

Employee Green Behavior at Workplace: A Review and Bibliometric Analysis

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Abstract

Employee Green behavior (EGB) has long been considered one of the most important issues in both academics and business because it can promote environmental sustainability, economic prosperity, and social responsibility. It provides a platform for research, innovation, and education, while also contributing to the long-term success of businesses. In the academic sphere, employee green behavior is important because it provides a platform for research and innovation. Academics can study the effectiveness of different environmental policies, programs, and initiatives in promoting sustainable behavior among employees. In the business world, employee green behavior is important because it can provide a competitive advantage. Companies that adopt environmentally responsible practices can improve their reputation, attract customers, and differentiate themselves from competitors. In this study, a total of 524 peer-reviewed Journals articles that were published in English between the years 2001 to 2022 were collected from the Scopus database by searching the keywords, Green Behavior or Employee Green Behavior, or Environmental Behavior and analyzed utilizing a combined strategy of bibliometric analysis, network analysis, and content analysis methods. The review did not include the conference papers and the papers published in other languages. This study's main objective is to discover current research advancements and developmental trends in EGB by thoroughly examining the body of current literature. The study aims to match current research interests with potential future research areas in EGB. The systematic mapping and bibliometric analysis of this study provides a detailed findings by thorough analysis of the currently available literature by identifying the annual publication growth, journals, and authors that contribute the most, as well as developing keywords and themes. The findings shows that the journal which contributes most in this field is Sustainability Journal and the most contributing author is Paille and the country which contributed most to this subject is China. By constructing a network of keyword co-occurrence, the terms "green HRM", "corporate social responsibility", and "sustainability" have been recognized as the emerging areas of study in this field. By providing a thorough, methodical, and extensive evaluation of the current articles utilizing a variety of research methodologies, this study adds to the body of knowledge on Employee green behavior at the workplace. The future researchers should also include books, conference papers and proceedings in order to get a detailed knowledge about the topic. Secondly, due to its qualitative in nature this study might not cover the complete picture green behavior. In future the empirical study suggested to thoroughly investigate the topic to enrich the findings

Keywords: Workplace Employee Green Behavior, Environmental Sustainability, Environmental Management, Bibliometric Analysis, Literature Review

Introduction

One of the most important issues facing humanity today is environmental sustainability. The recent case of the Great Pacific Garbage Patch was widespread and gained media attention (Lebreton et al., 2018), There is strong evidence that human activity is harming the environment. The quality of human life has been directly impacted by this environmental degradation and will continue also in the future (Bilynets & Cvelbar, 2020). The escalating issue of climate change and global warming poses a significant threat to our ecosystem and ultimately, to our survival as a species (Aguilera et al., 2021). According to the Intergovernmental Panel on Climate Change (IPCC, 2022), human-caused climate change is the main factor contributing to the environment's extensive irreversible changes. It is crucial for humans to establish a constructive and harmonious connection with the environment, as our actions have the potential to disrupt the delicate ecological balance. Furthermore, sustainable development is essential to ensure that we can meet our present needs without compromising the ability of future generations to meet their own needs (Liu et al., 2017).

Line managers are crucial in managing human resource (HR) tasks in the modern world and aid firms in being more effective and improving their performance (Azmi & Mushtaq, 2015).

As the focus on implementing corporate social responsibility programs and sustainability increases, it is the responsibility of human resource managers or line managers to establish and enforce policies that promote environmentalism (Stahl et al., 2020; Chaudhary, 2020).

Recent research has examined the influence of organizational attractiveness on the relationship between green human resource management (HRM) practices and university students' employment intentions. Organizations are now implementing green HRM practices to improve employee green behavior (EGB) among employees at work (Dumont et al., 2017). Employee green behavior (EGB) refers to the efforts an employee takes to reduce the unfavorable environmental consequences in the workplace (Kollmuss & Agyeman, 2002). To comprehend EGB, researchers have investigated a variety of theories, including the theory of planned behavior (TPB), the value-belief norm (VBN) theory, and the protective motivation theory in both social and professional contexts. Amoako et al (2020) used the theory of planned behavior TPB to examine how youth's green knowledge, green attitudes, and green beliefs about the environment affect their behavior. In their study of Chinese industries, (Ye et al., 2022) discovered a significant correlation between green human resource management (GHRM) and employee green behavior. Specifically, they found that GHRM practices had a positive impact on promoting environmentally friendly behaviors among employees. Sabokro et al (2021) conducted a study in Iranian industries to investigate the correlation between green human resource management and employee green behavior. The study concluded that green human resource management practices played a crucial role in promoting environmentally responsible behaviors among employees. In their research on university students in Cyprus, (Ercantan & Eyupoglu, 2022) explored the influence of green human resource management on pro-environmental green behavior. The study concluded that green human resource management practices had a notable impact on fostering environmentally responsible behaviors among the students.

The field of green behavior has its roots in the 1970s, during which numerous psychologists and sociologists conducted research on pro-environmental behavior within households.

However, in the last two decades, research on workplace EGB has become more popular. Due to the growing local and global environmental issues, Organizational psychologists have become more interested in predicting employee workplace green behavior (Smith et al., 2021). EGB is seen as an important employee behavior that aids businesses in promoting corporate social responsibility and safeguarding natural resources (Channa et al., 2021). It includes several practices such as recycling paper, printing on both sides, and sparingly using resources like power and water (Lee et al., 1995). Green workplace behavior shows a person's attitude to the environment (Norton et al., 2015). This covers both extra-role and in-role green behavior (voluntary) in workplace. Green formal duties that are a crucial component of an employee performance assessment are referred to as in-role green behavior. Extra-role green behavior, on the other hand, represents voluntary green behaviors that go beyond an employee's official duties and is not acknowledged in his or her performance evaluation (Paillé & Boiral, 2013). Given that workers spend almost eight hours of their day at work, EGB in office settings is expected to be essential in preventing environmental damage (Blok et al., 2015). According to the knowledge of the researcher, this study is the first of its type to review workplace employee green behavior. Therefore, the research addressed the following questions in this study.

RQ1. What is the present understanding of the academic literature about employee green behavior?

RQ2. Which countries are more eagerly working on workplace employee green behavior?

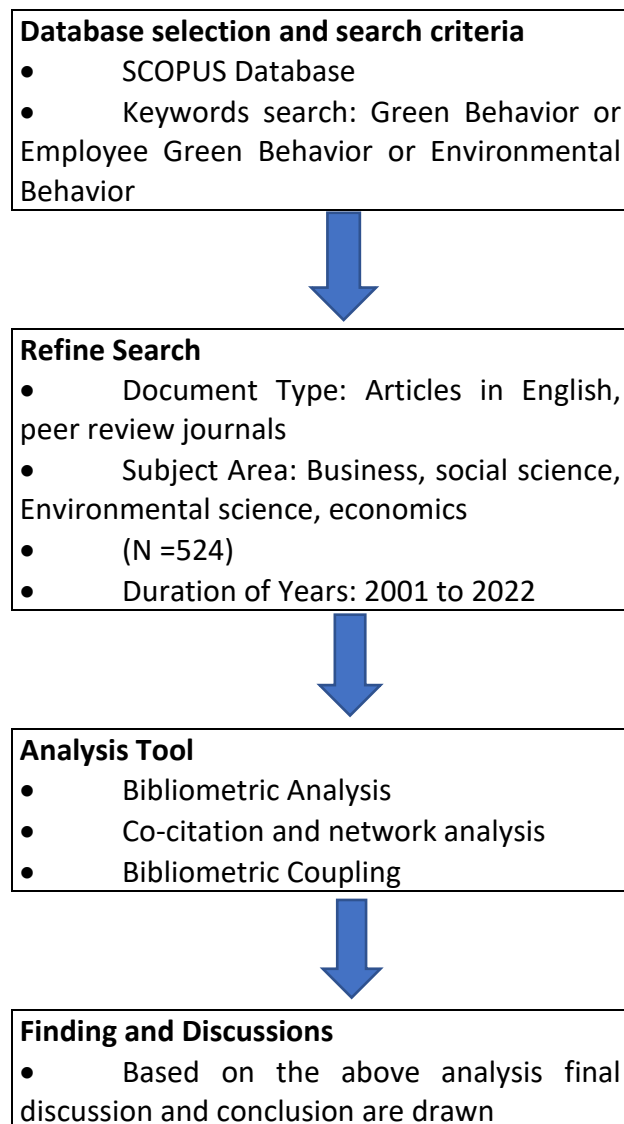
RQ3. What are the authors, coauthors, and most cited Journals on this subject of employee green behavior?

The current study aims to accomplish the goals in two significant phases. First, the authors used bibliometric analysis to illuminate the development of the area and approach authors contributions, affiliation statistics, citation analysis, and keyword analysis. Secondly, to have a clear understanding of the new trends and established themes in this field that could be investigated in future research, the current study also conducted a co-citation network analysis. By conducting a systematic review, bibliometric analysis, and content analysis of the literature, the authors attempted to synthesize it to fill the current research gap in the workplace.

Research Methodology

The current study focuses on the literature review of employee green behavior in the workplace. The researcher used the bibliometric analysis technique to increase the efficacy of the literature review by conducting a fair assessment of the academic literature, boosting the rigor, and reducing researcher bias (Zupic & Čater, 2015).

The researcher used the following methodology for data collection and its subsequent stages. The stepwise research methodology is shown in the figure below.



Database Selection and Search Design

In this research, the researcher used the SCOPUS database to collect the papers that were published in the English language between the years 2001 to 2022. The review did not include the conference papers and the papers written in other languages. Scopus was chosen because it is user-friendly and a big database that brings together journals with the greatest effect on the social sciences (Crossan and Gatto, 1996). Scopus was used for the study because it includes both ISI and Scopus-indexed publications, covers papers from a variety of subjects, including social sciences, and is seen to be more thorough than Web of Science, which only includes ISI-indexed journals (Fahimnia et al., 2015). Although Google Scholar is one of the most popular and freely accessible citation databases, its poor quality prevents data from being obtained from it (Zyoud & Fuchs-Hanusch, 2017). To fully assess the relevant papers, the researcher search the keywords “Employee green behavior” or “pro-environmental behavior” in the basic search of the SCOPUS, and this resulted in 656 papers.

Refining the Search

To narrow down their research, the authors restricted their search to scholarly articles written exclusively in English. Researchers further restricted their search to peer-reviewed journal

publications only because they are regarded as having "certified knowledge". In addition, non-scientific materials such as business magazine articles, book sections, and conference papers were excluded from the study. After implementing the criteria, the researchers were left with a total of 524 scholarly articles published between 2001 and 2022.

Selection of Analysis Method

Bibliometric analysis refers to the use of statistical methods to evaluate a body of literature, which involves quantitatively analyzing studies within a specific field (Mayr & Scharnhorst, 2015). The study employs bibliometric analysis for the following reasons:

One reason for using bibliometric analysis is that it offers a more reliable and user-friendly way to manage the large number of papers involved in the study. Furthermore, bibliometric analysis provides detailed insights into the relationships between publications, citations, co-citations, and keywords within a given research field. It is also highly effective in visualizing information, making it easier for readers to comprehend the study topic and identify potential research areas of interest.

Data Analysis and Interpretation

Documents by Years: Figure 1 shows the publication trend in the field of employee green behavior between the years 2001 to 2022. The statistic revealed that this field gain much attention in the last decade. From the year 2019, a sharp increase is shown which revealed that researchers are taking more interest in this subject in recent years. In the year 2022 almost 200 papers were published by different researchers in this field which shows the growing interest of researchers in the subject.

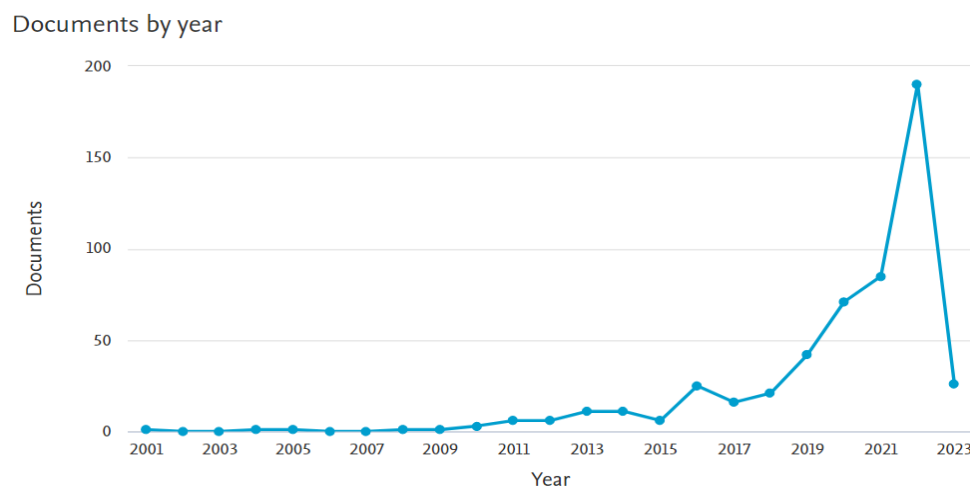


Figure 1. Sources: Scopus,2023

Most Influential Organizations

Figure 2 shows the organizations which show a keen interest in the subject of employee green behavior. To find the roots of the study and to guide future researchers bibliometric network analysis is done to find the organization which is most interested in the subject area. According to the network analysis, The school of management, School of public affairs, School of business administration, and department of management sciences show a keen interest in the

field.

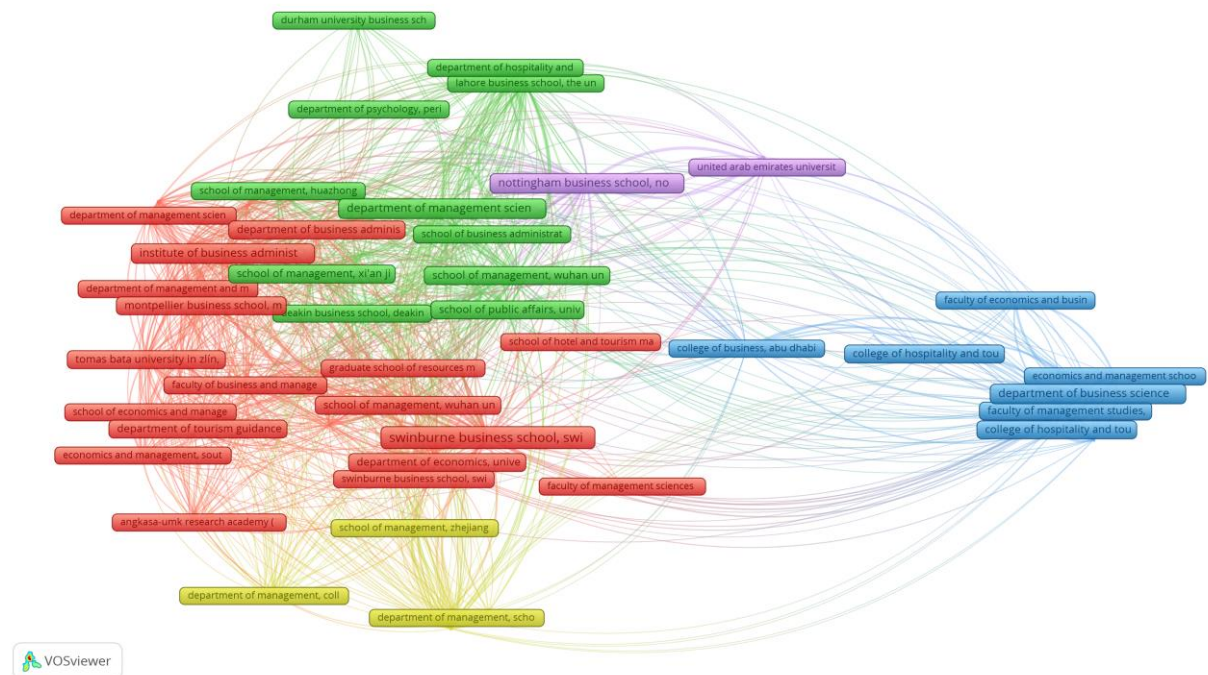


Figure 2.

Most Productive Countries

Figure 3 shows the most productive countries. According to the bibliometric analysis, the Republic of China is the most productive country having 150 articles followed by the Islamic Republic of Pakistan with 92 articles, and United State with 70 articles and Malaysia with 52 articles, and so on. These countries are taking a keen interest in the subject of employee green behavior.

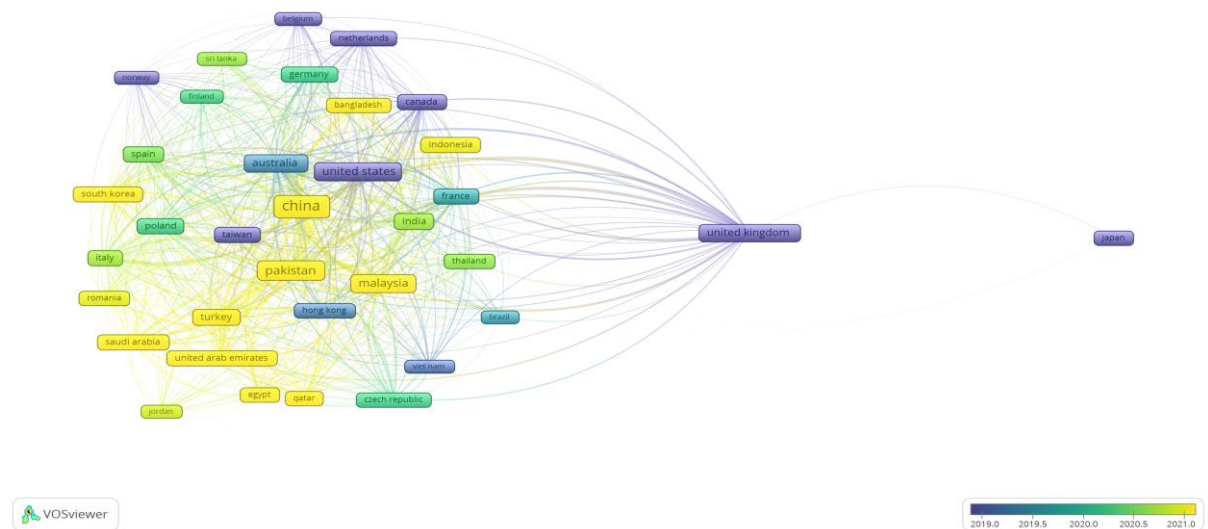


Figure 3

Co-citation Analysis of the cited reference: To determine the theoretical origins of studies on employee green behavior, a co-citation analysis was conducted. Co-citation refers to the frequency with which two documents are cited together in a body of research. Co-citation analysis is a method used to map the flow of knowledge within a particular field by analyzing patterns of citation among a set of documents (Van Eck & Waltman, 2014) to help scholars to understand a research area through network visualization. To understand the roots of the research area, it is important to identify key references and linkages from both longitudinal and transverse perspectives. The nodes in the co-citation network show references and the links represent the frequency with which two references are cited together with Cite Space (Chen, 2017). In the current study, the citation analysis of the cited reference is shown in figure 3.

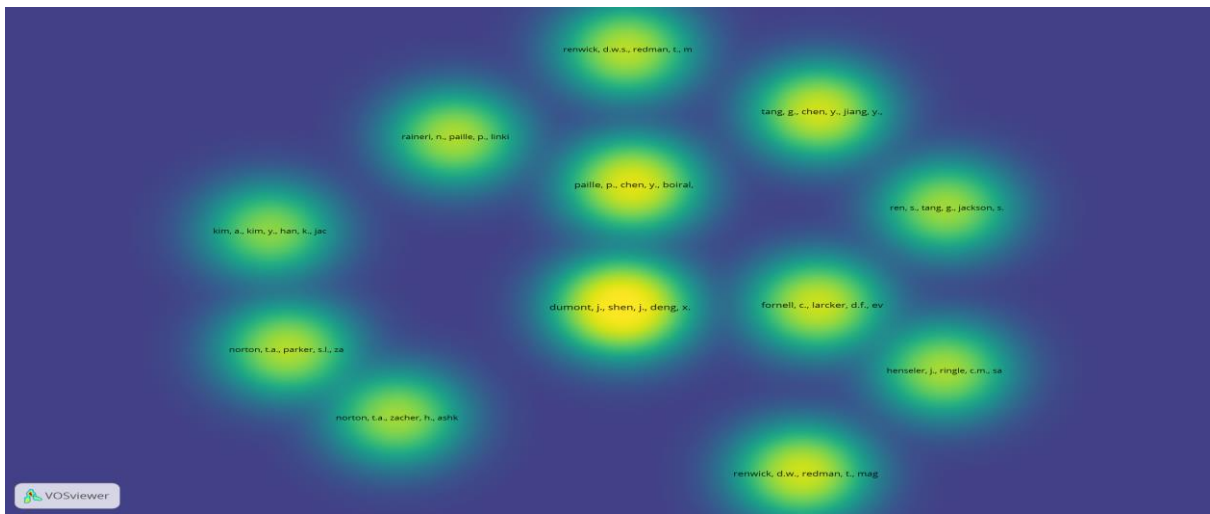


Figure 4.

Co-occurrence analysis of Key terms: The primary research themes of studies on green behavior and related terms were identified in this study by utilizing key term co-occurrence analysis. Co-occurrence analysis is a statistical method that calculates the frequency with which two or more terms appear together in a single research study. This technique is commonly used to identify potential research topics or themes in a given field of study. Co-occurrence analysis measures how frequently two terms appear together in a single study, and it can be used to identify potential research topics in this area (Van Eck & Waltman, 2014). Figure 4 shows the co-occurrence analysis of the key terms in which each circle in the image represents a term in this analysis, and the size of a circle represents the number of publications that contain the associated term.

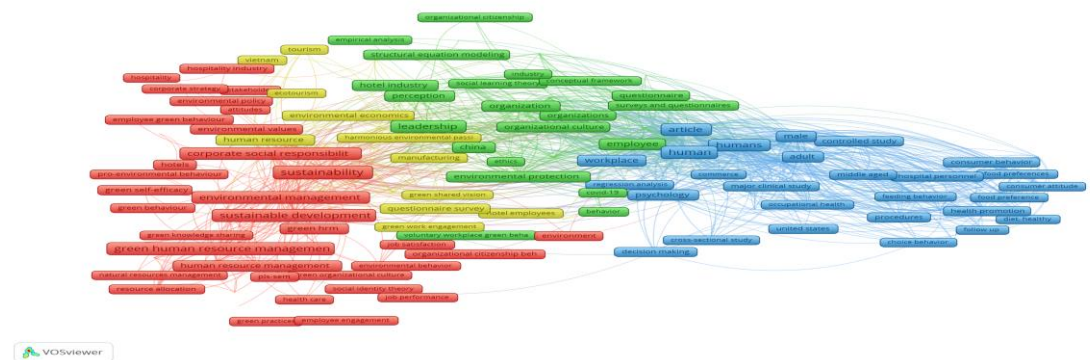


Figure 5

Most cited Articles: To establish the research trajectory in the relevant subject, this study conducted a direct citation analysis that covers the historical progression of research in the field. Citations analysis shows how many times this subject is cited by other studies and this shows the impact of the publications (Beliaeva, Ferasso, Kraus, & Mahto, 2022). In the direct citation analysis links indicate direct citations between papers while nodes indicate documents from the search results. The figure below shows the most cited articles, according to the analysis Robertson 2013 is on top followed by Kim 2017 and Paille 2014 and so on.

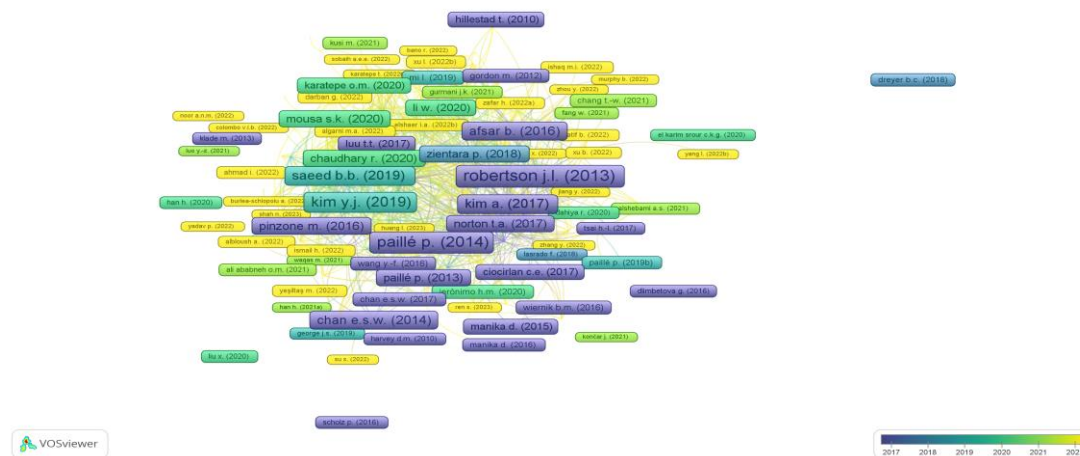


Figure 6

Discussion and Conclusion

Despite the extensive history of research in this field, significant advancement has been seen in the last ten years (Ones et al., 2018). Employee green behavior gaining and developing interest of practitioners and academicians on a global scale. The goal of the current study is to improve the body of knowledge in the field of research by providing a reasonably clear picture of the last two decades. The current study aims to answer the three research questions. This study responds to RQ1 by providing a summary of the available literature and a snapshot of a few bibliometric and review studies in this field. The author further investigates the field by using the bibliometric technique to find the relevant keywords, most productive journals, most cited authors, and articles. This findings assists the authors in comprehending and identifying the current progression and current condition of the research in this particular field. The study answers RQ2 by using the bibliometric coupling and cluster analysis technique to find the countries which are more eagerly working in this field. The study lastly addresses the RQ3 by co-citation and cluster analysis techniques to find the most productive authors, co-authors, and most cited journals. According to the bibliometric analysis, the most productive country is China followed by Pakistan, United State of America, and Malaysia. According to the analysis, the most cited authors and co-authors are Robertson 2013 is on top followed by Kim 2017 and Paille 2014 and so on. By constructing a network of keyword co-occurrence, the terms "green HRM", "corporate social responsibility", and "sustainability" have been recognized as the emerging areas of study in this field.

Research Implications and Future Direction

This study is useful for both scholars and professionals. The findings from the bibliometric analysis, particularly the identification of the top journals that make significant contributions to this field, can help new researchers in selecting appropriate journals for conducting their analyses and thorough literature searches. Future researchers will also take benefits from

keyword cooccurrence to search their key words. The results of the analysis of the most contributed authors will aid emerging scholars in creating a global network of collaborators from various cultural backgrounds and in giving a more comprehensive picture of the research. The highly cited and influential documents identified in this study can aid scholars in reading significant literature within their field and determining future research directions. This research has found that countries, whether developed or developing, are engaged in active research related to environmental behavior. Even though developing countries have economies that are significantly smaller than those of developed countries, their substantial research contributions demonstrate their extensive efforts towards achieving a sustainable environment. The study's results can also assist environmental policymakers in crafting policies at the organizational, individual, and societal levels. This study also suggests a new direction for future researchers to further investigate this area.

Research Limitations

The following are the limitations of this study

The first limitation is there might be a possibility of missing some crucial work on employee green behavior while screening in data base. Only the journal articles were selected in this study. Thus, this study might miss the information's from other source like books, conferences, and proceedings. Secondly, due to its qualitative in nature this study might not cover the complete picture green behavior. In future the empirical study suggested to thoroughly investigate the topic to enrich the findings.

Acknowledgment

The author would like to express his gratitude to his supervisor, Associate Professor Dr. Norhayati Zakuan and Dr. Teh Zaharah Yaacob for their guidance and to Research Management Centre (RMC), UTM for financial support through VOT: Q.J130000.2555.20H76 and VOT: Q.J130000.3829.31J18.

References

- Aguilera, R. V., Aragon-Correa, J. A., Marano, V., & Tashman, P. A. (2021). The corporate governance of environmental sustainability: A review and proposal for more integrated research. *Journal of management*, 47(6), 1468-1497.
- Amoako, G. K., Dzogbenuku, R. K., & Abubakari, A. (2020). Do green knowledge and attitude influence the youth's green purchasing? Theory of planned behavior. *International Journal of Productivity and Performance Management*, 69(8), 1609-1626.
- Azmi, F. T., & Mushtaq, S. (2015). Role of line managers in human resource management: empirical evidence from India. *The international journal of human resource management*, 26(5), 616-639.
- Beliaeva, T., Ferasso, M., Kraus, S., & Mahto, R. V. (2022). Marketing and family firms: Theoretical roots, research trajectories, and themes. *Journal of business research*, 144, 66-79.
- Bilynets, I., & Knežević Cvelbar, L. (2020). Past, present and future of the research on the pro-environmental behaviour in tourism: A bibliometric analysis. *Economic and Business Review*, 22(2), 5.
- Blok, V., Wesselink, R., Studynka, O., & Kemp, R. (2015). Encouraging sustainability in the workplace: A survey on the pro-environmental behaviour of university employees. *Journal of Cleaner Production*, 106, 55-67.

- Channa, N. A., Hussain, T., Casali, G. L., Dakhan, S. A., & Aisha, R. (2021). Promoting environmental performance through corporate social responsibility in controversial industry sectors. *Environmental Science and Pollution Research*, 28, 23273-23286.
- Chaudhary, R. (2020). Effects of green human resource management: testing a moderated mediation model. *International Journal of Productivity and Performance Management*, 70(1), 201-216.
- Chen, C. (2017). Science mapping: a systematic review of the literature. *Journal of data and information science*, 2(2), 1-40.
- Dumont, J., Shen, J., & Deng, X. (2017). Effects of green HRM practices on employee workplace green behavior: The role of psychological green climate and employee green values. *Human resource management*, 56(4), 613-627.
- Ercantan, O., & Eyupoglu, S. (2022). How do green human resource management practices encourage employees to engage in green behavior? Perceptions of university students as prospective employees. *Sustainability*, 14(3), 1718.
- Fahimnia, B., Sarkis, J., & Davarzani, H. (2015). Green supply chain management: A review and bibliometric analysis. *International Journal of Production Economics*, 162, 101-114.
- Kollmuss, A., & Agyeman, J. (2002). Mind the gap: why do people act environmentally and what are the barriers to pro-environmental behavior? *Environmental education research*, 8(3), 239-260.
- Lebreton, L., Slat, B., Ferrari, F., Sainte-Rose, B., Aitken, J., Marthouse, R., . . . Levivier, A. (2018). Evidence that the Great Pacific Garbage Patch is rapidly accumulating plastic. *Scientific reports*, 8(1), 1-15.
- Lee, Y.-J., De Young, R., & Marans, R. W. (1995). Factors influencing individual recycling behavior in office settings: A study of office workers in Taiwan. *Environment and behavior*, 27(3), 380-403.
- Liu, Y., Wang, Y., & Li, D. (2017). Estimation and uncertainty analysis on carbon dioxide emissions from construction phase of real highway projects in China. *Journal of Cleaner Production*, 144, 337-346.
- Mayr, P., & Scharnhorst, A. (2015). Scientometrics and information retrieval: weak-links revitalized. *Scientometrics*, 102, 2193-2199.
- Norton, T. A., Parker, S. L., Zacher, H., & Ashkanasy, N. M. (2015). Employee green behavior: A theoretical framework, multilevel review, and future research agenda. *Organization & Environment*, 28(1), 103-125.
- Ones, D. S., Wiernik, B. M., Dilchert, S., & Klein, R. M. (2018). Multiple domains and categories of employee green behaviours: More than conservation. In *Research handbook on employee pro-environmental behaviour* (pp. 13-38): Edward Elgar Publishing.
- Paille, P., & Boiral, O. (2013). Pro-environmental behavior at work: Construct validity and determinants. *Journal of Environmental Psychology*, 36, 118-128.
- Sabokro, M., Masud, M. M., & Kayedian, A. (2021). The effect of green human resources management on corporate social responsibility, green psychological climate and employees' green behavior. *Journal of Cleaner Production*, 313, 127963.
- Smith, C. J., Dupré, K. E., McEvoy, A., & Kenny, S. (2021). Community perceptions and pro-environmental behavior: The mediating roles of social norms and climate change risk. *Canadian Journal of Behavioural Science/Revue canadienne des sciences du comportement*, 53(2), 200.
- Stahl, G. K., Brewster, C. J., Collings, D. G., & Hajro, A. (2020). Enhancing the role of human resource management in corporate sustainability and social responsibility: A multi-

- stakeholder, multidimensional approach to HRM. *Human Resource Management Review*, 30(3), 100708.
- Van Eck, N. J., & Waltman, L. (2014). Visualizing bibliometric networks. *Measuring scholarly impact: Methods and practice*, 285-320.
- Ye, J., Zhang, X., Zhou, L., Wang, D., & Tian, F. (2022). Psychological mechanism linking green human resource management to green behavior. *International Journal of Manpower*, 43(3), 844-861.
- Zupic, I., & Cater, T. (2015). Bibliometric methods in management and organization. *Organizational research methods*, 18(3), 429-472.
- Zyoud, S. H., & Fuchs-Hanusch, D. (2017). A bibliometric-based survey on AHP and TOPSIS techniques. *Expert Systems with Applications*, 78, 158-181.