

Bibliometric Analysis of Sustainable Human Resource Management

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ABSTRACT

Sustainable Human Resource Management (SHRM) has emerged as an increasingly important area of research in response to growing global concerns regarding sustainability, environmental responsibility, and long-term organizational performance. This study aims to examine the development, intellectual structure, and research trends within the field through a bibliometric analysis approach. Bibliographic data were collected from the Scopus database and analyzed using bibliometric indicators and network visualization techniques through VOSviewer. The analysis includes publication trends, co-authorship networks, institutional collaboration, country collaboration, keyword co-occurrence, overlay visualization, density visualization, and citation analysis to identify the dominant themes and emerging directions of the field. The findings indicate that research in this area is strongly centered on the concepts of sustainable development and sustainability, which function as the primary foundations connecting multiple research streams. Collaboration patterns reveal that scholarly production is concentrated among several influential authors, institutions, and countries, with strong international connectivity but uneven distribution of research leadership. Keyword mapping demonstrates that the field has evolved from an initial emphasis on environmental protection, ecosystem management, and resource governance toward a more integrated perspective incorporating decision-making processes, organizational sustainability, and human resource management dimensions. Citation analysis further shows that the intellectual foundation of the field is dominated by highly influential studies addressing food security, social-ecological systems, biodiversity conservation, climate adaptation, and sustainable resource management. Despite increasing attention to management-related topics, human resource management remains relatively underrepresented, indicating opportunities for future research. This study contributes by providing a systematic overview of the knowledge landscape and identifying potential directions for advancing Sustainable Human Resource Management research.

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1. INTRODUCTION

The rising concerns for environmental issues, social inequalities, and

economic uncertainties have promoted the adoption of sustainability-based management among organizations within the past decades. Sustainability does not anymore imply being just concerned about environmental issues; instead, it involves all three aspects of economic performance, environmental responsibility, and social considerations. In such situations, human resource management becomes very crucial since human resources can be considered as one of the biggest assets an organization possesses when considering its sustainability strategies [1], [2]. Sustainable Human Resource Management (Sustainable HRM) was therefore developed as a management strategy that considers both the conventional human resource management and sustainability approaches to help promote organizational resilience, employee welfare, and socially responsible business practices. As defined by [3], Sustainable HRM is characterized by the balance between organizational goals and the development and preservation of human resources.

The rising significance of Sustainable HRM has much to do with the evolving expectations of stakeholders, such as the government, consumers, investors, and employees. Companies are required to have positive impacts on the environment while competing in turbulent markets [4]. As a result, organizations have incorporated sustainable values in their hiring process, employee training, performance evaluation, employee motivation, managing workforce diversity, and occupational safety and health management practices. According to [5], Sustainable HRM ensures organizational sustainability through fostering sustainable behaviors, practicing social justice, and cultivating sustainable human capital development. In addition, global issues like climate change, technological revolution, and labor force insecurity have made organizations seek sustainable people management practices. Companies without such practices can experience high staff turnover, low productivity, damage to their reputation, and difficulty recruiting skilled workers [6].

The academic focus on Sustainable HRM has increased considerably during the past twenty years. Researchers from different fields like management, organizational theory, environmental studies, and labor relations have made contributions to this domain. The current body of literature has covered many themes including green human resource management, employee well-being, organizational sustainability, corporate social responsibility, ethical leadership, and sustainable performance. For instance, [7] highlighted the importance of Green HRM practices in achieving environmental sustainability by actively involving employees and behaving environmentally responsibly. In a similar vein, [8] pointed out that Sustainable HRM should address both ecological and social aspects for sustainable organizational development. As the literature base expands, it has become increasingly challenging for academics to discern themes, key authors, collaboration patterns, and research trends.

As a result of the exponential increase in publications in scientific journals, bibliometric analysis has become a useful tool for assessing and understanding the intellectual structure of a certain research area. Bibliometric analysis is defined as the study of academic literature through quantitative methods involving an examination of citation patterns and literature trends. Such approaches provide information on the development path of a specific topic, important journals, active authors, institutional collaborations, and changes in themes. According to [9], the use of bibliometric approaches in studies enables a thorough and unbiased examination of scientific information, which makes it possible to gain a better insight into the structure and future perspectives of a research domain. As compared to conventional literature reviews, bibliometric analysis can be considered more advantageous as it encompasses a wider range of aspects and even presents them visually. Bibliometric analysis is extremely useful in relation to Sustainable HRM, as the area in question is interdisciplinary and constantly developing in multiple respects.

Although many studies have been done in relation to Sustainable Human Resource Management (HRM), it is clear that there is still a need to conduct comprehensive analysis of the existing body of knowledge regarding the subject matter. Most studies have concentrated on various issues such as green HRM, employee engagement, or sustainable leadership, among others, without giving any kind of integrated view of what has already been done in the field. The growing volume of studies on the topic has also led to fragmented information due to the wide scope of the topic in question. Bibliometrics is important in this case since it will allow for the identification of influential studies, research trends, collaborative works, as well as emerging areas of Sustainable HRM research. This will be quite helpful both to academicians and practitioners, especially those interested in knowing how sustainable human resource management can be achieved.

Even though Sustainable Human Resource Management has been a subject of extensive academic discussion, the available literature suffers from dispersion across several research areas and fragmentation. As a result of this fast-expanding field, it has become increasingly hard to single out the major authors in Sustainable HRM, the most important pieces of literature, topics, and trends. In addition, a lot of previous literature was focused on conceptual deliberations or organizational approaches but did not offer a thorough intellectual map of Sustainable HRM research. Lack of bibliometric studies in Sustainable HRM hinders the exploration of research patterns, collaboration tendencies, and theme evolution. There is thus a need for a bibliometric study of Sustainable HRM literature in order to outline its structure and suggest new avenues for further research.

This research will reveal trends in publications, influential researchers, journals of high productivity, prominent organizations, and cooperation among researchers working on Sustainable HRM. Besides, this paper will focus on identification of major themes and new issues in the field under discussion. It is hoped that the research

results will allow the researcher to get a comprehensive view on the current status of Sustainable HRM studies

2. METHODS

The analysis of literature in this paper is based on the bibliometric analysis method that will be used for examining the evolution of the Sustainable Human Resource Management (Sustainable HRM) literature. Bibliometric analysis is a method of quantitative evaluation that analyzes scientific publications by means of citation studies, publication statistics, authors, and keywords. The aim of bibliometric analysis is to describe systematically the intellectual organization and evolution of a research area. The areas that are explored in the course of the research include publication dynamics, key authors, influential journals, cooperation among organizations, and research topics in the field of Sustainable HRM.

The data utilized in this research is collected from trusted academic sources such as Scopus and Web of Science. The data collection procedure entails conducting searches on articles associated with "Sustainable Human Resource Management," "Sustainable HRM," and other human resource management strategies that are linked to sustainable development. The selection criteria include research-based articles written in English during a specified period. Editorials, notes, and conference papers are among the articles that will not be included in the analysis. Following the data collection procedure, duplicate records are eliminated, and the selected articles are converted into formats that can be subjected to bibliometrics analysis. The collected data includes the author(s), title, keywords, abstracts, citation count, journal name, affiliation, and publication date.

The bibliometric analysis is done using software VOSviewer for analyzing and visualizing the connections between various publications. There are several approaches that can be used for this

purpose, such as citation analysis, co-authorship analysis, co-citation analysis, and keyword co-occurrence analysis. The citation analysis is used to determine important publications and authors in the field, whereas the co-authorship analysis helps in analyzing the networks of

cooperation between researchers. The co-citation analysis is performed for discovering the intellectual structure of the field, while the keyword co-occurrence analysis allows identifying major themes and emerging issues in Sustainable HRM research.

3. RESULTS AND DISCUSSION

3.1 Co-Authorship Analysis

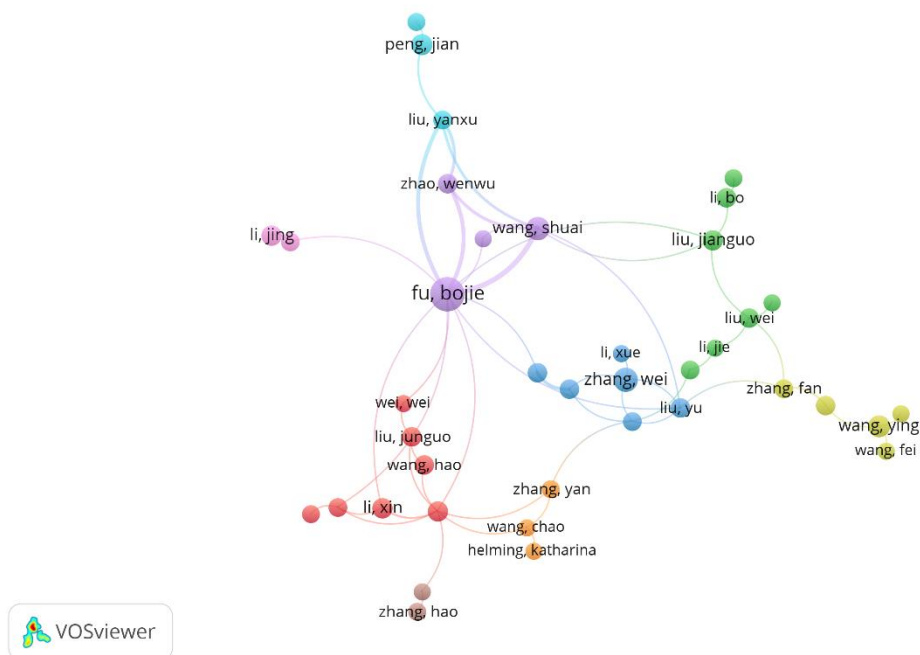


Figure 1. Author Visualization

Source: Data Analysis

From the co-authorship network diagram, it is evident that SHRM entails collaboration among various researchers and thus contains several clusters, which represent different research teams and academic communities. One of the notable features of the co-authorship network diagram is the prominence of Fu, Bojie, whose large node and numerous connections with other nodes indicate that he is one of the key actors in knowledge transfer and collaboration in SHRM. Moreover, it is noteworthy that there are some bridge actors

like Zhang, Wei, Wang, Shuai, and Li, Xin that can serve as bridges between different clusters, meaning that these researchers play a vital role in establishing cooperation between researchers from various domains. It is also important to mention that the color difference shows several cooperation clusters, which implies that members of the same cluster cooperate more often than others. Nevertheless, the fact that only a few links exist between clusters means that collaboration does not happen at a broad scale.

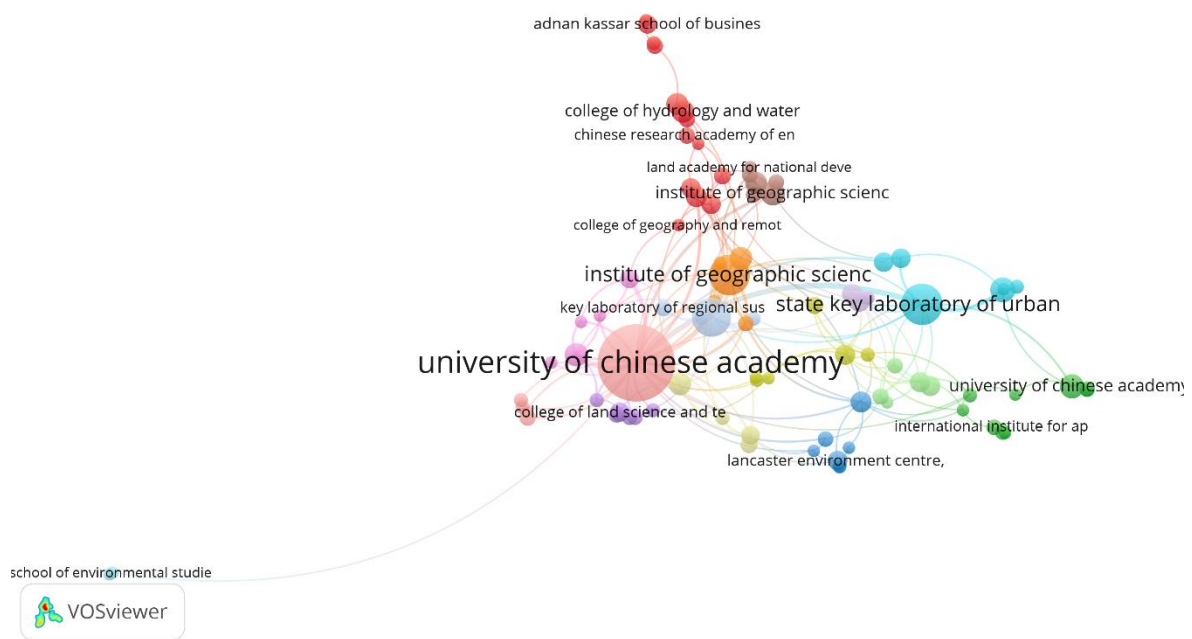


Figure 2. Institution Visualization

Source: Data Analysis

Institutional cooperation network shows the organizational structure and the focus of the scientific researches within the scope of Sustainable Human Resource Management. In particular, it should be noted that the pattern of institutional cooperation is rather centralized, which means that there is one predominant institution. The largest node and maximum number of connections between this institution and others are characteristic features of the leading university, which is the University of Chinese Academy of Sciences. Therefore, it could be assumed that this institution is a leader in

knowledge production and coordination of activities with other institutions. There is a cluster of other institutions connected to each other and located around the University of Chinese Academy of Sciences, including the Institute of Geographic Sciences, State Key Laboratory of Urban and others that form research centers. It means that the scientific work within the scope of Sustainable Human Resource Management is integrated to a great extent, but several international institutions, including Lancaster Environment Centre, are connected to others but have a limited number of connections with them.

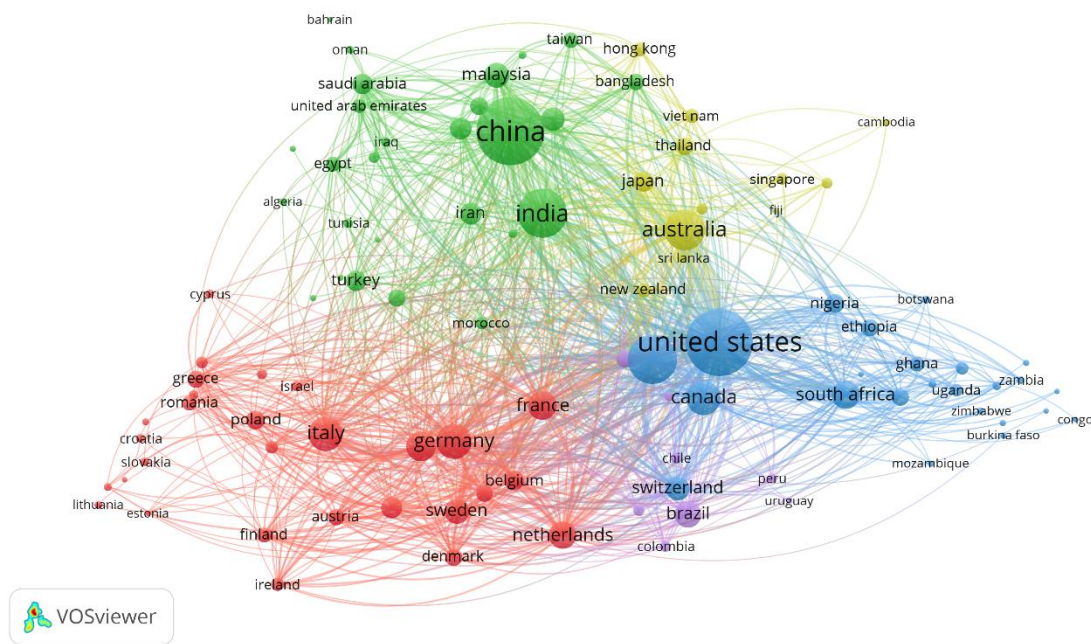


Figure 3. Country Visualization

Source: Data Analysis

The country collaboration map shows the global nature of the network of scientific cooperation in Sustainable Human Resource Management (SHRM). It is clear that the network is highly connected but geographically concentrated, with certain areas of intense cooperation. Among the major countries contributing to SHRM development, the United States, China, and India have been identified; they have big nodes and many collaboration connections with other countries. The United States is located at the central position in the network as the major connection point for SHRM development among countries from North America, Africa, and some European nations. Thus, it has a huge influence on global research and facilitates cooperation between different regions. In turn, China is the major node in the research network among Asian countries, which have many collaborations among themselves: Malaysia, Saudi Arabia, Japan, Bangladesh, among others. This shows that the contribution of Asian researchers is steadily growing. There is also a collaboration

cluster including Germany, Italy, the Netherlands, and France. Moreover, South Africa, Nigeria, Australia, among other countries, are presented in the network.

3.2 Keyword Co-Occurrence Analysis

The keyword co-occurrence network provides insights into the underlying structure and evolution of themes within the research on SHRM by providing a visual representation of how important research themes are related to one another. Through this network, the two most connected keywords, namely “sustainable development” and “sustainability,” emerge as the two most central concepts, which highlights the point that the field of research does not view SHRM as a standalone issue but rather relates it to the wider sustainability concept. In other words, it shows that research in SHRM is becoming more aligned with organizational goals that include sustainability issues as well.

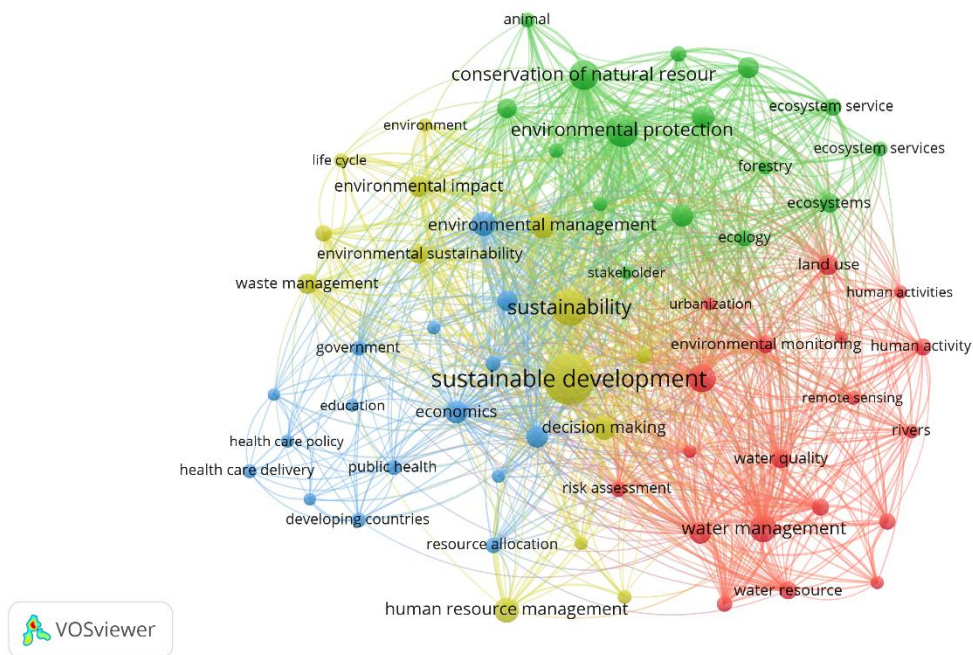


Figure 4. Network Visualization

Source: Data Analysis

The green group symbolizes the most environmental and ecological orientation of the literature. The use of terms such as environmental protection, environmental management, ecosystem services, ecology, conservation of natural resources, and environmental impacts means that a great deal of literature is centered on sustainability from the environmental governance and conservation of natural resources angle. Relationship density among literature articles in this green group is quite high and indicates that environmental sustainability is one of the most mature and dominant fields of study related to sustainability management. The red cluster highlights the issues related to environmental resources management and sustainability through the use of key words like water management, water quality, water resource, risk assessment, land use, and environmental monitoring. This implies that most of the studies undertaken are using practical and realistic approaches geared towards efficient management of environmental resources and reduction of sustainability risks. Another issue highlighted in the red cluster relates to technology and monitoring.

The blue cluster demonstrates the intersection of sustainability with public governance, social systems, and developmental results. Words like public health, health care delivery, government, education, economics, resource allocation, and developing countries show that sustainable development is not just limited to environment but also touches upon institutional and sociological aspects. The blue cluster denotes the realization that sustainable development can be attained only by working in coordination among different sectors and through the use of governance mechanisms. The yellow cluster brings the elements of management and organization into discussion by highlighting terms like human resource management, decision-making, environmental sustainability, and waste management. While human resource management emerges as a fairly small node in comparison to the major environmental themes, its placement near sustainability highlights the importance of HR related topics as enablers for organizations to achieve their sustainability objectives. This implies that literature has begun to recognize employees

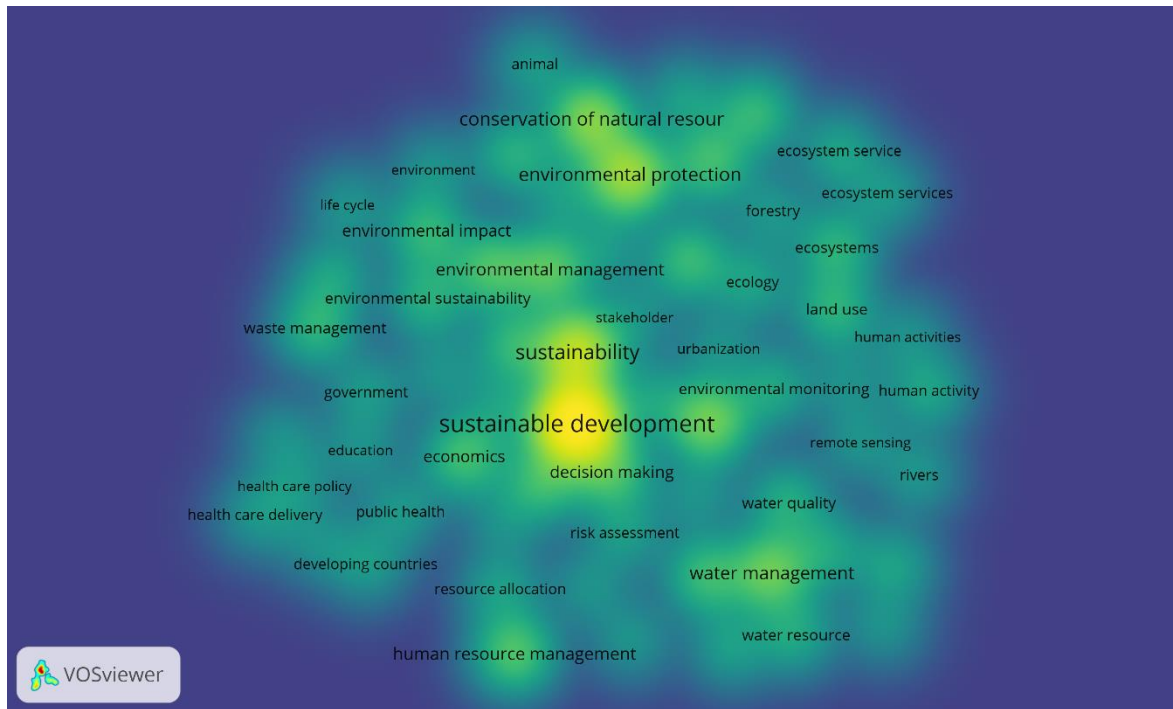


Figure 6. Density Visualization

Source: Data Analysis

Through density visualization, one can identify how densely packed and intensive the research themes are in the literature. From the density visualization, one can easily identify the most common and highly related topics in the literature. Yellow areas in the density visualization represent the high-density themes in the literature, which are characterized by a high frequency of occurrence and connections to other keywords. Green and blue areas represent moderate to low-density themes in the literature. Through density visualization, one can see that “sustainable development” is located at the highest position in the research landscape and is the key hotspot. This shows that sustainable development has formed the core intellectual framework of the field. Around the core, there are “sustainability,” “decision making,” “environmental protection,” “environmental management,” and “conservation of natural resources.” This

shows that most researchers have focused on environmental sustainability and governance, and strategic management approaches.

On the other hand, there exist some areas which show lower density but at the same time can be seen as future research areas. Some of the fields such as human resource management, public health, water management, resource allocation, environmental surveillance, and water resources are found in lower density zones, implying that despite the relevance of these themes within the sustainability theme, they are relatively understudied compared to major environmental themes. The fact that human resource management is found within the lower density zone means that even as organizational and workforce perspectives are gaining recognition in relation to sustainability studies, it is important to note that this field is yet to take center stage in sustainability research.

3.3 Citation Analysis

Table 1. Top Cited Literature

Citations	Authors and Year	Title
9591	[10]	Food security: The challenge of feeding 9 billion people

6577	[11]	A general framework for analyzing sustainability of social-ecological systems
4052	[12]	Global biodiversity: Indicators of recent declines
3927	[13]	Adaptation, adaptive capacity and vulnerability
3300	[14]	Bee declines driven by combined Stress from parasites, pesticides, and lack of flowers
3289	[15]	The Struggle to Govern the Commons
3178	[16]	Global Surgery 2030: Evidence and solutions for achieving health, welfare, and economic development
2999	[17]	Biodiversity redistribution under climate change: Impacts on ecosystems and human well-being
2647	[18]	Options for keeping the food system within environmental limits
2565	[19]	Managing nitrogen for sustainable development

Source: Scopus 2026

The most cited literatures in Table 1 are mostly the primary literatures relating to the concepts of sustainability, food security, biodiversity, climate adaptation, socio-ecological systems, and environmental governance. One of the highly cited papers by [10] suggests that food security and feeding the increasing global population are major topics for sustainability studies. Other notable works include [11] and [15] which emphasized the role of good governance and collaborative actions in managing common pool resources. [12], [14], [17] demonstrated high relevance towards the loss of biodiversity, changing ecosystems, and environmental risks associated with climate.

4. CONCLUSION

Conclusions about the intellectual structure, authorship, collaborations, and the dynamics of SHRM research can be made based on the results of this bibliometric study. In particular, it was discovered that the subject area of research under discussion is

firmly rooted in sustainable development theory and characterized by dominance of works that deal with environmental protection and ecosystem management. As for the dynamics of SHRM research, the collaborative aspect shows that the research is conducted mostly by a few prominent authors, institutions, and countries as leading centers of scientific exchange in the world. In addition, according to the results obtained, there have been changes in the nature of research, which was initially primarily connected with the issues of environmental and political importance, but now takes an integrative approach that considers managerial and organizational aspects. Still, it should be noted that topics related to human resource management have not received sufficient attention yet, which opens up new possibilities for further scientific exploration. It includes research on sustainable management practices, the well-being of employees, environmental skills and organizational sustainability, as well as strategies of human resource development.

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