



Nanostores and Society 5.0 Paradigm Shifts in Supply Chains through Bibliometric Analysis

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Abstract- *In this groundbreaking study, we utilize bibliometric analysis to explore the evolving landscape of supply chains in the context of Society 5.0. Our investigation highlights a critical research gap concerning "nanostores" within this emerging paradigm. By focusing on this captivating anomaly, we aim to shed light on the underexplored aspects of supply chains in the era of Society 5.0. This compelling revelation, extracted from an extensive review of scholarly works across 10 countries, not only highlights the escalating significance of Society 5.0 but also identifies related or further gaps in knowledge awaiting exploration. As we stand on the brink of profound technological advancements and societal metamorphosis, this study accentuates the pressing need for an in-depth exploration of the intricate link between nanostores and Society 5.0. Serving as a clarion call, our research sparks discourse and urges further investigation to unlock the latent potential and profound implications of nanostores within this paradigm shift. Join us on a journey into the future of supply chains, where nanostores emerge as pivotal players, potentially holding the key to navigating the uncharted territory of Society 5.0. Brace yourself for an enthralling delve into the uncharted realm of possibilities that nanostores present within this transformative paradigm.*

Keywords- Supply chain, Society 5.0, Bibliometric Analysis, VOSviewer.

I. INTRODUCTION

The landscape of private and public institutions, as well as society itself, is rapidly evolving under the pervasive influence of digitalization. This technological transformation encompasses a spectrum of innovations, including Artificial Intelligence (AI), autonomous robots, augmented and virtual reality, cyber-physical systems, cloud computing, and the Internet of Things (IoT) [1]. These advancements are reshaping production systems and fundamentally transforming societies [1]. Despite the accompanying high technology costs, the undeniable contributions of technology are laying the foundations for human-centered societies and forming information societies [2][3]. In this context, the emergence of Society 5.0 is crucial [4][5][6].

Society 5.0 signifies the convergence of the innovation economy and job creation capabilities in addressing social challenges while centering people and emphasizing their right to a comfortable and safe life [6]. Originating in Japan, this initiative strives to establish sustainable smart societies. The global landscape, marked by challenges like aging populations and outdated infrastructure, necessitates such a shift [4][5][6]. Society 5.0 represents not only a response to societal

challenges but also a catalyst for economic growth and job creation through technological support [6].

As technology and supply chains continue to advance, the competitiveness of countries, institutions, and organizations has intensified [7]. Artificial Intelligence (AI) technologies, developed to enhance happiness and improve lives, have exerted a transformative effect on culture, exemplifying the profound changes technology can bring about [8].

In today's intricate global environment, supply chains operate amidst increasing complexity, demanding adaptability, and foresight to maintain competitiveness and tackle future challenges [5][9]. Against this backdrop, this work aims to explore the evolving paradigm of Society 5.0 and its application to supply chains, with a specific focus on nanostores. While Society 5.0 principles have been partially implemented in a factory context, dedicated approaches to addressing nanostores with their unique needs and potential are still in their infancy, presenting opportunities for novel contributions [10]. The transformative wave of Society 5.0, characterized by its human-centric approach and convergence between innovation and social well-being presents a paradigm shift for supply chains. Despite the evident complexity and growing demands on modern supply chains, the unique potential of nanostores remains largely unexplored. This lack of dedicated research presents at least one critical gap in the literature that must be addressed.

A. Research Gap

While the concept of Society 5.0 has gained significant attention, there remains a critical gap in understanding how its foundational principles translate into actionable strategies for nanostores and their supply chains. Specifically, the application of Society 5.0's core tenets, including human-centricity and technological integration, are underexplored within the context of nanostore development and operation. This lack of research limits our comprehension of the potential contributions of nanostores to the evolution of Society 5.0 supply chains.

B. Research Question and Objective

Building upon the identified research gap regarding the application of Society 5.0 principles in nanostores and their supply chains, the following research question and objective were refined to guide this study.

- 1) *Research Question*: What are the emerging trends, interrelationships, and unexplored areas within the literature that intersect Society 5.0, supply chain management, and nanostores?
- 2) *Research Objective*: This research aims to systematically analyze the existing literature to uncover the evolving landscape of Society 5.0's impact on nanostore supply chains, with a focus on identifying trends, gap, and potential research avenues.

By reframing the research question and objectives, this study endeavors not only to explore the direct impact of Society 5.0 on nanostore supply chains but also to conduct a comprehensive review of the current knowledge landscape within this domain. Through synthesizing existing research, our paper aims to uncover emerging trends, scrutinize existing gaps, and identify potential areas for future exploration. In doing so, we aspire to contribute to the scholarly discourse on the transformative potential of Society 5.0 principles in reshaping nanostore operations and their integration within broader supply chain networks. This research endeavor seeks to provide a holistic understanding of the topic, with the aim of enriching the literature by investigating the influence of Society 5.0 on nanostore supply chains.

In Sections II through V, we conduct an in-depth analysis of Society 5.0's impact on nanostores and supply chains. Section II provides a comprehensive review of the relevant literature and propositions, setting the stage for our investigation. Section III details the research methodology, outlining our approach to bibliometric analysis using VOSviewer software. The findings of this analysis are presented in Section IV, which sheds light on research gap, the implications of Society 5.0 on supply chains in nanostores, and potential areas for future research. Finally, Section V concludes the paper, summarizing key findings and proposing avenues for further exploration.

II. LITERATURE REVIEW AND PROPOSITIONS

A. *The Concept of Society 5.0*

Introduced by Japan in 2016 in the *5th Science and Technology Basic Plan*, Society 5.0 envisions a super-smart society that addresses challenges such as aging populations, air pollution, and natural disasters [9][11]. This society would strive to meet diverse individual needs, ensuring high-quality services while fostering comfort and prosperity for all, irrespective of differences in age, gender, region, or language [12]. The core purpose of Society 5.0 is to balance economic progress with social problem-solving by imitating biological evolution structures and processes [13]. It represents a human-centered society that integrates cyberspace and physical space that strives to resolve social issues systematically [3]. Society

5.0 aims to enhance industrial competitiveness through sustainability, comprehensiveness, and efficiency, creating a smart society that generates value for humanity's benefit [14]. This paradigm is defined as a "smart society" where physical and cyberspace are strongly integrated, reflecting a desire for balance in the optimization of previous societal stages [11][15].

Society 5.0 is distinguished by its concentration on solutions that prioritize the human element, with technology serving as a medium that tackles societal hurdles and enhances the standard of living. This society fosters a seamless integration between the physical and digital realms, thereby enabling the effective exchange of information and resources. In Society 5.0, innovation flourishes through collaboration between a diverse range of stakeholders, leading to the development of comprehensive and sustainable solutions. Moreover, Society 5.0 advocates for data-driven decision-making processes that harness advanced technologies like artificial intelligence and the Internet of Things to augment productivity and efficiency across various sectors. Furthermore, there is a strong emphasis on ethical considerations, ensuring that technological advancements are employed responsibly and equitably for the advantage of all members of society. Through these interconnected principles and characteristics, Society 5.0 aims to create a future where technology serves as a catalyst for positive social impacts and inclusive growth, including:

- 1) *Human-Centric Society*: Society 5.0 places a strong emphasis on human welfare and well-being. The integration of technology is envisioned to enhance quality of life, address social challenges, and create a more inclusive and sustainable society.
- 2) *Technological Integration*: This concept revolves around the seamless integration of emerging technologies, including but not limited to artificial intelligence, Internet of Things (IoT), big data, robotics, and augmented reality. These technologies are seen as tools for solving complex issues and improving various aspects of daily life.
- 3) *Data-Driven Decision-Making and Smart Infrastructure*: The concept envisions a society where data is utilized intelligently to inform decision-making processes. The vast amount of data generated by digital technologies is harnessed for the benefit of society, enabling better insights, predictions, and policy formulations. Society 5.0 envisions the development of smart cities and infrastructure. This includes intelligent transportation systems, energy-efficient buildings, and interconnected services that enhance the overall efficiency of urban living.

Society 5.0 serves as a guiding vision for governments, industries, and societies to navigate the challenges and opportunities presented by rapid technological advancements,

fostering a harmonious and advanced coexistence between humans and technology.

B. The Factors That Reveal Society 5.0

Society 5.0 emerged in response to three main factors: 1) global technological innovations triggering revolutionary waves of change; 2) the shift of the world's economic centre from the West to Asia; and 3) the adoption of the United Nations Sustainable Development Goals (SDGs) in 2015, which are aligned with the concept of Society 5.0 [10]. This paradigm comprises six pillars: infrastructure, technological innovation, finance, healthcare, logistics, and AI, which emphasize the need for technology and innovation to aid societal advancement and not replace human roles [1]. Society 5.0 aims to incorporate technological and scientific advances into economic and social life, processing them in a way that aligns with economic, societal, and environmental sustainability [15].

C. Society 5.0 and Supply Chains

Recent years have witnessed significant shifts in citizen behavior, with informed customers being offered a vast array of products. Social media and enterprise mobility have contributed to new consumption patterns, necessitating customer-driven supply chains that align with customer needs and express their uniqueness [16]. The principles of Society 5.0 have catalyzed a transformation in supply chains, emphasizing digitalization, artificial intelligence, sustainability, human-centricity, and innovation. These principles have led to more resilient, responsive supply chains that contribute to broader societal goals [17].

D. Nanostores in the Era of Society 5.0 and Revolutionary Supply Chains.

Nanostores, which are compact retail establishments with limited shelf space, play a pivotal role in the transformative landscape of Society 5.0. Aligned with the principles of Society 5.0, nanostores leverage advanced technologies for efficient inventory management, personalized customer experiences, and streamlined operations [17][24][25]. These small-scale enterprises prioritize human-centric values, community engagement, and local needs while acting as innovation hubs that contribute to the well-being of individuals within their neighborhoods [18]. Their nimble nature allows rapid adaptations to changing consumer trends, making nanostores catalysts for reshaping supply chains into more responsive, sustainable, and community-oriented systems [18][19].

E. Research Propositions

In this study, three primary research proportions were developed to explore the influence of Society 5.0 on supply chains and nanostores, as well as the relationship between Society 5.0 principles and supply chain processes. These propositions are as follows:

P1: Society 5.0 as a Catalyst for Transformative Changes in Nanostores: Society 5.0 serves as a transformative catalyst, significantly impacting the dynamics of supply chains within nanostores. This proposition aims to delve into specific instances and mechanisms through which the principles of Society 5.0 brought about paradigm shifts in the operations and strategies of nanostores.

P2: Unraveling the Relationship between Society 5.0 and Supply Chain Processes in Nanostores: This study investigates and elucidates the relationship between Society 5.0 and supply chain processes within the unique context of nanostores. It also seeks to analyze how the principles of Society 5.0 have been integrated into supply chain operations, offering a nuanced understanding of the interplay between technological advancements and supply chain dynamics in nanostores.

P3: Bridging the Gap and Advancing Research on Nanostores in the Context of Society 5.0: Our paper bridges one critical gap in research, specifically the limited prominence of the term "Nanostores" in bibliometric analysis, which presents an opportunity for further exploration. This proposition encourages and guides future research endeavors that specifically focus on the intersection of Society 5.0 and nanostores, facilitating a more comprehensive understanding of this evolving field.

III. METHODOLOGY

A. Systematic Literature Review (SLR) and Scientometric Analysis

The study employed a Systematic Literature Review (SLR) coupled with scientometric analysis to comprehensively explore the impact of Society 5.0 on supply chains and nanostores. SLR, known for its suitability in critical reviews and identifying key trends, was chosen to map research avenues, and shed light on the nuanced aspects of Society 5.0 [20]. Given the nascent nature of Society 5.0, SLR allows for an in-depth understanding of unanalysed variables [20][21].

B. Database Selection and Search Terms

Scopus was chosen for its comprehensive coverage and structured interface. Search terms that captured the multidimensional nature of Society 5.0's impact on supply chains and nanostores included "Society 5.0," "nanostore," and "supply chain." This resulted in a dataset of 184 articles, review articles, and conference papers published between 2010 and 2024.

C. Data Attributes

The dataset, downloaded as a CSV file, contained metadata such as author names, paper titles, abstracts, keywords, and cited references. Validity was assured by Scopus's reliability and the exclusion of grey literature minimized bias. This study

restricted itself to English language publications to maintain consistency.

D. Scientometric Tool - VOSviewer

VOSviewer was chosen as the sole scientometric tool used in this study due to its powerful text-mining functionality and ability to construct and visualize bibliometric networks [22][23]. This tool, widely used in previous scientometric studies on Society 5.0, supply chain, and nanostores accepted CSV bibliographic records from Scopus [23].

E. Analytical Procedure

VOSviewer conducted a comprehensive analysis, generating maps and networks based on authors, documents, journals, institutions, and keywords. This study visualized co-authorship, document co-citation, keyword co-occurrence networks, bibliographic coupling, temporal analysis, geospatial analysis, source citation analysis, bootstrap resampling, spectral clustering, and thematic areas [21][23]. The resulting visualizations enabled the exploration of the research landscape and the identification of key contributors and thematic clusters. This study also highlighted countries that made significant contributions to this field. This combined approach facilitated a thorough exploration of Society 5.0's impact on supply chains and nanostores, offering valuable insights into research trends, gaps, and future research opportunities.

IV. RESULTS AND DISCUSSION

A. Annual Growth of Publications on the Application of Society 5.0 and SC Research

Fig. 1 illustrates the annual growth of publications on the application of Society 5.0 and supply chain research. The trend line reveals a significant increase in research interest, with a peak of ninety articles in 2023. The surge in 2023 suggests a growing emphasis on leveraging Society 5.0 and supply chain dynamics. The dip in 2024 is expected, considering the year had not yet concluded when this study was conducted. The upward trend aligns with increasing reliance on information technology and AI in supply chain decision-making.

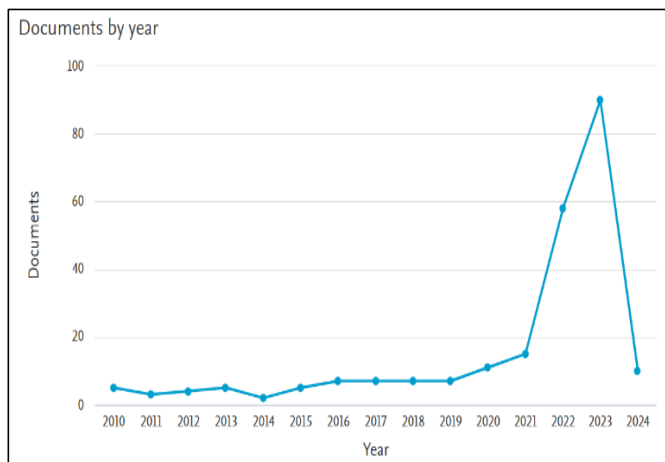


Fig.1 Society 5.0 and SC research growth (2010-2024)

B. Author Keyword Co-Occurrence

1) Network Visualization (Fig.2): The network visualization reveals the relationship between keywords with supply chain having the largest circle, indicating its centrality. "Society 5.0" had a smaller circle, suggesting a research gap.

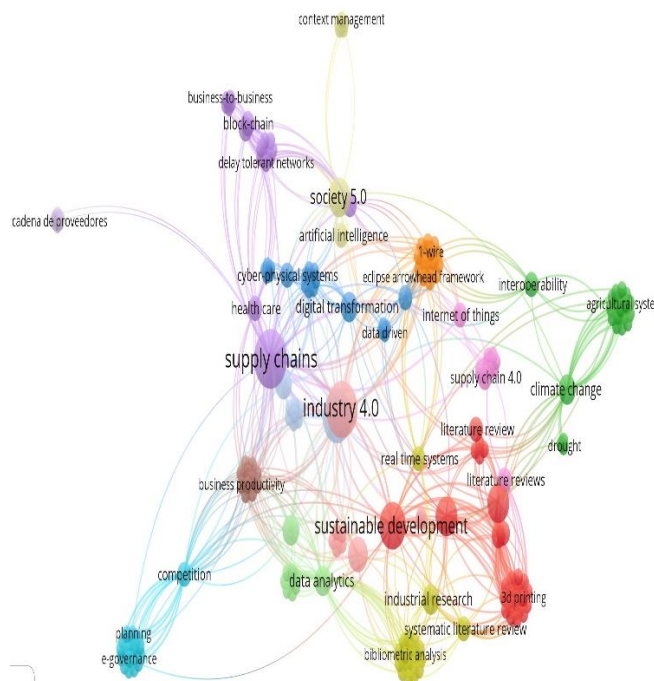


Fig.2 Network visualization – VOS viewer analysis results

2) *Density Visualization (Fig. 3 and Table I):* Density visualization supported the network analysis, emphasizing the lack of studies on Society 5.0, SC, and nanostores.

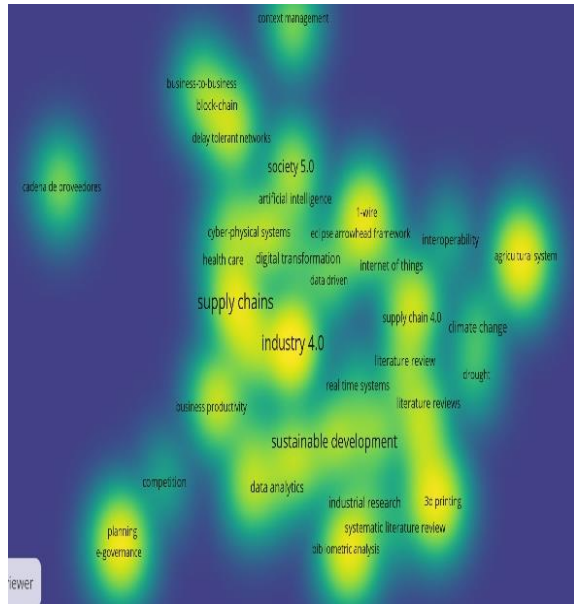


Fig.3 Density visualization – VOS viewer analysis results

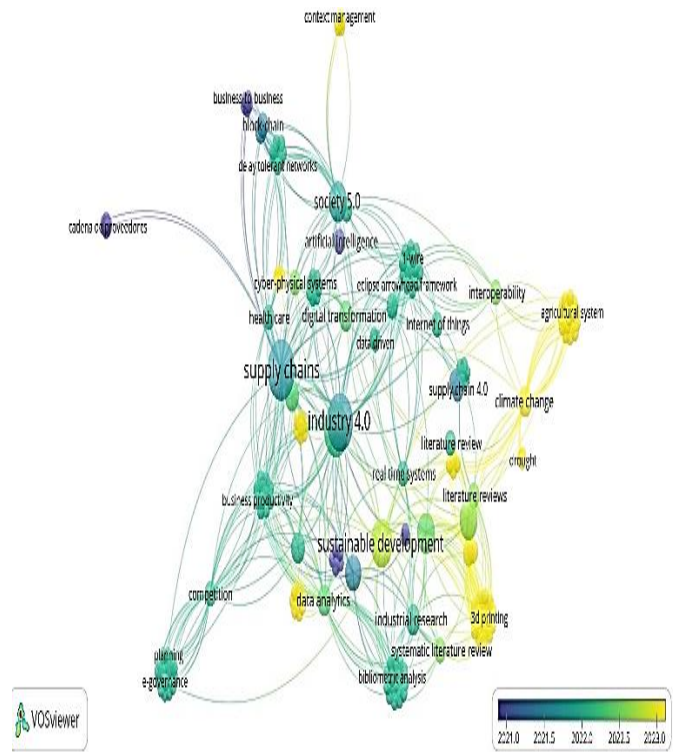


Fig.4 Overlay visualization – VOS viewer analysis results.

Table I provides keyword occurrence analysis, which underscores the dominance of "Supply chains" and "Industry 4.0."

TABLE I
AUTHORS KEYWORD OCCURRENCE ANALYSIS RESULTS

Keyword	Occurrence	Total link strength
Supply chains	76	127
Industry 4.0	71	88
Society 5.0	32	30
Blockchain	66	27
Sustainable development	69	25
Digital information	07	20
Supply chain 4.0	27	19
Industrial research	07	19
Climate change	07	17

3) *Overlay visualization (Fig. 4):* Overlay visualization mapped research topics from 2010 to 2024, indicating increased interest in "Society 5.0" and "Supply chains" around 2021-2023.

C. Countries' Co-Authorship

1) *Distribution of Papers by Country (Fig. 5):* India led in publication with thirty-eight studies and 1221 citations, followed by China (35 studies, 1176 citations) and the United States (31 studies, 974 citations).



Fig.5 Distribution of the papers for Society 5.0 and SC by country

2) *Countries Co-Authorship Network (Fig. 6 and Table II):* Five collaboration clusters were identified that highlighted key partnerships:

- *Group 1:* China, Hong Kong, and the United States.
- *Group 2:* European nations like France, Germany, Italy, Poland, and Denmark.
- *Group 3:* Canada, Indonesia, Japan, Malaysia, Singapore, South Korea, Thailand, UAE, and Vietnam, indicating strong collaboration in Asia.
- *Group 4:* India, Pakistan, the Russian Federation, and Saudi Arabia, showcasing collaboration between Asia and the Pacific.
- *Group 5:* Egypt, Iran, Türkiye, Australia, Greece, and Spain, indicating collaboration across Europe, the Middle East, and Africa.

Limited collaboration networks from Africa and South America suggest a need for increased research from these areas.

These results emphasize the global surge in interest in Society 5.0 and supply chain research, with diverse collaborations and increasing attention from academia. The identified clusters highlight regional focuses and collaboration patterns, emphasizing the need for more inclusive global collaborations.

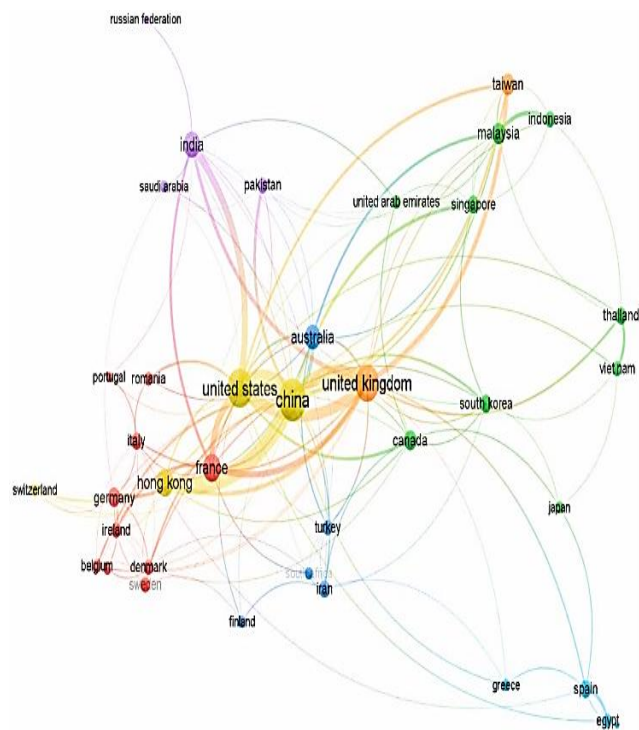


Fig.6 Countries Co-Authorship -VOS viewer analysis results

TABLE II
COUNTRIES CO-AUTHORSHIP ANALYSIS RESULTS

Country	No. of Studies	No. of Citations
India	38	1221
China	35	1176
United States	31	974
United Kingdom	23	557
Germany	12	311
Italy	11	158
Canada	10	127
Iran	08	109
Poland	08	116
Spain	08	121

D. Research Propositions

The findings from the VOSviewer analysis provide empirical support for the three propositions previously outlined in this study as follows:

P1: Society 5.0 as a Catalyst for Transformative Changes in Nanostores: The VOSviewer analysis reveals clusters of research articles that highlight the impact of Society 5.0 on supply chain dynamics within nanostores. By examining the co-occurrence of keywords related to Society 5.0 and supply chain management, we can identify emerging trends and patterns that illustrate how nanostores are adopting Society 5.0 principles to transform their operations. This supports P1 by demonstrating the influence of Society 5.0 on supply chain dynamics within the context of nanostores, as evidenced by the clustering of research literature around topics such as digitalization, connectivity, and human-centric approaches.

P2: Unraveling the Relationship between Society 5.0 and Supply Chain Processes in Nanostores: The results also allow us to explore the relationship between Society 5.0 principles and supply chain processes. We identified clusters of research literature that focus on how advancements in technology, such as artificial intelligence and the Internet of Things, are facilitating collaboration, transparency, and efficiency across supply chain networks. This supports P2 by demonstrating the interconnectedness between Society 5.0 principles and supply chain processes, as evidenced by the clustering of research literature around topics such as digital transformation, smart logistics, and agile supply chains.

P3: Bridging the Gap and Advancing Research on Nanostores in the Context of Society 5.0: Additionally, the VOSviewer analysis helps focusing on the identified research gap between nanostores and Society 5.0. We detected areas of overlap and divergence in the literature, pinpointing potential avenues for future research and exploration. This supports P3 by providing a roadmap for bridging the research gap between nanostores and Society 5.0, as evidenced by the visualization of research literature clusters that highlight common themes and areas of intersection between the two domains.

V. CONCLUSION

This paper conducted a comprehensive scientometric analysis and critical review of the literature on the application of Society 5.0 (S5.0) and Supply Chain (SC) between 2000 and 2024. This analysis monitored trends, visualized the knowledge structure, identified a research gap, and proposed future research areas. This study utilized bibliographic records from Scopus (comprised of 266 studies) and applied various science mapping techniques to gain insights into the research topic.

The research revealed a remarkable growth in Society 5.0 and supply chain research over the last two decades, with a substantial surge after 2016. The peak in 2023, with 90 published articles, indicates a burgeoning interest in the application of Society 5.0 and SC research. This study offers a unique contribution by providing a holistic statistical and visualized analysis of knowledge structure, productivity, and scientific collaborations in this domain.

The exploration of Society 5.0 through the lens of supply chains via bibliometric analysis has provided valuable insights into paradigm shifts and emerging trends in this dynamic intersection of technology and industry. This analysis uncovered key themes, influential authors, and impactful publications, offering a comprehensive overview of this evolving landscape. As we traverse the landscape of Society 5.0, it becomes evident that the integration of advanced technologies such as artificial intelligence, the Internet of Things, and big data analytics plays a pivotal role in reshaping supply chains.

Bibliometric analysis has not only highlighted the growth and interdisciplinary nature of research in this domain but has also emphasized global collaboration between researchers and institutions. The identification of prolific authors and prolific journals underscores the key players and knowledge dissemination channels driving advancements in Society 5.0 and supply chains.

Furthermore, by unveiling thematic clusters and mapping the intellectual structure, this analysis serves as a compass for future research. It provides a foundation for scholars, policymakers, and industry practitioners to navigate the complexities of Society 5.0 and make informed decisions. The insights gleaned from this bibliometric exploration have contributed to our understanding of the transformative journey toward intelligent, connected, and human-centric supply chains within the broader context of Society 5.0. As we move forward, this knowledge can guide strategic initiatives, foster collaborations, and inspire innovative approaches that align with the principles of the fifth industrial revolution.

While research on Society 5.0's impact on supply chains and nanostores is booming, several key areas remain unexplored. While interest in such impact grows, we lack studies detailing the specific mechanisms and strategies for successful implementation. Existing research often leans theoretical, leaving practical implementation and empirical

validation behind. Additionally, the unique challenges and opportunities faced by nanostores in Society 5.0-powered supply chains, which include tech adoption barriers, scalability hurdles, and sustainability concerns, are currently underexplored. Furthermore, in-depth analyses of broader socio-economic impacts on consumers, small retailers, and local communities are missing. Addressing this gap is crucial to guiding informed decision-making and effective implementation strategies for all stakeholders navigating this evolving landscape of Society 5.0-enabled supply chains and nanostores.

This study delves into the under-explored territory of nanostores in the context of Society 5.0, highlighting one critical research gap in Section I, with two related or further gaps:

1) *Uncharted Territory-Exploring the Potential Impact of Society 5.0 on Nanostores: A bibliometric analysis of 184 articles spanning from 2010 to 2024 unveiled a remarkable absence of research on "nanostores" within prominent clusters. This finding underscores a significant gap in understanding the transformative influence of Society 5.0 on supply chain dynamics, especially concerning nanostores, which remain largely unexplored. Future research endeavors can capitalize on this insight to delve into the specific challenges, opportunities, and strategies for incorporating Society 5.0 principles into nanostore operations and supply chain management.*

2) *Exploring the Application of Society 5.0 Principles in Nanostores: Further exploration is imperative to grasp the application of Society 5.0 principles to nanostores. This understanding can be cultivated through thorough literature reviews that identify pertinent theoretical frameworks, alongside empirical studies that investigate the practical implementation of these principles in nanostores. Additionally, qualitative and quantitative analyses can offer insights into the specific challenges and opportunities encountered by nanostores within the supply chain landscape of Society 5.0.*

By addressing this research gap, this study paves the way for a more comprehensive understanding of nanostores' potential in Society 5.0 and enriches the discourse in this evolving field.

A. Implications of the Research

The implications of this research extend into two pivotal domains: managerial strategies and theoretical-methodological frameworks.

1) Managerial Implication

- Nanostore managers can leverage Society 5.0 technologies to strategically boost supply chain efficiency. By embracing these advanced technologies, nanostores can streamline operations, improve logistics, and enhance overall productivity, ultimately leading to more agile and responsive supply chains.

- To maintain a competitive edge in the dynamic landscape of Society 5.0, nanostore managers must stay abreast of evolving technological trends. Resource allocation decisions should prioritize investments based on their potential impact, carefully analyzing the relevance and applicability of specific technologies to the unique supply chain challenges faced by nanostores. This strategic approach, whether it involves smart inventory systems, automated checkout processes, or data analytics, ensures that nanostores maximize efficiency gains from their technological investments, ultimately enhancing their responsiveness to consumer demands.
- Prioritizing investments based on their potential impact allows nanostore managers to allocate resources strategically for maximum efficiency and gain. Staying current on the rapid advancements within Society 5.0 is crucial for their success. The continuous monitoring of technological trends can ensure that nanostores remain competitive and can proactively align their strategies with evolving consumer expectations. This proactive approach empowers nanostores to embrace innovations that resonate with their customer base and contribute to long-term sustainability.

This analysis emphasizes the critical role of agility, informed decision-making, and strategic resource allocation for nanostores navigating the dynamic currents of Society 5.0. By embracing these managerial implications, nanostores can not only ensure their survival but also position themselves to thrive in an era characterized by rapid technological advancements and evolving consumer expectations.

2) Theoretical and Methodological Implications

- The study's findings indicate a profound paradigm shift in supply chain management catalyzed by the^o integration of Society 5.0 technologies. The theoretical implication is that traditional supply chain models need to evolve to accommodate the transformative impact of technologies like artificial intelligence, IoT, and data analytics. Researchers and practitioners should reevaluate existing theoretical frameworks to align with the new dynamics introduced by Society 5.0, ensuring that theoretical foundations adequately capture the complexities of modernized supply chains.
- The identification of influential researchers and research outlets in this field signifies the importance of collaboration and strategic dissemination. The theoretical frameworks and methodologies employed by influential researchers have become crucial references for future studies. Theoretical implications emphasize the need for collaborative research efforts, bringing together experts from diverse disciplines to enrich the theoretical foundations of Society 5.0 and

supply chain research. Methodologically, this highlights the significance of interdisciplinary approaches to comprehensively address the multifaceted nature of the evolving supply chain landscape.

- The global participation and collaborations evident in Society 5.0 and supply chain research underscore the universal impact of technological advancements. Theoretical implications emphasize the need for research frameworks that transcend geographical boundaries, acknowledging the interconnected nature of supply chains in the digital era. Methodologically, this implies that studies should adopt a global perspective that considers cultural, regulatory, and infrastructural nuances that provide comprehensive insights. Collaborations on an international scale are imperative to harnessing a diverse range of experiences and perspectives that enrich the theoretical and methodological underpinnings of research in this domain.

In summary, the theoretical and methodological implications highlight the necessity for dynamic theoretical frameworks, collaborative research endeavours, and a global perspective that effectively navigates and contributes to the evolving landscapes of Society 5.0 and supply chain management.

B. Research Limitations

Despite achieving this study's aims, certain limitations should be acknowledged:

- 1) The bibliometric analysis provided an overview and did not include a detailed evaluation of each study.
- 2) Relying on published articles may introduce bias by excluding unpublished or grey literature.
- 3) Language bias is possible as the analysis primarily focused on English articles, potentially overlooking contributions in other languages.

While these limitations exist, the validity and relevance of our scientometric review remains robust, offering objective and quantitative insights into the evolving landscape of Society 5.0 and supply chain research.

C. Future Research Directions

Considering this study's findings and limitations, several avenues for future research are proposed:

- 1) *Inclusion of Unpublished or Grey Literature:* Extending the analysis to include unpublished or grey literature will capture a more comprehensive view of the research landscape.
- 2) *Multilingual Analysis:* Addressing language bias by expanding the analysis to include articles in languages other than English will ensure a more inclusive representation of global research contributions.

- 3) *Comparative Analysis with Other Paradigms*: Comparing the adoption and impact of Society 5.0 in supply chains with other industrial paradigms, such as Industry 4.0 will identify unique contributions and challenges.
- 4) *Longitudinal Analysis*: A longitudinal analysis would track evolving trends, emerging themes, and changes in collaboration patterns over an extended period.
- 5) *Qualitative Exploration*: Complementing the quantitative analysis with qualitative exploration, including interviews or surveys with researchers and practitioners would provide deeper insights into the practical implications of Society 5.0 on supply chains.
- 6) *Exploring Intersection of Society 5.0 and Supply Chain Processes in Emerging Economies*: There is potential to delve deeper into the convergence of Society 5.0 principles with supply chain processes, particularly within the context of nanostores. By aligning cutting-edge technologies with societal needs, this exploration could yield innovative solutions to address evolving challenges faced by businesses, especially in developing countries. This extension underscores our commitment to driving innovation and sustainable development in emerging economies, promising to contribute significantly to advancing knowledge in this critical domain.

These future research directions aim to enhance the depth and breadth of understanding in this field, addressing the identified study limitations, and providing a more nuanced perspective on the application of Society 5.0 and supply chain dynamics.

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