



BIBLIOMETRIC ANALYSIS OF STUDIES ON HRM DURING COVID-19 PANDEMIC

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Selma Kilic Kirilmaz¹, Ismail Simsir²

¹Sakarya University, of Applied Sciences, Department of International Trade and Logistics, Kaynarca, Sakarya, Turkey.

skirilmaz@subu.edu.tr, ORCID: 0000-0002-8478-1910

²Sakarya University of Applied Sciences, Faculty of Health Sciences, Department of Health Management, Akyazi, Sakarya, Turkey.

ismailsimsir@subu.edu.tr, ORCID: 0000-0001-7460-9634

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ABSTRACT

Purpose- The purpose of this research is to determine the course of HRM research studies conducted during the COVID 19 Pandemic period by focusing on the author, country, citation, subject, etc.

Methodology- The research was carried out with the method of bibliometric analysis. The articles containing the subjects of COVID-19 Pandemic and HRM published in the Web of Science Core Collection database between 2020 and 2021 were examined within the scope of the research.

Findings- As a result of the research conducted, it is observed that 206 publications covering the subjects of pandemic and HRM were made between 2020-2021. These publications were included in 139 sources (journals, books, etc.), written by 1004 authors. Citation rate per article was 6.019 and the collaboration index of authors was quite high (5.72). Moreover, it is found that the journal publishing the most articles on HRM during the pandemic period was BMJ Open. The most relevant institution on the subject was Shanghai Jiao Tong University with 14 articles. The countries publishing the most articles were China, the USA and India, respectively, and the countries that received the most citations per article were Brazil, Denmark and Kuwait. It is determined that the most cited article worldwide is Carnevale JB 2020 with 122 citations. In the keyword analysis of the author, it is revealed that the terms of COVID-19, human resource management, COVID-19 pandemic, pandemic, coronavirus, crisis management, health policy, public health, human resource development and mental health are mostly used.

Conclusion- It is believed that the findings obtained as a result of the research will contribute to the literature. Carrying out the research using a single database (Web of Science) constitutes an important limitation for the research.

Keywords: Human resources, human resources development, Covid-19, pandemic, bibliometric analysis.

JEL Codes: M12, M15, M54

1. INTRODUCTION

COVID-19 Pandemic profoundly impacted both societies and businesses thus causing a major, unexpected and sudden changes in the work lives of billions of workers worldwide. Businesses and employees were forced to transform their operational routines almost overnight. This situation made it necessary for managers to make decisions under uncertain conditions and to enact new arrangements (Sanders et al., 2020). The importance and responsibilities of HRM units and HRM managers increased in the implementation of these changes and innovations. The most important reason for this is that HRM units had to undertake all the coordination process between employees and business managers during the management of the Pandemic. In addition, HRM units were required to regulate the changing work conditions and ensure that the employees adapt to these conditions as well. Ensuring hygienic conditions, arranging telework conditions, keeping morale and motivation of employees high etc. can be named as examples.

In parallel with the changing and increasing responsibilities of HRM departments during the COVID-19 Pandemic, changes were also observed in HRM research studies. In this period, interest in teleworking, work-life balance, wellbeing, etc. increased slightly more. Therefore, the aim of this research is to determine the course of HRM research studies during the COVID-19 Pandemic period by focusing on the author, country, citation, subject, etc. The research questions guiding this study are:

1. Which HRM issues were mostly studied during COVID-19 Pandemic period?
2. Which countries and which authors conducted the most HRM research during COVID-19 Pandemic?
3. Which authors and countries received the most citations in HRM research during COVID-19 Pandemic?
4. What would be the course of research in the field of HRM after COVID-19 Pandemic?

Within the scope of this research, which was carried out to determine the course of HRM research during Covid-19 Pandemic, a literature review was first conducted. Bibliometric analysis method was utilized during this and analysis process. Bibliometrics, first proposed by Pritchard (Pritchard, 1969) instead of statistical bibliography has the potential to offer a systematic, transparent and reproducible review process based on comprehensive measurement of scientific activity (Aria & Cuccurullo, 2017).

Information about the design and methodology of the research is given in the method section. Findings obtained as a result of the research are explained in the findings section. In the conclusion section, the research findings were evaluated in the light of the literature.

2. LITERATURE REVIEW

COVID-19 was first detected in Wuhan, China. On 31 December 2019, China informed the World Health Organization (WHO) about pneumonia cases of unknown cause and rapid spread. It was defined by WHO on 7 January 2020 as a new type of "CoV" that has not been detected in humans before. COVID-19 was first detected outside of China on 13 January 2020 in Thailand. Afterwards, many countries, such as Japan and South Korea, reported cases to WHO. The first COVID-19 case in Turkey was detected on March 11, 2020 (Çankaya, 2020).

Upon the break out of COVID-19, governments had to take drastic measures with the aim of stopping the spread of the virus. This new global pandemic brought the global economy down drastically, suspending public life from time to time. In this process, industries and economies all over the World faced an unprecedented challenge to survive. Many sectors were forced to lay off their employees. The downsizing of economies worldwide due to COVID-19 became a major concern for the current and future workforce. During COVID-19 Pandemic, employees started to experience anxiety about maintaining their jobs and advancing their careers (Mahmud et al., 2021).

Hecklau et al. (2016: 2) define human resource management as a strategic approach to the efficient employment and development of a highly committed and qualified workforce in order to achieve the goals of businesses. COVID-19 Pandemic created a particularly challenging environment for human resource management. While managers were trying to adapt to the radical changes experienced in the workforce, HRM had to quickly respond to "unknown unknowns" in order to support them. For instance, employees previously spending all or most of their time working within the physical confines of their workplaces now needed to quickly adapt to teleworking environments (Carnevale & Hatak, 2020: 183). The importance of HRM units in the businesses increased along with COVID-19 Pandemic. The reason for this is that all businesses were affected by COVID-19 Pandemic, and thus being obliged to carry out all coordination between employees and business managers. In addition, HRM departments had to regulate changing business conditions and ensure that employees adapt to these conditions. Human resources management has become one of the most important areas of management practice due to its central role in the coordination of all processes in the COVID-19 Pandemic environment, where businesses abandon many existing practices and turn to new ones (Ilhan, 2020: 294).

During the "new normal" stage caused by COVID-19 Pandemic, many white-collar and professional workers had to work from home (Sanders et al., 2020: 289). The advantages of teleworking may include a better work-life balance, increased creativity, higher productivity, less stress and less carbon emissions, etc. When working remotely, there is no loss of time experienced commuting to work. If this time is allocated to home or social needs while working remotely, more work-life satisfaction can be achieved. However, despite the advantages of telework, there are also some disadvantages. One of the most important disadvantages of telework is social isolation. Since the employees are not present in the office environment, they are in contact with a limited number of people. This mostly affects the psychology of the employees negatively. Another disadvantage of telework is experiencing difficulty in maintaining the home-work-life balance (Russo et al., 2021: 5).

Examining the research on HRM during COVID 19 Pandemic period, it is inferred that many studies were conducted in this sense. For example, Carnevale & Hatak (2020) dwelled on the changing work pattern of HRM due to COVID-19, the challenges faced by employees during telework, the opportunities brought by the pandemic, and the adaptation of employees to the pandemic and their welfare. Dirani et al. (2020), on the other hand, revealed the position of HRD practitioners to support leaders adapting to new conditions during the COVID-19 Pandemic and their forecasts for HRD research and practices in the post-pandemic period. They also discussed the effects on employees by addressing COVID-19 Pandemic as a crisis. In the study conducted by Arora & Suri (2020), COVID-19 Pandemic was evaluated as a crisis and the HRM interventions that could be carried out by HRM professionals to combat this crisis were discussed. Hite & McDonald (2020) addressed the issue of the career post-COVID-19 Pandemic. They discussed that career changes would be inevitable with the effect of COVID-19

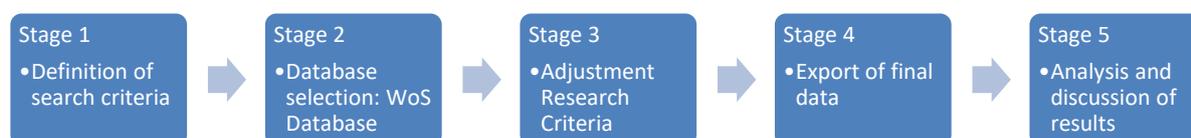
Pandemic, that COVID-19 Pandemic brought uncertainties to career plans, and that HRD would play an active role in shaping the future workforce. Moreover, they focused on the concepts of career shock, resilience and sustainable career. Mahmud et al. (2021) also examined the impact of COVID-19 Pandemic on the future career concerns of the workforce. In addition, they investigated the mediating role of COVID-19 depression in terms of relationship between fear of COVID-19 and career concern in the workforce.

Yawson (2020) addressed the subject of strategic resilience analysis of HRD research and practices after COVID-19 Pandemic. In the study conducted by H. Chen & Eyou (2021), the relations between employees' fear of COVID-19, job insecurity and emotional burnout were investigated. They also examined the moderator role of employee awareness and perceived organizational support in the study. Ipsen et al. (2021) discussed the advantages and disadvantages of telework during COVID-19 Pandemic. In the study of Bhumika (2020) the relationship between work-life balance and emotional burnout of those working from home during the curfew in the COVID-19 Pandemic was investigated. Collings et al. (2021) examined how the HRM function responded to the challenges of COVID-19 crisis and the role of HRM in mapping the way out of the crisis. In the study conducted by He et al. (2020), it was aimed to determine the effect of socially responsible human resource management on employees' fears of external threats during COVID-19 Pandemic. Ngoc Su et al. (2021) carried out a study and focused on how HRM practices were adopted to improve organizational resilience during the COVID-19 crisis, with employees regarded as a critical dimension in tourism and hospitality services. Diab-Bahman & Al-Enzi (2020) conducted their study in order to provide HRM policy makers with an idea of how the changes emerged in working conditions affected employees during the COVID-19 Pandemic. According to the study conducted by Bierema (2020), COVID-19 process was seen as an opportunity for HRM studies. Bierema (2020) also argued that bold, critical research works prioritizing organization and social justice and creating sustainable organizations and communities for human beings can be carried out in the new normal period. Agarwal (2021) examined the impact of COVID-19 on the welfare of hotel employees through investigating the HRM practices adopted by hotels during COVID-19. Bennett & McWhorter (2021), examined remote working and the resulting digital human resources management processes to ensure business continuity during the COVID-19 Pandemic.

3. DATA AND METHODOLOGY

There are four main stages in a typical bibliometric analysis. These stages are shown in Figure 1.

Figure 1: Principal Stages in a Typical Bibliometric Research



Source: Öztürk (2021)

In bibliometric research, it is important to create data sets rigorously and comprehensively in order to make qualified literature reviews and analysis (Gürler, 2021; Seyran, 2021). Accordingly, a search strategy such like following was employed as initiative to research.

3.1. Search Strategy and Source of Bibliometric Data

The articles constituting the data set of the study were obtained from the Web of Science Core Collection database. The search strategy is used as following:

"sars2" (Title) or "sars-2" (Title) or "SARS 2" (Title) or "novel corona virus pneumonia" (Title) or "new human coronavirus" (Title) or "2019 novel coronavirus" (Title) or "2019 novel coronavirus infection" (Title) or "novel coronavirus" (Title) or "new coronavirus" (Title) or "severe acute respiratory syndrome coronavirus 2" (Title) or "sudden acute respiratory syndrome coronavirus 2" (Title) or "China coronavirus" (Title) or "Wuhan coronavirus" (Title) or "Wuhan seafood market pneumonia virus" (Title) or "covid-19" (Title) or "COVID19 virus" (Title) or "Coronavirus disease 2019" (Title) or "coronavirus disease-19" (Title) or "SARS-CoV-2" (Title) or "2019-nCoV" (Title) or "2019-nCoV disease" (Title) or "2019-nCoV infection" (Title) or "Coronavirus" (Title) and 2022 or 2018 or 2019 (Exclude – Publication Years) and 2020 or 2021 (Publication Years) and Articles or Review Articles (Document Types) and Articles or Review Articles (Document Types) and Book Chapters or Data Papers (Exclude – Document Types) and Proceedings Papers or Retracted Publications or Publication With Expression Of Concern or Withdrawn Publication (Exclude – Document Types) and English (Languages) and "International Human Resource Management" Or "Human Resource " Or "Hrm" Or "Personnel Management" Or "Human Resource Development" Or "Hrd" Or "People Management" Or "People-management" (Search within all fields)

In line with the given search strategy, 339 articles were accessed. Summaries of all articles found have been examined by authors and irrelevant of them were extracted from analyzing process. Residual 206 articles were involved in the analysis process through exporting relevant raw data.

3.2. Bibliometric Analysis

Bibliometric analysis uses mathematical and statistical methods to examine the formal properties of knowledge domains (Qiu et al., 2017). Bibliometric analysis includes several approaches such as citation analysis (CA), co-occurrence or co-word analysis, co-citation analysis (CCA) or co-authorship analysis (Bağış & Ardiç, 2021; Kurutkan & Orhan, 2018) that can be used with multiple combinations. Bibliometric analysis of the article was made using the R 4.0.3 package program. Also, the software used for the bibliometric analysis within the scope of the study is "biblioshiny", which is an R-based library and the web-based interface of "bibliometrix" (Prajapati, 2013; R Core Team (2020), n.d.).

The units and types of analysis performed are shown in Table 1.

Table 1: Analysis Unit and Sub-Components (Analysis Type) Used in the Study

Data set	Main Information About Data
	Average Number of Citations Per Article
	Three-field plot
Sources	Most Relevant Sources
	Bradford's Law
Authors	Most Relevant Affiliations
	Corresponding Author's Country
Documents	Most Global Cited Documents
	Most Local Cited Documents
	Most Frequent Words
	Word Analysis
Conceptual Structure	Thematic Evolution Map
	Most Contributing Documents
	Most Cited Documents
	Co-occurrence network
	Factorial Analysis
Intellectual Structure	Co-citation Network
Social Structure	Collaboration Network
	Country Collaboration Map

4. FINDINGS AND DISCUSSIONS

The basic information of the articles is shown in Table 2. When Table 2 is examined, it is seen that 206 articles analyzed in the study cover the years 2020 and 2021. There are 139 sources (journals, books, etc.) in which these articles are published. Citation rate per article is 6.019, The number of single-authored articles is 37, and the ratio of single-authored articles to all articles is 0.18. The authors' collaboration index is 5.72 as a quite high value. This shows that the field is a suitable field for different authors to work together.

4.1. Dataset

This section gives general information about data set such as document types, document contents, authors etc. included in the analysis process.

Table 2: Descriptive Information Relating Dataset

Description	Results
MAIN INFORMATION ABOUT DATA	
Timespan	2020:2021
Sources (Journals, Books, etc.)	139

Documents	206
Average years from publication	0,277
Average citations per documents	6,019
Average citations per year per doc	4,816
References	9434
DOCUMENT TYPES	
article	162
article; early access	28
review	15
review; early access	1
DOCUMENT CONTENTS	
Keywords Plus (ID)	386
Author's Keywords (DE)	681
AUTHORS	
Authors	1004
Author Appearances	1024
Authors of single-authored documents	37
Authors of multi-authored documents	967
AUTHORS COLLABORATION	
Single-authored documents	37
Documents per Author	0,205
Authors per Document	4,87
Co-Authors per Documents	4,97
Collaboration Index	5,72

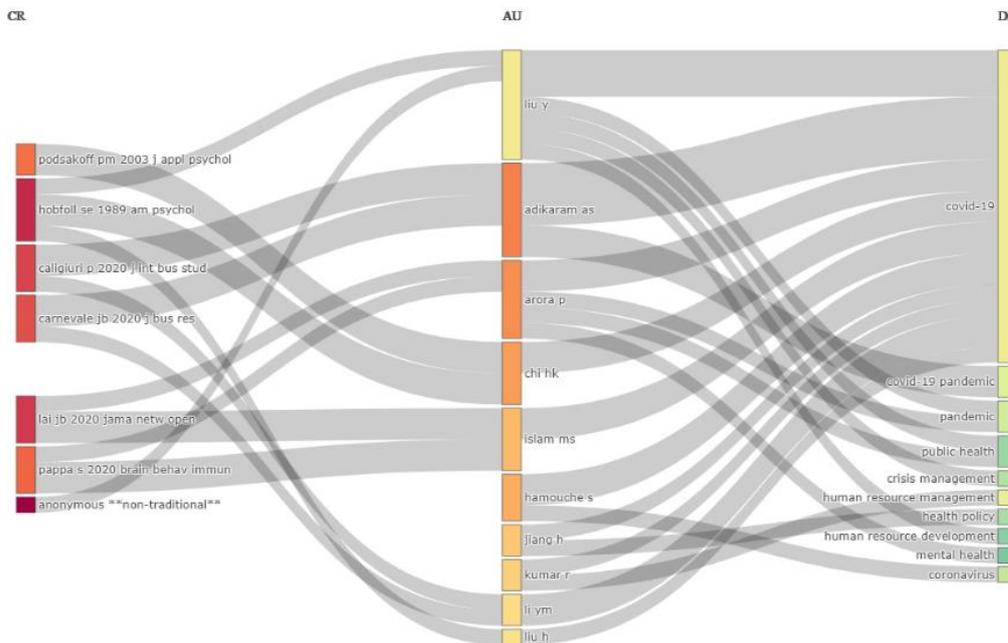
We observe the publication process started in 2020 (49 article) and peaked in 2021 (128 article). The annual growth rate increased by 261.22% and the average number of citations per article which was 14.63 in 2020, decreased to 3.85 in 2021

Table 3: Average Number of Citations per Article

Year	N	Mean TC per Art	Mean TC per Year	Citable Years
2020	49	14,633	7,316	1
2021	128	3,860	3,860	0

A three-field plot built upon a Sankey diagram depicting the connections from cited references to authors and themes is displayed in Figure 2. The authors in the middle part of the figure have expanded the concepts on the right by referring to the references on the left. Apart from COVID-19, it is seen that main concepts such as crisis management, health policy, organization of health services, public health, mental health, etc. come to the fore, along with remote work, burnout, career development and change management. Liu Y, Adikaram AS and Arora P are the authors who feed these concepts the most. The references that these authors refer to the most while feeding these concepts can be observed as Hobfoll SE 1989, Podsakoff PM 2003, Lai JB 2020 and Pappa S 2020, Caligiuri P 2020 and Carnevale JB 2020.

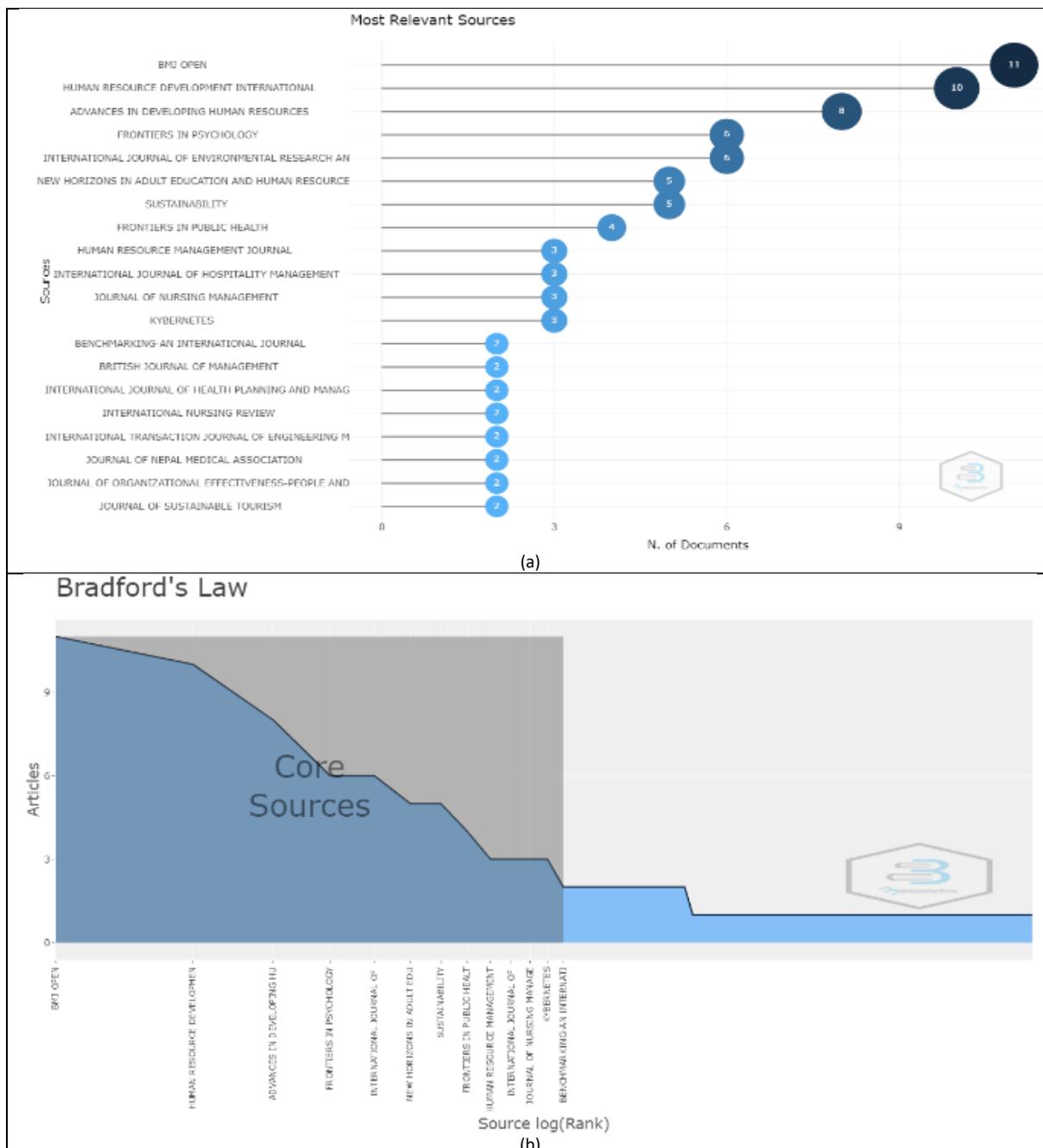
Figure 2: Three-Field Plot Showing the Network between Authors (Middle), Cited References (Left) and Themes (Right)



4.2. Sources

The top 20 most relevant resources are as shown in Figure 3(a). The journal that publishes the most articles on the subject is BMJ Open. The journal is published at regular intervals and 5-year impact factor of the journal is stated as 3.424. articles published in BMJ Open accounts for 13,25% of the articles published in the first 20 journals. The Journal also published 49,39% of the articles published in the first five journals. Furthermore, it is observed that articles in any field are generally published in certain sources. Therefore, according to the Bradford's Law, a small number of journals in a particular subject area cover a significant portion of the total articles in a given area, while an increasing number of journals publish fewer articles in that area (Şimsir, 2021). When the sources are sorted in descending order according to the number of publications, the sources can be classified into three groups, each of which covers one-third of the publications. The first group formed as a result of this classification is the core resources (Dadkhah et al., 2020). Accordingly, 13 journals can be seen in the Zone1 as core resources in Figure 3(b). It draws attention that the journals in Figure 3(b) are the same as the top 5 journals in the most relevant sources given in Figure 3(a). Also, the area covered by the BMJ Open is more than other journals, as can be seen from the Figure 3(a) depicting Bradford's Law. It is seen that 9.35% of the total number of journals, which is 139, consists of core resources. However, the articles published in the top 5 core journals constitute 19.90% of all articles included in the analysis.

Figure 3: (a). Most Relevant Sources (b). Bradford’s Law



4.3. Authors

Figure 4 shows most relevant affiliations. It can be seen that top 5 most relevant institutions are Shanghai Jiao Tong Univ with 14 articles, Huazhong Univ Sci and Technol with 10 articles, London Sch Hyg and Trop Med with 9 articles, Tilburg Univ with 7 articles and All India Inst Med Sci with 6 articles

Figure 4: Most Relevant Affiliations

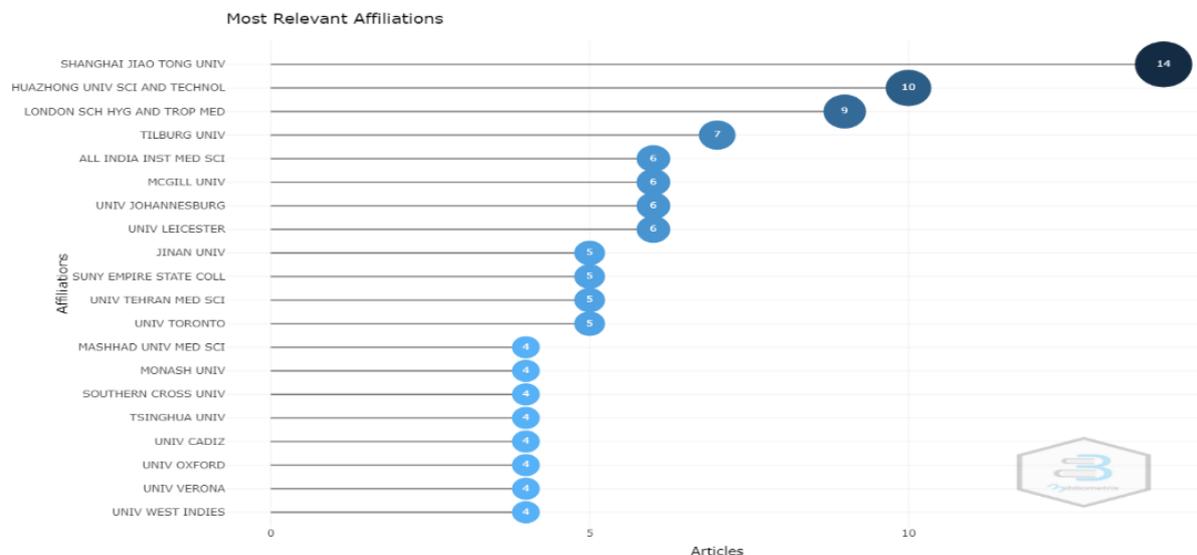
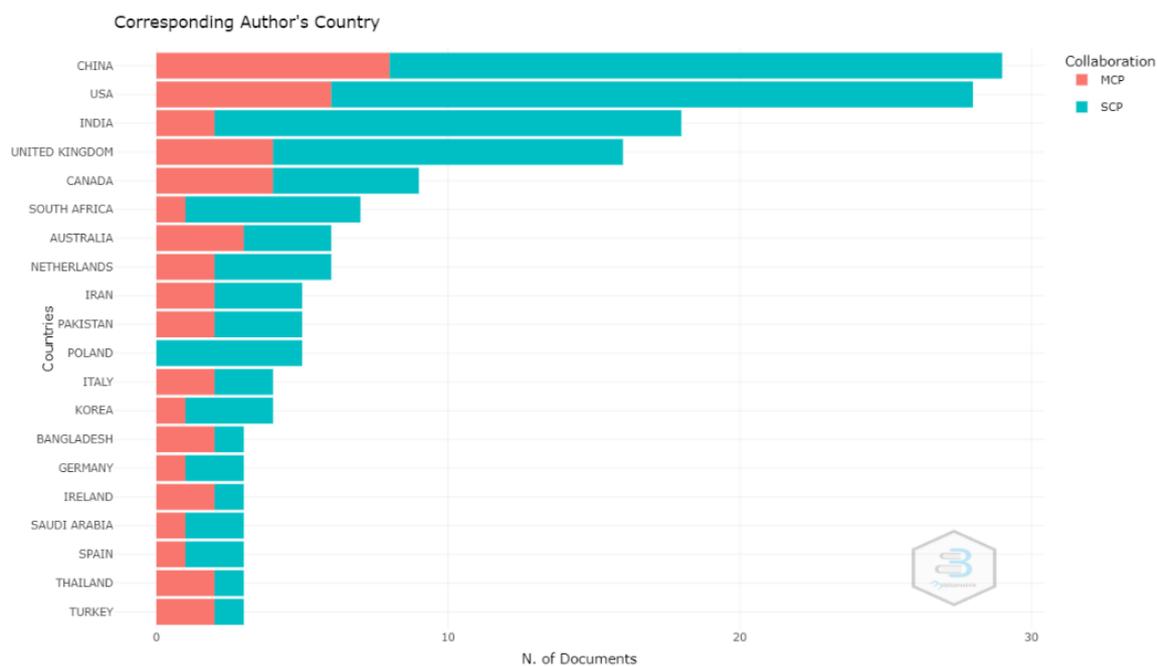


Figure 5 depicts Corresponding Author's Country. In this context, there are two types of articles: single country publications (SCP) with all authors from the same country and representing intra-country cooperation, and multiple country publications (MCP), whose authors are from different countries and representing inter-country cooperation.

Figure 5: Corresponding Author's Country



When examined the ranking made according to the MCP to article ratio (MCP Ratio) given in Table 4(a), it is seen that the 5 most productive countries are in the lower ranks. Interestingly, it can be seen that the most productive countries, such as China, USA, and India, where the MCP ratio is low, do not rank high in the ranking of citations per article. For example, USA, India and UK, which are the three countries with the highest number of citations, could not find a place in the top three in the ranking of citation rates per article. This situation can be expressed as a finding showing that international cooperation is important in increasing the number of citations per article (Sweileh et al., 2016). On the other hand, it can be stated that it

would be beneficial to follow the studies from these three countries with the highest total citations in the studies conducted on the subject or in the decisions taken by policy makers.

Table 4(a): Most Relevant Countries by Corresponding Author (b). Most Cited Countries

Country	Articles	Freq	SCP	MCP	MCP Ratio	Country	Total Citations	Average Article Citations
BANGLADESH	3	0,01463	1	2	0,667	BRAZIL	33	33
IRELAND	3	0,01463	1	2	0,667	DENMARK	16	16
THAILAND	3	0,01463	1	2	0,667	KUWAIT	29	14,5
TURKEY	3	0,01463	1	2	0,667	INDIA	245	13,611
AUSTRALIA	6	0,02927	3	3	0,5	USA	328	11,714
ITALY	4	0,01951	2	2	0,5	BANGLADESH	34	11,333
CANADA	9	0,0439	5	4	0,444	UNITED KINGDOM	151	9,438
IRAN	5	0,02439	3	2	0,4	FRANCE	18	9
PAKISTAN	5	0,02439	3	2	0,4	RUSSIA	8	8
NETHERLANDS	6	0,02927	4	2	0,333	SPAIN	23	7,667
GERMANY	3	0,01463	2	1	0,333	IRAN	34	6,8
SAUDI ARABIA	3	0,01463	2	1	0,333	ITALY	22	5,5
SPAIN	3	0,01463	2	1	0,333	THAILAND	16	5,333
CHINA	29	0,14146	21	8	0,276	INDONESIA	9	4,5
UNITED KINGDOM	16	0,07805	12	4	0,25	IRELAND	13	4,333
KOREA	4	0,01951	3	1	0,25	CHINA	119	4,103
USA	28	0,13659	22	6	0,214	CANADA	33	3,667
SOUTH AFRICA	7	0,03415	6	1	0,143	U ARAB EMIRATES	9	3
INDIA	18	0,0878	16	2	0,111	AUSTRALIA	15	2,5
POLAND	5	0,02439	5	0	0	NETHERLANDS	13	2,167

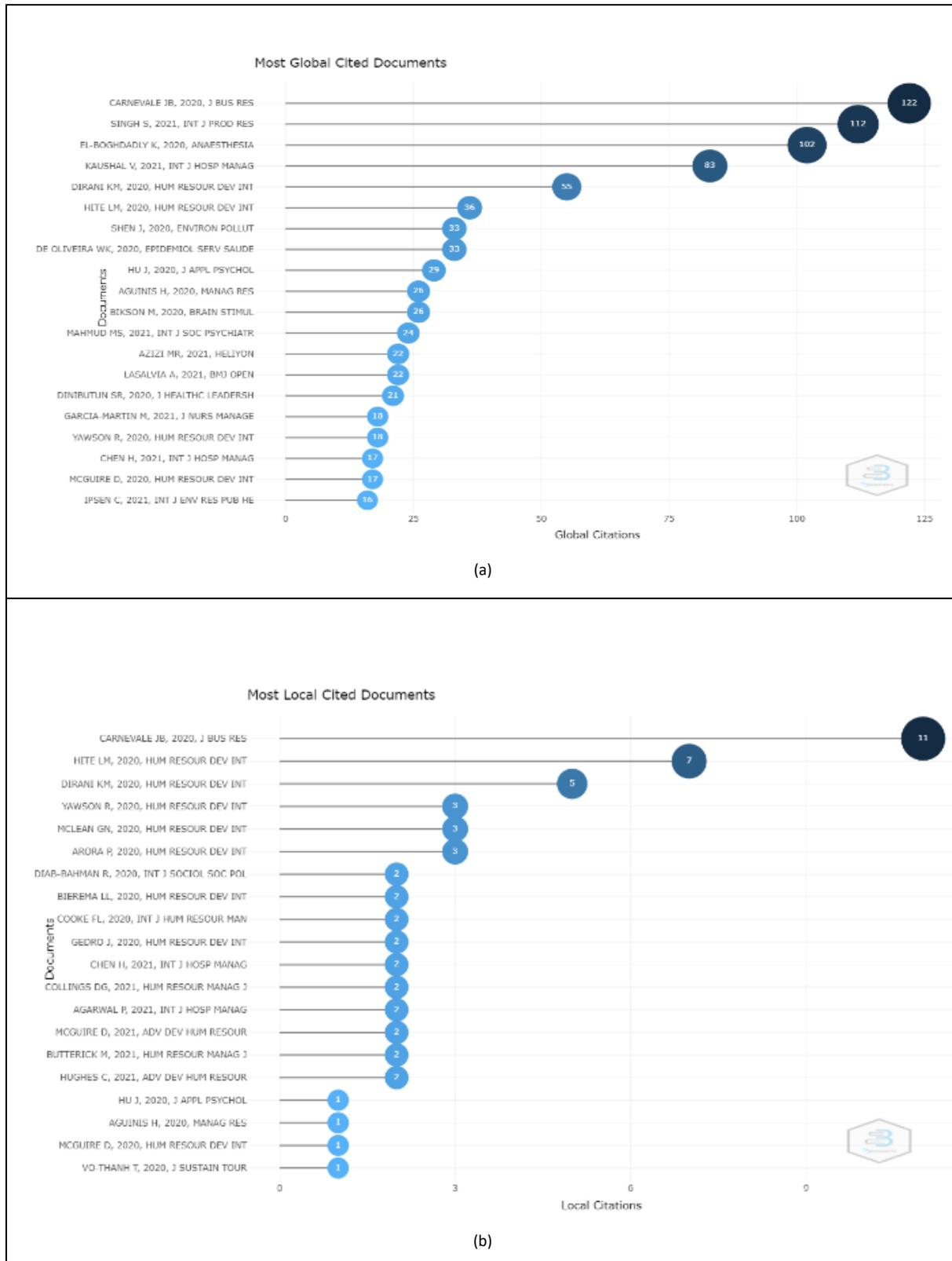
(a)

(b)

4.4. Documents

The most cited documents at global and local level are given in Figure 6(a) and Figure 6(b), respectively. It is seen that the most cited article is Carnevale JB 2020 receiving 122 citations globally. It is also observed that same study is cited 11 times locally by the 206 articles within analysis.

Figure 6: (a). Most Global Cited Documents (b). Most Local Cited Documents





(c)



(d)

4.5. Conceptual Structure

The thematic evolution of the field showed the main changes in the Keywords Plus is presented in Figure 8. Research themes are categorized under four groups with regard to thematic evolution: i) Motor themes at a high centrality and intensity level. This section contains highly evolving key themes for the research field. ii) Basic and transversal themes at a high centrality and low development level. The themes in this section tend to become motor themes in the future due to their high centrality level. iii) Emerging or declining themes at a low centrality and intensity level. Qualitative analysis is needed to determine whether the themes in this section are emerging or declining. iv) Highly developed and isolated themes with low centrality and high development level. Themes in this area are no longer important because of a new concept or technology (Cobo et al., 2012).

With reference to that concept, it is seen that the theme composed of performance employee and future is the most studied among the motor themes with highest centrality and density. Also, the theme composed of impact, crisis and lessons is among the motor themes with second-level centrality and density. In the lower right part of the thematic map, there are themes with a high degree of centrality but with a low degree of intensity. In other words, it can be said that although they are in the center of the field, there are themes that are likely to become motor themes when more publications are made. Those are the theme composed of health, satisfaction and perceptions and the theme composed of stress, challenges and job. It is noteworthy that the themes management, anxiety and care are studied as a niche theme. And the theme gender intersectionality needs to be analyzed qualitatively about whether it is emerging or declining.

Figure 8: Thematic Evolution Map (Keywords Plus)

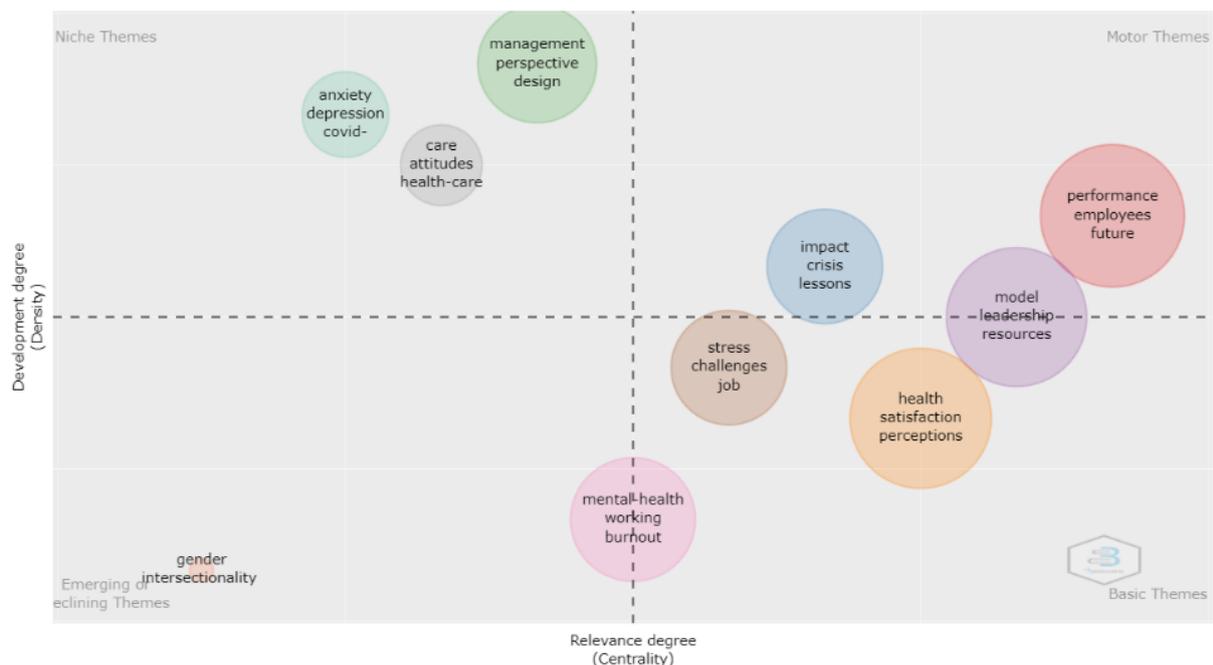


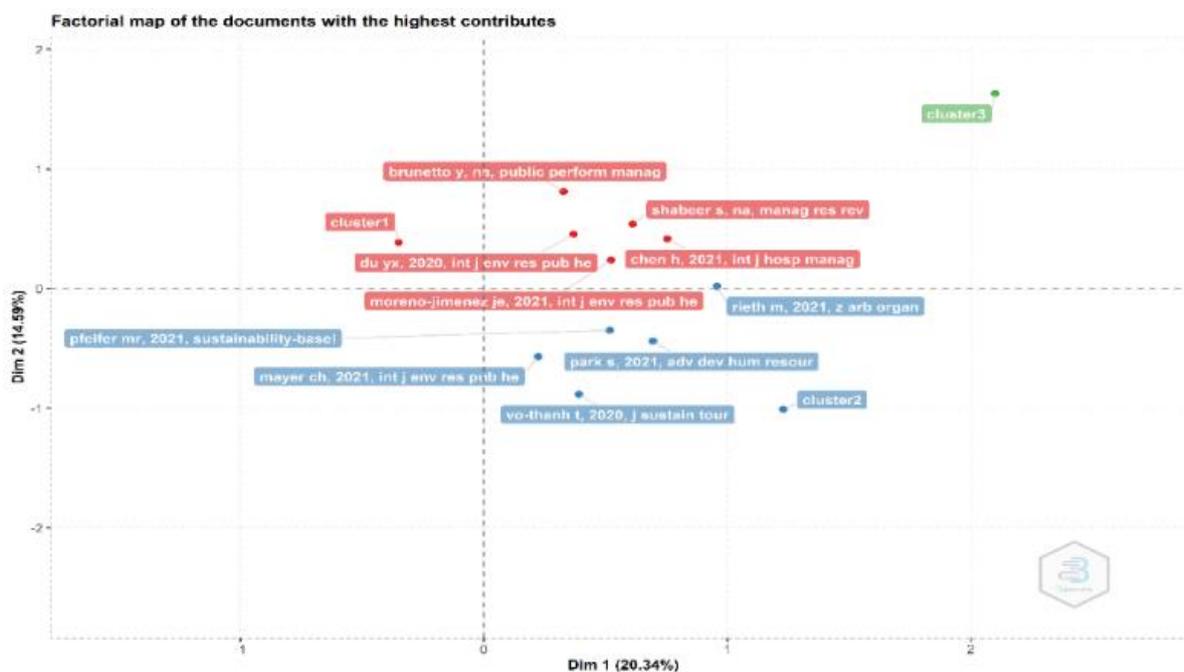
Figure 9 depicts the factorial map of the documents with the highest contribution. Brunetto et al. (2021), one of the authors included in the red cluster in Figure 9, discussed the issues of psychosocial security environment, psychological capital and innovative behavior in COVID-19 Pandemic. They made reference to that COVID-19 changed the working lives of employees, that innovative behavior contributed to the success in this period, that the psychosocial safety climate took part in the personal psychological coping, performance, and well-being and innovation of the employees. In the study of Shabeer et al. (2021) the subject of managing the career plateau in COVID-19 was referred. Du & Liu (2020) examined the effect of psychological contract on employee safety behaviors against COVID-19. In the study conducted by H. Chen & Eyoun (2021) the relationships between employees' fear of COVID-19, job insecurity, and emotional burnout were investigated. Moreno-Jiménez et al. (2021) addressed the stress experienced by healthcare professionals during COVID-19 period.

The authors included in the red cluster in Figure 9 dwelled on the employees' fear of COVID-19, job security, psychological problems experienced by employees, etc.

Rieth & Hagemann (2021), one of the authors included in the blue cluster in Figure 9, investigated the effect of teleworking and closures of schools and nurseries on employees during COVID-19 Pandemic. According to the findings, it is understood that people who do not work from home experience more stress and less life satisfaction than those who work from home. In addition, teleworking is beneficial if the working conditions are supportive, otherwise it could be very compelling to work from home, especially because of the children who stay at home. Pfeifer (2021) investigated the effects of quarantine practices and phases outside the quarantine on managers and employees during COVID-19 Pandemic period. As a result of the research, it is observed that managers in general and especially those with telecommunications experience adapt better to working from home during the quarantine period. In the study of Mayer et al. (2021) the stress and positive psychological perspective of managers with the aim of adapting to the new business world that changed along with COVID-19 and coping with the problems experienced was discussed. Park et al. (2021), on the other hand, focused on the psychological well-being and career development of those teleworking during COVID-19 Pandemic.

It is seen that the authors included in the blue cluster in Figure 9 especially emphasized the issue of teleworking, discussed the challenges of teleworking and its effects on the psychology of the employees.

Figure 9: Most Contributing Documents Map (Keywords Plus)



The factorial map of the most cited articles is given in Figure 10. Carnevale & Hatak (2020), one of the authors included in the red cluster of this map, examined the effects of COVID-19 on the changing work pattern of HRM. They dwelled on the difficulties experienced by employees in teleworking, the opportunities brought by the pandemic, and the adaptation of employees to the pandemic and their welfare. Hite & McDonald (2020) focused on the post-pandemic period. These authors discussed the changes and challenges that would be experienced by employees in their careers post-pandemic period. Career,

career shock, uncertainties, resilience and sustainable career and career opportunities, etc. were emphasized. They also discussed the role of HRM in this process. Dirani et al. (2020) explored the functions of leaders and organizations in COVID-19 and broadly evaluated the new roles assumed by Human Resources Development during COVID-19 Pandemic.

Bhumika (2020), one of the authors included in the blue cluster in Figure 10, investigated the relationship between work-life balance and emotional burnout experienced by individuals teleworking during quarantine periods in COVID-19 Pandemic. According to the findings, it was revealed that women experienced more emotional burnout compared to men because they were not able to maintain their work-life balance during telework period. Moreover, it is determined that participatory leadership will be effective in maintaining the balance between work and private life and that the emotional burnout experienced by employees may be reduced to some extent thanks to this effect. Mayer et al. (2021) discussed the stress and positive psychological perspective of managers with the aim of adapting to the new business world that changed along with COVID-19 and coping with the problems experienced. Pfeifer (2021) investigated the effects of quarantine practices and phases outside the quarantine on managers and employees during COVID-19 Pandemic period. As a result of the research, it is observed that managers in general and especially those with telecommunications experience adapt better to working from home during the quarantine period. Park et al. (2021) focused on the psychological well-being and career development of those teleworking during COVID-19 Pandemic. Researchers suggested that HRD professionals could support the psychological health and career development of those teleworking during COVID-19 Pandemic.

Figure 10: Most Cited Documents Map (Keywords Plus)

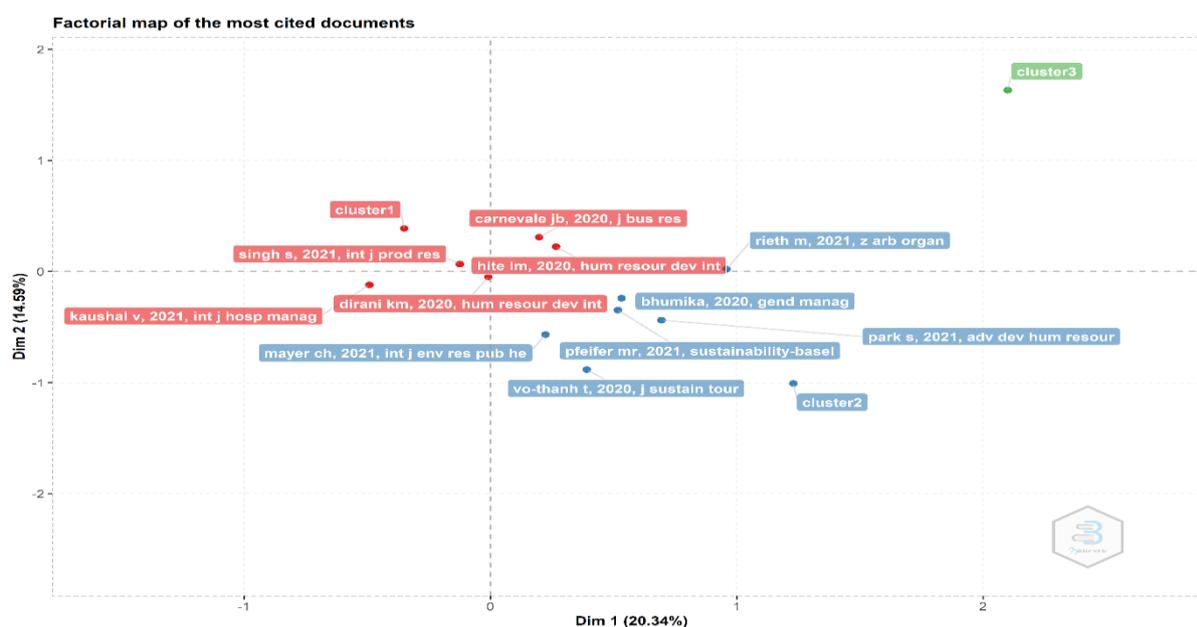
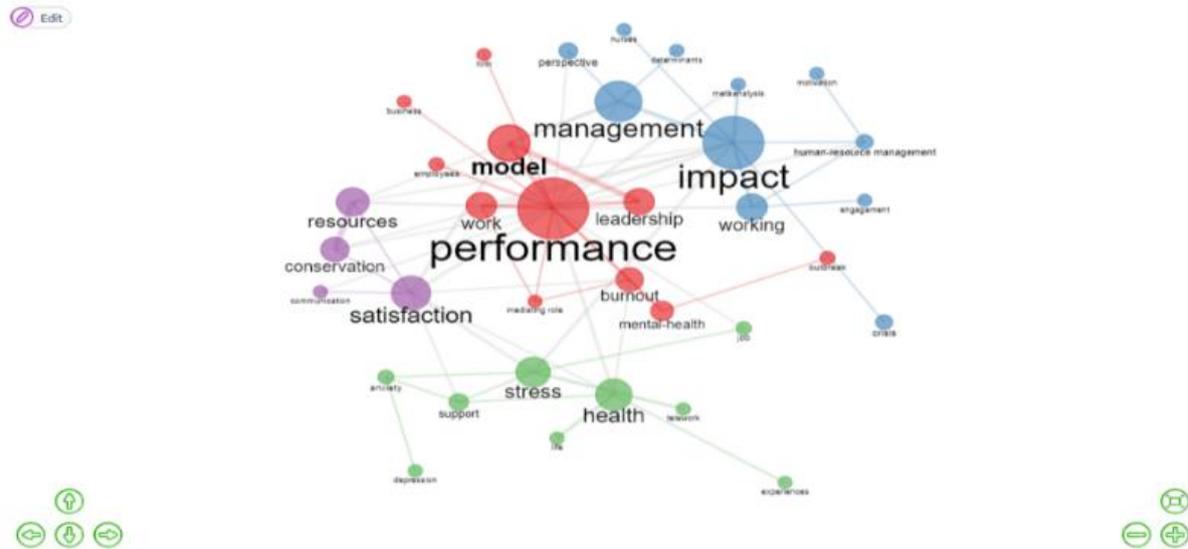


Figure 11 depicts the co-occurrence network by Keywords Plus. The purpose of co-occurrence network analysis is to access the relations of items based on the number of documents in which they occur together. According to analysis, it is seen that the words are gathered under four main cluster. Red cluster that can be characterized as performance cluster and blue cluster that can be characterized as impact cluster are the two of the biggest of them. Also, the minor clusters are green cluster which can be characterized as health and purple cluster can be characterized as satisfaction.

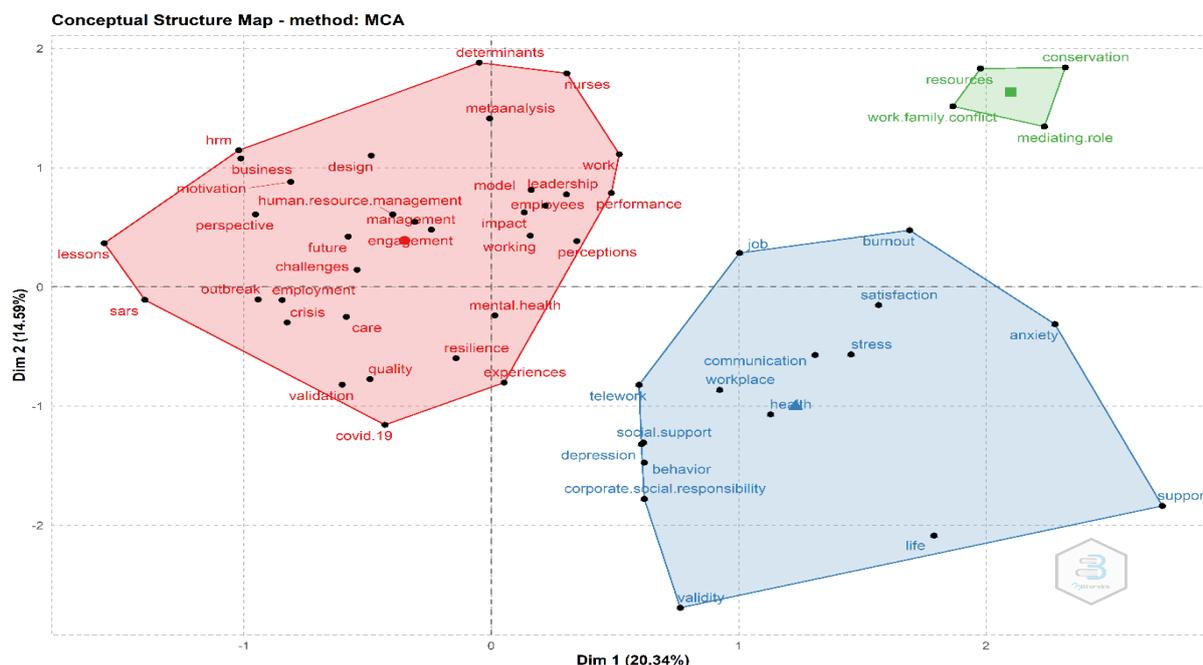
Figure 11: Co-occurrence Network (Keywords Plus) Analysis



Conceptual structural map, given in Figure 12, depicts three different compositions shown in blue, red, and green colors. It is observed that the red cluster involves concepts such as HRM, COVID-19, leadership, employees, motivation, management, future, challenges, employment, mental health and resilience. This cluster can be referred to as the mental health zone. This zone points at the problems experienced by healthcare professionals, especially in the early stages of COVID-19 Pandemic, and the psychological problems developed due to these problems. HRM departments undertook an important role in solving the problems experienced by healthcare professionals and other employees.

In the blue cluster, concepts such as telework, job, burnout, satisfaction, stress, anxiety, communication, workplace, health, depression, behavior and support are seen. This cluster can be named as the telework cluster. In this cluster, it is observed that problems such as stress, anxiety, depression, burnout and communication experienced by employees due to telework stand out. HRM departments assumed important tasks in solving these problems experienced by employees while teleworking and in maintaining the works remotely. At this point, HRM departments also functioned as a bridge so that communication between employees and managers could be provided. In the green cluster, concepts such as resources, conservation, and work-family conflict stand out.

Figure 12: Factorial Analysis (Keywords Plus) (Conceptual Structural Map, Method: MCA)



4.6. Intellectual Structure

Co-citation network is given in Figure 13. The relative size of the nodes connotes the centrality of each respective author. Size of that node increases as per to the number of other authors co-cited with that author in question. A large node also indicates that the author's works play a major role for the topical orientation of the cluster.

Co-citation network comes under four cluster. Red cluster is the biggest one and then blue, green and purple appears respectively. Q. Chen et al. (2020), one of the authors included in the red cluster in this figure, studied on the mental health of healthcare professionals in China during COVID-19 Pandemic. Kang, Ma, et al. (2020) explored the mental health status of healthcare professionals during COVID-19 Pandemic. Kang, Li, et al. (2020) examined the mental health of healthcare professionals dealing with the novel coronavirus in Wuhan, China. Lai et al. (2020) studied the mental health of healthcare professionals exposed to coronavirus disease. Liu et al. (2020) reviewed the experiences of healthcare professionals during COVID-19 crisis in China. Pappa et al. (2020), on the other hand, investigated the issues of depression, anxiety and insomnia among healthcare professionals during COVID-19 Pandemic.

It is understood that the authors included in the red cluster in Figure 13 dwell on the problems experienced by healthcare professionals and their psychological effects.

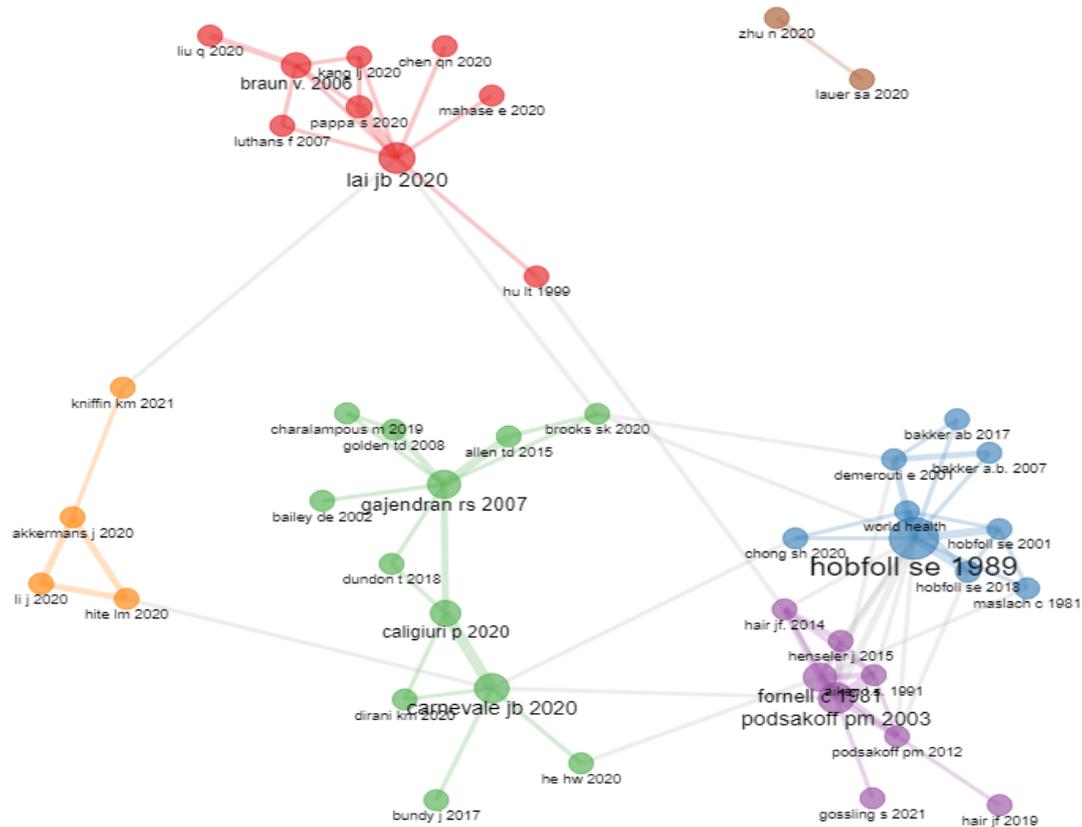
Zhu et al. (2020), one of the authors in the Brown cluster in Figure 13, examined the emergence and early spread of the Coronavirus in Wuhan, China. Akkermans et al. (2020), one of the authors in the orange cluster in Figure 13, assessed COVID-19 Pandemic as a career shock. The effects of COVID-19 Pandemic on career and occupational behaviors were studied. Hite & McDonald (2020) focused on the post-pandemic period. They reviewed the changes and challenges that would be experienced by employees in their careers post-pandemic period. Also, the role of HRM in this process was discussed. With regard to the subject of career; career shock, uncertainties, resilience and sustainable career and career opportunities, etc. were emphasized. Kniffin et al. (2021) broadly addressed the effects of COVID-19 on workers and workplaces around the world. The emphasis is on: (a) abrupt changes in ways of doing business (e.g., telework, virtual teamwork) and (b) abrupt changes for workers (e.g., social distancing, stress and unemployment) caused by COVID-19 Pandemic.

It is observed that the authors included in the orange cluster in Figure 13 mostly focus on the impact of COVID-19 Pandemic on the careers of the employees.

Brooks et al. (2020), one of the authors in the green cluster in Figure 13, dwelled on the psychological effects of quarantine. As a result of their research, it is determined that quarantine has negative psychological effects such as stress, confusion and anger. Caligiuri et al. (2020) focused on international human resources management (IHRM) in order to address the challenges of COVID-19 Pandemic. Telework, career issues and cross-border distance problems are mentioned. In addition,

the challenges posed by distance in terms of employee selection, training, support, health and safety, leadership and virtual collaboration are emphasized as well. Chong et al. (2020), one of the authors included in the blue cluster in Figure 13, discussed the issue of COVID-19 and teleworking.

Figure 13: Co-citation Network



4.7. Social Structure

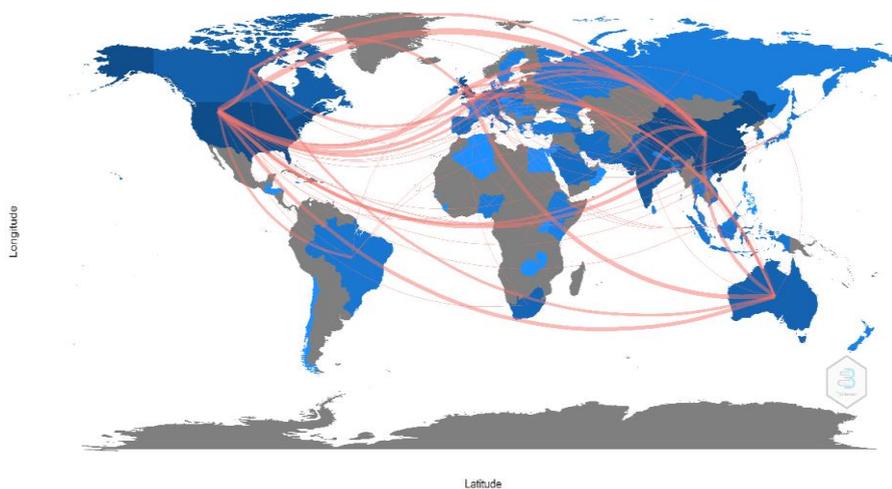
Figure 14 depicts the collaboration network of authors. The red cluster is the densest at the point of cooperation. Because it is seen that there is more interaction between them. Then the blue cluster, and the green cluster can be seen as the most cooperating clusters in themselves. McGuire et al. (2020), one of the authors shown in the blue cluster in Figure 14, assessed the COVID-19 Pandemic as a crisis and reviewed the leadership and communication skills of the leader in the management of this crisis. They claimed that positive and consistent communication inspires trust and social solidarity upon emphasizing the importance of communication in crisis management. McGuire et al. (2021) underlined that ethical values should be taken into account while reshaping HRD in the light of the COVID-19 Pandemic.

Figure 14: Collaboration Network



The international research collaboration regarding original studies of the field is given in Figure 15. The density of the blue color indicates to the number of published articles. And the thickness of the red line indicates the multitude of the collaboration based on frequency. According to Figure 15, it is inferred that USA, China, England, Australia and Canada collaborated mostly.

Figure 15: Country Collaboration Map



5. CONCLUSION AND IMPLICATIONS

Shortly after COVID-19 was first reported in December 2019 in Wuhan City, Hubei Province of China, it spreads all over the world and turned into a pandemic (Yawson, 2020: 406). COVID-19 Pandemic deeply influenced all economies and businesses. Significant changes also occurred in the duties and roles of HRM along with the pandemic. For instance, HRM departments had to regulate changing business conditions and ensure that employees adapt to these conditions (İlhan, 2020: 294). Within the scope of this research, which was carried out to determine the course of HRM research during pandemic, bibliometric analysis methodology was implemented.

As a result of the research conducted, it is observed that 206 publications covering the subjects of pandemic and HRM were made between 2020-2021. These publications were included in 139 sources (journals, books, etc.), the publications belonged 1004 authors, the citation rate per article was 6.019 and the collaboration index of authors was quite high (5.72). Since the collaboration index of the authors is high, it is identified as a suitable area for the collaborative works of the authors. It is understood that the number of articles, which was 49 in 2020, increased to 128 in 2021, and the interest in this subject has grown significantly. According to the result from the Sankey diagram it is observed that the main concepts such as telework, burnout, career development and change management, as well as crisis management, health policy, organization of health services, public health, mental health, etc. come to the fore due to COVID-19. These concepts are also among the most discussed issues in terms of HRM during COVID-19 Pandemic period.

It is found that the journal that published the most articles on HRM during the pandemic period was BMJ Open and that the most relevant institution on the subject was Shanghai Jiao Tong University with 14 articles. It is understood that although the countries that published the most articles were China, USA and India, respectively, the countries with the highest number of citations per article were Brazil, Denmark and Kuwait. It can be claimed that it would be instrumental to keep track of the countries that made the most publications and received the most citations per article for the follow-up of the HRM studies conducted during the pandemic period.

It is observed that the most cited article worldwide is Carnevale JB 2020 with 122 citations. In the said study, the changing work pattern of HRM due to COVID-19, the challenges faced by employees during telework, the opportunities brought by the pandemic, and the adaptation of employees to the pandemic and their welfare are emphasized.

Analyzing the words most frequently used by the authors, it is seen that the terms of covid, pandemic, human, management, study, resource, employees, health, impact and healthcare are mostly preferred in the titles of the articles. On the other hand, looking at the author's keyword analysis, it is observed that the most commonly used terms are covid-19, human resource management, covid-19 pandemic, pandemic, coronavirus, crisis, management, health policy, public health, human resource development and mental health. When examining most frequently used words by the authors within the scope of this analysis, it is understood that these terms are related to both the COVID-19 pandemic and human resources.

When analyzing the factorial map of the documents with the highest contribution to the conceptual structure, it is seen that the authors in the red cluster focused on employees' fear of COVID-19, job security, psychological problems experienced by employees, etc. It is observed that the authors in the blue cluster especially emphasize the issue of teleworking, and discuss the challenges of teleworking and its effects on the psychology of the employees. When the factorial map of the most cited documents is analyzed, the effects of HRM on the changing working pattern, career and leadership issues are discussed in the red cluster. On the other hand, work-life balance and psychological problems related to teleworking are emphasized in the blue cluster. In the study conducted by Mahmud et al. (2021), it was revealed that fear of COVID-19 has a direct impact on the career anxiety of the future workforce.

According to the conceptual structural map, the red cluster contains words such as HRM, COVID-19, leadership, employees, HRM, motivation, management, while, terms such as telework, job, burnout, satisfaction, stress, anxiety, communication stand out in the blue cluster. Red cluster points at the problems experienced by healthcare professionals, especially in the early stages of COVID-19 Pandemic, and the psychological problems developed due to these problems. The blue cluster indicates the problems experienced by employees while teleworking, and the fact that HRM departments assumed important duties in solving these problems and maintaining the work remotely. According to Carnevale & Hatak (2020), employees who previously spent all or most of their time working within the physical confines of their workplaces now needed to quickly adapt to teleworking environments. At this point, HRM departments also functioned as a bridge to ensure communication between employees and managers.

When the co-citation network is analyzed, it is seen that the authors in the red cluster focus on the problems experienced by healthcare professionals and their psychological effects; that the authors in the brown cluster examined the emergence and early spread of the corona virus in Wuhan, China; that the authors in the orange cluster dwell on the impact of COVID-19 Pandemic on the careers of employees; that the authors in the green cluster focused on the psychological impact of quarantine and international human resources management (IHRM); and that the authors in the blue cluster address the issue of COVID-19 and telework. Each cluster in the co-citation network appears to represent many of the HRM issues during the pandemic.

Examining the Country Collaboration Map, it is inferred that the most collaboration is between the USA, England, China, Australia and Canada. It can be claimed that increasing the collaboration between countries would contribute to the emergence of publications in greater number and quality.

In conclusion of this study, which was conducted in order to determine the course of HRM studies during COVID-19 Pandemic, it was observed that in the early days of the pandemic, employees experienced anxiety, stress, burnout, etc., due to fear of

COVID-19, and consequently research studies mostly focused on these aspects. Then, it was understood that most of the employees had to work remotely with the quarantine practices, and as a result, important problems were faced by both employees and businesses. Employees were forced to experience psychological problems due to isolation and at the same time had difficulties in maintaining home-work balance. However, it is seen that businesses dealt with concerns such as ensuring the motivation of employees and preventing performance declines. At this point, it can be argued that the HRM departments of the businesses assume important duties. One of the issues that employees are most concerned about during COVID-19 Pandemic is career advancement. Some of the studies also focuses on this issue. It can be claimed that among the issues to be discussed most in terms of HRM after the pandemic, would be telework, performance improvement, career advancement, maintaining the well-being of employees, etc.

There are some limitations to the research conducted. Carrying out the research using a single database (Web of Science) constitutes the most important limitation for the research. In future studies, more studies can be reached by exploring on more databases. Another limitation of the research is the determination of the time interval as 2020-2021. If future studies are conducted to the extent covering the year of 2022, in which the pandemic perseveres, it will be possible to ccess more data.

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