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Effectiveness of Human Resource Information System (HRIS): A Bibliometric Analysis

Tushar Roy Chowdhury[a], Sanjay Guha[b], Abhishek Chakraborty[c] Sunil Kumar[d]

[a]**Corresponding author:** Department of Management
: Bhilai Institute of Technology, Durg
Address : Chhattisgarh, 490010, India
Email : s.kushwaha@bitdurg.ac.in

[b]**author** **:** Department of Management
: Bhilai Institute of Technology, Durg
Address : Chhattisgarh, 490010, India

[c]**author** **:** Department of Management
: Bhilai Institute of Technology, Durg
Address : Chhattisgarh, 490010, India
ORCID : https://orcid.org/0000-0002-8028-9742

[d]**author** **:** Department of Management
: Bhilai Institute of Technology, Durg
Address : Chhattisgarh, 490010, India
ORCID : https://orcid.org/0000-0002-8395-3899

ABSTRACT

This study conducts a comprehensive bibliometric analysis of research on Human Resource Information System (HRIS) published between 2000 and 2022, using data retrieved from the Scopus database. A total of 483 publications were analyzed to examine trends in publication growth, authorship patterns, international collaboration, keyword co-occurrence, influential journals, and highly cited articles. The results reveal a significant and steady increase in HRIS-related research, with a notable surge in output during the period, reflecting the growing reliance on digital HR technologies and data-driven decision-making. Key findings include the predominance of multi-authored publications, increased contributions from Asian countries particularly India and Indonesia and the central role of journals such as *Finance Research Letters* and *Journal of Finance*. Thematic analysis using VOSviewer revealed clusters focusing on employee data, training, system usability, and user experience, while highlighting a current research gap in integrating emerging technologies like AI, blockchain, and predictive analytics into HRIS frameworks. Highly cited articles emphasize strategic HRM, HR analytics, and digital transformation, demonstrating the field's evolution from administrative

support systems to strategic enablers of organizational performance. While this study provides valuable insights into the landscape of HRIS research, limitations include the exclusive reliance on Scopus data and the exclusion of recent or less-cited works. The findings offer direction for future research and underscore the growing importance of HRIS in shaping the future of work.

Keywords: Human Resource Information System (HRIS); Bibliometric analysis;HR analytics; Digital transformation; VOSviewer; Citation analysis; Collaborative research; Strategic HRM.

Introduction

Studies on Human Resource Information System (HRIS) have traditionally focused on the digitization and automation of human resource (HR) functions. However, the rapid evolution in HRIS technologies, data-driven decision-making, and HR analytics has significantly broadened the scope of HRIS research. Despite the exponential increase in scholarly and practical interest, the growth and direction of HRIS research may have been underestimated. Therefore, this study seeks to evaluate emerging trends in HRIS research using established bibliometric techniques and databases. The foundation of HRIS lies in integrating information systems with core HR activities such as recruitment, performance management, payroll, training, and employee records management (Angrave, Charlwood, Kirkpatrick, Lawrence, & Stuart, 2016). With advancements in cloud computing, artificial intelligence, and big data, HRIS has become more strategic, enabling predictive analytics and strategic workforce planning (Marler & Boudreau, An evidence-based review of HR Analytics, 2017). These systems also play a pivotal role in fostering employee engagement, aligning HR strategies with organizational goals, and enhancing data-driven decision-making (Ball, 2001), (Parry & Tyson, 2011).

Key behavioural and organizational theories such as the Technology Acceptance Model, (Davis, 1989) Diffusion of Innovations (Rogers, 2003), and Resource-Based (Barney, 1991) have been used to examine HRIS adoption, usage, and impact on organizational performance. Researchers have also studied employee resistance, data security, user acceptance, and system usability as critical factors influencing HRIS implementation success (Beadles, Lowery, Petty, & Ezell, 2005), (Ngai & Wat, 2006). The breadth of HRIS research encompasses themes such as strategic alignment (Lengnick-Hall & Moritz, 2003), user acceptance and training (Stone,

Deadrick, Lukaszewski, & Johnson, 2015), role of HR analytics (Marler & Boudreau, An evidence-based review of HR Analytics, 2017), and digital transformation in HRM (Bondarouk & Ruël, 2009). More recent studies explore the integration of AI and machine learning into HRIS for decision support and talent analytics (Rana, Malik, & Hussain, 2021), including emerging ethical concerns related to algorithmic bias, employee surveillance, and data governance (Strohmeier, 2020).

Human Resource Information System (HRIS) have become central to modern HR management, fundamentally transforming how organizations handle HR processes, data, and strategic decision-making. As the digitalization of workplaces accelerates, understanding the evolution and impact of HRIS research is critical for both scholars and practitioners. This review synthesizes bibliometric trends in HRIS literature from 2000 to 2022, analyzing publication growth, key contributors, research domains, and emerging themes. The analysis reveals that publications in HRIS have increased significantly, from under 15 articles in 2000 to over 200 in 2022, indicating a compound growth rate aligned with advancements in HR technology and digital workplace transformation. This upward trajectory reflects a growing interdisciplinary focus that intersects information systems, human resource management, and organizational psychology (Boyack & Klavans, 2010).

Methodology

- **Data Source:** Scopus database was primarily used for bibliometric data collection, as it is a comprehensive and widely recognized literature database for management and technology research.
- **Analysis Tools:** Bibliometrix (R package) and VOSviewer were employed for statistical analysis and visualization, enabling performance analysis (publication/citation counts) and science mapping (co-authorship, keyword co-occurrence, and collaboration networks) (Kumar, Guha, & Gomes, Post Covid Trends On Behavioural Finance: A Bibliometric Analysis, 2022).
- **Scope:** The review covers HRIS-focused literature, with a particular emphasis on peer-reviewed articles in business, management, and accounting domains, published in English between 2000 and 2022 (Ahmi & Mohd Nasir, Examining the trend of the research on extensible business reporting

language (XBRL): a bibliometric review, 2019a).

Methods

Data Source and Search Strategy

Bibliometric analysis was performed using the Scopus database as of June 2022. The search term "Human Resource Information Systems" contained in the title of the article was used to search for relevant articles published in any language related to research on HRIS and its effectiveness. We focused on the title of the articles because it is the first element that readers will observe. It represents the relevant topic that is significant with the research area and the aim of the study. We refined the search to publishing year from 2000 to June 2022 to identify the trends in Human Resource Information System research. We excluded erratum and retracted document types to avoid double or false counting of documents.

Information extraction

Search Strategy is explained in Figure 1. We have excluded some error conducting documents like retracted and errata documents which will avoid double counting and false results. The documents were bibliometric analysed (Kumar S. , Guha, Chakraborty, & Gomes, 2021). In this study we have used (i) Microsoft Excel 2010 the frequencies and percentage and the relevant charts and graphs; (ii) VOSviewer (version 10.4) - create and visualize the networks for bibliometric analysis; and (iii) Harzing's Publish and Perish software -the citations metrics analysis (Sunil, Chakraborty, & Singh, 2021).

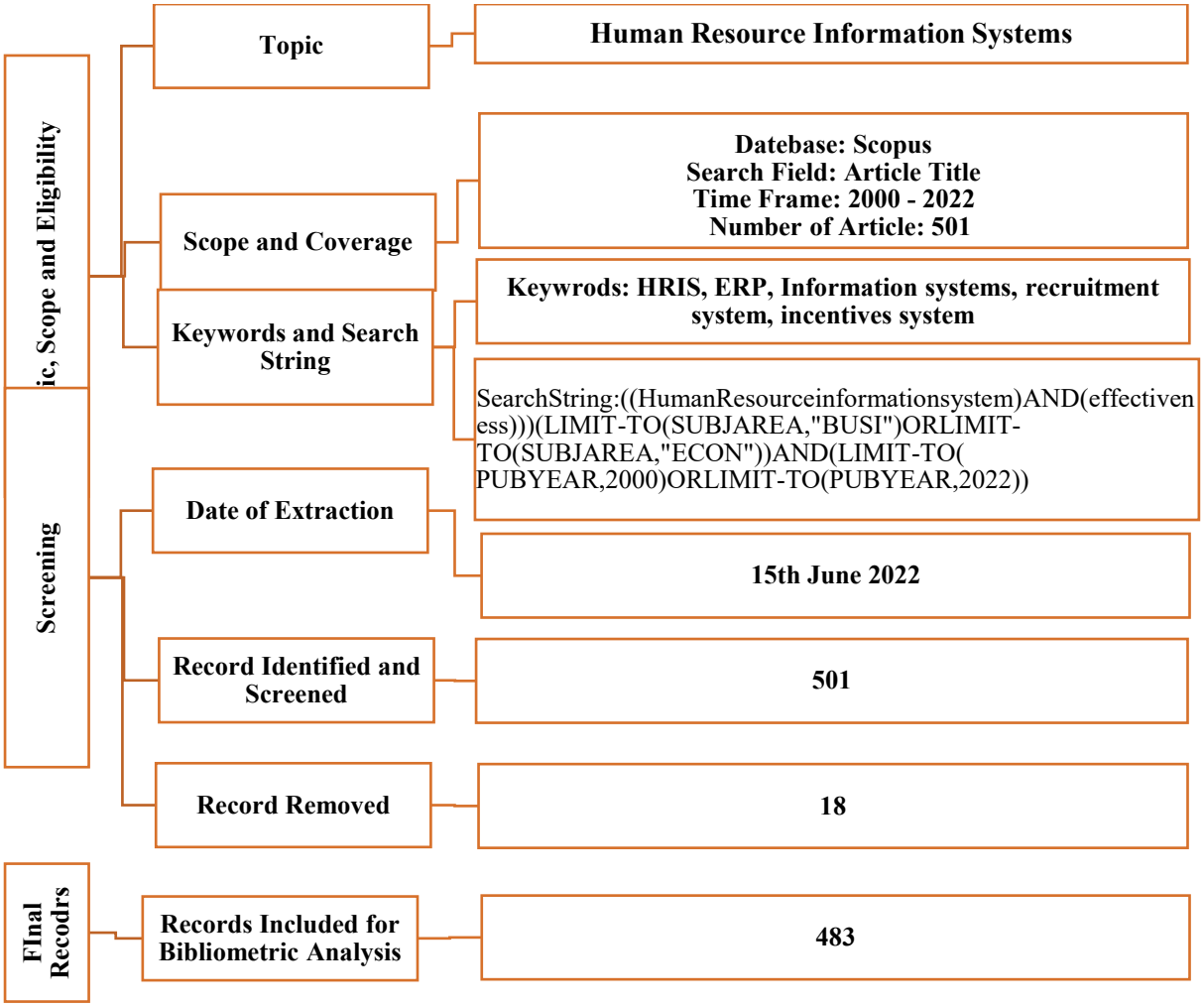


Figure 1: Flow diagram of the Strategy for Search.

Results

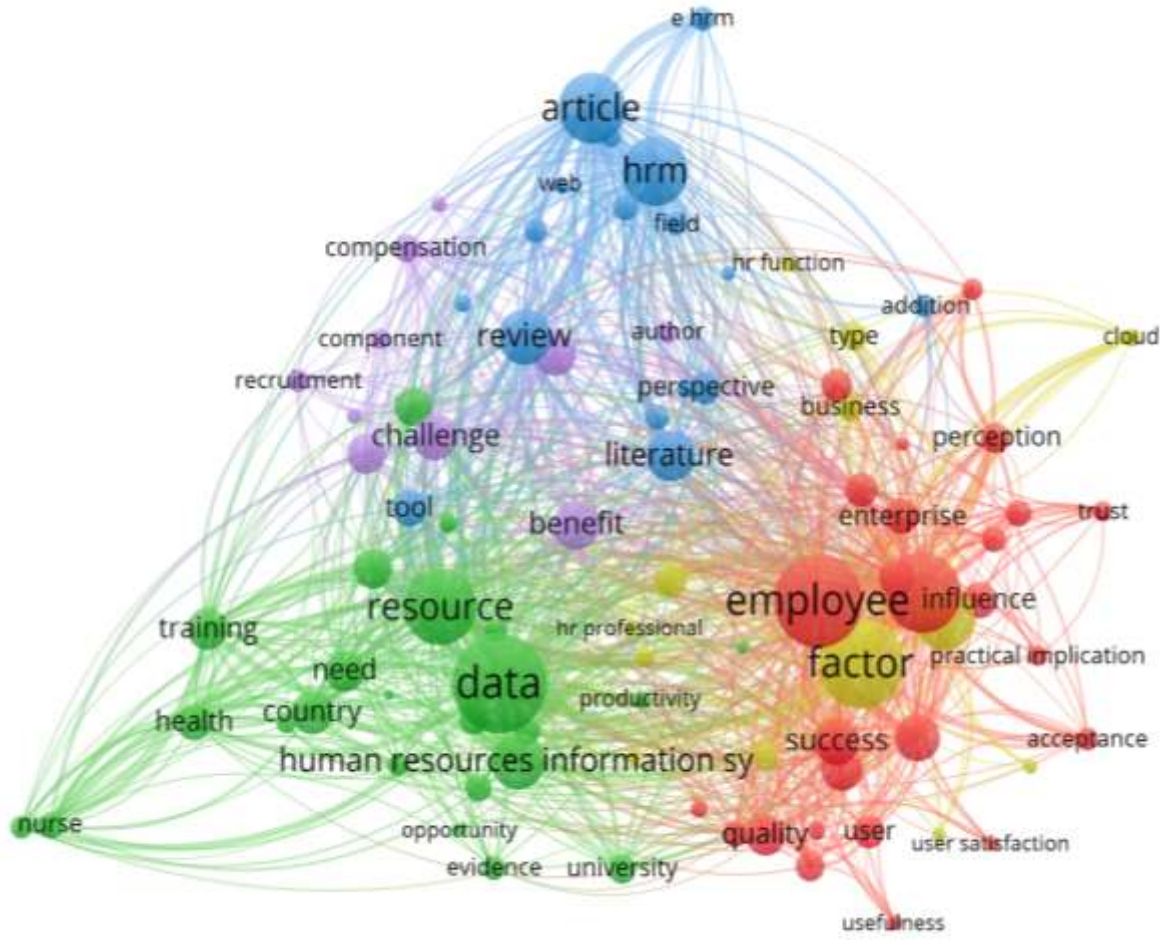
Retrieved literature description A total of 483 documents related to Human Resource Information System (HRIS) were retrieved from the Scopus database for the period between 2000 and 2022. These documents encompassed various types, including journal articles, review articles, book chapters, letters, notes, conference papers, editorials, short surveys, books, and entries with undefined types (Kumar S. , Guha, Chakraborty, & Gomes, 2021). As summarized in Table 2, journal articles represented the majority of the publications, with 262 records (54.24%). Conference papers followed with 142 publications (29.40%), while book chapters contributed 43 documents (8.90%). Review articles accounted for 29 entries (6.00%). Other types such as editorials (0.83%), notes (0.41%), and books (0.21%) comprised a very small fraction of the total output. Collectively, these retrieved documents received a total

of 75,130 citations in the pre-COVID period and 303 citations in the post-COVID period, indicating a substantial impact and ongoing relevance of HRIS research over the 25-year span (Kumar, Guha, & Gomes, Post Covid Trends On Behavioural Finance: A Bibliometric Analysis, 2022).

Table 1: Types of retrieved documents (2000 – 2022)

Document Types	Total Publications (TP)	Percentage (%)
Article	262	54.24%
Book	1	0.21%
Book chapter	43	8.90%
Conference paper	142	29.40%
Editorial	4	0.83%
Note	2	0.41%
Review	29	6.00%
Total	**483**	**100**

The VOSviewer-based bibliometric analysis of Human Resource Information System (HRIS) research from 2000 to 2022 reveals a multifaceted thematic structure, with key author keywords including *human resources information system*, *data*, *employee*, *factor*, *resource*, and *review* dominating the landscape (van Eck & Waltman, 2010) (Figure 2). The map demonstrates at least five major thematic clusters, indicating a diverse research orientation across human resources, data management, employee behavior, and technological applications. The green cluster emphasizes keywords such as *data*, *resource*, *training*, and *health*, suggesting a focus on operational HR practices and institutional needs. The red and yellow clusters center around *employee*, *factor*, *user*, and *success*, pointing to an emerging trend in employee-centered outcomes, user satisfaction, and acceptance models. The blue cluster includes terms like *article*, *hrm*, *web*, and *e-hrm*, indicating methodological and publication-focused discussions. Notably, while themes like *perception*, *influence*, and *trust* are present, the bibliometric map lacks strong associations with digital transformation tools such as *AI*, *blockchain*, or *predictive analytics*, revealing a gap and future research opportunity in integrating intelligent technologies into HRIS frameworks.



Unit of analysis = author keywords; Counting method: Full counting; Minimum number of occurrences of a keyword = 25; Minimum cluster size = 4.

Authorship pattern, collaboration, and prolific authors

In Table 3, A closer examination of the author distribution reveals that the highest number of publications involved two authors (147 documents, 30.4%), followed by three-author collaborations (100 documents, 20.7%), and single-author papers (93 documents, 19.3%). Four-author papers accounted for 13.0% of the total. The proportion of documents with five or more authors decreases significantly, suggesting that extensive multi-authorship is less common in this field. Interestingly, 19 documents (3.9%) were listed with zero authors, which likely refers to conference review documents where no individual author was specified (Alam & Kashem, 2022). In total, 160 different authors contributed to the corpus, underscoring a diverse and engaged scholarly community in behavioural finance research during the examined period

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Table 3: Number of Author(s) per Document

No. of Authors	Count of Documents	Percentage (%)
0	19	3.9%
1	93	19.3%
2	147	30.4%
3	100	20.7%
4	63	13.0%
5	22	4.6%
6	16	3.3%
7	5	1.0%
8	4	0.8%
9	6	1.2%
10	2	0.4%
11	3	0.6%
12	3	0.6%

a Conference review document. No author is listed.

Geographical distribution of publications

In the 2000-2022 period, researchers from 47 different countries contributed to publications related to Human Resource Information Systems. Table 4 highlights the top 10 contributing countries (Adel & Younis, 2022). The United States leads with 73 publications (TP) and the highest total citations (TC = 1889), along with the strongest collaboration network (TLS = 26). India ranks second with 63 publications, while Indonesia comes third with 51 publications. Despite India having a lower citation count (TC = 380) compared to the U.S. and U.K., its research output is substantial in quantity. As visualized in Figure 3, a VOSviewer-generated collaboration map with a minimum productivity threshold of two documents illustrates international co-authorship patterns among 28 countries, grouped into six color-coded clusters. The map reflects a prominent cluster of Asian countries (e.g., India, China, Malaysia, Indonesia) actively engaging in Human Resource Information System research. In contrast, Western countries, particularly the United States and the United Kingdom, continue to show sustained academic interest in this domain, with extensive global research linkages. The clustering further underscores regional research dynamics and evolving global collaborations during the pandemic (Al , 2022).

Table 4: Top 10 Countries Contributed to the Publications

Rank	Country	TP	TC	TLS
1	United States	73	1889	26
2	India	63	380	8
3	Indonesia	51	200	4
4	United Kingdom	35	1481	25
5	China	29	123	10
6	Germany	21	896	1
7	Malasia	18	321	17
8	South Africa	14	55	0
9	Australia	13	376	7
10	France	11	104	3

Notes: TP = total number of publications; TC = total citations; TLS = total link strength

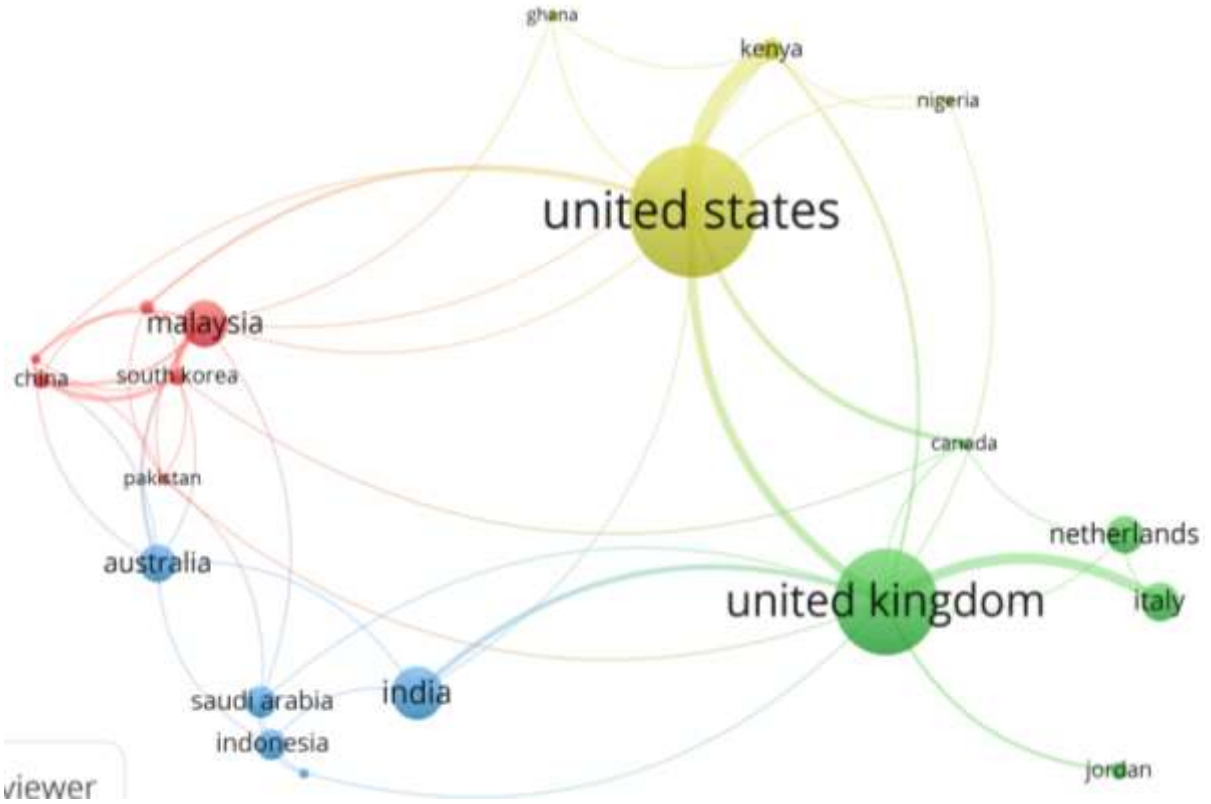

Figure 4: International collaboration network visualization map for Post-covid

The map illustrates international research collaboration among countries with a minimum productivity threshold of two documents, visualized through network clustering. Countries are grouped into color-coded clusters based on their co-authorship strength. The green cluster includes the *United Kingdom*, *Netherlands*, *Italy*, *Canada*, and *Jordan*, indicating a strong collaboration network centered around the UK. The yellow cluster, led by the *United States*, also connects with countries such as *Kenya*, *Nigeria*, and *Ghana*, showcasing extensive

transcontinental collaboration. The red cluster features *Malaysia*, *China*, and *South Korea*, highlighting regional academic partnerships in East Asia. Meanwhile, the blue cluster comprises countries like *India*, *Australia*, *Saudi Arabia*, *Indonesia*, and *Pakistan*, reflecting growing research connectivity across South and Southeast Asia. Notably, the *United States* and *United Kingdom* emerge as central hubs with broad international linkages.

Table 6 highlights the most highly cited articles in the field of Human Resource Information System (HRIS). The article titled *"HR and analytics: why HR is set to fail the big data challenge"* by Angrave et al. (2016), published in a reputed journal, stands out as the most cited article with 398 citations and an impressive average of 44.22 citations per year. This reflects its significant academic impact and continued relevance in addressing HR's challenges in the big data era.

The second most cited work is *"Research in e-HRM: Review and implications"* by Strohmeier (2007), which has garnered 354 citations, underscoring its foundational role in shaping e-HRM research. Another prominent contribution is from Marler and Parry (2016), whose article on strategic involvement and e-HRM technology achieved 183 citations. Notably, recent studies like *"Artificial Intelligence in Tactical Human Resource Management: A Systematic Literature Review"* by Votto et al. (2021) have quickly gained traction, accumulating 175 citations in just a short span, with a high citation rate of 43.75 per year. Similarly, *"The use of human resource information systems: A survey"* by Ball (2020) received 155 citations, indicating the growing interest in empirical HRIS studies. These top-cited articles reflect a strong focus on emerging technologies, data analytics, digital transformation, and strategic HRM, confirming the dynamic evolution and scholarly attention in the HRIS research landscape.

Table 6: Top 10 highly cited articles in human resource information systems

No.	Authors	Title	Year	TC	C/Y
1	Angrave D.; Charlwood A.; Kirkpatrick I.; Lawrence M.; Stuart M.	HR and analytics: why HR is set to fail the big data challenge	2016	398	44.22
2	Strohmeier S.	Research in e-HRM: Review and implications	2007	354	19.67
3	Marler J.H.; Parry E.	Human resource management, strategic involvement and e-HRM technology	2016	183	20.33
4	Votto A.M.; Valecha R.;	Artificial Intelligence in Tactical Human	2021	175	43.75

	Najafirad P.; Rao H.R.	Resource Management: A Systematic Literature Review			
5	Ball K.S.	The use of human resource information systems: A survey	2020	155	31.00
6	Hendrickson A.R.	Human resource information systems: Backbone technology of contemporary human resources	2003	142	06.45
7	Hussain Z.; Wallace J.; Cornelius N.E.	The use and impact of Human Resource Information System on human resource management professionals	2007	140	07.78
8	Eddy E.R.; Stone D.L.; Stone-Romero E.F.	The effects of information management policies on reactions to human resource information systems: An integration of privacy and procedural justice perspectives	1999	132	05.08
9	Fenech R.; Baguant P.; Ivanov D.	The changing role of human resource management in an era of digital transformation	2019	131	21.83
10	Maier C.; Laumer S.; Eckhardt A.; Weitzel T.	Analyzing the impact of HRIS implementations on HR personnel's job satisfaction and turnover intention	2013	116	09.67

Notes: TC = total citations; C/Y = citation per year

Discussion

In recent years, bibliometric analysis has gained traction as a powerful approach to identifying research trends and mapping the evolution of scholarly output (Adel & Younis, 2022). While much of the earlier bibliometric literature focused on domains such as behavioural finance, a growing body of research is now examining the emergence and adoption of Human Resource Information System (HRIS) in the context of digital transformation and organizational performance (Younis & Adel, 2022). Although earlier bibliometric studies, such as those by Costa et al. (Costa, Ferreira, Bento, & Aparicio, 2017), highlighted thematic trends in behavioural finance—including cognitive biases and decision-making heuristics—recent research shows that HRIS is becoming equally significant, especially in a post-pandemic environment where digital tools and data-driven decisions are central to managing human capital (Alam, Masum, Beh, & Hong, 2016).

The current bibliometric study reveals a notable rise in scholarly interest in HRIS, especially from 2010 onward, with a substantial surge in publications post-COVID-19 (Adenuga & Kekwaletswe, 2013). This increase reflects the evolving role of HR departments in leveraging technology to maintain operational continuity, enhance employee engagement, and implement data analytics for strategic planning. Consistent with trends seen in behavioural finance, older HRIS publications tend to attract more citations,

though recent papers are rapidly gaining momentum—particularly those that explore the integration of AI, data analytics, and digital HRM practices (Al-Aali, 2022). A significant shift has also been observed in the geographic distribution of HRIS research. While earlier literature was dominated by contributions from the United States and Western Europe, India, Indonesia, and other Asian countries have emerged as active contributors to HRIS-related research post-pandemic. This is clearly visualized in international collaboration maps generated via tools like VOSviewer, which demonstrate strong co-authorship networks and growing cross-border academic interaction.

Moreover, the top-cited HRIS articles now emphasize the practical implications of digital tools in workforce management, AI integration, and organizational agility—aligning HRIS research with broader themes such as digital transformation and resilience. These findings contrast earlier bibliometric studies where HRIS was often treated as a support system rather than a strategic enabler. Despite its valuable insights, this study does have limitations. The analysis was restricted to the Scopus database, which, while comprehensive, does not encompass the full spectrum of global scholarly output. Additionally, rapid publication cycles and evolving terminologies may result in relevant studies being unintentionally omitted. Citation-based metrics, while useful for measuring academic impact, may not always reflect the quality or real-world applicability of the studies analyzed. In conclusion, HRIS research has matured significantly in recent years, reflecting broader shifts in HRM practice and the urgent need for digital solutions in the post-COVID era. As organizations continue to adapt to hybrid work models and tech-driven HR strategies, future bibliometric studies are expected to highlight even greater diversification and depth in this field.

Conclusion

This bibliometric analysis offers a comprehensive overview of research trends in Human Resource Information System (HRIS) from 2000 to 2022. The findings highlight a significant increase in scholarly output, especially in the post-COVID-19 period, underscoring the growing importance of HRIS in facilitating digital HR transformation and strategic decision-making. The dominance of multi-authored papers and international collaborations—particularly among countries like the United States, India, and Indonesia—reflects the global and interdisciplinary nature of HRIS research. Thematic mapping revealed diverse

research clusters focusing on employee behavior, data management, system usability, and digital tools. However, the limited presence of keywords related to artificial intelligence, machine learning, and blockchain suggests that HRIS research is still evolving in terms of integrating advanced technologies. Highly cited publications in the field continue to emphasize the strategic and analytical roles of HRIS, moving beyond administrative functions.

While the study is limited to Scopus-indexed documents and subject to the constraints of citation-based evaluation, it provides valuable insights into key contributors, leading journals, and emerging topics. Future research should explore underrepresented areas such as ethical considerations, algorithmic fairness, and HRIS applications in remote or hybrid work environments. As organizations navigate the digital age, HRIS will continue to be a pivotal driver of workforce efficiency, strategic alignment, and organizational resilience.

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