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THE IMPACT OF DATA-DRIVEN HR DECISIONS ON ORGANIZATIONAL PERFORMANCE: A BIBLIOMETRIC ANALYSIS

Rabia Majeed[*1], Dr. Adeel Nasir[2], Dr. Saqib Rehman[3]

[*1]*PhD Scholar, Department of Management Sciences, LCWU, Lahore*
[2]*Associate Professor, Department of Management Sciences, LCWU, Lahore*
[3]*Assistant Professor, Department of Management Sciences, LCWU, Lahore*

[*1]rabiaa.m12@gmail.com, [2]adeel.nasir@lcwu.edu.pk, [3]dr.saqibrehman81@gmail.com

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Corresponding Author: *
Rabia Majeed

Abstract

This study examines the impact of HR decisions, based on data, on company performance. The study utilizes the method of bibliographic analysis, which is an analysis of a large amount of scientific articles, books and research reports related to HR analytics and organizational outcomes. The aim of the analysis is to identify the general themes, trends and empirical results of the correlation between data-informed HR practices and significant performance indicators (employee engagement, productivity, financial indicators).The existing literature has been comprehensively reviewed using strict bibliometric techniques such as citation analysis, co-citation analysis and bibliographic coupling. It provides insight into the trajectory of discourse on academic writing, shows key works and identifies key authors with an impact on this area of research. In addition, the study identifies gaps and potential future research, which helps to inform an understanding of areas of research that pose questions that should be explored through scholarly research or experimentation. This study is an integration of the past knowledge and is useful in the academic and practical fields. Understanding the evolving landscape of HR analytics, and learning about what can be done to enhance the decision-making process to drive organization performance, would be valuable for both scholars and practitioners/policymakers. Moreover, the study offers a detailed analysis of how HR strategies based on data affect the management of challenges in the contemporary business landscape. The overall aim of this research is to advance the debate on data-informed HR decision-making and create a platform for more informed research-based debate between researchers, practitioners and stakeholders. The study offers a systematic approach, employing bibliographic analysis to shed light on the multifaceted nature of the HR analytics-organization performance relationship, thereby paving the way for further research endeavors and initiatives aimed at enhancing organizational performance in the era of data.

Introduction

Data has become a powerful tool in today's fast-paced business world, aiding organizations in making informed decisions regarding their human resource (HR) strategies. Data analytics in HR can provide opportunities that are likely to improve the efficiency and competitiveness of an organization (Singh & Del Giudice, 2019). As the

impact of data-driven HR decisions on organizational performance gains in interest and importance, it is crucial to gain a deeper understanding of how these decisions affect business operations (Shabbir & Gardezi, 2020). With the help of analytics and data science, organisations can transform the way they recruit, making it a more efficient and effective process. This, in turn, will also affect business performance directly and significantly (Dalhbom et al., 2020). Data-driven HR decisions offer a more significant impact on organization performance not only by improving the quality of the hires but also by fostering diversity and inclusion (Dalhbom et al., 2020; Zhang et al., 2021). Today, HR analytics and data-driven decision-making are a critical part of good strategic HRM, as businesses are becoming more adept at gathering, analysing and interpreting HR information to enhance the ability to fulfil strategic goals (Brynjolfsson & McElheran, 2016; Brynjolfsson et al., 2011). There are several resources including books and comprehensive reviews which can give profound knowledge of implementing data driven HR decisions and their effect (Hemalatha, n.d.). For organizations to remain competitive and make informed decisions in the dynamic landscape of today's job market, it is essential to understand the impact of such data-driven decisions on the organization's performance (Marr, 2023; Verma et al., 2021; Conte & Siano, 2023). The aim of this study is to examine the role of data in HR decision making and how that affects the organizational performance, which is yet to be explored in literature. This research aims to provide insights to both academics and practitioners by investigating the level of impact of data-driven HRM practices on different aspects of organizational success such as productivity, engagement, and financial results. Understanding the effect of data-driven HR strategies can help companies make informed decisions and maintain its success in the evolving business world of work and digital transformation.

Research Objectives

1. To evaluate the body of research on the connection between organizational performance indicators and data-driven HR decisions.
2. To locate research on the critical elements affecting the effective application of data-driven HR strategies.
3. To review the research on the best practices for incorporating HR analytics into strategic decision-making procedures.

Research Questions

1. What are the empirical evidence and theories in the literature on the link between organizational performance metrics and data-informed HR decisions?
2. Based on literature, what do you think are the most critical organizational factors for effective use of data-driven HR analytics in companies?
3. What approaches/best practices have been published to ensure maximum HR analytics in strategic decision-making processes?

Methodology

This bibliographical study examines the effect of making HR decisions based on data on organizational performance. The methodology will involve reviewing and analyzing the literature and resources to gather the data regarding the implementation and effect of data-driven HR decisions. The following steps are followed: firstly, a comprehensive literature search in academic databases, scholarly articles and books on the topic of data-driven HR decisions and impact on organizational performance is done covering the period 2012-2024. The research to be undertaken will include a study of the selected resources to identify pertinent findings, good practice and empirical evidence that relates to the impact of data-driven HR decision making on organisational performance.

Synthesis of Findings: The findings of the literature are synthesized to get a holistic understanding of the topic, such as the advantages of data-driven HR decisions, the difficulties in implementing it, and how HR analytics can be used to boost organizational performance. The analysis also covers the gathering of pertinent bibliographic data of the selected resources with

the aim of being academic and honest in citing the sources.

Bibliographic analysis

The use of HR analytics to support strategic initiatives and enhance decision-making is emphasized in the literature on data-driven HR choices and organizational performance. In order to find patterns, trends, and correlations in the workforce data, HR analytics entails gathering and integrating HR data from multiple sources, including personnel databases, performance management systems, and engagement surveys (Ekka, 2021). In areas including hiring, employee performance, remuneration, employee engagement, and workforce planning, it involves leveraging HR data to uncover meaningful patterns, forecast outcomes, and direct strategic decision-making (Dahlbom et al., 2020). HR decision-making that is fueled by data needs to be carefully planned and carried out. This includes establishing important metrics and targets that are pertinent to the aims and objectives of the company, such as productivity, engagement, performance, and employee turnover (Karaboga et al., 2023). More workforce visibility is made possible by HR data analytics, which also makes it possible to make focused, data-driven decisions about HR initiatives and programs including engagement, performance management, learning and development, rewards and recognition. HR metrics serve as the foundation for data-driven decision-making in the field, allowing businesses to monitor and assess performance on various fronts, including attrition, hiring, and absence rates, in order to make well-supported decisions (Hora et al., 2017). In order to guarantee that data-driven decisions assist the accomplishment of organizational goals, the literature emphasizes the significance of coordinating the HR analytics strategy with the business strategy as a whole of the firm (Ekka, 2021).



Figure 1 *Word cloud*

Table 1
Annual Scientific Production

Year	Articles
2012	3
2013	0
2014	2
2015	2
2016	7
2017	20
2018	12
2019	13
2020	23
2021	28

2022	32
2023	70
2024	1

Table 1 depicts the number of articles published per year from 2012 to 2024. It is evaluated that a huge number of emerging topics are being visualized in recent years regarding data-driven HR decisions and organizational performance.

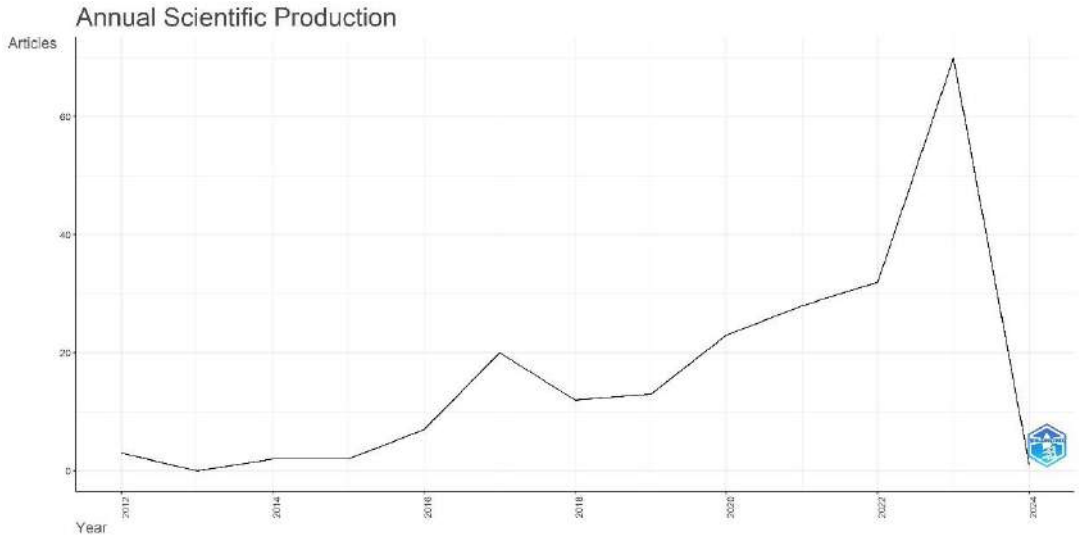


Figure 2 ***Annual scientific production***

A growing body of research has examined how HR analytics and data-driven decision-making affect organizational performance. Numerous scholarly investigations have emphasized the importance of HR analytics in facilitating evidence-based decision-making and its favorable correlation with the performance of organizations. It has been discovered that HR technology, such as data visualization and predictive analytics, makes data-driven HR choices easier to make, which eventually improves organizational performance (McCartney & Fu, 2022). The development of human resource analytics has also been noted as an innovative approach to gathering, analyzing, and presenting data from businesses, underscoring the increasing emphasis on metrics and analytics to improve HR operations and decision-making. Furthermore, it has been demonstrated that HR metrics raise the standard of decision-making and boost HR performance, demonstrating the connection between data-driven HR practices and organizational results (Bonilla-Chaves & Palos-Sánchez, 2023). Singh and Sarkar (2022) in the literature have emphasized the significance of data-driven decision making in HR that refers to making strategic HR decisions based on HR data and analytics. This helps to prioritize and allocate resources, and link HR plans to business goals, making them more effective. In general, the body of research strongly corroborates that using data-driven decisions based on HR analytics positively correlates with better organization performance on various metrics including financial performance, employee engagement, and productivity. More workforce visibility is made possible by HR data analytics, which also makes it possible to make focused, data-driven decisions about HR initiatives and programs like performance management and engagement (Mohammed, 2019).



Figure 3 *Keyword cloud*

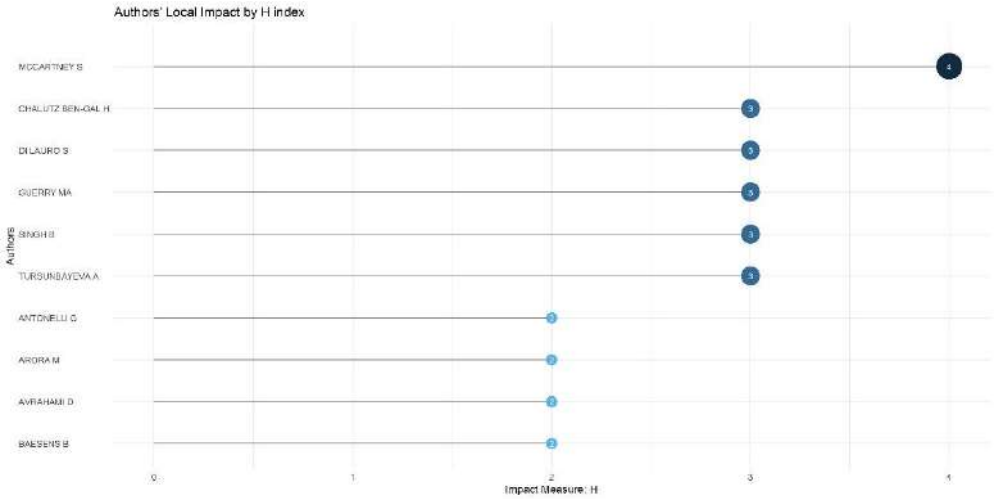


Figure 4 *Author local impact by H index*

The number of publications and citations are used to determine the h-index. Due to variations in coverage and citation sources, H-index can change between databases. The body of research highlights the significance of HR analytics-enabled data-driven decision-making for driving strategic HR initiatives and enhancing organizational performance across a range of indicators, including as financial results, employee engagement, and productivity. Numerous writers also point out how HR analytics is becoming more and more popular and how it can improve HR operations and decision-making. The body of research indicates that better organizational performance is favorably correlated with HR analytics and data-driven decision-making.

Table 2
Authors Impact

Element	h_index	g_index	m_index	TC	NP	PY_start
MCCARTNEY S	4	4	0.8	81	4	2020

CHALUTZ BEN-GAL H	3	3	0.5	145	3	2019
DI LAURO S	3	3	0.429	151	3	2018
GUERRY MA	3	3	0.429	58	3	2018
SINGH S	3	3	0.75	14	7	2021
TURSUNBAYEVA A	3	3	0.429	151	3	2018
ANTONELLI G	2	2	0.5	53	2	2021
ARORA M	2	2	0.667	10	4	2022
AVRAHAMI D	2	3	0.4	84	3	2020
BAESENS B	2	2	0.25	99	2	2017

The table shows the bibliometric data of authors which includes h-index, g-index and m-index to show research impact. The h index represents the number of papers that have been cited h times, and other measures of author impact are provided by the g index and m index. For the purposes of a contextualization of the author's productivity and longevity in the field, Total citations (TC), number of papers (NP) and Starting year of publication (PY start) are presented. The data reveals varied levels of scholarly impact and productivity among authors, with some demonstrating consistent citation performance over time.

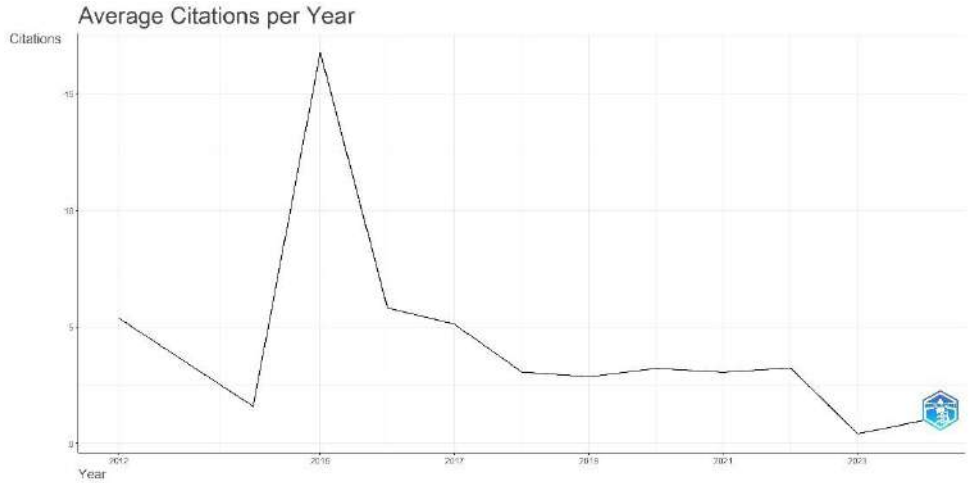


Figure 5 ***Authors' articles citations per year***

The 213 papers' performance bibliometric analysis showed that HRM studies are becoming more and more relevant to the field of performance management. Particularly in the past ten years, there has been a significant increase in the quantity of papers. The US and India are the countries with the most publications, according to an examination of the number of papers and

citations by author country. The US established the study field under investigation, and there is still a significant discrepancy in the quantity of publications from China, Germany, the Netherlands, India, and other nations. But recently, researchers from other nations have begun to look into this field of study, including those from Belgium, Italy, and Nigeria, as seen in figure 9.

Table 3
Annual citation per year

Year	Mean TC per Art	N	Mean TC per Year	Citable Years
2012	70	3.00	5.38	13
2014	17.5	2.00	1.59	11
2015	168	2.00	16.80	10
2016	52.43	7.00	5.83	9
2017	40.95	20.00	5.12	8
2018	21.5	12.00	3.07	7
2019	17.15	13.00	2.86	6
2020	16.17	23.00	3.23	5
2021	12.25	28.00	3.06	4
2022	9.75	32.00	3.25	3
2023	0.84	70.00	0.42	2
2024	1	1.00	1.00	1

The table shows the number of citations for each year, the number of citations per article (mean), the number of articles (N) and the mean number of citations per year, and the number of years for which data is available. It's used to indicate whether citations are increasing or decreasing over time, more especially in 2015 and 2016, and then slowly dropping. The data shows that there are some fluctuations in the impact and productivity of research over time, including a decline in the average number of citations per year in recent years, which may be due to changes in research trends or areas of focus. Despite the fact that the majority of the journals that are considered as most productive in HRM are associated with HRM field, the analysis of the articles published in these journals revealed the fact that the topic under study is presented as a cross-disciplinary study field. The International Journal of Human Resource Management publishes a great number of articles and also has a fair amount of emphasis on organizational behavior, international business and strategic HRM in a global context. The most articles were published in the International Journal of Organizational Analysis over the last time. It shares the latest developments in best practice in performance management and measurement aimed at improving company, group and individual performance.

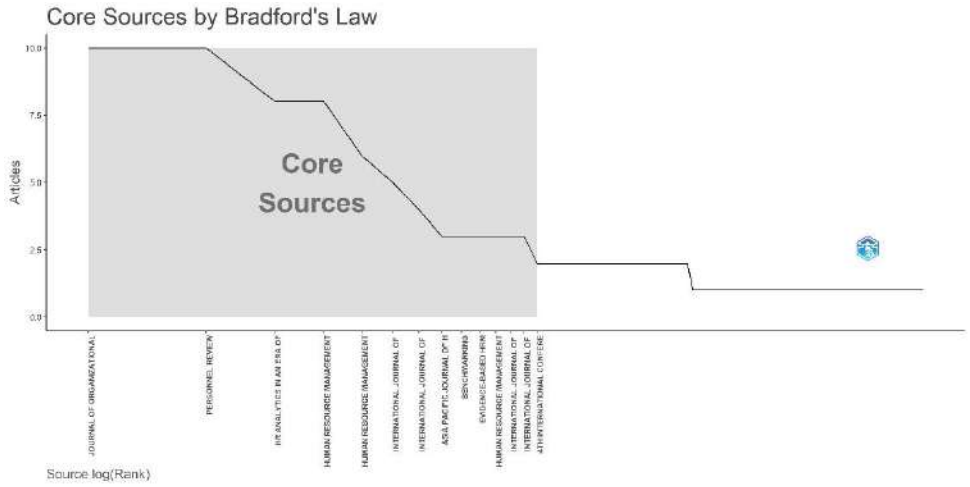


Figure 6 *Core sources by Bradford law*

Table 4
Sources through Bradford law

SO	Rank	Freq	cumFreq	Zone
JOURNAL OF ORGANIZATIONAL EFFECTIVENESS	1	10	10	Zone 1
PERSONNEL REVIEW	2	10	20	Zone 1
HR ANALYTICS IN AN ERA OF RAPID AUTOMATION	3	8	28	Zone 1
HUMAN RESOURCE MANAGEMENT JOURNAL	4	8	36	Zone 1
HUMAN RESOURCE MANAGEMENT INTERNATIONAL DIGEST	5	6	42	Zone 1
INTERNATIONAL JOURNAL OF MANPOWER	6	5	47	Zone 1
INTERNATIONAL JOURNAL OF ORGANIZATIONAL ANALYSIS	7	4	51	Zone 1
ASIA PACIFIC JOURNAL OF HUMAN RESOURCES	8	3	54	Zone 1
BENCHMARKING	9	3	57	Zone 1
EVIDENCE-BASED HRM	10	3	60	Zone 1
HUMAN RESOURCE MANAGEMENT REVIEW	11	3	63	Zone 1
INTERNATIONAL JOURNAL OF HUMAN RESOURCE MANAGEMENT	12	3	66	Zone 1
INTERNATIONAL JOURNAL OF SCIENTIFIC AND TECHNOLOGY RESEARCH	13	3	69	Zone 1
4TH INTERNATIONAL CONFERENCE ON INTELLIGENT ENGINEERING AND MANAGEMENT, ICIEM 2023	14	2	71	Zone 1
ADVANCED SERIES IN MANAGEMENT	15	2	73	Zone 2
BALTIC JOURNAL OF MANAGEMENT	16	2	75	Zone 2
COMPETITIVENESS REVIEW	17	2	77	Zone 2
DECISION SUPPORT SYSTEMS	18	2	79	Zone 2

DISRUPTIVE ARTIFICIAL INTELLIGENCE AND SUSTAINABLE HUMAN RESOURCE MANAGEMENT: IMPACTS AND INNOVATIONS - THE FUTURE OF HR	19	2	81	Zone 2
GRUPPE. INTERAKTION. ORGANISATION. ZEITSCHRIFT FUR ANGEWANDTE ORGANISATIONSPSYCHOLOGIE	20	2	83	Zone 2
HANDBOOK OF BIG DATA RESEARCH METHODS	21	2	85	Zone 2
HR ANALYTICS AND DIGITAL HR PRACTICES: DIGITALIZATION POST COVID-19	22	2	87	Zone 2
HUMAN RESOURCE DEVELOPMENT REVIEW	23	2	89	Zone 2
HUMAN RESOURCE MANAGEMENT	24	2	91	Zone 2
INTERNATIONAL JOURNAL OF INFORMATION MANAGEMENT	25	2	93	Zone 2

Journal rankings, frequencies, cumulative frequencies and zones are shown for the sources in the table 4 (Bradford's Law). Journal literature is dominated by Zone 1 which consists mainly of journals relating to HR and such as Personnel Review and Human Resource Management Journal. The second zone comprises of broader management and technology journals focusing on interdisciplinary aspects of HR analytics research. The distribution shows a spread source pool, highlighting the multidimensionality of HR analytics and the link between HR analytics and various domains.

In the last decade or so a multitude of publications have appeared in a wide range of journals that have addressed the literature on the impact of HR decisions on organizational performance. A lot of research has been done on the development of HR analytics and how it affects organizational outcomes. This field of study has been greatly assisted by the publications of journals like Harvard Business Review, Journal of Organizational Effectiveness and Human Resource Management. Furthermore, authors that have written a lot on the subject of HR analytics include Kichie Matsuzaki and Caryl Charlene Escolar-Reggie C. Gustilo. Author-level metrics like the h-index, which gauges a scientist or scholar's productivity and citation impact from publications, are frequently used to assess the significance of these pieces. When evaluating the impact of researchers and their contributions in a particular topic, the h-index is a useful measure. The literature shows a significant body of work addressing the relationship between HR decisions and organizational performance, with an emphasis on the developing subject of HR analytics, even though the precise annual citations per year for the authors and topics addressed were not provided.

Table 5
Country Production

Region	Freq
INDIA	144
USA	46
GERMANY	24
UK	22
AUSTRALIA	16

NETHERLANDS	15
CHINA	13
IRELAND	12
ITALY	11
ISRAEL	10

The table shows the country-wise production in HR analytics research, India holds the lead followed by USA, Germany and UK. The distribution reflects a global appetite for HR analytics with strong participation from a variety of countries such as Australia, the Netherlands, China, Ireland, Italy and Israel. The results are indicative of the wide cross-continental involvement of researchers in the development of HR analytics knowledge and practices.

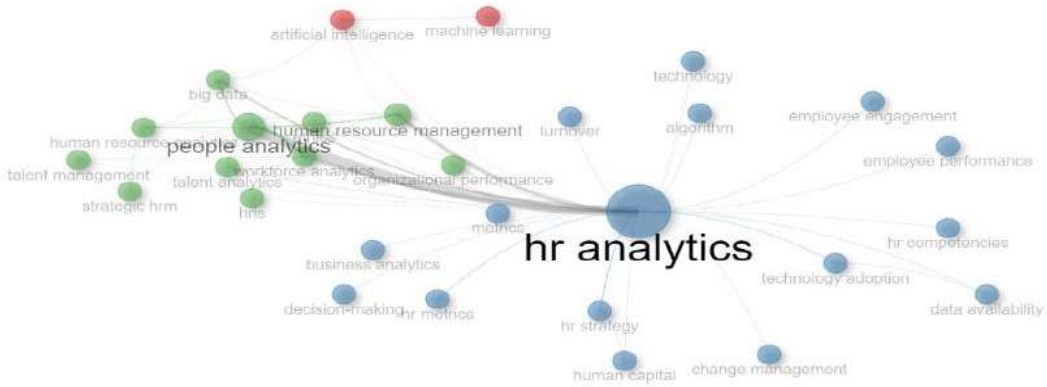


Figure 7 ***Co-occurrence of network***

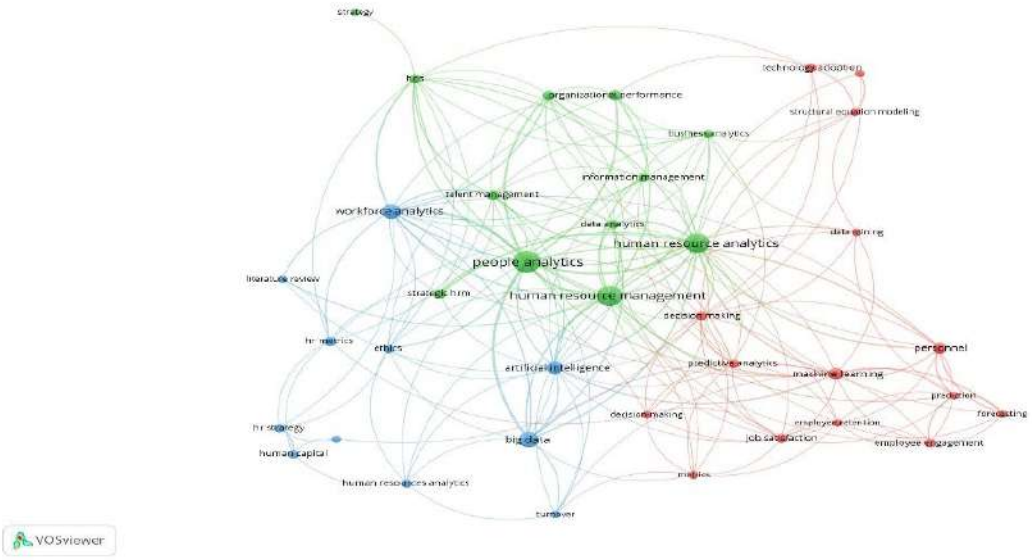


Figure 8 *Co-occurrence*

Table 6
Most frequent word abstract

Words	Occurrences
Hr	838
Analytics	760
Data	314
Human	275
Research	264
Study	246
management	209
Resource	170
organizations	150
Hra	145

The word use of research abstracts is illustrated in tables 6, 7, 8 and 9 with words that have been used frequently, and in tables 6 and 7 with words that have been used by the authors. Tables 6, 7, 8 and 9 present the frequency of keywords in HR analytics through the research abstract authors' words use and frequent words use respectively, indicating that the keywords with high frequencies are HR and analytics, underscoring the core of HR analytics. The prevalence of words such as "data," "management," and "organizations" suggests that HR analytics is an interdisciplinary subject and has strategic implications in an organizational setting.

Table 7
Most frequent author's keywords

Words	Occurrences
hr analytics	110
people analytics	33

human resource management	26
human resource analytics	23
big data	18
workforce analytics	17
artificial intelligence	10
machine learning	9
organizational performance	8
hr metrics	7

Table 8
Most frequent keyword

Words	Occurrences
Personnel	9
decision making	6
hr analytic	6
human resource analytics	5
human resource management	5
Forecasting	4
machine learning	4
people analytic	4
predictive analytics	4
artificial intelligence	3

IEER
Institute for Excellence in Education & Research

Table 9
Most frequent keyword titles

Words	Occurrences
Analytics	160
Hr	117
Human	69
Resource	46
management	37
Employee	25
Review	22
performance	20
Adoption	19
De	17

Table 10
Most global cited documents

Paper	DOI	Total Citations	TC per Year	Normalized TC
ANGRAVE D, 2016, HUM RESOUR MANAGE J	10.1111/1748-8583.12090	271	30.11	5.17
MARLER JH, 2017, INT J HUM RESOUR MANAGE	10.1080/09585192.2016.1244699	258	32.25	6.30
ULRICH D, 2015, HUM RESOUR MANAGE REV	10.1016/j.hrmr.2015.01.004	182	18.20	1.08
ARAL S, 2012, MANAGE SCI	10.1287/mnsc.1110.1460	181	13.92	2.59
RASMUSSEN T, 2015, ORGAN DYN	10.1016/j.orgdyn.2015.05.008	154	15.40	0.92
TURSUNBAYEVA A, 2018, INT J INF MANAGE	10.1016/j.ijinfomgt.2018.08.002	98	14.00	4.56
VAN DEN HEUVEL S, 2017, J ORGAN EFF PEOPLE PERFORM	10.1108/JOEPP-03-2017-0022	98	12.25	2.39
LISMONT J, 2017, INT J INF MANAGE	10.1016/j.ijinfomgt.2016.12.003	82	10.25	2.00
CLAUS L, 2019, BRQ BUS RES Q	10.1016/j.brq.2019.04.002	81	13.50	4.72
PESSACH D, 2020, DECIS SUPPORT SYST	10.1016/j.dss.2020.113290	76	15.20	4.70

The table provides a list of highly cited documents in HR research and some papers like Angrave et al. (2016) and Marler et al. (2017) that had a high number of citations per year, making them very influential in HR research. In addition, the research of Ulrich et al. (2015) and Aral et al. (2012) would be of significance as they demonstrate the variety of studies that have been influential on HRM.

Table 11
Most local cited authors

Authors	Articles	Articles Fractionalized
SINGH S	7	2.45
MITTAL A	5	1.20
NA NA	5	5.00
ARORA M	4	0.95
GUPTA S	4	1.50
MCCARTNEY S	4	1.50
PRAKASH A	4	0.95
AVRAHAMI D	3	0.62
CAVANAGH J	3	0.87
CHALUTZ BEN-GAL H	3	1.42

The table showcases locally cited authors, with Singh S leading in citations, followed by Mittal A and Na Na, suggesting their prominence within the research community. Arora M, Gupta S, and

McCartney S also feature prominently, reflecting their impact on local scholarly discourse.

In order to shed light on the key themes, scholarly journals, authors, and research articles in this subject, a bibliometric study conducted in 2023 sought to locate and evaluate the most pertinent scientific work in HR analytics (Bonilla-Chaves & Palos-Sánchez, 2023). A further study emphasized the evolution of HRM and the rising conviction that HR analytics may enhance strategic HRM decisions by highlighting the significance of HR analytics in fostering data-driven HRM and its connection to company performance (Jensen-Eriksen, 2016). Additionally, studies have shown how HR technology significantly affects HR analytics, evidence-based decision-making within organizations, and, ultimately, organizational success (McCartney & Fu, 2022). A study on the latest developments in human resources, bibliometric analysis, and content analysis also revealed the rising quantity of publications and leading scholarly journals that support HRA research (Bahuguna et al., 2023). These co-occurrences are a reflection of the literature's growing body and the importance of HR analytics in influencing and forming organizational performance.

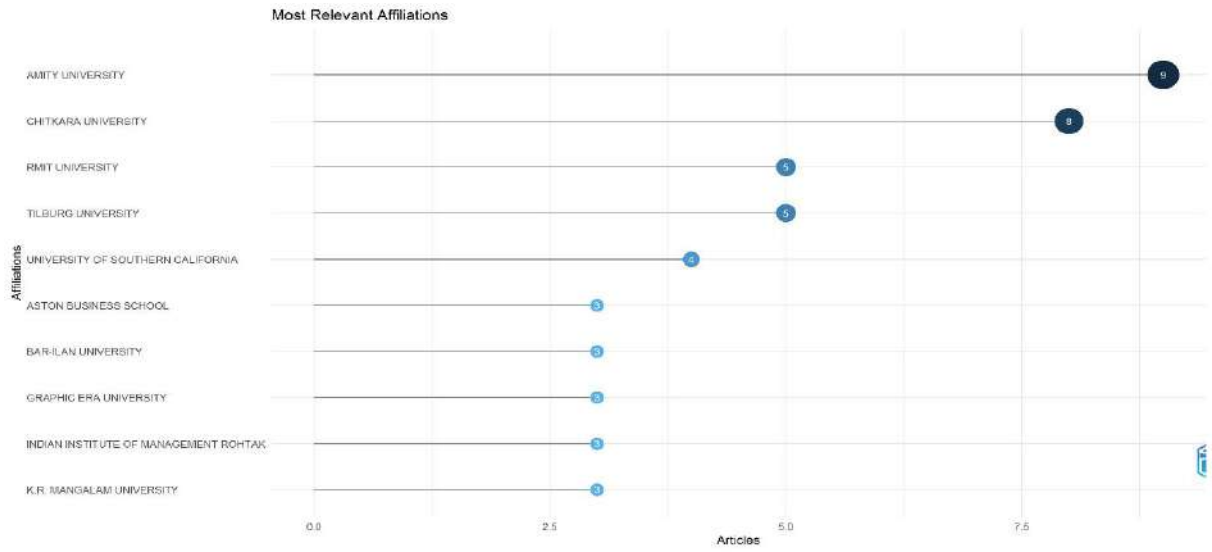


Figure 9 ***Most relevant affiliations***

Table 13
Most relevant affiliations

Affiliation	Articles
AMITY UNIVERSITY	9
CHITKARA UNIVERSITY	8
RMIT UNIVERSITY	5
TILBURG UNIVERSITY	5
UNIVERSITY OF SOUTHERN CALIFORNIA	4
ASTON BUSINESS SCHOOL	3
BAR-ILAN UNIVERSITY	3
GRAPHIC ERA UNIVERSITY	3
INDIAN INSTITUTE OF MANAGEMENT ROHTAK	3
K.R. MANGALAM UNIVERSITY	3

The table 13 and figure 9 highlights the most relevant affiliations in HR analytics research, with Amity University leading with 9 articles, followed by Chitkara University with 8 articles. RMIT University and Tilburg University are also significant contributors with 5 articles each, highlighting their importance in developing HR analytics scholarship. Other significant links are with the University of Southern California, Aston Business School, and the Indian Institute of Management Rohtak, among which there are a variety of academic institutions engaged in HR analytics research.

The interest has a number of connections, and they all revolve around HR analytics and its impact on organizational performance. HR analytics and its implications have been extensively studied by academics and researchers from a variety of universities, including Tilburg University, University of Southern California, Aston Business School, Barilan University, Graphic Era University, Indian Institute of Management, KR Mangalam University, Chitkara University, and Amity University. To obtain a competitive edge in HR practices, Tilburg University and the University of Southern California, for instance, conducted a systematic literature analysis that identified possibilities and difficulties in talent acquisition and HR analytics (Espegren & Hugosson, 2023) Furthermore, studies conducted by Barilan University and Aston Business School have illuminated the state of knowledge in this field by focusing on people analytics and its consequences for HRD (Lee & Lee, 2023). Moreover, studies from organizations like Chitkara University, Graphic Era University, and Indian Institute of Management have emphasized important principles related to HR analytics and helped organize study subjects in this field. These affiliations' involvement indicates a widespread interest in HR analytics and its importance in influencing and improving organizational performance.

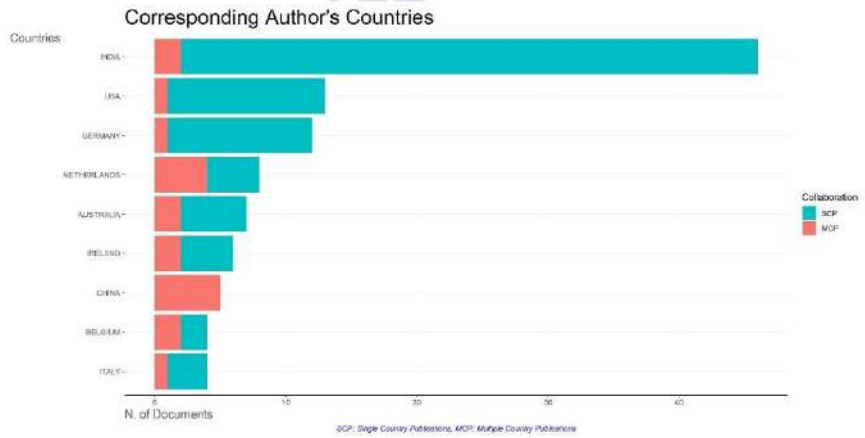


Figure 10 ***Corresponding author countries***

Figure 10 of the article journals displays a range of fascinating literary fields. The terms HR analytics, HRM, people analytics, big data, workforce analysis, artificial intelligence, machine learning, organizational performance, and HR metrics depicted in figure 11 are among the most pertinent terms utilized by the writers in the literature on the influence of HR decisions on performance. Studies and articles that examine how HR analytics shapes evidence-based HRM practices and improves corporate performance commonly use these phrases. For instance, the most pertinent scientific research in HR analytics is being done, according to a bibliometric analysis of the field's development. Using terminologies like HR analytics, workforce analytics, and talent analytics, another study concentrated on people analytics and its consequences for human resource development (Lee & Lee, 2023). Furthermore, many synonyms for HR analytics were found in a

comprehensive literature analysis of HR analytics-as-practice (Espegren & Hugosson, 2023). These synonyms include talent analytics, employee analytics, and human resource analytics. The increased interest in HR analytics and its potential to enhance organizational performance and HR decision-making is reflected in these phrases.

Table 14
Most relevant countries by corresponding authors

Country	Articles	SCP	MCP	Freq	MCP_Ratio
	73	62	11	0.343	0.151
INDIA	46	44	2	0.216	0.043
USA	13	12	1	0.061	0.077
GERMANY	12	11	1	0.056	0.083
NETHERLANDS	8	4	4	0.038	0.5
AUSTRALIA	7	5	2	0.033	0.286
IRELAND	6	4	2	0.028	0.333
CHINA	5	0	5	0.023	1
BELGIUM	4	2	2	0.019	0.5
ITALY	4	3	1	0.019	0.25

Table 14 and figure 10 highlights the corresponding authors from a variety of nations have contributed to the study on how HR decisions affect organizational performance. Belgium, Italy, China, Australia, Ireland, the Netherlands, Germany, and the United States are among these nations. The literature, which includes studies and publications on HR analytics, HR metrics, and the development of HR analytics, demonstrates the topic's widespread interest. The fact that corresponding authors from these various places are involved emphasizes how important HR-related research is globally and how it affects organizational effectiveness.

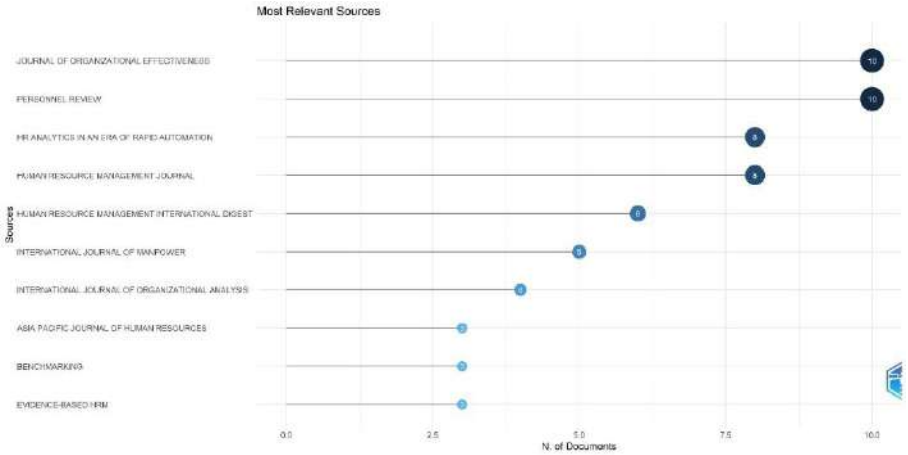


Figure 11 ***Most relevant sources***

Table 15
Most relevant sources

Sources	Articles
JOURNAL OF ORGANIZATIONAL EFFECTIVENESS	10
PERSONNEL REVIEW	10
HR ANALYTICS IN AN ERA OF RAPID AUTOMATION	8

HUMAN RESOURCE MANAGEMENT JOURNAL	8
HUMAN RESOURCE MANAGEMENT INTERNATIONAL DIGEST	6
INTERNATIONAL JOURNAL OF MANPOWER	5
INTERNATIONAL JOURNAL OF ORGANIZATIONAL ANALYSIS	4
ASIA PACIFIC JOURNAL OF HUMAN RESOURCES	3
BENCHMARKING	3
EVIDENCE-BASED HRM	3

The table 15 identifies the most relevant sources in HR analytics research, with the Journal of Organizational Effectiveness and Personnel Review being the top sources with 10 articles each. HR Analytics in an Era of Rapid Automation and Human Resource Management Journal follow closely with 8 articles each, indicating their significant contributions to the field. Other noteworthy journals include Human Resource Management International Digest, International Journal of Manpower and International Journal of Organizational Analysis, which demonstrate the breadth of research publications propelling HR analytics scholarship.

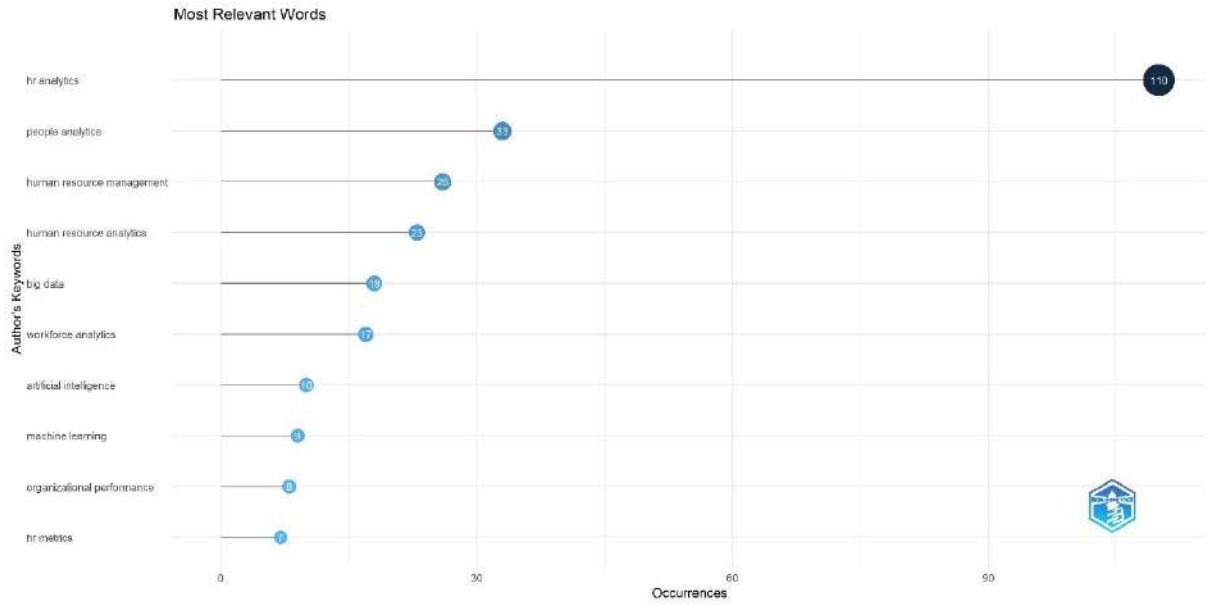


Figure 12 ***Most relevant words***

Table 16
Source impact

Element	h_index	g_index	m_index	TC	NP	PY_start
JOURNAL OF ORGANIZATIONAL EFFECTIVENESS	8	10	0.727	403	10	2014
HUMAN RESOURCE MANAGEMENT JOURNAL	6	8	0.667	361	8	2016
PERSONNEL REVIEW	6	10	1	191	10	2019
HUMAN RESOURCE MANAGEMENT INTERNATIONAL DIGEST	4	6	0.308	46	6	2012

INTERNATIONAL JOURNAL OF HUMAN RESOURCE MANAGEMENT	3	3	0.375	320	3	2017
INTERNATIONAL JOURNAL OF MANPOWER	3	5	0.6	63	5	2020
ASIA PACIFIC JOURNAL OF HUMAN RESOURCES	2	3	0.667	12	3	2022
BALTIC JOURNAL OF MANAGEMENT	2	2	0.4	45	2	2020
DECISION SUPPORT SYSTEMS	2	2	0.4	84	2	2020
EVIDENCE-BASED HRM	2	2	0.286	7	3	2018

The table 16 shows the metrics of the sources and the Journal of Organizational Effectiveness has the highest h-index which is 8 and g-index which is 10, indicating that since 2014 this journal has had a significant impact in the HR analytics research field. Personnel Review has exhibited a remarkable scholarly impact with a h-index of 6 and a g-index of 10 beginning in 2019. Since 2016, Human Resource Management Journal has been influential, with an impressive h-index of 6 and a g-index of 8. Other journals that show considerable impact, but with lower indices, include Human Resource Management International Digest and International Journal of Human Resource Management. These metrics reveal the contribution and impact of the different HR analytics journals through time.

Table 17
Thematic map cluster

Cluster	Callon Centrality	Callon Density	Rank Centrality	Rank Density	Cluster Frequency
hr analytics	0.64233835	17.04595422	8	1	244
human resource analytics	0.238341897	21.67960663	7	3	65
employee engagement	0.041666667	25	3	6	10
hr strategy	0.073333333	23.33333333	6	4	11
job satisfaction	0.0625	25	5	6	4
technology adoption	0	27.08333333	1.5	8	10
human resources analytics	0.05	20	4	2	5
Strategy	0	25	1.5	6	4

The thematic map cluster shows that the most prominent theme is 'HR Analytics', with higher Callon centrality and density, having 244 occurrences. Lower centrality but higher density comes the 'Human Resource Analytics' which has 65 occurrences. Other themes are "Employee Engagement," "HR Strategy," "Job Satisfaction," "Technology Adoption," and "Human Resources Analytics," each having different centrality and density measures, demonstrating different emphases in HR analytics research.

Table 18
Thematic map terms

Occurrences	Words	Cluster	Cluster_ Label	btw_ centrality	clos_ centrality	pagerank_ centrality
108	hr analytics	1	hr analytics	4841.705036	0.003921569	0.136517796
32	people analytics	1	hr analytics	814.2734458	0.003076923	0.056645813
25	human resource management	1	hr analytics	1301.412551	0.003215434	0.043497679
18	big data	1	hr analytics	377.1771451	0.002739726	0.027125974
17	workforce analytics	1	hr analytics	471.2038502	0.002985075	0.035129632
8	organizational performance	1	hr analytics	206.0057709	0.002754821	0.012682715
7	hr metrics	1	hr analytics	365.5636188	0.00280112	0.01223217
7	talent analytics	1	hr analytics	388.8028994	0.00297619	0.01504715
7	talent management	1	hr analytics	247.0746009	0.002832861	0.012619282
6	hris	1	hr analytics	235.662282	0.002695418	0.014219107
5	ethics	1	hr analytics	200.4342279	0.00280112	0.010124204
4	literature review	1	hr analytics	62.55666634	0.002518892	0.008129232
23	human resource analytics	2	human resource analytics	639.7835804	0.002747253	0.027769512
10	artificial intelligence	2	human resource analytics	521.5446907	0.002785515	0.017116764
9	machine learning	2	human resource analytics	243.2926056	0.002747253	0.014843939
7	strategic hrm	2	human resource analytics	228.9702638	0.002793296	0.010952924
4	data analytics	2	human resource analytics	97.61535032	0.002506266	0.007007852
4	decision-making	2	human resource analytics	76.2548128	0.002570694	0.007056434

4	metrics	2	human resource analytics	79.0313572	0.002824859	0.007608647
4	turnover	2	human resource analytics	113.0466688	0.002808989	0.009219776
6	employee engagement	3	employee engagement	140.5414731	0.00265252	0.011025249
4	prediction	3	employee engagement	15.39995327	0.002369668	0.00832009
6	hr strategy	4	hr strategy	82.03109608	0.002597403	0.009344458
5	human capital	4	hr strategy	109.6267738	0.00245098	0.009053908
4	job satisfaction	5	job satisfaction	37.41091847	0.00255102	0.006984654
6	technology adoption	6	technology adoption	65.28038654	0.002375297	0.010314193
4	data availability	6	technology adoption	3.836956522	0.002020202	0.007035739
5	human resources analytics	7	human resources analytics	427.8197978	0.002724796	0.008240725
4	strategy	8	strategy	148.8939402	0.002197802	0.00557797

The thematic map cluster shows that the highest centrality and density of the map was represented by the theme "HR Analytics", which corresponds to 244 entities. The second most central and dense term was "Human Resource Analytics", which was mentioned 65 times. Other themes are "Employee Engagement," "HR Strategy," "Job Satisfaction," "Technology Adoption" and "Human Resources Analytics," each having different centrality and density metrics, representing varying aspects of emphasis in HR analytics research.

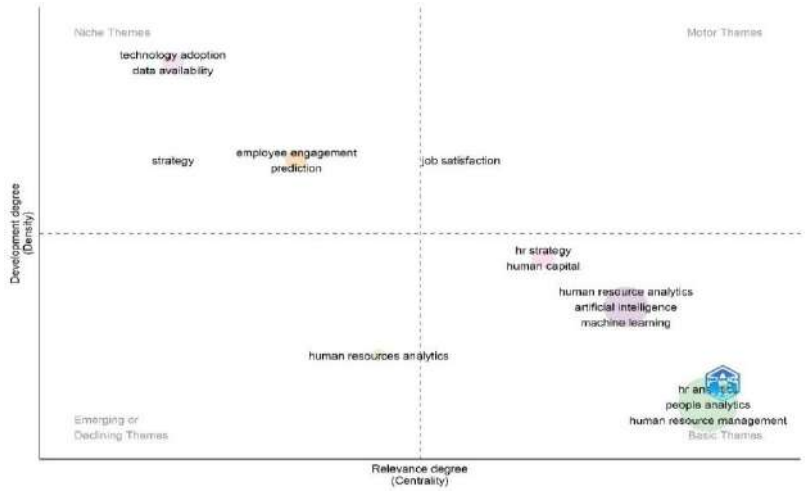


Figure 13 ***Most relevant words***

HR analytics covers a variety of topics, such as technology adoption, strategy, employee engagement, prediction and data availability. These themes are specific topics of interest among the wider theme of HR Analytics. For example, employee engagement is highlighted, emphasizing the importance of understanding and enhancing employee engagement and satisfaction. Emphasis on prediction and strategy in leveraging analytics for forecasting and informing HR and organizational strategy. The use of technology and data is an indicator of the growing importance of technology, particularly data in HR Analytics. On the other hand, the themes of rise and decline shifts in HR analytics highlight that HR analytics is a constantly evolving field. Emerging themes like big data, artificial intelligence, and machine learning point to the increasing incorporation of cutting-edge technologies into HR analytics procedures. These are several of the emerging concepts in the HR space, and they're all employed for analyzing data using cutting-edge technology and methods. However, the low-level concepts, like HR Analytics, People Analytics, and HR Strategy are fundamental concepts that serve as the theoretical pillar and practice of HR Analytics. The fundamental building blocks for comprehending and using HR analytics in organizational situations are these phrases. The emerging theme, the niche theme, the decreasing theme and the basic theme can be identified to provide valuable insights into the niche and areas of growth within HR Analytics.

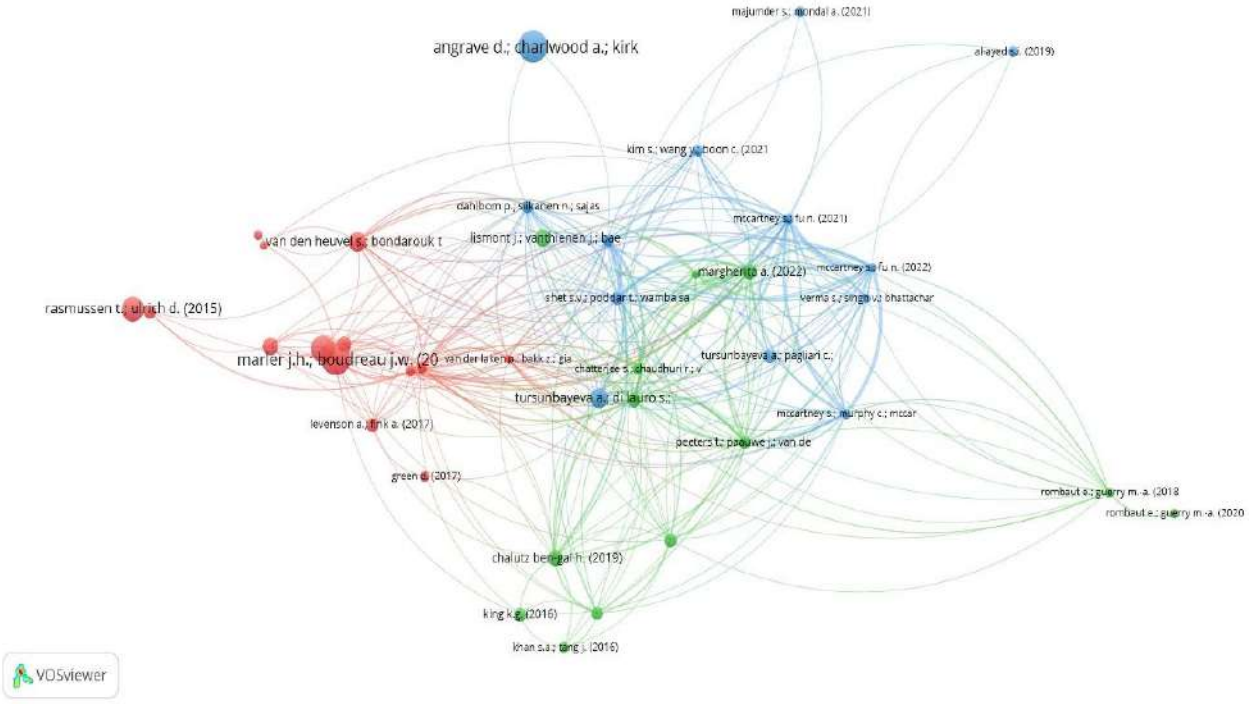


Figure 14 ***Coupling***

Table 19
Coupling map data clusters

tursunbayeva a.; pagliari c.;	di lauro s.; antonelli g. (2022)	green d. (2017)
mccartney s.; fu n. (2022)	chatterjee s.; chaudhuri r.; vrontis d.; siachou e. (2022)	marler j.h.; boudreau j.w. (2017)

verma s.; singh v.; bhattacharyya s.s. (2020)	margherita a. (2022)	levenson a.; fink a. (2017)
mccartney s.; murphy c.; mccarthy j. (2020)	rombaut e.; guerry m.-a. (2018)	van der laken p.; bakk z.; giagkoulas v.; van leeuwen l.; bongenaar e. (2018)
mccartney s.; fu n. (2021)	rombaut e.; guerry m.-a. (2020)	rasmussen t.; ulrich d. (2015)
kim s.; wang y.; boon c. (2021)	peeters t.; paauwe j.; van de voorde k. (2020)	
al-ayed s.i. (2019)	lismont j.; vanthienen j.;	
baesens b.; lemahieu w. (2017)	chalutz ben-gal h. (2019)	
shet s.v.; poddar t.; wamba samuel f.; dwivedi y.k. (2021)	king k.g. (2016)	
majumder s.; mondal a. (2021)	khan s.a.; tang j. (2016)	
dahlbom p.; siikanen n.; sajasalo p.; jarvenpää m. (2020)		
angrave d.; charlwood a.; kirkpatrick i.; lawrence m.; stuart m. (2016)		

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Thematic coupling data is available in Table 19 and a thematic coupling map is offered, which offers an overview of the landscape of research on HR analytics, themes, and connections among research articles. It shows groupings of research areas like ethics, effectiveness, adoption challenges. The map highlights the importance of HR analytics, demonstrating greater citation count and strength of links in the last few years. Some topics, such as data privacy and organizational impact, are particularly important and prominent, indicating current debates and areas of interest in the field. The map is, overall, a graphical representation of the development of discourse and research areas in HR analytics.

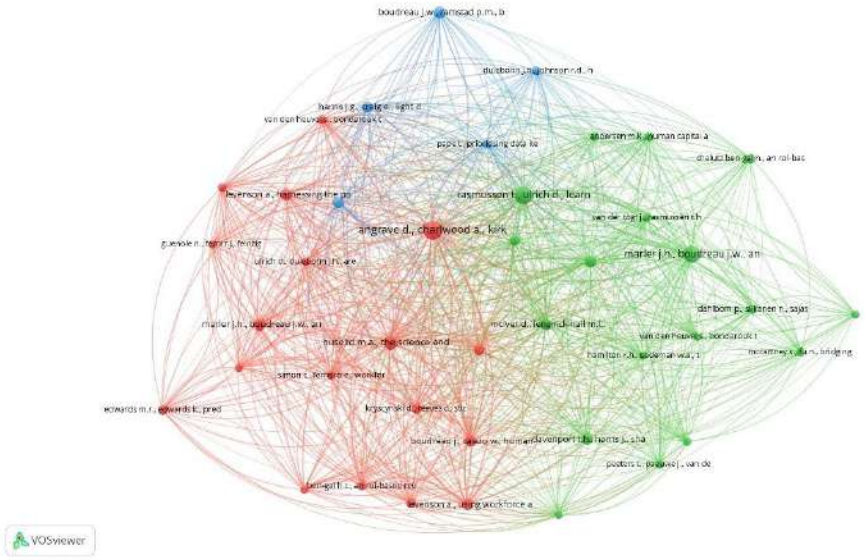


Figure 15 ***Co citations***

Figure 15 depicts the co-citations of the authors from different countries and from different aspects of HR data-driven analytic to make decisions regarding organizational performance.

Conclusions

The bibliographic analysis offers insightful information on how HR analytics is developing and how it affects organizational performance. The body of research suggests that the use of data-driven HR decisions is increasingly becoming a key factor in the direction of strategic projects and improving organizational decision-making processes. The value of HR analytics for enhancing evidence-based HR practices and its positive link to other organizational success factors, such as productivity, financial performance, and employee engagement, have been highlighted by academics. The analysis focusses on the development and application of HR analytics techniques and shows how a body of research has emerged on the relationship between HR decisions and organizational outcomes. Employee engagement, Employee Strategy, Technology adoption, Employee Prediction, Data availability are all themes highlighted in the HR analytics literature. They document the constant changes in the field and the introduction of new and emerging technologies, including big data and artificial intelligence. The analysis also emphasizes the worldwide awareness of HR analytics as a crucial field of study with consequences for organizational success, highlighting the involvement and cooperation of researchers from various affiliations and nations. The overall results will give valuable information on topics, trends and future research directions of HR analytics that will affect HR management practice and academia.

Recommendations

Organizations need to concentrate on important organizational components that have been emphasized in the literature in order to guarantee the effective adoption of data-driven HR strategies. These consist of organizational culture, technology infrastructure, and support from the leadership. Investing in the right IT infrastructure, promoting an IT-driven decision-making process, and establishing a leadership-friendly atmosphere are essential steps for building a conducive environment for effective HR analytics. Companies should explore and adapt best practices to enhance the strategic use of HR analytics. It involves setting up proper KPIs and targets, collaboration between teams, and linking

HR analytics programs to the overall business objectives. By leveraging HR analytics, organizations can gain a competitive edge, increase agility, and be more responsive in these times of change within the business world.

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