



(REVIEW ARTICLE)



Insights and innovations in human resource information systems: A systematic literature review

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Abstract

The aim of this systematic literature review is to consolidate existing knowledge and identify unexplored research areas in the field of Human Resource Information Systems (HRIS). The study examines the literature published between 2000 and 2024 to understand the evolution, influence, and potential advancements of HRIS. The methodology is consistent with the PRISMA principles, which ensure a meticulous selection process. Initially, 144 publications were identified through the Scopus database. Nevertheless, only 65 articles were ultimately included after the application of rigorous inclusion and exclusion criteria. The findings suggest that HRIS is essential for the improvement of working standards, the facilitation of strategic decision-making, and the improvement of access to human resource data. Scholarly interest in HRIS has been on the rise, particularly since 2015, as it underscores the increasing utilization of technology in human resource management. The study also emphasizes critical areas for future research, such as the integration of open-source software and the service sector's role in the implementation of HRIS. This comprehensive assessment provides policymakers and HR professionals with valuable insights, aiding in the strategic development and management of human resources using advanced information systems.

Keywords: Human Resource Information System; Systematic review; PRISMA

1. Introduction

Human resource management (HRM) is essential for the success of organizations, as it leverages the expertise, abilities, and dedication of employees to improve competitiveness and drive development in the global market (1). In the complex contemporary business environment, the strategic application of HRM is crucial for achieving a sustainable competitive advantage. Employees are responsible for maintaining organizational ethics and leadership standards. (2). In addition to enhancing the performance of major organizations, human resource management (HRM) methodologies also have a positive effect on small and medium enterprises (SMEs), resulting in improved retention and utilization of human capital (3). Additionally, HRM is essential for the advancement of innovation, the creation of an efficient organizational culture, and the attainment of overall success. This is achieved by integrating HR strategies that are consistent with the organization's objectives and fostering continuous improvement (4). In the hotel industry, the human resource department plays a critical role in the development of performance standards and processes, underscoring the importance of HRM in the pursuit of organizational success (5).

The success of an organization is contingent upon the implementation of Human Resource Information Systems (HRIS) and Human Resource Management (HRM). Multiple studies (6–9), have emphasized the substantial contribution that HRIS make to improving access to human resource data, improving working standards, and positively influencing organizational performance. The integration of IT systems, specifically HRIS, can improve productivity, reduce

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expenses, and aid in the formulation of strategic decisions, thereby granting organizations a competitive advantage (10). Furthermore, the implementation of HRIS allows HR professionals to adopt the role of strategic business associates, thereby contributing significantly to the organization's overall performance and strategic direction. The development of HRIS has revolutionized HR operations by enabling the efficient retrieval of information and positively impacting the daily activities of employees and organizations. It is essential for organizations to effectively manage human resources through HRM and utilize HRIS in order to achieve their financial and social objectives.

In order to gain a deeper understanding of the development, influence, and prospective avenues for further investigation in the field of Human Resource Information Systems (HRIS), it is imperative to conduct a comprehensive assessment of the existing literature. A systematic examination of existing resources, as elucidated in numerous publications (11–13), offers valuable perspectives on the advantages of HRIS adoption, its impact on organizational performance, and the effective administration of knowledge workers. Systematic reviews analyze a wide range of papers and data to identify patterns, identify areas where further research is needed, and suggest future research directions. For instance, they may suggest that the service sector be prioritized and that open-source software be employed (14). Additionally, these studies are instrumental in the development of frameworks that facilitate the efficient management of knowledge and expertise within organizations. This, in turn, enables policymakers and HR professionals to make wise decisions (15). Consequently, the objective of this investigation is to assemble existing data, pinpoint unexplored research areas, and produce evidence-based conclusions concerning the development and consequences of these practices. Current research is essential for identifying the factors that influence the human resource information system and obtaining insight into the current state of the system. It accomplishes this by conducting an analysis of a variety of publications from 2000 to 2024.

2. Methodology

This study provides a thorough examination of the literature on human resource information systems, with a particular emphasis on their development and influence. This review incorporates an extensive range of disciplines, such as economics, sociology, environmental science, and human resource management. Regarding the systematic literature review, the process began by documenting the criteria used to include or exclude articles, as well as the methodology used for analysis. This mirrors the approach utilized in the preferred reporting items for systematic reviews and meta-analyses (PRISMA), which aids in the objective selection and analysis of papers (16). Accordingly, identification, screening, ensuring eligibility and deciding on inclusion was followed in identifying the most relevant articles to be reviewed.

Scopus was identified as the optimal destination for identifying papers with significant effect (17). Hence, the search was performed in Scopus database using the search string as “Human Resource Information System” OR “Human Resource Management System”. The preliminary findings yielded a total of 144 articles. Stringent criteria for inclusion and exclusion were implemented to ensure the selection of the most relevant articles and 65 articles were selected as final sample.

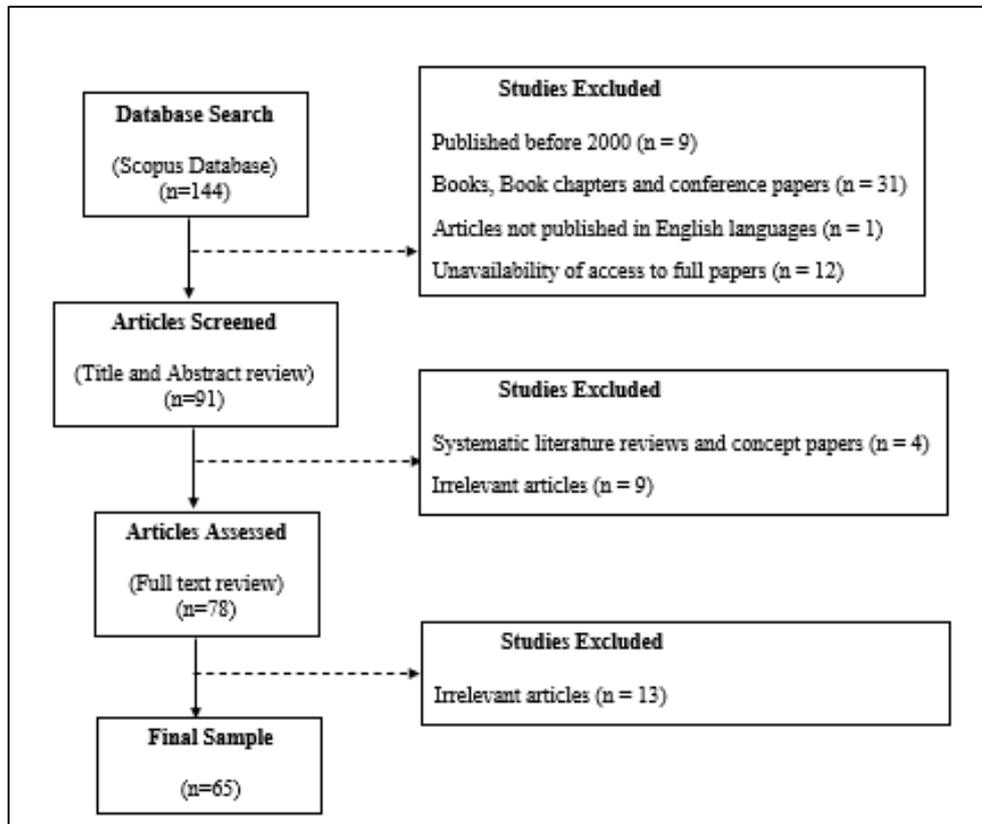


Figure 1 Articles selection strategy (Source: Developed by Author)

3. Analysis and results

3.1. Descriptive Analysis

Mapping the literature using descriptive analysis is essential for identifying patterns, strengths, and weaknesses in previous studies. Therefore, this section provides a descriptive analysis of 65 articles published between 2000-2024.

3.1.1. Trend Analysis

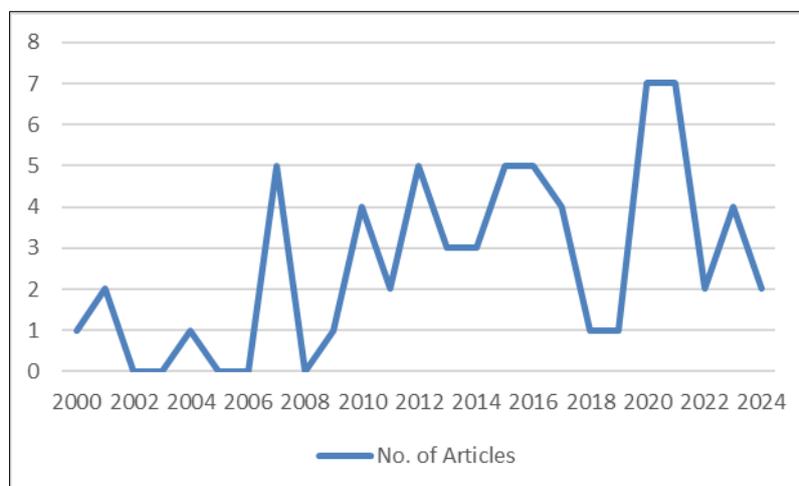


Figure 1 Year-wise Publications

The annual publication of articles demonstrates the evolving state of the human resource information system. Figure 1 illustrates the pattern of publications on "human resource information system" in the Scopus database from 2000 to

2024. Many articles have been published after 2015, with the largest number occurring in 2020 and 2021. This graph depicts a consistent increase in publications, with nearly every year having at least one publication. This trend emphasizes the urgent requirement for human resource information systems in the management of human resources and underlines the growing scholarly focus on technology advancements in management.

3.1.2. Country Analysis

Table 1 Country-wise Publications

Country	Total Publications	Total Citations	Avg. Article Citations
United Kingdom	31	402	67
India	26	104	14.9
USA	25	392	65.3
Germany	7	90	30
South Africa	7	17	8.5
Malaysia	6	50	25
Ghana	5	2	1
Pakistan	4	10	10
Spain	4	4	2
China	3	5	5
Thailand	3	5	5
Netherlands	1	37	37
Botswana	1	8	8
Israel	1	14	14
Hungary	1	11	11

In the past two decades, twenty-seven countries have made significant contributions to the field of "human resource information system" publications. According to Table 1, the United Kingdom, United States, India, Germany, and Malaysia are the top five developed countries with the most citations. The United Kingdom, being the most productive country in this area of research, published thirty-one articles and received the highest number of citations and the highest average article citations.

3.1.3. Source Analysis

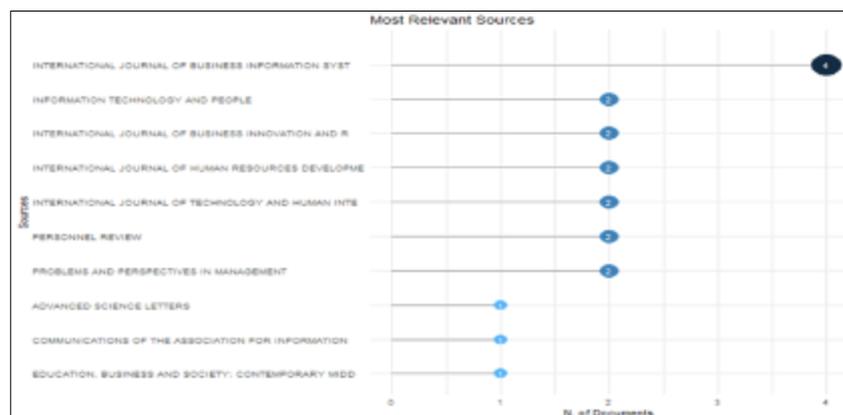


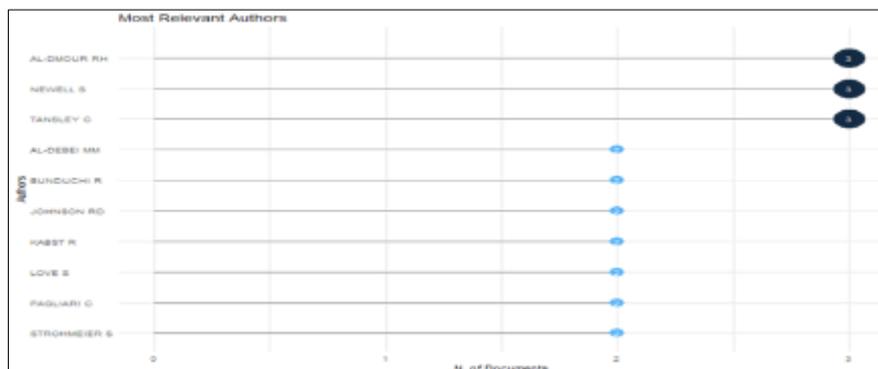
Figure 2 Source Analysis

Table 2 Journal-wise Publications

Journal	h_index	g_index	m_index	TC	NP	PY_start
International Journal of Business Information Systems	3	4	0.1667	23	4	2007
Information Technology and People	2	2	0.125	55	2	2009
International Journal of Business Innovation and Research	2	2	0.2	12	2	2015
Personnel Review	2	2	0.0833	202	2	2001
Problems And Perspectives In Management	2	2	0.1818	4	2	2014
Advanced Science Letters	1	1	0.125	7	1	2017
Communications of the Association for Information Systems	1	1	0.1111	71	1	2016
Education, Business and Society: Contemporary Middle Eastern Issues	1	1	0.0667	8	1	2010

The "International Journal of Information Management" is the primary source, with the highest number of documents (four), making it a prominent resource in this field of study. The collection comprises 65 papers that were published by 56 sources. Table 2 displays the top 8 journals that have received the most citations for the topic of "human resource information system". Personal Review, published by Emerald publishing, has the highest number of citations among its publications, with 202 citations for two documents.

3.1.4. Author Analysis

**Figure 3** Author Analysis**Table 3** Author-wise Publications

Authors	h_index	g_index	m_index	TC	NP	PY_start
Al-Dmour RH	3	3	0.3	15	3	2015
Newell S	3	3	0.125	149	3	2001
Tansley C	3	3	0.125	149	3	2001
Al-Debei MM	2	2	0.2	12	2	2015
Bunduchi R	2	2	0.4	23	2	2020
Johnson RD	2	2	0.1667	155	2	2013
Kabst R	2	2	0.1428	16	2	2011
Love S	2	2	0.2	12	2	2015
Pagliari C	2	2	0.4	23	2	2020
Strohmeier S	2	2	0.1333	14	2	2010

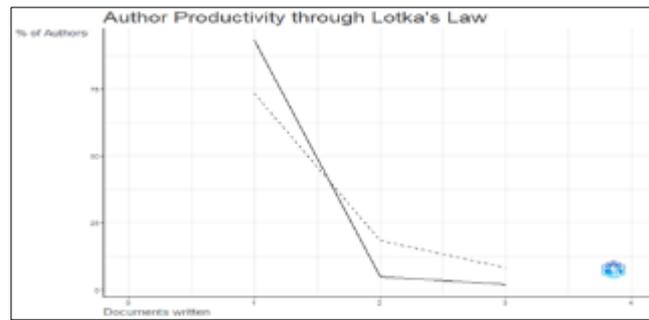


Figure 4 Author Productivity through Lotka’s Law

In terms of individual contributions to the development of the concept, Al-Dmour RH, Newell S and Tansley C are the most influential authors, having each produced 3 high-impact publications. Significantly, Newell S and Tansley C, who commenced writing in 2001, have garnered substantial citations (149 each), indicating a consistent and enduring influence over the years. Contrarily, emerging writers such as Bunduchi R and Pagliari C, who began publishing in 2020, demonstrate notable productivity and influential citations in a relatively little timeframe, suggesting their valuable contributions to their respective fields. According to Lotka’s Law, the majority of authors, at over 75%, have written only one document. A small number of authors have authored two documents, as evidenced by the subsequent significant decline. Only a small number of authors have produced three or more documents, as the frequency of production levels off.

3.1.5. Three-Fields Plot

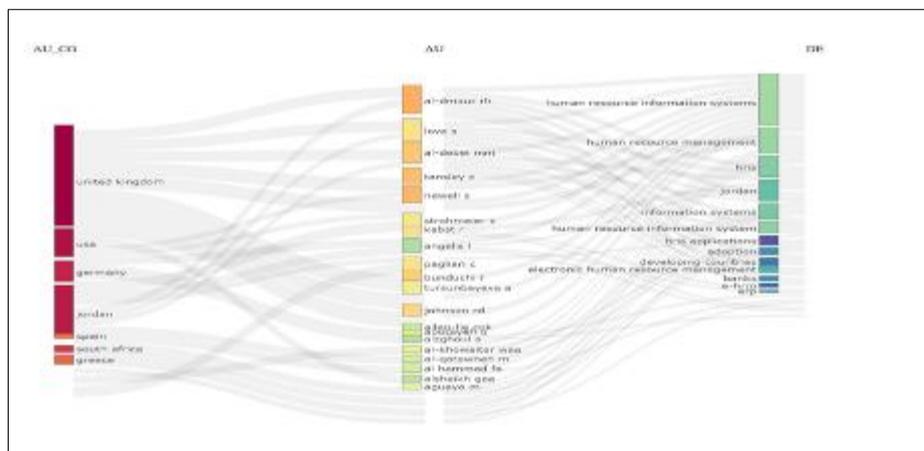


Figure 5 Three-Fields plot

Figure 5 illustrates the relationships among the countries of origin of authors (AU_CO), the individual authors themselves (AU), and their respective research areas or domains (DE). The data emphasizes that the predominant nationality of the authors is from the United Kingdom, with the United States, Germany, and Jordan following suit. Authors such as Al-Dmour RH and Love S have notable connections to several academic topics, including human resource information systems and human resource management. The diagram also illustrates that authors from these nations have a strong focus on study subjects such as "human resource management" and "information systems". This suggests that there is a significant level of multidisciplinary and international collaboration in these specific research fields.

3.1.6. Keywords Analysis

The word cloud showcases prominent themes and subjects within the realm of human resource management and information systems. The most salient terms, denoted by their bigger size, are "human resource management," "information systems," "resource allocation," and "personnel," implying that these are the primary areas of concentration. The inclusion of terminology such as "decision making," "natural resources management," "surveys," and "information use" highlights the wide-ranging and multidisciplinary character of research and activities in these

3.1.7. Thematic Analysis

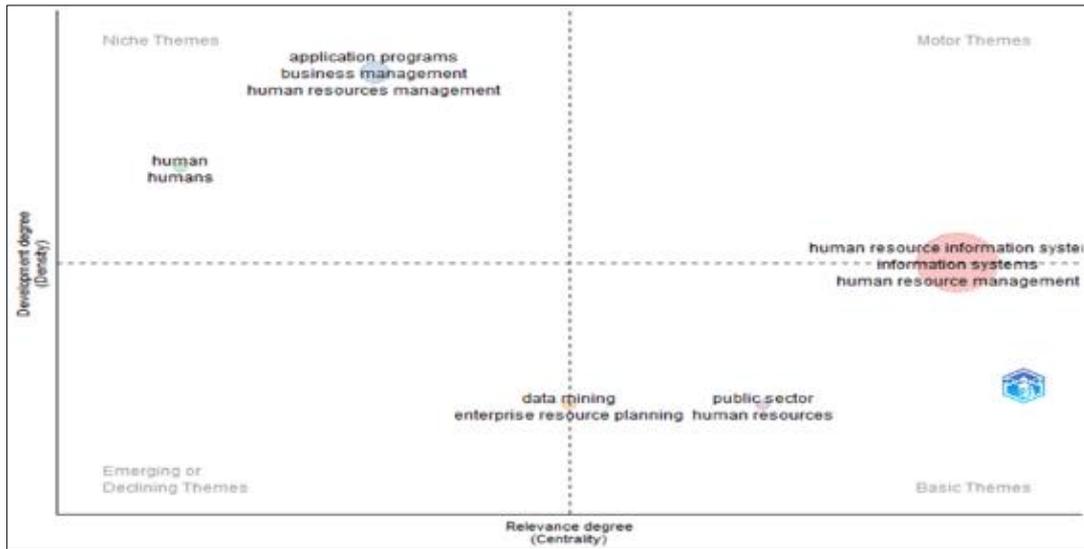


Figure 6 Thematic map

Figure 6 classifies themes according to their pertinence and advancement within a particular domain. The Motor Themes quadrant, located at the upper right, includes the topics "human resource information system," "information systems," and "human resource management." These topics are well developed and play a prominent role in the area. In the upper left quadrant, the Niche Themes quadrant is situated. It includes specialized but less prominent subjects, including "business management," "human resources management," and "application programs," as well as specific terminology such as "human" and "humans." The Emerging or Declining Themes, which are in the lower left quadrant, consist of subjects that are less prominent and underdeveloped, including "data mining," "enterprise resource planning," and "public sector." This suggests that these subjects are either in the early stages of development or are progressively diminishing in importance. Finally, the Basic Themes in the lower right quadrant underscore the importance of "human resources" as a fundamental subject, but it also recognizes that it necessitates further research and development. In general, the diagram visually demonstrates the diverse degrees of significance and development of a variety of subjects within the field.

3.1.8. Keyword co-occurrences

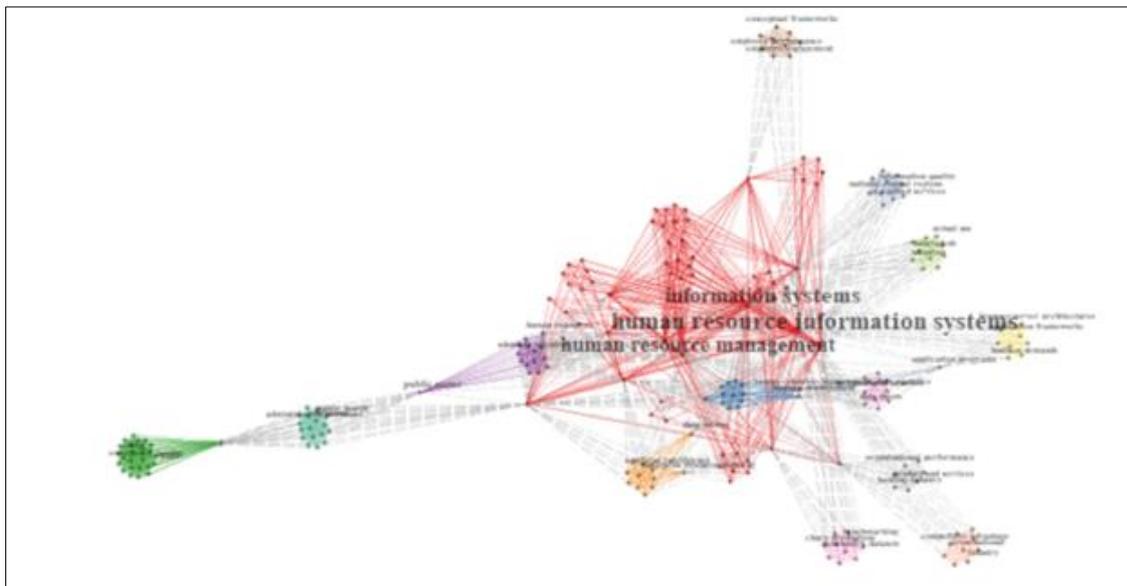


Figure 7 Keyword co-occurrences

The co-occurrence network of keywords visually illustrates the connections between various research topics, as determined by their concurrent presence in scholarly literature. The network primarily concentrates on central themes, including "human resource information systems," "information systems," and "human resource management." These issues are very relevant and frequently discussed, as seen by the numerous connections they have. The text displays clusters of correlated terms, distinguished by different colors, which demonstrate thematic groupings and highlight the interconnection within the topic. Peripheral topics such as "data mining," "public sector," and "enterprise resource planning" are not as central, but they emphasize specialized or growing fields of study. The network also demonstrates the integration of principles from human resource management, information systems, and business management, highlighting interdisciplinary connections. This visualization highlights the wide range of study topics and the significant impact of central themes in the area.

3.1.9. Tree Map

The tree map visualization showcases the relative prominence of several research themes in a dataset, where each rectangle represents a keyword, and its size indicates its frequency or significance. The theme of "Human resource information systems" is the most prominent, representing 10% of the dataset with 15 references. Two other significant themes, "information systems" and "human resource management," are each represented by 7%. Keywords such as "resource allocation," "information management," and "information use" are moderately significant, but they appear less frequently. The tree map also displays a diverse array of subthemes, each of which accounts for 1-2% of the information. This suggests a wide variety of research topics, such as "enterprise resource planning," "data mining," "public sector," and "competition." The research's intricate and diverse nature is underscored by the prevalence of a variety of forms of diversity.



Figure 8 Tree map

3.2. Factorial Analysis

The arrangement of various research issues is depicted in Figure 9 in accordance with their centrality (significance) and density (level of development). The critical position of the key issues of "resource allocation" in the field of study necessitates further exploration and advancement, as they are of great significance but have not been sufficiently developed. Conversely, the subjects of "humans" and "human" are comprehensively examined, yet their significance is modest. This suggests that they have been extensively researched, but they are not essential to the primary objective of the field. The "public sector" theme is presently not prominent or well-developed, as evidenced by its low centrality and density. This suggests that it may be a developing field of interest with a significant amount of potential for future research. The thematic structure is underscored by the triangular boundary in the diagram, which suggests that the themes are indispensable elements of the research landscape. In general, the diagram provides an exhaustive strategy summary, identifying key areas that are important but require further improvement, as well as those that are already established but less essential to the primary focus of the sector.

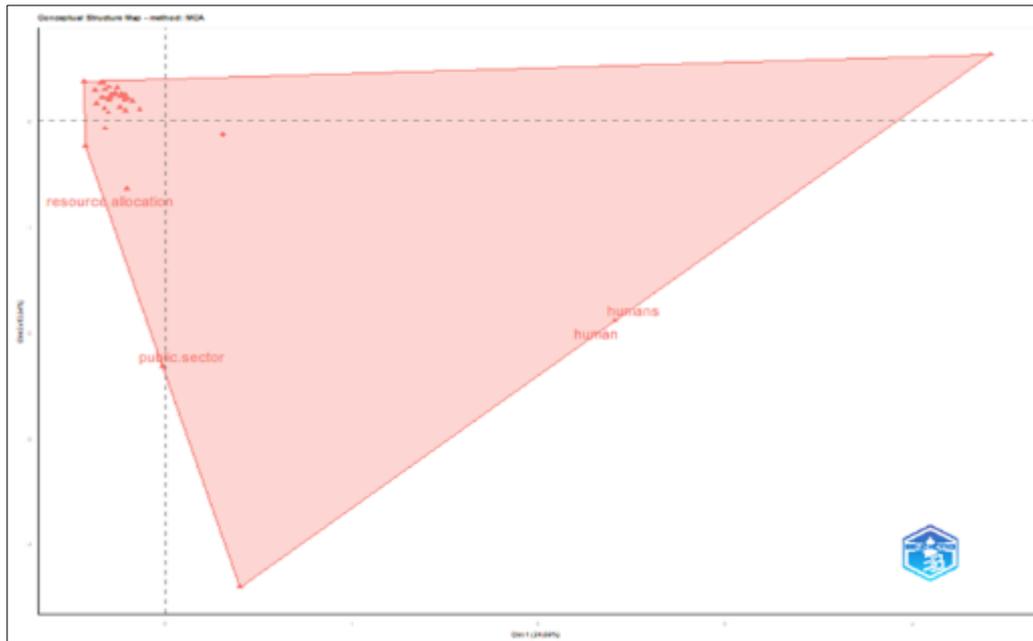


Figure 9 Conceptual structure map

4. Discussion

4.1. Evolution of HRIS

The Human Resource Information System (HRIS) is a dynamic technology that has revolutionized the practices of Human Resource Management (HRM). HRIS, which was initially introduced in the 18th century, has undergone continuous development and has become a critical element of organizations (9,18,19). The integration of technology into HRM has revolutionized practices such as recruitment, training, performance evaluation, and retention, resulting in the development of systems that optimize the HR process and improve employee work-life balance (9,19,20). Companies have been able to analyze vast amounts of HR data to enhance decision-making and obtain a better understanding of employee behaviors and organizational dynamics, which has further accelerated the evolution of HRIS through the use of big data technology (18). This development underscores the critical role of HRIS in modern organizations, as it affects the relationship between HR management and technology to achieve strategic outcomes and operational excellence.

4.2. Factors affecting to the adoption of HRIS

Several studies have demonstrated that the adoption of HRIS is significantly influenced by performance expectancy, social influence, favorable environments, and personal innovativeness (21,22). Additionally, the successful implementation of HR technology is contingent upon the availability of technology, the HR department's competencies, the support of managers, and organizational culture (23,24). In addition, the quality of the system, information, and service, as well as user satisfaction and system utilization, are all critical factors in the success of E-HRM adoption. This underscores the importance of comprehensive system approaches and user involvement in the optimization of HRIS installation (25).

4.3. Applications of HRIS

HRIS is capable of automating a variety of HR duties, monitoring and storing employee information, managing payroll processes, assisting in decision-making, and enhancing the organization's overall efficiency and productivity (7,26,27). Recent research has shown that the implementation of integrated information systems, specifically HRIS, can enhance productivity, service quality, and strategic decision-making, while simultaneously reducing operating costs. This provides organizations with a competitive advantage (7). Organizational success necessitates the implementation of HRIS to enhance fundamental HR operations, including recruitment, training, and performance evaluation (20). In addition, HRIS enables efficient monitoring of employees' personal profiles, training, recruitment, payroll, and other aspects, hence enhancing record management efficiency and offering a technical edge for organizations.

4.4. Issues of HRIS

HRIS encounter numerous obstacles in various circumstances. Low- and middle-income nations, such as Uganda, face challenges such as restricted compatibility between systems, intricate human resources for health (HRH) planning, and a lack of insight into the private and community health workforce (28). The significance of HRIS in strategic rivalry is emphasized, underscoring the need for record-keeping and HRM advances to enhance competitiveness (29). Staff dissatisfaction and neglect are the consequences of the slow implementation of HRIS in the South African health sector. Consequently, it is imperative to allocate resources to HRIS research in order to improve service delivery (30). In order to effectively implement and manage HRIS, it is necessary to address critical issues such as strategic utilization, adoption, system efficiency, and interoperability.

5. Conclusion

The present study of Human Resource Information Systems (HRIS) illustrates its indispensable function in facilitating strategic contributions to organizational success and revolutionizing HR operations. The academic fascination and significance of HRIS are underscored by the consistent increase in scholarly publications since 2015. The research underscores the critical importance of HRIS in improving organizational performance by enhancing information management, decision-making, and resource allocation. The discipline places a substantial emphasis on critical issues, including "human resource management," "information systems," and "human resource information systems," which are thoroughly investigated and regarded as fundamental. Furthermore, opportunities for future research are presented by emerging disciplines such as "enterprise resource planning" and "data mining."

This analysis underscores the necessity of ongoing research to address underexplored topics and to examine the multidisciplinary and diverse aspects of HRIS. The results emphasize the critical role of HR professionals as strategic business partners, thereby supporting the ongoing integration of HRIS into organizational strategies to achieve financial and social objectives. The comprehensive assessment of the current corpus of literature on HRIS provides valuable insights into its evolution, impact, and potential areas for future research, underscoring its importance in the contemporary organizational environment.

Compliance with ethical standards

Disclosure of conflict of interest

No conflict of interest to be disclosed.

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