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Intellectual progression of green service research: a bibliometric examination and avenues for future research

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ABSTRACT

This article reviews the extant literature on green services based on data obtained from the Web of Science core collection database. The objective of the review is the identification of emerging and predominant themes, authors, and organizations within this domain of research. A bibliometric approach is taken in the analyses of the co-authorship, co-citations, keyword co-occurrence, and bibliographic coupling to assess the evolution of this research domain, based on a total of 212 publications. The results and visual representations of networks indicate that in the last decade, the major themes in green service research are 'sustainability', 'impact' and 'performance'. Further, most of the studies have been published in the hospitality, supply chain and marketing fields. These and many more valuable insights discovered in this review present scholars and practitioners, among other things, a clearer understanding of the state-of- the art in green service research which could facilitate future studies and practices toward emerging issues in the field, such as big data and healthcare.

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1. Introduction

The provision of services depends on a broad range of equipment, resources, and activities that pose different degrees of threat to the natural environment. Thus, the business world is inundated with escalating expectations and demands for environmental responsibility, particularly in the manufacturing of products and delivery of services to consumers. Businesses are called to lower the effect of service provision realized at the expense of the Earth's ecosystem. Subsequently, the concept of green service has emerged among scholars and practitioners as services have as much impact on the environment as goods (see Bloemer & de Ruyter, 2001; Delafrooz & Goli, 2015; Lăzăroiu et al., 2020). Based on the classic concept of service, green service (GS) can be described as services offered while considering the environmental impact of satisfying customers' needs and reducing operations costs (Cramarenco et al., 2023; Chan et al., 2016). Also, Xu et al. (2018) defined green service as a 'set of actions undertaken by a firm to minimize the negative environmental effects associated with the entire life cycle of its products or services'. On one hand, the provision of service has a huge impact on the environment as the world's

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economies are dominated by the service sector, on the other hand, it also has huge potential for enhancing the resource efficiency of the consumption of goods (Guyader et al., 2019; Marchiori et al., 2021). Thus, the *greening* of service firms, their value propositions and processes has been prioritized while delivering outstanding customer experiences in the current service-dominated economies. For example, several organizations have integrated eco-friendly practices into their operations: banks substitute paper-based statements of account with electronic statements, hotels cut their water and energy consumption by requesting guests to reuse towels and sheets, and schools as well as hospitals adhere to green building codes and implement alternate energy sources such as solar (Bamidele et al., 2023).

Likewise, the pressing issue of remodeling services to protect the environment, and incentivizing customers and employees to imbibe roles that lessen services' negative environmental impact, is a significant theme in the literature. However, studies documenting and reviewing these studies are scarce and too limited in scope. For example, Nagariya et al. (2022) and Liu et al. (2017) published reviews focusing on supply chain management, and Pallaro et al. (2017) published a review of studies on sustainable service-based business models in China. Likewise, Caiado et al. (2018) reviewed studies in the field to integrate Green, Lean and Six Sigma approaches for sustainability in the service industry.

Thus, there is a need for a review of studies in the green service domain encompassing more areas within the field of study. This is important as it would reveal the evolution of the research field as a whole and not a niche within the research field as it has been. It is also necessary because it would uncover research gaps within the field and help to determine a research roadmap, to redirect scholars' focus on the emerging or neglected research directions.

To minimize this research gap, this study provides a bibliometric review of green service research identifying state-of-the-art in this domain. This means conducting a content analysis and recognizing trends and other significant indicators by surveying the published articles, with subsequent data treatment through an analysis and visualization software. The bibliometric analysis will be employed to answer the following research questions:

RQ1. What are the publication trends, in terms of period and publication outlets?

RQ2. What are the patterns of citation records and authorship?

RQ3. Which major intellectual themes are being investigated?

2. Theoretical framework and literature review

2.1. Bibliometric review

In recent years, the volume of scientific research has risen considerably, making it complicated for scholars to stay updated with all the important publications in their field (Zupic & Čater, 2015; Shamsi et al., 2022). Therefore, to keep up, there is a need to use review methods that can handle a huge volume of data, filter significant publications based on their impact, unearth the field's underlying structure, and summarize existing knowledge in the research area (Bhatt et al., 2020). Of the key review methods available, such as systematic literature review, meta-analysis and bibliometrics, bibliometrics is most appropriate for the review of a very large volume of data (Zupic & Čater, 2015). The bibliometric is an accurate technique that scrutinizes the literature and is suitable for information mining offering researchers the opportunity to understand more about the evolution of a certain field through key bibliometric indicators (Bhatt et al., 2020). Bibliometric analysis techniques can generally be categorized into two: (a) scientific mapping and (b) performance analysis. While scientific mapping concentrates on the relationships among research constituents, a performance analysis accounts for the contributions of research constituents (Donthu et al., 2021). In essence, the intellectual structure of a field is summarized and the structural and social relationships among the different constituents of the domain are analyzed (see Wörfel, 2021). This creates networks among the several topics within the research domain which can be demonstrated through graphical visualization maps. In addition, it also offers a substantial amount of information within a research domain through a widespread and yet meticulous analysis of a huge volume to show peculiarities in terms of keywords, countries, authors' publication, and collaboration

efforts, among other data (Donthu et al., 2022). Consequently, the use of bibliometrics has increased in review studies in recent years.

2.2. Green service research

Green service can generally be described as the service delivery processes and practices that minimize its negative impact on the environment. The realization of green service is often viewed from more than one perspective. Certain scholars (e.g. Callaway & Dobrzykowski, 2009; Maziriri, 2020) think of green service as a peripheral service, such as life-cycle extension and product maintenance. Other researchers (e.g. Cook et al., 2006; Lăzăroiu et al., 2020) consider green services as a brand-new service offering, such as ownership-substituting services. Green service is likewise considered as the revamping of customer service to enhance service efficiency and reduce carbon footprint, such as providing an online enquiry system (Bartolomeo et al., 2003).

Previous research on green services has not paid much attention to green services as practices in the strategic and competitive dimension of operations (Wong et al., 2013), although some studies (e.g. Buysse & Verbeke, 2003; Ma et al., 2021) considered green services as an environmental management strategy with strategic values. In addition, extant studies paid little attention to the critical environmental management strategies of sustainable development, product stewardship, and pollution prevention (Chan et al., 2016), which are essential for organizations to be environmentally sustainable in their commercial activities according to the natural resource-based view (Buysse & Verbeke, 2003).

The *greenness* of service could be in an organization's service environment, core service offerings, peripheral service offerings and in process of service delivery. Possibly because the components of peripheral services, service processes and core service offerings are generally intangible, green practices have often focused on the physical service environment (Pollack, 2021). Green service has been studied in different contexts and industries such as the supply chain (Hosseini-Motlagh et al., 2018), hospitality (Tuan, 2021), banking (Nisha, 2020), healthcare (Nagariya et al., 2021) and SMEs (Majid et al., 2020). The synthesis and review of studies from all these contexts and more is presented in this study.

Moving from orthodox marketing to more contemporary marketing, the green service concept has gained more attention in the services marketing segment. Importantly, marketing practitioners have appreciated the growing importance of green service policies which contribute toward aiding environmental sustainability in both advanced and global south countries (Prabhu & Aithal, 2021). Again, from a strategic marketing perspective, the actions and inactions toward the green concept have triggered a healthy move toward maximizing green services in general. For instance, due to the global concern on rising carbon footprint, important sectors such as banks, transport, manufacturing, packaging, storage and disposal, administration and IT systems are encouraged to ensure that technologies which considerably decreases the carbon footprint are to be use (see Melander & Arvidsson, 2022). In view of this, it has become a priority for both the public and private sector to strengthen green practices at the highest level. By doing so in the long run, firms are rather indirectly performing CSR activities which thereby create value to satisfy their customers.

3. Methodology

3.1. Data collection

This study obtained bibliographic data from the Clarivate Analytics' Web of Science (WoS) bibliographic database. Particularly, the WoS is a digital bibliometric platform renowned among researchers internationally for high standards and quality and thus has become a major tool for searching and evaluating publications and journals. WoS is also considered a relevant database by bibliometric researchers as it provides a set of metadata essential for this type of analysis such as countries, institutions, list of authors, number of citations, references, abstracts, and journal impact factor (see Gaviria-Marin et al., 2019; Glänzel, 2000; Kumpulainen & Seppänen, 2022).

Again, the decision to exclusively utilize the Web of Science core collection database for this bibliometric analysis was based on several considerations. Firstly, Web of Science is widely recognized for its

Table 1. Research protocols for database.

Search string	**TITLE-ABS-KEY** ('green service*' OR 'sustainable service*' OR 'environment-friendly service*' OR 'zero-carbon service*' OR 'low-impact service*' OR 'zero-waste service*' OR 'eco-service*' OR 'eco-friendly service*' OR 'climate-friendly service*' OR 'non-consumptive service*' OR 'low carbon service*')
Publication types	Journal Articles and Conference proceedings in English
Database	Web of Science

high-quality and rigorously curated database of scholarly literature, ensuring the inclusion of reputable and peer-reviewed publications (Hicks et al., 2015). Secondly, while both Scopus and Web of Science are comprehensive databases, they may differ in terms of coverage and disciplinary focus, with Web of Science being chosen based on its strong coverage of the relevant literature in the field of green service research (Franceschini et al., 2016). Thirdly, researchers' familiarity and expertise with Web of Science can streamline the research process and reduce the likelihood of errors or oversights (Martín-Martín et al., 2018). Lastly, aligning with established practices in the field ensures comparability and continuity with existing literature, facilitating easier cross-referencing and synthesis of findings (Mongeon & Paul-Hus, 2016). While acknowledging the relevance of Scopus as another valuable resource for bibliometric analyses, the decision to focus exclusively on Web of Science optimizes data quality, consistency, coverage, and alignment with prior research practices in the specific domain of green service research.

To perform the search on the WoS database, keywords are carefully chosen based on existing studies to create a search string and 212 articles were obtained (see Table 1 for a preview of keyword search). These keywords were then organized into a search string to retrieve relevant articles. The search string was designed to capture a comprehensive range of literature related to green services while ensuring specificity to the research focus. The following filtering conditions were applied to the search string.

3.1.1. Keyword selection

Keywords were carefully selected to represent key concepts and themes in green service research. These keywords were chosen based on their relevance to the study objectives and their frequency of occurrence in existing literature on the topic.

3.1.2. Combination of keywords

The selected keywords were combined using Boolean operators (e.g. AND, OR) to create a search string that would retrieve articles containing all or some of the specified terms. This allowed for a focused search that targeted articles specifically related to green services.

3.1.3. Publication types

The search was limited to journals and articles written in English to ensure consistency and accessibility of the literature. This filtering condition helps to maintain the quality and relevance of the articles retrieved.

3.1.4. Database selection

The search was conducted exclusively within the Web of Science database, a widely recognized and respected platform for academic research. This database was chosen for its comprehensive coverage of scholarly literature across various disciplines.

By applying these filtering conditions to the search string, a total of 212 articles were obtained, representing a diverse and relevant collection of literature on green services. This approach ensured that the retrieved articles were closely aligned with the objectives of the study and provided a solid foundation for the subsequent bibliometric analysis.

3.2. Publication trends

The first research question is about publication trends over time, publication outlets, and samples used in the focal studies. To answer RQ1, Figure 1 illustrates a breakdown of green service research publications.

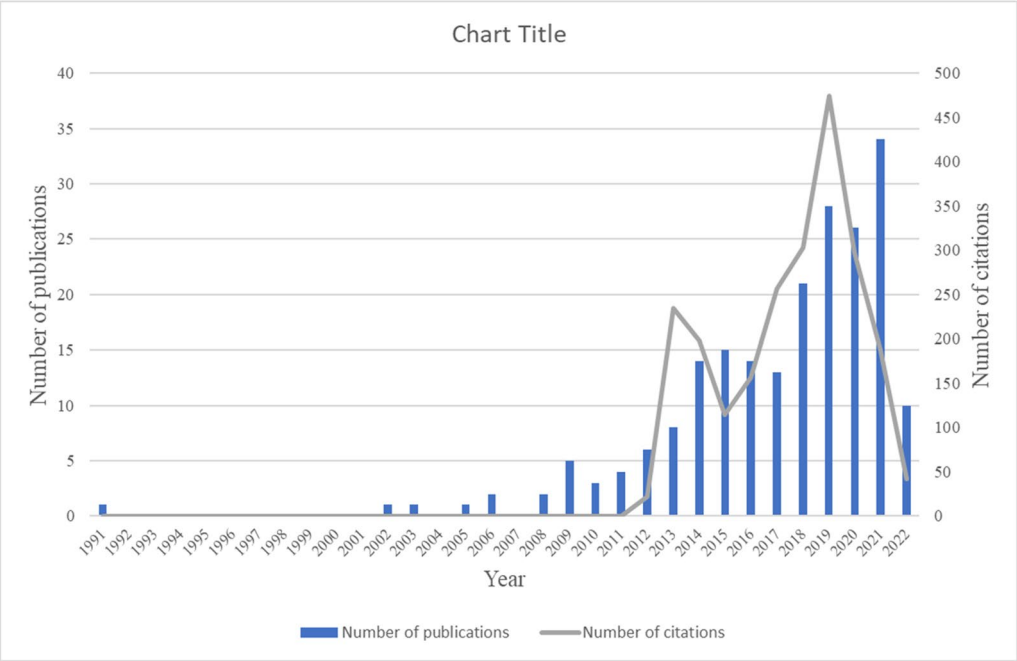

Figure 1. Period-wise publication and citation trends.

Table 2. Publication outlet.

Journal	#	JCI[a]	ABDC rank	CABS rating
Sustainability	40	0.56	Not ranked	Not rated
Journal of Service Management	8	2.31	A	2
Sustainable Production and Consumption	3	1.02	Not ranked	Not rated
Management of Environmental Quality	3	0.82	C	1
Service Industries Journal	3	1.38	B	2
Journal of Sustainable Tourism	3	1.51	A*	3
Journal of Services Marketing	3	1.01	A	2
International Journal of Contemporary Hospitality Management	3	1.74	A	3
International Journal of Hospitality Management	3	2.63	A*	3
International Journal of Production and Performance Management	3	0.67	Not ranked	Not rated

[a]2020 metrics.

The proliferation of papers in a particular field over time shows the pace of development in that discipline (Donthu et al., 2021; Serenko et al., 2022). Our analysis shows that there has been a drastic increase in the volume of green service research, from just 5 during 1999–2006, to 42 during 2007–2014. This is consistent with the rise of environmental consciousness globally (Perron et al., 2006). As a result, scholars have sought to provide academic evidence related to environmental-friendly services.

Table 2 shows the top 10 journals that serve as the leading outlets for green service research are presented in Table 1. Sustainability journal published the most contributions to green service and related fields, with 40 papers, whereas Journal of Service Management comes far behind in the second rank with 8 each. Interestingly the other eight journals in the top 10 come next 3 papers each in the fields of Hospitality, Environmental Management and Marketing. Thus, green service research has been published in journals and indexed in the WoS database (with journal citation indices). 20% were ranked 'A*', and 30% were ranked 'A' by the Australian Business Deans Council (ABDC) in 2021. Likewise, 30% were ranked '3', and 30% were ranked '2', by the Chartered Association of Business Schools (CABS) in 2021.

3.3. Patterns of citation and authorship

The second research question is about patterns of citation records and authorship in focal studies. To answer RQ2, first, the authors with the highest number of publications are evaluated. With the most published articles in this field, is the author Gupta A, with 7 published documents. With 6 articles are Liu, M. C., Horng, J. S., and Chou, S. F., in the second position. With 5 published articles is Zhang, J. J.

Then, the co-authorships analysis is assessed based on country to examine collaboration activities in the study of green services among countries. Of the 21 countries with collaborations with other countries, only 11 had more than one collaborative publication. As shown in Table 3, China has more collaborative efforts in green research than other countries, followed by Taiwan and India.

Likewise, as presented in Table 4, co-authorship analysis based on the names of authors revealed that 128 authors of the total 545 authors (23.49%) engaged in collaborative efforts and only 9 (1.65%) had at least 2 collaborations.

Further, of the total 1204 sources cited in the 212 green publications extracted, 25.08% were cited in at least 2 green service publications and only 8.47% were cited in at least 5. Figure 2 shows the most influential sources (those cited in at least 20) which are only 1.66%. The source co-citation is presented in 4 clusters. The green cluster is the strategy and operation sources, the blue cluster is the leading sources from the tourism and hospitality stream of research, the yellow cluster is the ethics and substantiality sources, and finally, the red cluster is the services marketing sources.

Table 5 presented the authors that were most cited within green service publications. Of the total 2239 authors cited, 8 authors were cited at least 10 times. Likewise, as presented in Table 6, out of the total 2679 publications cited in the green service studies extracted, 11 publications were cited in at least 4 studies. Further, Table 7 presents the list of organizations that engage in collaborative research efforts in the green service domain. This list presents organizations with at least 2 collaborative efforts. Indian Institute Management in India tops the list with 3 publications.

Next, a bibliographic coupling analysis was conducted to examine the references of the green service-related publications to identify those with a common reference. This is important because the extent of overlapping in articles' references denotes the degree of connection of the articles. When two publications share a large proportion of references, there is a greater chance that the content is on related topics. As seen in Figure 3, the bibliometric coupling analysis yielded 6 clusters. The red is cluster 1 focusing on eco-service quality, particularly in the tourism, travel, and hospitality sector. The green

Table 3. Countries co-authorship.

Country	Publications	Citations
China	11	86
Taiwan	9	147
India	7	70
USA	4	31
Germany	4	10
England	3	69
South Korea	3	37
Australia	3	25
Turkey	2	14
Iran	2	10
Italy	2	2

Table 4. Authors' co-authorship.

Authors	Numbers of collaborative efforts	Citations	Link strength
Mishra, A	3	56	3
Lin, Y	2	55	0
Chou, S	2	25	4
Horng, J	2	25	4
Liu, C	2	25	4
Boon-itt, S	2	13	4
Wong, C. Y.	2	13	4
Wong, C.	2	13	4
Kumar, P	2	5	0

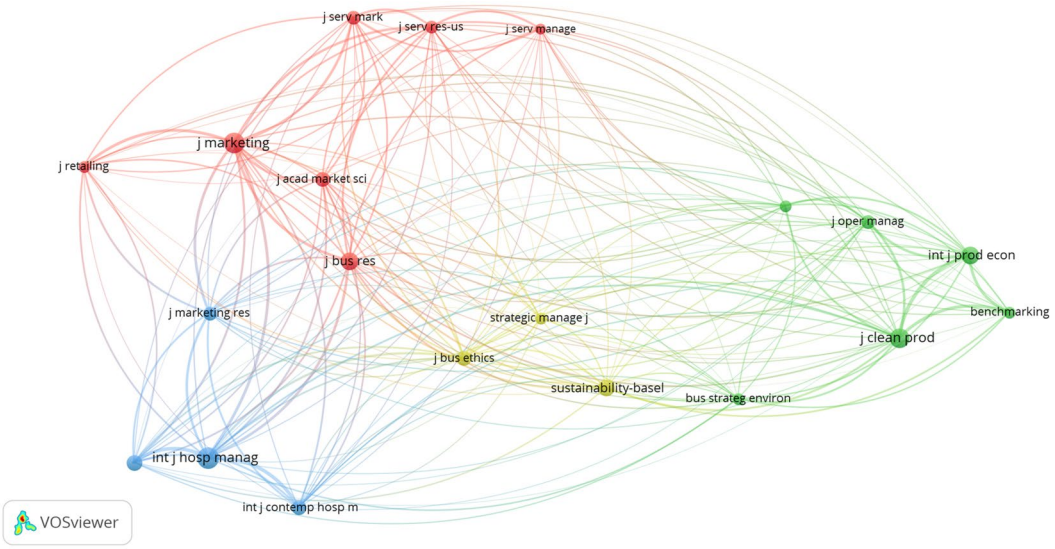

Figure 2. Sources co-citation.

Table 5. Most referenced authors.

Cited authors	Citations	Link strength
Chen, Y. S	20	49
Han, H	19	95
Vargo, S. L	16	8
Fornell, C	12	72
Wong, C W Y	11	17
Wu, H. C	10	80
Parasuraman, A	10	44
Zeithaml, V. A	10	30

Table 6. Most referenced documents.

Cited references	Citations	Link strength
Fornell and Larcker (1980)	11	18
MacKenzie et al. (1993)	6	9
Manaktola and Jauhari (2007)	5	7
Chan et al. (2016)	5	7
Baltacioglu et al. (2007)	4	10
Billington and Johnson (2004)	4	10
Parasuraman et al. (1985)	4	10
Wang et al. (2015)	4	10
Barney (1991)	4	9
Wong et al. (2012)	4	8
Parasuraman et al. (1988)	4	7

Table 7. Top 10 publications by organization.

Organizations	Number of publications	Citations
University of Leeds, UK	2	64
National Def University, Pakistan	2	60
Indian Institute Management, India	3	56
Kyung Hee University, South Korea	2	33
Sejong University, South Korea	2	33
Jinwen University Science and Tech, Taiwan	2	25
Ming Chuan University, Taiwan	2	25
Sun Yat Sen University, China	2	20
Hong Kong Polytechnic University, Hong Kong	2	13
Bogatchi Chocolates, India	2	11
IIM Ranchi, India	2	5

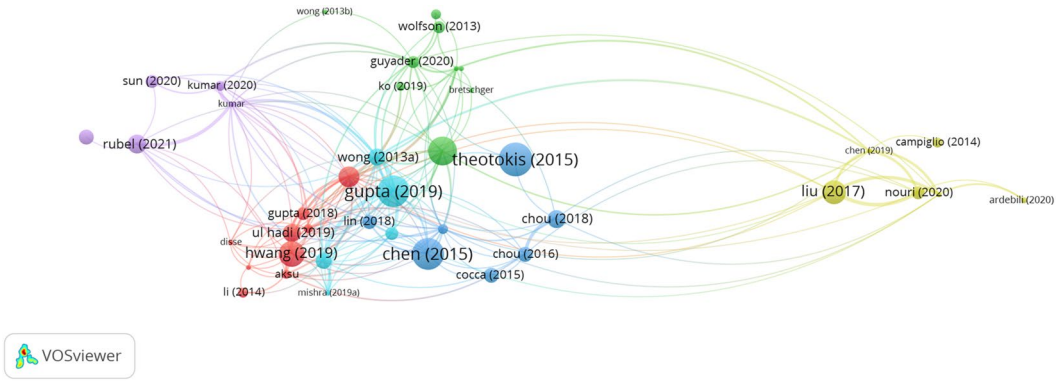

Figure 3. Bibliometric coupling.

Table 8. Top 10 most frequent index keywords in green service research.

Keyword	Number of occurrences	Link strength
Sustainability	41	110
Performance	27	108
Management	25	87
Innovation	24	92
Impact	23	79
Quality	16	61
Sustainable development	14	35
Dominant logic	13	40
Green	12	46
Strategy	10	46

cluster is the second cluster, and it focuses on green service practices and a sustainability approach to green services studies. The third cluster is blue and concentrates on the attributes and aspects of green services, while the fourth class is mustard and comprises studies on the supply chain dimension of green services. The fifth cluster is purple and focuses on the human resources management and leadership roles in green services. And finally, the sixth cluster is cyan, and it focuses on green encounters and green servicescape (Ogunmokun & Ikhide, 2022).

3.4. Keyword analysis

The third research question is about patterns of keywords and terms in the focal studies. A total of 1360 keywords were analyzed from the extracted documents and a count of the index keywords was performed to calculate their frequency and draw up a ranking. As shown in Table 8, which illustrates the top ten Keywords, 'Sustainability' is the most frequent keyword, with 41 occurrences. Within the top-ten ranking, there are keywords describing influence ('Impact' and 'Sustainability development'), signaling the centrality of the influence of green service on the environment and the business world. In fact, the impact of green services on the environment is one of the key foci of green service research (Chan et al., 2016). The centrality of (green) service to a firm's dominant logic and the role of service quality is also evident in keywords such as 'dominant logic' and 'quality'. Finally, such as 'management' and 'strategy' show that the importance of top-level involvement in the greening of services has been of scholarly interest.

In Figure 4, four clusters of connected topics were pointed out in the network analysis: innovative impact (red with 18 items), quality management (green with 17 items), strategic sustainability performance (blue with 15 items), and green experience (yellow with 9 items).

The red cluster is tagged the 'innovative impact' and refers to studies in which the innovativeness and impact of green service were analyzed under several aspects. Within this cluster keywords such as 'knowledge', 'capabilities' and 'co-creation' are included which suggest a linkage with innovation but also keywords such as 'big data' and 'implementation' referring to studies which use recent technologies to enhance systems and operations. The green cluster tagged as 'quality management' refers to a research

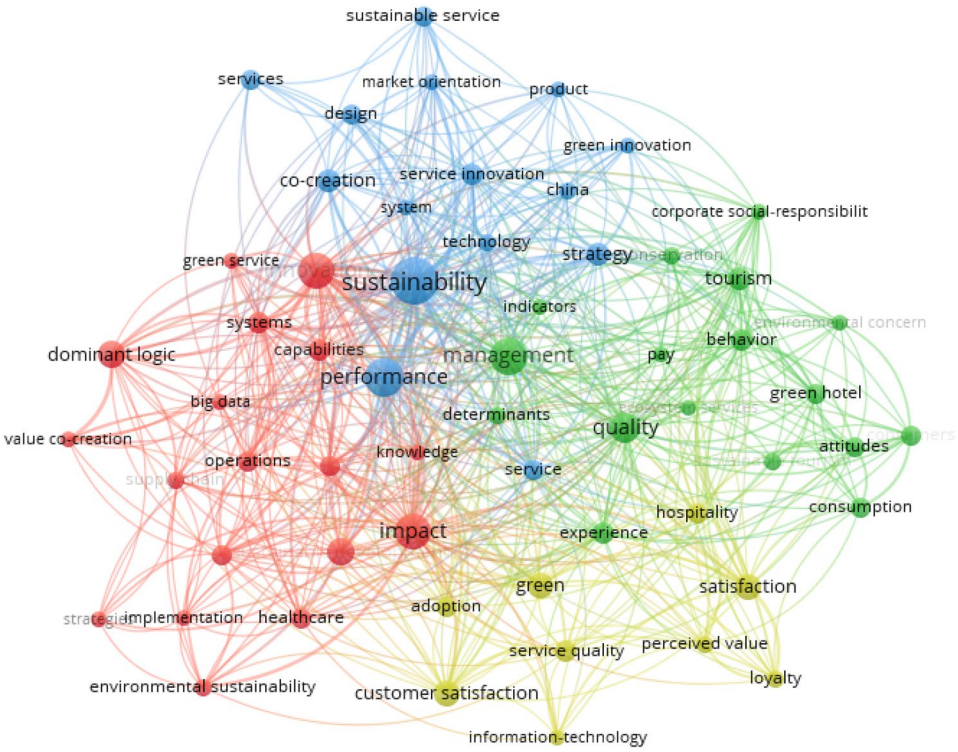

Figure 4. Network visualization of keyword co-occurrence analysis.

stream that focuses on the delivery and management of quality environmental-friendly services. The cluster includes words such as 'experience', 'attitude', 'pay' and 'consumption' representing consumers and their responses to environmental-friendly services. In addition, the cluster also includes words such as 'green hotel' and 'tourism' suggesting the industry where the studies have been conducted. The blue cluster tagged 'strategic sustainability performance' includes words such as 'market orientation' 'product' and 'design' indicating the strategic directing of firms and designing of service/goods for sustainable performance. 'Service innovation', 'green innovation' and 'technology' are some of the other keywords in this cluster and they suggest the likely mechanisms and/or objectives of sustainable strategic performance. Finally, the yellow cluster tagged 'green experience' describes customers experience in a green service environment as evident in words such as 'satisfaction', 'perceived value' and loyalty. Further Figure 5 represents the overlay visualization of keyword co-occurrence, certain keywords are detached from others, denoting that some scientific themes are evolving in the field of green service and scholars have just started exploring them, as in the case of big data and information technology.

4. Discussion and implications

The current study seeks to understand the present state of green service research and reveal research gaps as well as determine future trends within the research domain. In particular, the study similarly identifies the key authors, institutions and countries as regards publication volume and publication outlets in the field. Finally, it recognized the covered topics in the field based on the relevance of trends and keywords emerging from the analysis.

Regarding RQ1, the analysis performed indicates that green service research has grown in volume as well as in scientific impact, as seen by the rising quantity of publications in this domain. It is now considered an important topic in the services literature (Pollack, 2021), with 212 published articles across 30 years, 189 of which appeared in the last decade. This has been attributed to increased awareness of the negative impact of business on the environment. And this is expected to increase even as global warming seems to be on the rise. This makes the green service research domain very promising, as it potentially helps combat climate change by proffering empirically based solutions. Although it is not

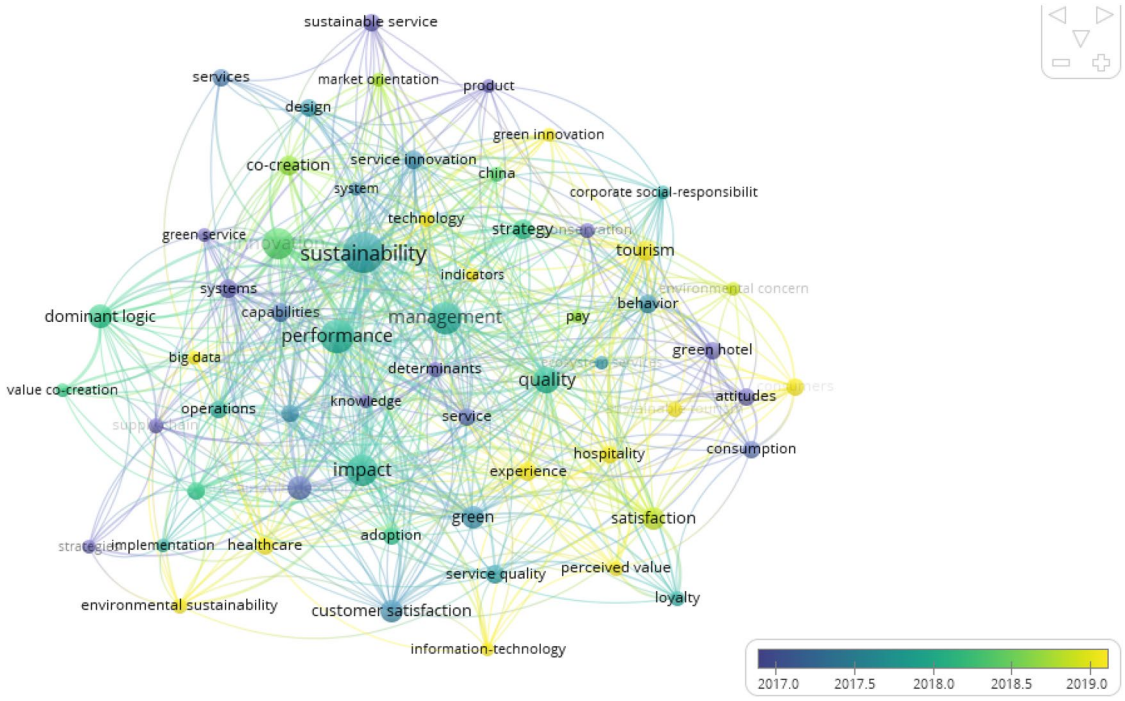

Figure 5. Overlay visualization of keyword co-occurrence analysis.

ranked by the CABS and the ABDC, the leading publication outlet in the domain is *Sustainability* journal. This probably is due to the journal's laser focus on prompt dissemination of knowledge in the studies related to the domain under consideration and could also be due to its leading position in the cited sources in the research domain. The topmost ranked journals that serve as the leading publication outlet for studies in this domain are in the Tourism and hospitality sector (*Journal of Sustainable Tourism* and *International Journal of Hospitality Management*). This indicates that the Tourism and hospitality sector is one of the leading sectors in the research domain probably due to the high impact this sector has on the environment (Ikhide et al., 2023: Joshua et al., 2022)

Regarding RQ2, citation and authorship patterns in the field revealed that China has the highest collaborative efforts with other countries. This is probably because the country is one of the leading economies in the world with a lot of commercial activities negatively impacting the environment globally. And thus, may feel more responsibility to work with other nations to proffer solutions through the greening of services. In addition, the co-citation network revealed four clusters of cited sources demonstrating four key areas of green service research influence. They are strategy and operations, tourism and hospitality, ethics, and sustainability as well as marketing. Further, the document most referenced in green research are methodology documents (such as Fornell & Larcker, 1980) and hospitality documents (such as Manaktola & Jauhari, 2007), supply chain and services marketing (such as Parasuraman et al., 1985). This is probably because of the rigorous analysis required in service research and the prominence of green research in the hospitality, supply chain and marketing sectors. Also, Asian organizations top the list of organizations with publications in the research domain. Worthy of mention is the contribution of non-academic organizations like Bogatchi chocolate India to green service research. This is laudable as it will enhance the quality of the research by offering researchers the opportunity to learn from complementary approaches to green services studies, and lead to the development of pragmatic studies and innovative solutions.

To answer the RQ3, the keyword analysis revealed the major themes of study in green service research. It is no surprise that the most prominent are words such as 'sustainability', 'impact' and 'performance', as the key objective of greening service is to ensure environmental sustainability and cut the negative impact of business on the environment. Likewise, one of the most important indices to measure business performance now is environmental performance (Ikhide et al., 2023).

It is also important to note that emerging keywords in green service research are in the direction of new technologies. Thus, scholars considering new studies in the domain should consider the role of new technologies in the greening of service. New technologies could be significant in promoting green services particularly in fostering the use of renewable resources, energy efficiency, and waste reduction. Overall new technologies enable the development and implementation of sustainable practices in businesses; from HVAC systems and automating lighting to enabling cloud-based operation and remote working, new technologies seem to be the future of green service management and delivery.

This bibliometric analysis of green service research offers significant managerial implications and contributions for both scholars and practitioners in the field. By identifying emerging and predominant themes, authors, and organizations, this study provides valuable insights into the current state of green service research, enabling practitioners to make informed decisions regarding sustainability initiatives and strategies (Ramos-Rodríguez et al., 2021). For managers in industries such as hospitality, supply chain management, and marketing, understanding the key themes and trends in green service research can inform the development of sustainable business practices and enhance corporate social responsibility efforts (Fernández-Méndez et al., 2021). Additionally, the identification of interdisciplinary connections between green service research and emerging fields such as big data and healthcare underscores the importance of interdisciplinary collaboration for addressing complex sustainability challenges (Kiron et al., 2019). Overall, this study provides managers with a clearer understanding of the current landscape of green service research and offers actionable insights for driving sustainable innovation and performance in their organizations.

In addition to its managerial implications, this study holds theoretical significance in the field of green service research. By employing a bibliometric approach to analyze the evolution of green service literature, the study contributes to the theoretical understanding of this burgeoning area of inquiry. Through the identification of emerging and predominant themes, authors, and organizations, the study provides valuable insights into the key concepts and trends shaping green service research. Furthermore, by mapping out the interconnectedness of concepts and the evolution of research over time, the study offers a comprehensive overview of the theoretical landscape of green service literature. This contributes to the theoretical foundation of green service research and lays the groundwork for future theoretical developments and empirical investigations in the field.

Future studies may examine how new technologies might facilitate the measurement and reporting of environmental performance (Ikhide et al., 2023). Better data analytics and sensors could improve the tracking of carbon emission, waste generation and energy usage. In turn these data can be employed in identifying avenues where improvements are necessary and to set standards for reducing environmental impacts. In addition, future studies may examine how new technologies can facilitate the development of new green services and products. Examples of this in the past are the use of drones, robots, and electric vehicles for delivery services in green restaurants to reduce greenhouse gas emissions (Joshua et al., 2022). No doubt, by examining the role and potential of new technologies, scholars and practitioners can help businesses meet the raising demand for more sustainable services and improve their environmental performance.

5. Conclusion

The current study contributes to the extant body of knowledge by presenting the current research opportunities, gaps, and trends in green service research through the collection and analysis of the scholarly publications in the research domain.

This makes several contributions. First, it presents the knowledge stream and the state of art in the domain making it possible to see the evolution of green service research across different fields of study. The rise in publications over the years suggests how deep and valuable this research domain is for academia as well as managers and it likewise reveals its increasing relevance and its potential to broaden research in different fields of study.

Second, the current study describes the major clusters in which the extant green service publications can be grouped. This helps scholars interested in the domain of research to pursue further knowledge and deliberations in the identified clusters. Equally, in the current study possible the prominent journals publishing studies in the field are presented pointing scholars in the field to journals to read and potential outlets for their research.

One more contribution of the current study is the presentation of keywords via network maps using the VOSviewer software, which demonstrates the key themes and terms in the research domain and, also provides evidence for the lack of studies on themes that may be understudied. Furthermore, understanding the authors and articles most cited is important for scholars in the research domain, promoting a more relevant theoretical foundation in future studies.

In considering future directions from both theoretical and managerial perspectives, several major topics emerge. Theoretical avenues could explore the integration of diverse green service theories, such as blending ecological economics with service-dominant logic, to deepen comprehension of green service phenomena (Guzmán et al., 2020). Further, investigating dynamic capabilities and innovation strategies could shed light on how firms adapt their green service offerings in response to environmental challenges and market demands (Dangelico & Pujari, 2010). Stakeholder theory offers another theoretical lens to examine sustainable value creation in green service contexts, elucidating the roles of customers, employees, communities, and regulatory bodies in shaping environmental outcomes (Hoffman & Bazerman, 2021). Additionally, cross-cultural perspectives could provide valuable insights into how cultural factors influence green service adoption and implementation across different regions and markets (Bhardwaj et al., 2020).

From a managerial standpoint, future research could delve into effective strategies for fostering green service innovation, such as eco-design and sustainable product-service systems (Mont, 2021). Exploring customer engagement and co-creation strategies may reveal how firms can involve customers in the development of sustainable service experiences and promote pro-environmental behaviors (Hartmann et al., 2015). Partnerships and collaborations with suppliers, NGOs, and government agencies represent another managerial avenue for advancing sustainable practices and achieving shared environmental goals (Seuring & Gold, 2013). Lastly, the development of comprehensive metrics and performance measurement frameworks could assist managers in assessing the environmental and social impact of green service initiatives and guiding strategic decision-making toward sustainability goals (Schaltegger & Burritt, 2018). Through exploration of these theoretical and managerial topics, future research can contribute to advancing both knowledge and practice in the field of green service management.

Finally, the current study also has certain limitations. As the data was collected using only the WoS database, some relevant studies not in this database might have been overlooked. Thus, future studies may consider using several databases to collect papers. Likewise, future research should incorporate the analysis of other software to complement the shortcoming of VOSviewer.

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Author contributions statement

Oluwatobi A. Ogunmokun, and ***Juliet E. Ikhide*** **-** Are involved in the conception and design, or analysis and interpretation of the data; the drafting of the paper, revising it critically for intellectual content; and the final approval of the version to be published. ***Christian Nedu Osakwe*** and ***Abdul Bashiru Jibril*** **-** also involved in the drafting of the paper, revising it critically for intellectual content; and the final approval of the version to be published. And that all authors agree to be accountable for all aspects of the work.

Disclosure statement

No potential conflict of interest was reported by the author(s).

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Data availability statement

The study was purely a review paper, and all data intercepted for this paper are from Web of Science database and has been acknowledged. Requesting of any data/material associated with this manuscript is available upon reasonable request.

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