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Unleashing Green Innovation Through Social Capital: A Systematic Review of Literature.

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Abstract

Surrounded by increasing environmental issues and the need to meet the demand for sustainable development globally, Green innovation (GI) has gained considerable precedence in the industrial industry. This paper provides a literature summary of the factors that favor or discourage green innovation adoption with respect to the role of social capital (SC). In developing nations like Pakistan, economic growth is usually achieved at the expense of environmental spoliation; hence, establishing sound means of encouraging environmentally friendly innovation is critical to ensuring sustainable economic growth. However, such unexplored drivers of power have no clear image. The aim of the present study was to address this gap by achieving the following objectives: 1. This study offers some insights into the bibliography because it was conducted with the help of a systematic review of the literature (SRL) to identify existing knowledge of green innovation using social capital. 2. To identify the gaps in the bodies of knowledge relating to utilizing social capital to release green innovation. The Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) standard was used during the SLR process. In the Lens Organization database, 395 papers were retrieved which were published in 2014-2024. A bibliometric analysis was conducted to achieve the research goals. According to the findings, although a relatively new subject, green innovation has not received sufficient scholarly attention. This has led to the development of various gaps, including the green aspects of innovation. Topics that form the literature gaps include green innovation behavior, green finance, inhibitors of green innovation, green product innovation, and green technological innovation and so forth. This study makes a cumulative contribution to the current stock of knowledge, as the research will be used to bridge knowledge gaps or areas of knowledge that have not been studied on green innovation. This knowledge would give future researchers a higher probing of designing and undertaking studies that concentrate on such observations that were revealed as having research gaps.

Key words: Green Innovation, Social Capital, Environment, Industrial Sector, Social Network, Sustainability.

Introduction

The world economy is expanding rapidly; however, this increase is accompanied by significant environmental damage and massive energy consumption. Energy use and environmental deterioration are elements that endanger the safety of human existence. The creation of a green economy is essential, as environmental concerns have become a significant factor in global economic and social development [1]. Businesses have a social duty to protect the environment, as a crucial element of superior economic growth. Economic progress is fuelled and derived from innovation. Green innovation has boosted the growth potential of the green economy and emerged

as a crucial means for businesses to consider both financial and environmental advantages. Companies' capacity and willingness to implement green innovation are frequently constrained by their long cycle, high level of uncertainty, high investment requirements, high risk, and dual externalities [2]. Thus, we must actively investigate the forces behind companies' green innovation and encourage businesses to follow the path of sustainable development [3]. Global warming has become a serious issue and this has sensitized stakeholders more about the environment than before. Stakeholders are more willing than ever to favor environment-friendly businesses. At the same time, corporations seek to extend their social circles in the way that will promote a greener innovation. The role that green social capital plays in the GI process is to mediate the relationship between the network embeddedness and the performance of innovation partially. Network variety had no impacts on level of green social capital but it had a positive impact on green social capital, green innovation performance by assisting in network entrenchment. This demonstrates great importance of social capital in encouraging green projects and suggest that the creation of strong social networks has the ability of enhancing the environmental innovativeness of a business. In response to the green demands of the stakeholders, a new form of green attitude is gaining prominence in corporate activities such as green supply chain management, production, marketing, design and research and development (R&D). [4] describes how environmental management is gaining significance in the routinary business and new business role in organizations. Green innovation requires social capital because it enables entrepreneurs to overcome challenges, including obtaining funding, overcoming technical problems, and gaining clients. Social capital facilitates access to resources and assistance, which are essential for environmental initiatives. This is achieved through effective network management, trust building, and strategic cooperation. In addition to being crucial in addressing the issues of environmental entrepreneurship, social capital is also necessary for the advancement and spread of green technologies. A crucial element in encouraging creativity is social capital. It offers a cooperative and trustworthy organizational structure that makes it easier to share resources and knowledge, both of which are critical for innovation. The "or industries'" social networks within communities can offer fresh perspectives and frameworks for evaluating and enhancing them. In the modern day, innovation-driven green development is essential for attaining industrial transformation and enhancing quality and efficiency. Compared to regular technological innovation, Innovation in green technologies relating to the environment is more successful and has a greater positive impact. An important and favorable impact on the adoption of green industrialized technology is social capital. The most important of its numerous aspects is social participation. This study suggests that social capital, especially for younger and part-time rice producers, facilitates the adoption of green technologies. In order to boost social capital and accelerate the transition to low-carbon and environmentally friendly farming practices, it is crucial to encourage group activities and organizational support [5]. An organization's operational procedures, advertising strategies, institutional frameworks, organisational arrangements, and products (including goods and services) that reduce environmental risk and pollutant emissions, as well as the negative effects of energy and resource usage, are all examples of green innovation, whether intentional or unintentional [6]. The Organisation for Economic Cooperation and Development in Pakistan offers this description. Because of the increasing pollution problem, environmental safety testing has become a focus of the global economy. To prevent pollution of the environment, the international community also put environmental safety measures into place and made major efforts. Between 2022 and 2023, Pakistan's manufacturing GDP decreased from 4864350 PKR million to 4606868 PKR million. The State Bank of Pakistan reports that between 2000 and 2023, Pakistan's manufacturing GDP averaged 3113545.02 It peaked in 2022 at 4864350.00 PKR million and fell to a record low of 1405601.92 PKR million in 2000 [7]. Pakistan's economic growth strategy is centered on increasing exports and reviving the industrial sector, as per the Framework for Economic Growth

[8]. Over the previous three decades, structure of industries has not evolved all that much. Inadequate environmental performance is the primary cause of the low export performance of Pakistan's industrial sector. This paper's primary focus, which is structured as follows, is, the connection between the environmental performance of Pakistan's industry and its objectives for export growth and industrial expansion. At a moment when it might be able to bridge the gap created by global manufacturing behemoths like China Pakistan's manufacturing sector is outdated and runs the risk of losing clients. Going green has recently been a nearly unavoidable strategic decision that helps businesses handle more pressing environmental concerns [25]. The deterioration of the environment and the increased stewardship requirement as demanded by the stakeholders are creating a pressure on businesses to behave in an ethical way and integrate the environmental issues into their business strategy. [26; 27]. Companies are soon coming to the realization that green innovation is a crucial aspect to look upon so that they can solve the increasing environmental problems. By continuously upgrading goods, processes, technologies, and management systems, GI demonstrates initiatives to lessen the operational impacts of businesses' operations on the environment. [28; 29]. In addition to helping businesses fulfill their ethical obligations and tackle the growing environmental issues, GI gives them the chance to improve their competitiveness, establish their brand, and achieve strong financial results [30]. Besides, the competence to effectively combine and apply the resources that could facilitate a given innovation and which could be multidimensional, socially complex and new to a business is key to the success of innovation [31, 32, 33]. To maximize the adoption of GIs, businesses will need to therefore establish reasonable absorptive capacity (AC) or capacity to recognize, accept, and utilize external knowledge on business grounds [34, 35]. AC supports companies' ability to innovate and quickly combine existing and external resources across a range of organizational activities [36]. Businesses can use this capability to help them build the competencies and abilities necessary to adapt to the external environment [37; 38].Furthermore, by utilizing externally generated information and resources, businesses can successfully integrate innovation into their current operations, processes, and product ranges [39; 40;41].

Methodological Framework

The literature study of the problem on the basis of bibliometric analysis and the VOS viewer tools represents a short listing of the understanding map of this or that issue. This development of a process was developed to analyze green innovation using social capital journal articles and report the results using a process consisting of eight steps. The Preferred Reporting helped to ensure the quality and consistency of the current study. The preferred reporting items of systematic reviews and meta-analyses are the minimal items of evidence-based reports on systematic reviews and meta-analyses. [9]. The initial step was the literature analysis of green innovation with social capital that was conducted in January 2024 with the purpose to explore the latest angle of viewing the research problem and see the most used keywords in the topic. Superior search of the search word green innovation using. Social Capital in the titles of the articles published between the year 2014 and 2024 in the Lens.org database provided the following information [insert figure]. On that note, the most frequently occurring concepts in the GI literature were the terms green innovation and sustainable development. This implies that there is an upward trend in the literature regarding use of these terms. In order to achieve very relevant studies within the field of interest, the keyword used was "green innovation using Social Capital". The second step was to clarify how the information on the nature of relationships between them is to be collected and whom it depends on the inclusion of the individuals. Within a Systematic Literature Review (SLR), eligibility criteria to select articles and method of analysis is further objective. In connection with the article selection process, PRISMA flow diagrams have been proposed to SLRs [10,11]. This process is comprised of three steps which are as follows, "Identification, Screening and Included." Figure 1

shows the procedures used in the current study. In the first stage, the database, data extraction methods and search phrases were established. Green innovation using Social Capital was the principal keyword to search. The researchers did not incorporate other related terms as search criterion since this is the study of green innovation by using social capital. Using the inclusion criteria (see Table 1), the papers were incorporated at the screening level. The review was restricted to "Articles" defined as: Publications as articles published in Journals in terms of English in the period 2014 to 2024 under: Emerald, Wiley, Elsevier B. V. publisher and containing the word, Green Innovation through Social Capital. The time period 2014 was selected due to the sudden

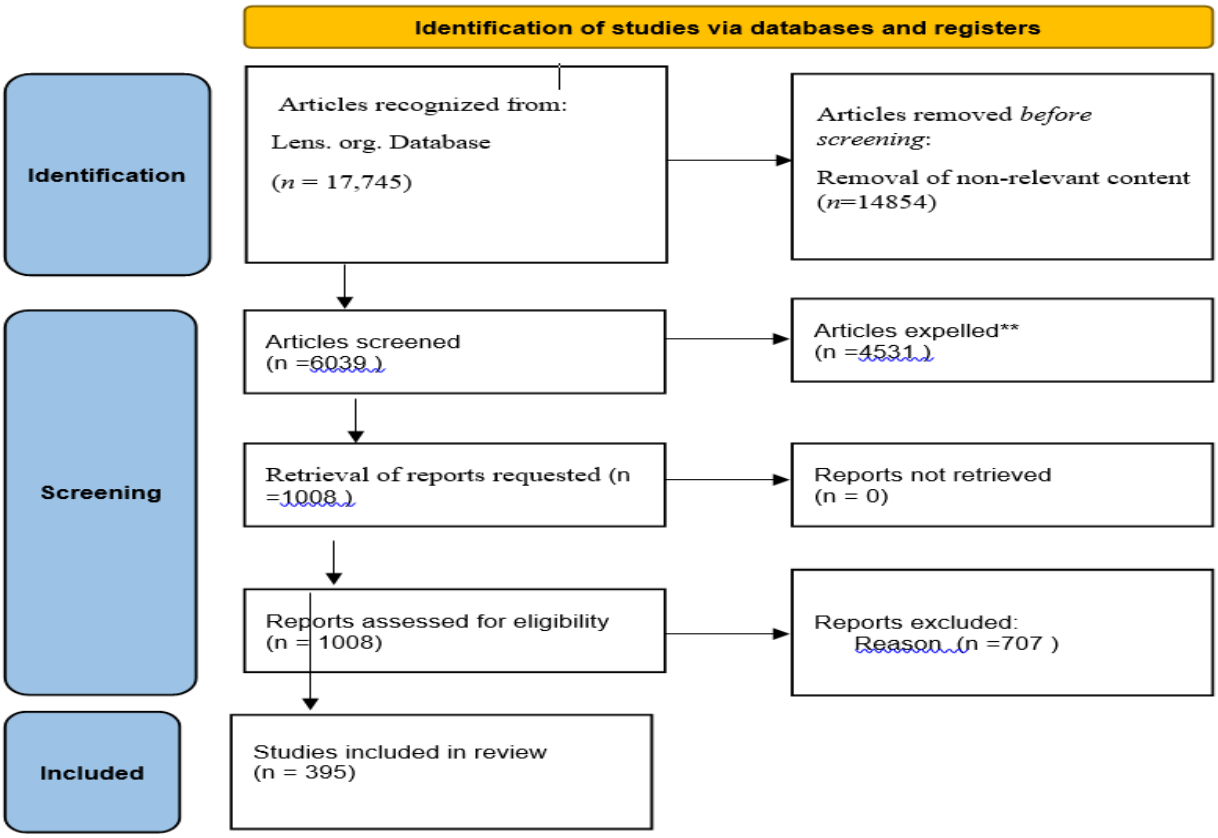


Figure 1: Source (s) Figure by Author Prisma articles Selection Flow Diagram

burst of intense lending on the title and heightened discussion on it. since 2014, be it due to its broad and essential value and applicability along with environmental issues [12].

Table 1 provides an overview of the search procedures. Journal papers are suggested for SLRs and guarantee methodological quality to produce pertinent results that meet internal validity requirements; therefore, they were chosen [21]. Step three involved gathering data from the Lens.org database on January, 2024, following the definition of the study's parameters. In the initial phase, 17,745 articles were produced. During the identification phase, 14854 of the 17,745 articles were disqualified because they had no direct bearing on the research. The fourth step included evaluation of the next 6039 articles based on criteria of inclusion. It includes articles "published as articles," in the "English language" journals, published between the dates of "2014 - 2024," and respect the inclusion criteria (see Table 1). This was screened using Lens.org auto-screen on the database and its limiting options as language, publication type, articles with objects of green innovation through social capital in title, publication date and publisher. At this stage, items were culled on the basis that they did not meet the inclusion criteria. Articles published in other languages, articles published outside the year period under consideration, and article

published by other publishers were not included as non-English publications, articles published by other publishers, and other publishing genres (including publications, book chapters, dissertations, reports, editorial comments, and conference proceedings were not included. The fifth step was downloading and manual screening the full texts of other articles. Manual screening involved each author of the study authors assessing all abstracts in the downloaded articles separately and reviewing it according to the inclusion criteria. After the exclusion of any irrelevant publications, the remaining publications were reviewed and assessed individually and independently by the authors of the study as to the exclusion criteria.

Articles that are published the English language's articles Published in a journal Articles that contain the term The use of social capital for green innovation						
Keywords	Field	Published in	Language	Time	Publisher	Type of publication
GI through SC	all	All	English	all	All	All
GI through SC	title	all	English	all	All	All
GI through SC	title	Journal	English	all	All	All
GI through SC	title	Journal	English	2014–2024	All	All
GI through SC	title	Journal	English	2014–2024	All	All
GI through SC	title	Journal	English	2014–2024	All	article

Table 2. length.org database search summary

Methodological eligibility and study field were used as exclusion criteria for this review. The inclusion of publications with excellent methodological quality was ensure by eligibility evaluation. A total of 707 papers with " technique unclear" and "area of study irrelevant." were found during the eligibility check and removed from the study. Consequently, these pieces were rejected from the study. As shown in Figure, the articles were ultimately included in the evaluation. The sixth step was based on a bibliometric analysis of the 395 selected papers. Bibliometric analysis is one of the scientific methods used in measuring scientific activities [13, 22]. As [14] defines, it includes two kinds of studies: (1) scientific maps; and (2) evaluation, performance, and a scientific productivity analysis. Keywords and other data may be generated into citations of article bibliometric networks. Keyword analysis is the most popular unit of analysis of bibliometric networks. The relationship between co-occurrence of terms can enable one to identify many links in an article [15]. In VOSviewer, it is possible to construct multiple bibliometric relationship-based maps: author or journal co-citation networks or keyword co-occurrence networks. In order to attain the central goal of the study, i.e., ascertaining the knowledge base of green innovation as the manifestation of social capital, co-occurrence analysis was performed. One more of the visualization by means of co-occurrence data of keywords is the keyword density visualization. This helped to fulfil the second aim of the study that was to determine research gaps within the domain of green innovation and social capital. In comparison to other visualization programs, VOS Viewer offers unique and totalizing images that сапнок an easy presentation and analysis of bibliometric results [1].Moreover, simple data on the set of articles, the amount published each successive year, and the word associations of the average citations made was produced by using

the Biblioshiny, which is a package in R. The seventh phase involved a critical analysis of the chosen papers (N=395) from this evaluation, with an emphasis on gaining a deeper grasp of the crucial topics to be covered in subsequent investigations. Review papers carefully in accordance with the most recent SLR studies to produce this varied collection of research articles[16,17]. The four authors reviewed the articles in light of the themes found in the literature to guarantee an objective account of the selected studies.

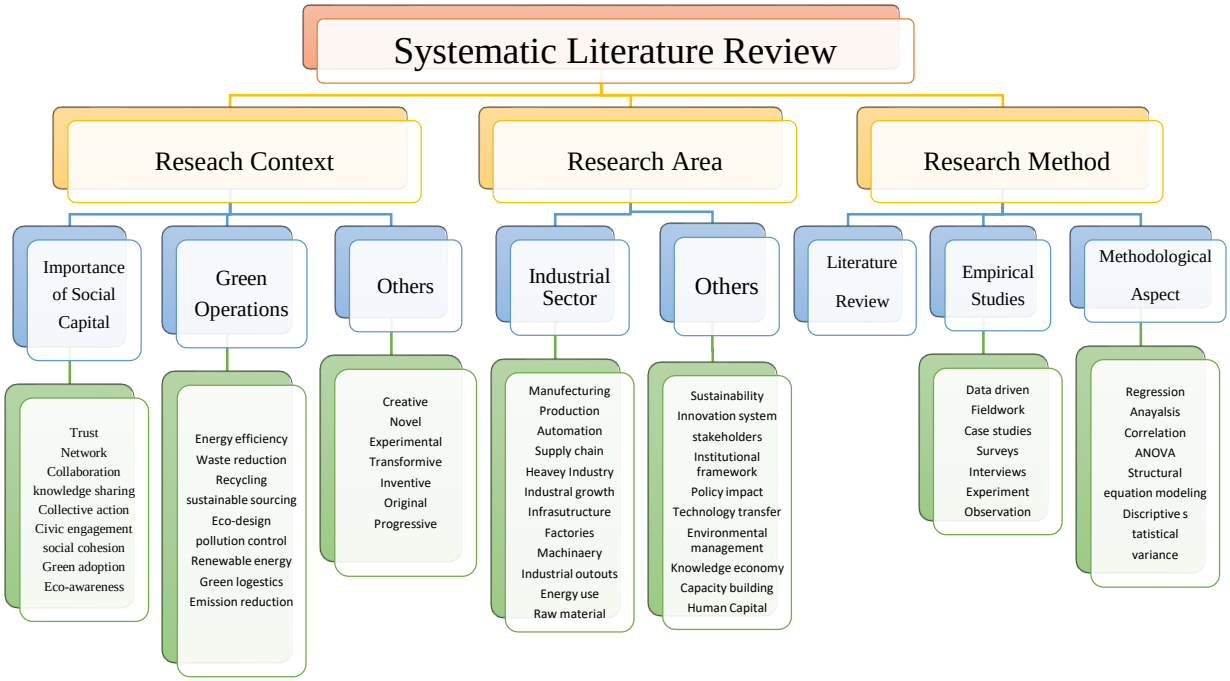


Fig.2.Systematic literature review map/Source: Authors.

Evaluation of Article Bias Risk

Researcher bias can interfere with the quality of a review paper in terms of selection of publications and analysis of the publications [18]. Such factors as a methodical objective article selection process, and review procedure will assist in the prevention of selection bias. Moreover, as outlined by [19], a preliminary model of the protocol that determined the analysis procedures allowed avoiding and dealing with the prospect of analytical bias [1] In order to reduce the risk of bias in the investigation under consideration, the inclusion criteria were clearly explained to exclude inconsistent usage with regards to their implementation in the study selection process. Table 1 shows the criteria. Second, the further process of research-flow is measured with the help of the PRISMA DIAGRAM.

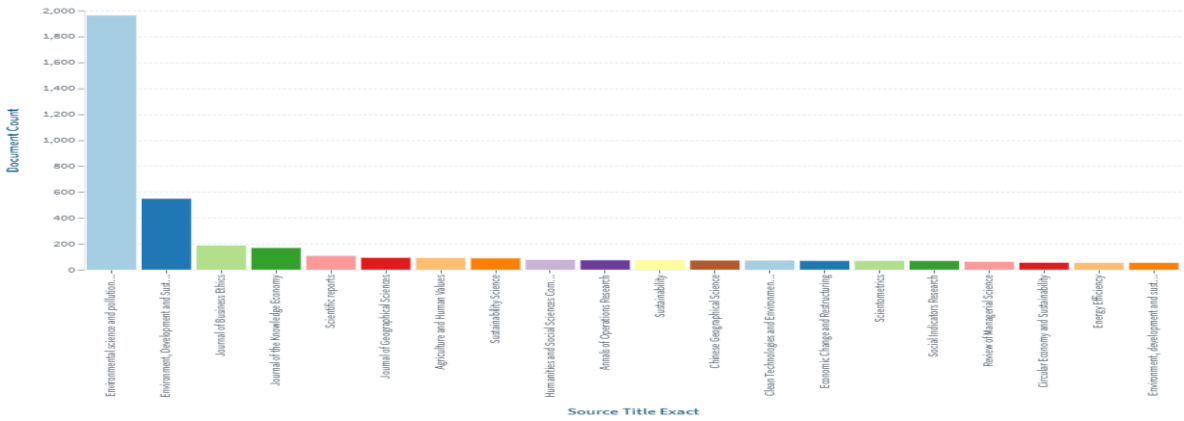
Results and Discussions

Table 3 shows the major information of the papers that are included in this review. 395 in all. The papers were published in 2014-2024. The review utilized 50 keywords. This reveals that the majority of the research has been done in 2020. Academics working on the area of green innovation continue to expand. Students have been more interested in ecological innovation since 2020. However, some researchers [20] discovered that green innovation gained popularity among researchers after 2010, while others [2, 12] observed that it did so after 2014. Figure 3 displays the most pertinent sources of published papers. It displays the journals with the most articles published.

Description	Results
Time span	2014-2024
Author's keywords	50
Journal article	395

Source(s): Table by authors

Figure 3: Source(s): Figure by authors Annual scientific production



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Study Results

This section presents the findings that fulfill the aims of the inquiry. This was done using co-occurrence and co-citation analyses, among others. The hallucination of the term co-occurrence network and the co-citation analysis graph were useful in attaining the first of the goals, which was to use social capital to determine the more current content on green innovation and to come up with bibliographic data using an SLR. The second aim, which was to determine gaps in the empirical research on GI, was fulfilled through the use of a visualization method referred to as keyword co-occurrence density.

The State of Green Innovation Knowledge at the Moment

The strength of the co-occurrence relationship between the 50 keywords and other keywords was obtained by multiplying the number of the occurrence of each of the 50 keywords by the minimum number of keyword occurrence provided by the VOSviewer software. The researchers would tend

to use up to fifty keywords. The keywords covered by the gradually increased times of occurrences of keywords in the literal sense increase until the threshold level of keywords is attained and its occurrences begin at one time. The thickness of the lines that make up the figure indicates the level of closeness of the keywords to each other. The size of the node points at the frequency of the events. There was a regular increase in the sizes of the nodes. Consequently, it is possible to say that the process of GI is a relatively common practice in the research. This is an indication that a lot of research work has taken place in this field. Table 4 presents the most frequently used keywords in the study and these include: GI, green technology innovation, , and innovation performance, which have a consistent increasing trend of their occurrence times. This means that scholars have concentrated on these issues. These most commonly used terms in their research include green innovation, innovation, social capital and sustainable development as listed by [23]. The keywords, consequently, are obviously the most popular ones in the region and are as follows: Green innovation and Innovation. That does not imply though that there exists adequate research in those bodies since keywords are not displayed in the red section in the keyword co-occurrence density visualisation map.

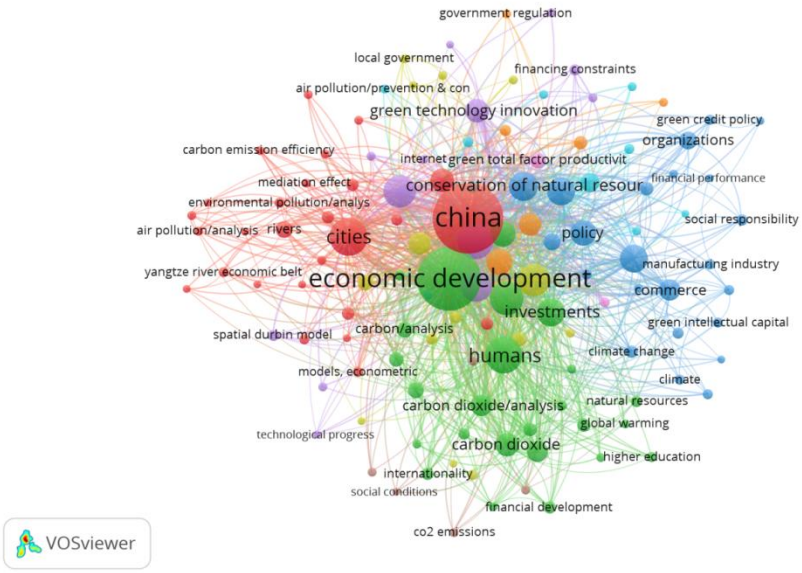


Figure 4.The keyword co- Source(s): Figure by authors occurrence network visualization

Cluster - 1 Red

The red cluster is centered around "China" and includes keywords such as air pollution/prevention & control, "carbon emission efficiency, mediation effect, environmental pollution/analysis, air pollution/analysis, cities, yangtze river economic belt, spatial durbin model, "models, econometric, technological progress, internationality, social conditions, and co2 emissions, These keywords suggest a focus on China's environmental challenges and the need for sustainable development strategies.

Cluster- 2 Green

The green cluster is dominated by economic development and includes keywords such as bumans, carbon dioxide/analysis, carbon dioxide, financial development, natural resources, global warming, higher education, "climate change, climate, and co2 emissions. This cluster highlights the interconnectedness of economic growth, human well-being, and environmental degradation.

Blue Cluster- Blue

The blue cluster is centered around organizations and includes keywords such as green credit policy, policy, social responsibility, manufacturing industry, commerce, green intellectual capital, investments, conservation of natural resource, internet green total factor productivity, financing constraints, government regulation, and local government. These keywords indicate a focus on the role of organizations and governments in encouraging environmentally friendly behaviours and green technologies.

Keywords	Occurences
Green Finance	2
Green Innovation	10
Green Intellectual Capital	2
Social Capital	10
Organizational Capital	1
Enterprise Innovation	1
Radical Innovation	1
Social Capital, Finance	1
Social Capital, Innovation	1
Green Economy	1
Capital and Quality	1
Green Supply Chain	1
Eco-Innovation	1
Corporate Green Innovation	1
Green Development	1
Green Knowledge	1
Innovation, Circular Economy	1
Innovation and Network	1
Environmental Capability	1
Green Growth	1
Innovation and Sustainability	1
Social Enterpenurship	1
Green Product Innovation	1
Relational Capital	1
Green Initiatives	1
Sustainable venture Capital	1
Green Dynamic Capability	1
Green Economic Efficiency	1
Community Capitals	1
Industrial Innovation	1
Smart Innovation	1
Innovation on Green Growth	1
Green HRM	1
Innovation in Business	1
Social Sustainability	1
Green Intellectual	11
Green Innovation strategy	1
National Innovation and Social Capital	1

Green Capital Social Network	1
Network Diversity	1
Mediating Role	1
Green Innovation and Social Responsibility	1
Green Performance	1
Green Innovation Moderating Effect	1
Green Transformation	1
Eco-innovtaion	1
Ecological Sustainability	1
Green Technological Innovation	1

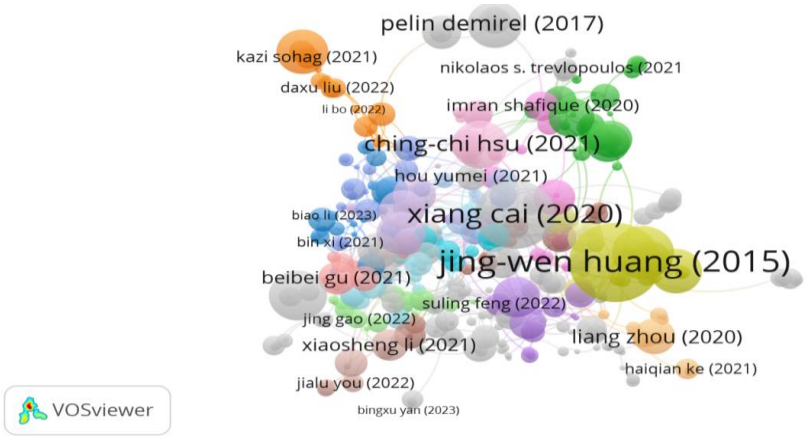


Figure 5. Source(s): Figure by authors Co-citation analysis based on the documents

As shown in Figure 6, co-citation analysis was conducted using sources, with a minimum of two sources for a referenced item being taken into consideration. Thirty-six of the 94 journals and cited publications were deemed to be sufficient. The overall citation strength for each of the 36 sources Links to further sources was computed. Sources with a granted overall link strength were chosen. The colored circles indicate the sources and their connections to other sources. as well as lines. Additionally, the citation weight is indicated by the circle's size. The Cleaner Journal With the most citations, "production" in green creates a green cluster with co- referenced publications such as "Environmental Impact Assessment" and "Sustainable Cities and Society. In terms of "corporate social responsibility and environmental management," "technological forecasting and social change" correlates to "business strategy and the environment" in bright red. In contrast, there are fewer citations for other sources, which are blue, yellow, and purple. and the ages of weak interlinks. The same data are shown in Table 5; it is the most often mentioned. Journals published research articles on the topic. Evidence indicates that The Journal of Cleaner Production was the highest-cited journal, with 66 papers and 3,927 citations. The Corporate Strategy and the three articles in the Environment journal include 1837 citations. There are 2,395 citations in 22 papers on social change and technological foresight. The Journal of Cleaner Production, the Journal of Business Ethics, Business Strategy, and [24]. The most mentioned journals are those related to the environment. Citation analysis, however, solely evaluates not an article's significance in a study but rather its popularity among other articles in a sample field.

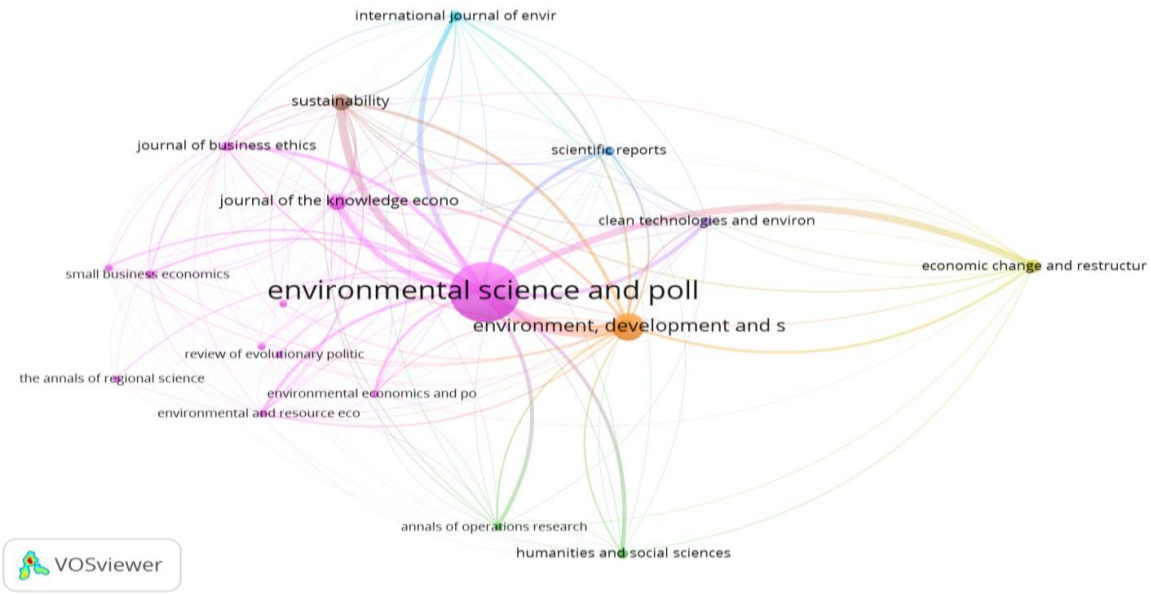
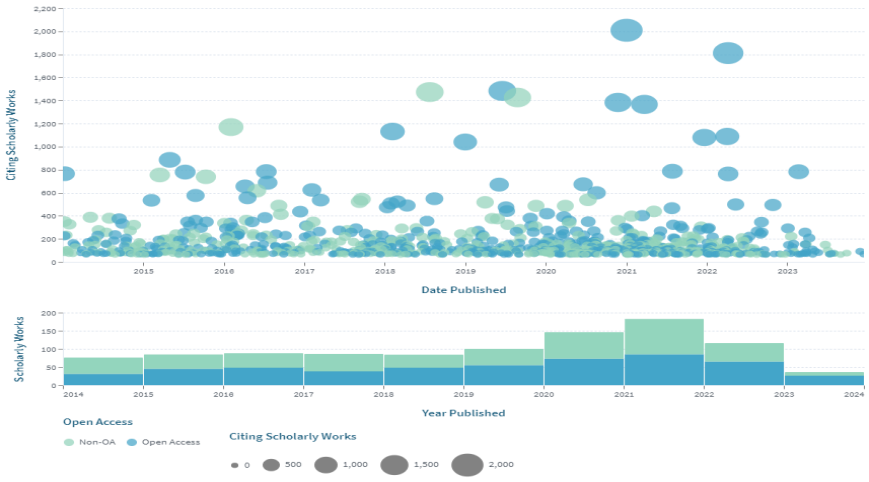


Figure 6. Journals Visualisation Source(s): Figure by author

Red, yellow, and green are typically the three colors used in density visualization maps. Red-highlighted keywords indicate that many studies have been conducted on them. Thus, proven knowledge exists in this field [11]. There is no red region in Figure 7, indicating that there are not many studies pertaining to specific keywords. Additionally, a term in the yellow region suggests a considerable level of investigation, while phrases that fall in the green range indicate very few studies have been conducted. Modest and insufficient research does not provide a recognized understanding. According to this reasoning, the keywords in Table 4 indicate that there has been insufficient investigation of established knowledge because they are located in the yellow and green regions of Figure 7. Therefore, more research in such areas must be addressed by future researchers. Therefore, practically every sector needs more research, including innovation, green Further research should be conducted on sustainable development, environmental regulation, innovation performance, technological innovation, and environmental performance. In addition, obstacles to GI, green product development, green finance, and GI behavior. Future research can examine innovation and green technology innovation.



Source(s): Figure by author

The image provides valuable insights into the citation patterns and publication trends in scholarly works. The data suggests a growing interest in recent publications, with 2021 being a peak year for citations. However, the decline in publications from 2022 onwards warrants further investigation to understand the underlying causes. Citation Trends: The scatter plot reveals a general increase in citations over time, with a notable spike in 2021. Publication Dates: The bar graph shows a steady rise in publications from 2014 to 2021, followed by a decline in 2022 and 2023. Open Access: The graph includes an open access indicator, suggesting that some publications are available under open access licenses.Correlation: Publication dates and the quantity of citations seem to be positively correlated, suggesting that more recent works typically get more citations.Peak Citation Year: 2021 highlights the year with the highest number of citations, suggesting a significant impact or relevance of publications during that year. Decline in Publications: The decline in publications from 2022 onwards may indicate a shift in research focus or a decrease in academic output.

Conclusion:

The current study's main goals were to (1) determine the amount of information that is already available and (2) pinpoint any research gaps on green innovation using social capital. The PRISMA guidelines were utilised to select the papers from lens.org that were used for analysis. Following the accepted inclusion criteria, 395 articles in all Publications released from 2014 to 2024 were reviewed. To accomplish the first goal, the study used strategies including keyword co- Co-citation analysis and visualisation of occurrence networks. Consequently, the term "green The term "innovation" appears most frequently in this analysis, indicating that it has been thoroughly investigated. However, according to The co-occurrence density of the keyword visualisation map, no specific field of green innovation has been thoroughly investigated. It is also noted that there is a moderate level of investigation activity in "Green innovation through social capital" Consequently, it might be said that green innovation through social capital is still a relatively new sector. Consequently, future It would be beneficial for research projects to focus on these less explored regions. Additionally, thematic separation analysis identifies certain locations as "barriers to. There is little focus on "organisation learning" and "development for green innovation." and require further study in the future. The study's second The objective was to determine the gaps in the literature around green innovation through social capital. As previously mentioned, the research environment surrounding green innovation through social capital is still largely untapped and has to be examined from a number of angles. such as green product, green finance, GI behaviour, and obstacles to green innovation, technical innovation in the green space, and so forth. These factors need to be addressed by upcoming scholars. Additionally, it is necessary to conduct a variety of green innovation studies depending on various theoretical and logical justifications, which will contribute to the comprehensive depiction of green future innovation. The reader now has a better understanding of green innovation principles through social capital and how they have evolved thanks to this examination. Additionally, it displayed the most pertinent literature journals. Charting the awareness of green inventiveness evaluation, highly regarded research papers that have been published in journals, the theoretical underpinnings of the significant research on driving green innovation through social capital. It offers suggestions for people who are interested in joining the green innovation space, along with details about which journals and articles to consult. Additionally, it is proposed that researchers utilise this work to build green innovative ideas with greater integration of theory.

Suggestions for Future Studies:

The findings of the research reveal that numerous prospective paths can potentially be examined in further research. This is especially the case since such findings imply some research gaps, which

consist of green innovation, innovation performance, green finance, green behavior, green product innovation, green process innovation, GI performance innovation, digital transformation, and green technology innovation. Secondly, the scholars will also be compelled to explore trans-organizational learning and innovative thinking. Big data, green supplier learning, hindrances to the growth of GI, motives of environmental greenness, environment management, elegant frameworks of corporate environment ethics and commitment, and R and D capability of green innovation. Two points may be conceded as to the general limitations that are present in it. First, only publications in journals belonging to one database are within the scope of the study. Using more databases might have resulted in the finding of more articles and a deeper understanding of driving green innovation through social capital in the industry. More articles and green spaces would have been available if more databases had been used in the search. There is room for inventiveness. Owing to the database chosen, the available choices for analysis. Additionally, there are few analytical options. If the study had focused on more databases, we would have had additional possibilities for examining the body of knowledge. As a result, several analytical components (such as theme analysis) were carried out manually by the scholars. Second, even if recently released papers have been considered in the analysis, they do not have access to the number of citations. Consequently, future studies should consider this information.

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