Bibliometric investigation on green human resource management research

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Abstract

Purpose – The paper aims to present the comprehensive picture on green human resource management (GHRM) based upon bibliometric investigation, including different criteria, such as key authors, documents, keywords, bibliographic coupling (BC), etc.

Design/methodology/approach – Bibliometric technique has been used with the application of VOSviewer. Further, the Scopus database has been utilised to extract the research articles.

Findings – The present study has exposed the due relevance of GHRM in the area of human resource management (HRM) for researchers as well as practitioners. The study has revealed that number of citations in the area is high from the researchers of China. Also, Jabbour, C.J.C., has been identified as the lead contributor and author from the area with 43 publications and 1,352 citations. The journal of cleaner production has been identified as the journal with the largest number of publications from the area. Also, prominent keywords used in the area are sustainability, GHRM, environmental management, sustainable environment and HRM.

Research limitations/implications – The study has offered the comprehensive publication analysis on the area which will assist the researchers in gaining review on topic and development of empirical models. Further, with the utilisation of keywords criterion they can easily explore the publications done in the area. Also, study will help the scholars and researchers to identify the region and countries along with the institutions and universities to pursue research on the GHRM topic.

Practical implications – The present study will help the mangers to focus on GHRM with more focus to acquire positive consequences for human resource management.

Originality/value – The present paper has presented various new and recent facets associated with the area of GHRM. Previously the similar analysis with bibliometric technique is rarely done with the present Scopus database.

Keywords Green human resource management, Bibliometric analysis, Citation analysis, Bibliographic coupling, Co-citation, Co-occurrence, VOSviewer

Paper type Research paper

Introduction

The last decade has prompted a crucial role of environment protection in making organisations more competitive, which further embrace them towards eco-friendly policies and practices (Wu et al., 2021; Thondhlana and Hlatshwayo, 2018). Considering this, many organisations are now focusing on implementation of policies and initiatives through which they can develop the policies to protect the environment (Ren et al., 2018). In this concern, organisations are taking various steps for every function including, finance, marketing and supply chain management (Ahmad, 2015). However, these initiatives in organisation may prove to be vague if they are not done with the cooperation of human resource of organisation and its functions (Ángel del Brio et al., 2008). These initiatives are termed as green human resource management.
resource management (GHRM), where human resource management is amalgamated with environment management (Ansari et al., 2020). GHRM is basically a usage of human resource management (HRM) policies to cultivate and boost optimum and sustainable use of organisational resources to promote sustainability in individual life, society and environment (Farrukh et al., 2021; Renwick et al., 2016; Arho et al., 2019). With the effective utilisation of GHRM one can create a green skill set which can promote and inculcate green practices with the usage of different HRM functions, like, recruitment, training, compensation, development of human capital, etc.

The literature has strongly argued that organisation would get successful in implementation of green management practices only if their HR function is strengthened and ready to adopt green policies (Mehta, 2021a; Gholami et al., 2016; Mishra et al., 2014). Further, HR function of organisation can cultivate a desirable mindset by motivating and boosting the workforce to work for environment (Ginsberg et al., 2004). Studies have mentioned that organisations can successfully implement green policies if their workforce is ready to imbibe this in their managerial skills and daily routine tasks (Daily and Huang, 2001). Therefore, for framing such kind of behaviour within individual there is a requirement of infusing progreen HR practices which will be possible with the proper emphasise on GHRM (Yong et al., 2019). The area of GHRM was rarely discussed before the year of 2010, however, after 2010, its relevance has been emphasised due to the contribution from different disciplines, including, social psychology and economics (Jabbour and Santos, 2008). Gradually, different functions of organisations, including, HRM have also presented a concern towards eco-friendly policies (Guerci and Carollo, 2016). Literature has exemplified the due importance of HR function in GHRM but there is a shortage of comprehensive studies in the area of GHRM, which are presenting the evolution and publication trend of studies from the area (Mehta, 2021b; Yong et al., 2019). There are plenty of analytical techniques to review the literature from which bibliometric analysis is one of the techniques which comprehend the literature in detailed manner (Farrukh et al., 2020; Cancino et al., 2017).

The concept of GHRM has been inculcated to create a sustainable environment with the involvement of those policies which may create a green impact and create ecological impact. Basically, from 1960 to 1970, the concept of GHRM has started to come into existence when business activities start to create harmful impact on environment (Jabbour and Renwick, 2018). In 2000, business organisations have started to expose the ways through which these practices can be halted (Jabbour et al., 2008). Further, some of the organisations are following it as a requirement from global rules and protocols. However, after a while organisations have started to rebuild the policies as moral responsibility. In the last decade, organisations have initiated various progreen plans, such as green marketing, green financing, green operations and green accounting (Ginsberg and Bloom, 2004). Gradually, organisations have realised that mindset is important to create green impact (Jackson et al., 2014). Hence, concept of GHRM has been created where significant role of human aspect has been associated with environmental management (Jackson and Seo, 2010). Here, human resources of the organisation have created a set of activities that are crucial in planning, creation and execution of activities to create green impact in the society (Kim et al., 2019).

Bibliometric analysis is the systematic way to analyse the studies with a statistical and quantitative procedure (Farrukh et al., 2020; Nawaz et al., 2020; Nejati et al., 2017). This technique helps in determination of abundant data of field to present the trends, development, most prolific nations and authors in particular areas which provide an insight to new researchers to expose unexplored areas of the field (Pham et al., 2020; Farrukh et al., 2020). Hence, the present study used bibliometric techniques to examining the GHRM literature developed and evolved from the last one decade. The present study has utilised the Scopus database from the year 2015–2021 which has included 177 research papers shortlisted on the basis of various criteria.
Research methodology
As from the literature it has been identified that researchers have increased the work on GHRM which has broadened the area. Further, it has been identified that organisations are working in this direction to improve the practices of GHRM. Considering the trends in the area, following research questions have been framed:

RQ1. How many papers from the area of business management are published in GHRM?
RQ2. Which are the journals which are creating a high citation impact from the area of GHRM?
RQ3. How many countries have published prominently in the area of GHRM?
RQ4. What are the related keywords with which GHRM has been associated?
RQ5. Which are the dominating journals in GHRM scholarship?
RQ6. Who are the most relevant authors in the area of GHRM?

Research process
In the present study, bibliometric analysis has been used to review the data. Bibliometric technique is worthwhile in determining the trend and growth in any area in context to authors, publications, journals and countries (Wu et al., 2021). It is a quantitative evaluation technique to determine the bibliographic data on academic literature. Through bibliometric analysis one can analyse publications, citations, co-authorship and bibliometric coupling. The technique is helpful in creating libraries which will assist the researchers to gain in depth review on any subject and area (Engler, 2014). In the present study, citation and co-citation analysis, bibliographical coupling and keyword co-occurrence analysis has been undertaken. Co-citation analysis is one of the most popular methods to analyse the relationship of bibliographic data. It assumes that two documents share a similar literature stream if they are cited together in a third document. bibliographic coupling (BC) happens when two different documents cite the third document in their reference list commonly. BC uses the number of shared sources by two published documents to measure the extent of the similarity. The higher the shared references, the more the similarity. Co-occurrence is a concept that refers to the common presence, frequency of occurrence and proximity of similar keywords present across (Gong et al., 2018).

Searching criteria
Scopus database has been utilised to extract the papers as it is the one of the widest repositories of bibliometric data in the field of social sciences. Data has been selected on the basis of different criteria applied on the Scopus database mentioned in Table 1. For the present study, the Scopus database has been used as comparing to the Web of Science database, as former is appropriate in terms of offering widest dataset. Table 1 Has illustrated the procedure in the context to the extraction of papers where total 176 research papers have been extracted after applying various filters. Further, after considering the recent review analysis and empirical examinations in the area of GHRM, selected key words have been applied. The present study has used shortlisted the data on the basis of certain criteria. The first criteria used in this concern is key words, such as “Green HRM” or “Green Human Resource Management” or “Green behaviour” or “Green HR skills” or “green workforce” or “GHRM”.

The searching criteria includes ((TITLE-ABS-KEY(“Green Human Resource Management”) OR TITLE-ABS-KEY (“Green HRM”) OR TITLE-ABS-KEY(“green behaviour”) OR TITLE-ABS-KEY(“GHRM”) OR TITLE-ABS-KEY(“green workforce”) OR Green HR skills)). The search results displayed 176 research papers from the year
Further, on the basis of subject areas, business, marketing accountancy, social sciences, economics, econometrics and finance, psychology, environmental sciences, medicine and energy has been chosen to shortlist the research papers. Also, only research papers written in the English language from 2015 to 2021 have been included. Further, book chapters, notes, conference papers and proceedings are not included. Finally, research results have displayed 176 research papers which are used for analysis.

Software
For the present analysis, visualisation of similarities technique has been used. Accordingly, literature maps have been used to visualise different indicators (publications by year, nations, authors, journals keywords, bibliometric coupling) with the application of software “VOSviewer”. VOSviewer software has been used to analyse the dataset as it is appropriate to form and visualise networks effectively (Van Eck et al., 2010). It is best for creating and visualisation of networks in relation to the different association among different factors, such as citation, co-citation, BC and co-authorship (Van Eck and Waltman, 2010).

Results analysis
Publications and citations trend by year in GHRM
If we consider the search publications the temporal analysis illustrated in Figure 1, has presented the immense increase in publication from the year of 2017–2020 (refer Figure 1). Also, year 2020 is the most productive year in the area of publication with 56 publications in the area (refer Table 2). The reason for outburst in the study is due to the rapid shift of the organisations towards environment and sustainability, where relevance of human resource has been appreciated to bring this change in depth. Further, data before 2015 has not been included as before that there are hardly 2 to 3 publications on yearly basis in the area. Also, from 2017 to 2020, the environment is on deterioration due to business units which have explored the need to promote pro-environmental behaviour from individual as a professional (Thondhlana and Hlatshwayo, 2018). Hence, researchers and scientists have determined the need of the subject and contribute in academia.

Publications by nations/countries in GHRM
In present study, only those studies have been included which have used the English language as very few studies have utilised the Chinese, French and German language. Further, it has been analysed that most of the publications have been originated from Asian
countries where, China leads in numbers of publications with 58 documents. In this concern, it has been noticed that Asian countries have faced a drastic damage in environment which is speedier in comparison to other zones of world. This provokes the organisations as well as researchers to put focus on green environment with the inclusion of policies. Table 3. Has presented the top nations which are into publications in the area of GHRM.

Bibliometric coupling in GHRM

Further, bibliometric coupling analysis has been done to present a comprehensive analysis on networking among countries which are producing publications in the area of GHRM. As mentioned, BC presents the scenario where two papers cite the any other third paper sharing subject theme with each other (Aksnes et al., 2019). Further, in context to countries bibliometric coupling occurs when any publication from two countries cites the third publication sharing the similar literature (Donthu et al., 2020; Gao et al., 2021). Also, Figure 2, is presenting the BC, where size of the circle depicts the contribution from the country.

Further, on the basis of Figure 2, clusters have been identified. Red cluster shared by China, United States, Spain, Pakistan, Malaysia and Australia. Further, countries in green colour are creating another cluster including India, the United Kingdom, France and Brazil. Green clusters representing those countries that are sharing the similar literature.

<table>
<thead>
<tr>
<th>Year</th>
<th>Number of papers</th>
<th>Number of citations</th>
</tr>
</thead>
<tbody>
<tr>
<td>2021</td>
<td>52</td>
<td>570</td>
</tr>
<tr>
<td>2020</td>
<td>56</td>
<td>443</td>
</tr>
<tr>
<td>2019</td>
<td>29</td>
<td>321</td>
</tr>
<tr>
<td>2018</td>
<td>18</td>
<td>245</td>
</tr>
<tr>
<td>2017</td>
<td>07</td>
<td>121</td>
</tr>
<tr>
<td>2016</td>
<td>11</td>
<td>571</td>
</tr>
<tr>
<td>2015</td>
<td>03</td>
<td>022</td>
</tr>
<tr>
<td>Total</td>
<td>176</td>
<td>2293</td>
</tr>
</tbody>
</table>

Source(s): Author’s calculations

Figure 1.
Publication’s trend by year in GHRM

Table 2.
Publications and citations trend by year in GHRM

Green human resource management


Keywords/topics usage in GHRM
The researchers have used certain keywords across the globe where most of the research related to GHRM revolves around the words, such as, sustainability, green human resource management, environmental management, sustainable environment, human resource, etc (refer Figure 3). However, difference in the usage of keywords have been identified, where red cluster is representing the keywords only from the area of HRM, such as, human resource, employment, green behaviour and resource management which provides an insight to the management researchers to explore the area with the application of these key words. There are some keywords, such as, pro-environmental behaviour, conservation of natural resources, employee green behaviour, etc., which are having a small node size and representing that these keywords are rarely used in the research but has a connection to the area.

Journals productivity in GHRM
The articles in the area of GHRM are published in more than 50 journals; however, majority of the journal is restricted to main ten journals. Further, from these ten journals, majority has been contributed by one leading journal, namely, *Journal of Cleaner Production*

<table>
<thead>
<tr>
<th>Country</th>
<th>Number of papers</th>
<th>Number of citations</th>
</tr>
</thead>
<tbody>
<tr>
<td>China</td>
<td>58</td>
<td>1297</td>
</tr>
<tr>
<td>Pakistan</td>
<td>29</td>
<td>541</td>
</tr>
<tr>
<td>Malaysia</td>
<td>21</td>
<td>605</td>
</tr>
<tr>
<td>France</td>
<td>18</td>
<td>971</td>
</tr>
<tr>
<td>United Kingdom</td>
<td>21</td>
<td>774</td>
</tr>
<tr>
<td>Australia</td>
<td>18</td>
<td>871</td>
</tr>
<tr>
<td>India</td>
<td>15</td>
<td>373</td>
</tr>
<tr>
<td>Brazil</td>
<td>10</td>
<td>937</td>
</tr>
<tr>
<td>United States</td>
<td>17</td>
<td>928</td>
</tr>
<tr>
<td>Spain</td>
<td>9</td>
<td>312</td>
</tr>
</tbody>
</table>

*Source(s):* Author’s calculations

Figure 2. Bibliometric coupling in GHRM

*Source(s):* Author
(refer Table 4). Also, the journal is successful in producing majority of citations. Similarly, other journals, like, sustainability, business strategy and the environment, corporate social responsibility and environmental management, are also into the list which have contributed in the area. Also, in the area of HRM and organisational behaviour, only one journal, namely, international journal of manpower has presented the work in the area of GHRM. This journal is helpful in producing various insights in the area of HRM.

**Author’s productivity in GHRM**

The most prominent author from the field has been analysed from Table 5, who have published the maximum number of articles from area. According to the list, Jabbour, C.J.C., from France has been identified as the prominent author from the field who have contributed 43 documents with 1,352 citations (refer Figure 4 here). Similarly, Dumont J. is the second author from the field who has published 29 articles with 1,213 citations.

<table>
<thead>
<tr>
<th>S. No.</th>
<th>Source</th>
<th>Documents</th>
<th>Citations</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Journal of cleaner production</td>
<td>42</td>
<td>2058</td>
</tr>
<tr>
<td>2</td>
<td>Sustainability (Switzerland)</td>
<td>39</td>
<td>407</td>
</tr>
<tr>
<td>3</td>
<td>Business strategy and the environment</td>
<td>10</td>
<td>296</td>
</tr>
<tr>
<td>4</td>
<td>International journal of manpower</td>
<td>7</td>
<td>111</td>
</tr>
<tr>
<td>5</td>
<td>Corporate social responsibility and environmental management</td>
<td>10</td>
<td>348</td>
</tr>
<tr>
<td>6</td>
<td>International journal of environmental research and public health</td>
<td>10</td>
<td>55</td>
</tr>
<tr>
<td>7</td>
<td>International journal of hospitality management</td>
<td>5</td>
<td>305</td>
</tr>
<tr>
<td>8</td>
<td>Benchmarking</td>
<td>4</td>
<td>67</td>
</tr>
<tr>
<td>9</td>
<td>Journal of business ethics</td>
<td>6</td>
<td>276</td>
</tr>
<tr>
<td>10</td>
<td>International journal of contemporary hospitality management</td>
<td>4</td>
<td>140</td>
</tr>
<tr>
<td>11</td>
<td>Journal of environmental management</td>
<td>4</td>
<td>108</td>
</tr>
<tr>
<td>12</td>
<td>Environmental science and pollution research</td>
<td>5</td>
<td>76</td>
</tr>
</tbody>
</table>

**Source(s):** Author’s calculations

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**Table 4.** Leading journals/journals productivity in GHRM

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**Figure 3.** Keywords/topics usage in GHRM

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**Green human resource management**
Implications of the study

The present study has portrayed the comprehensive image on GHRM. Accordingly, studies have some implications for academician as well as practicians. Accordingly, the study has identified certain gaps prevailing in previous literature. In this concern, the study has determined that despite of belongingness of GHRM with HRM, most of its research has been found in journals covering science and technology. Hence, the present study suggests the prospective and future authors working in the field of social sciences or management or HRM to work in the area of GHRM. In this concern, researchers can associate their respective HR studies with environment and sustainability. Secondly, the study has offered the comprehensive publication analysis on the area which will assist the researchers in gaining review on topic and development of empirical models. Further, with the utilisation of keywords criterion they can easily explore the publications done in the area. Also, study will
help the scholars and researchers to identify the region and countries along with the institutions and universities to pursue research on the GHRM topic. As far as practical implications are considered, the present study will help the managers to focus on GHRM with more focus to acquire positive consequences for HRM. Here, researchers from the area of HRM can accentuate the topic with environment related topics.

Conclusion
The present study has exposed the due relevance of GHRM in the area of HRM for researchers as well as practitioners. The studies have highlighted the various reasons for its rapid awareness where primarily it has been found that organisations are integrating their core functions with environment management for promoting sustainable environment. The study has included the studies from the year 2015–2021 extracted from the Scopus database. The analysis has revealed that the majority of the publication has been done in the area from the year 2020. Further, the present study has provided a clear view on various bibliometric facets associated with GHRM, such as, bibliometric coupling, co-authorship, citation and keyword analysis. Further, it has been found that number of citations in the area is high from the researchers of China. Also, Jabbour, C.J.C., has been identified as a lead contributor/author from the area with 43 publications and 1,352 citations. The journal of cleaner production has been identified as the journal with the largest number of publications from the area. Also, prominent keywords used in the area are sustainability, GHRM, environmental management, sustainable environment and HRM.

Further, for future researchers it has been suggested to perform bibliometric analysis on other databases, such as, Web of Science, which will contribute more in the field. Also, non-English publication, book chapters, conference proceedings and papers, notes are not included in the present analysis. Future researcher can utilise all these non-utilised databases in future to get more insights of the area.

References


Further reading


About the author
Dr Poonam Mehta, has worked as Assistant Professor in private and government universities of India. She has completed her Ph.D. in the area of employee well-being. She has corporate as well as academic experience in private as well as government organizations in the area of human resource management. She has in her credit dozens of research papers with reputed publishers/institutions like Science Direct, Springer, Emerald, Inderscience, etc. Poonam Mehta can be contacted at: poonam.meh26@gmail.com

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