. (2020). Circular economy business models: The state of research and avenues ahead. *Business Strategy and the Environment, 29*, 3006–3024.

Griggs, D., Stafford-Smith, M., Gaffney, O., Rockström, J., Öhman, M. C., Shyamsundar, P., Steffen, W., Glaser, G., Kanie, N., & Noble, I. (2013). Sustainable development goals for people and planet. *Nature, 495*(7441), 305–307.

Grootendorst, M. (2022). *BERTopic: Neural topic modeling with a class-based tf-idf procedure* (arXiv:2203.05794). arXiv. https://doi.org/10.48550/arXiv.2203.05794

Gomes, L., da Silva Torres, R., & Côrtes, M. L. (2023). BERT- and TF-IDF-based feature extraction for long-lived bug prediction in FLOSS: A comparative study. *Information and Software Technology, 160*, 107217.

Gupta, J., & Vegelin, C. (2016). Sustainable development goals and inclusive development. *International Environmental Agreements: Politics, Law and Economics, 16*(3), 433–448.

Hussain, H. I., Kamarudin, F., Anwar, N. A. M., Ali, M., Turner, J. J., & Somasundram, S. A. (2023). Does income inequality influence the role of a sharing economy in promoting sustainable economic growth? Fresh evidence from emerging markets. *Journal of Innovation & Knowledge, 8*,(2) 100348.

Kraus, S., McDowell, W. C., Ribeiro-Soriano, D., & Rodríguez-García, M. (2021). The role of innovation and knowledge for entrepreneurship and regional development. *Entrepreneurship & Regional Development, 33*(3–4), 175–184.

Letrud, K., & Hernes, S. (2019). Affirmative citation bias in scientific myth debunking: A three-in-one case study. *PloS one, 14*,(9) e0222213.

Li, X., Wu, T., Zhang, H. J., & Yang, D. Y. (2023). National innovation systems and the achievement of sustainable development goals: Effect of knowledge-based dynamic capability. *Journal of Innovation & Knowledge, 8*,(1) 100310.

McCain, K. W. (2014). Obliteration by incorporation. *Beyond bibliometrics: Harnessing multidimensional indicators of scholarly impact*, 129–149.

McInnes, L., Healy, J., & Melville, J. (2020). *UMAP: Uniform Manifold Approximation and Projection for Dimension Reduction* (arXiv:1802.03426). arXiv. https://doi.org/10.48550/arXiv.1802.03426

Merton, R. K. (1988). The Matthew effect in science, II: Cumulative advantage and the symbolism of intellectual property. *Isis; an international review devoted to the history of science and its cultural influences, 79*(4), 606–623.

Missimer, M., Robèrt, K. H., & Broman, G. (2017). A strategic approach to social sustainability–Part 1: Exploring the social system. *Journal of cleaner production, 140*, 32–41.

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. *Systematic Reviews, 10*(1), 89.

Pappas, I. O., Mikalef, P., Dwivedi, Y., Jaccheri, L., Krogstie, J., & Mäntymäki, M. (2019). *Digital transformation for a sustainable society in the 21st century*. Springer International Publishing.

Rama, R., Nair, V. K., Nedungadi, P., Ray, I., & Achuthan, K. (2023). *Darkweb research: Past, present, and future trends and mapping to sustainable development goals*. Heliyon.

Raman, R., Nair, V. K., Prakash, V., Patwardhan, A., & Nedungadi, P. (2022). Green-hydrogen research: What have we achieved, and where are we going? Bibliometrics analysis. *Energy Reports, 8*, 9242–9260.

Raman, R., Lathabhai, H., Mandal, S., Kumar, C., & Nedungadi, P. (2023). Contribution of business research to sustainable development goals: Bibliometrics and science mapping analysis. *Sustainability, 15*(17), 12982.

Raman, R., Nair, V. K., Nedungadi, P., Sahu, A. K., Kowalski, R., Ramanathan, S., & Achuthan, K. (2024). Fake news research trends, linkages to generative artificial intelligence and sustainable development goals. *Heliyon, 10*(3).

Sachs, J., Schmidt-Traub, G., Mazzucato, M., Messner, D., Nakicenovic, N., & Rockström, J. (2019). Six transformations to achieve the sustainable development goals. *Nature Sustainability, 2*(9), 805–814 Link.

Sachs, J. D., Kroll, C., Lafortune, G., Fuller, G., & Woelm, F. (2022). *Sustainable development report 2022*. Cambridge University Press.

Shahzad, M., Qu, Y., Rehman, S. U., & Zafar, A. U. (2022). Adoption of green innovation technology to accelerate sustainable development among manufacturing industry. *Journal of Innovation & Knowledge, 7*,(4) 100231.

Singh, V. K., Singh, P., Karmakar, M., Leta, J., & Mayr, P. (2021). The journal coverage of web of science, scopus and dimensions: A comparative analysis. *Scientometrics, 126*(6), 5113–5142.

van Eck, N. J., & Waltman, L. (2010). Software survey: VOSviewer, a computer program for bibliometric mapping. *Scientometrics, 84*(2), 523–538.

Wang, S., Abbas, J., Sial, M. S., Álvarez-Otero, S., & Cioca, L. I. (2022). Achieving green innovation and sustainable development goals through green knowledge management: Moderating role of organizational green culture. *Journal of Innovation & Knowledge, 7*,(4) 100272.