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# Life cycle approaches in human resources management and their impact on competitiveness: A comprehensive bibliometric study

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## Abstract

This study explores the intellectual structure of life cycle approaches in human resource management (HRM) and their impact on organizational competitiveness through a comprehensive bibliometric analysis. A total of seven Scopus-indexed publications were analyzed using performance analysis and science mapping tools, specifically VOSviewer. Findings reveal an emerging and fragmented research field characterized by dispersed authorship and globally distributed contributions. Key themes identified include competency development, performance optimization, sustainability, and digital transformation, highlighting the interdisciplinary integration of HRM with engineering, environmental management, and technological innovation. The analysis also indicates limited theoretical consolidation, with no dominant authors or institutions. The study concludes that HRM life cycle approaches hold significant potential for enhancing organizational competitiveness but require further theoretical integration and empirical research. Recommendations emphasize developing integrated HRM life cycle models, strengthening alignment with digital and sustainability goals, and promoting international and cross-industry research collaborations.

## Keywords

Bibliometric analysis, digital transformation, human resource management, life cycle approach, organizational competitiveness

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## Introduction

Recently, human resource management (HRM) has evolved significantly, driven by globalization, technological advancements, and the increasing pressure for organizations to remain competitive in a dynamic business environment. Traditionally, organizations have relied on their financial capital, technology, and market access to gain competitive advantage. However, in today's knowledge-based economy, the importance of human capital has become more pronounced. It is increasingly recognized that organizations can no longer derive sustainable competitive advantage solely from tangible assets; rather, their human resources—through strategic HRM practices—are integral to achieving long-term success (Kumar & Singh, 2022; Park & Ko, 2021). This shift has led to a growing interest in life cycle approaches in HRM, which view human resource practices as interconnected stages spanning from recruitment and onboarding to development, retention, and exit management (Albrecht et al., 2021; Lau, 2023; Syafri et al., 2025).

The life cycle approach in HRM considers the entire employment journey of an individual within an organization, considering the evolving needs of both the employee and the organization throughout various phases of the employment relationship. As organizations face increasing complexities due to global talent management, hybrid work environments, and technological disruptions, the ability to manage human capital throughout its entire lifecycle has become a critical factor in enhancing organizational competitiveness (Boon et al., 2019). The strategic integration of HRM practices across all stages of the employee life cycle allows organizations to maintain workforce agility, foster innovation, and ensure sustainable performance, positioning them for continued competitiveness (Budhwar et al., 2022). Despite the growing recognition of the importance of life cycle thinking in HRM, the literature on this topic remains fragmented, with a focus on individual HR functions rather than a holistic view that integrates them throughout the life cycle of an employee (Nie et al., 2020).

The adoption of life cycle approaches in HRM also holds the potential to address contemporary challenges, such as increasing employee turnover, shifting workforce expectations, and the rise of remote and flexible working models. HRM systems designed with life cycle approaches are more adaptable to these changes, enabling organizations to foster a more engaged, productive, and satisfied workforce. As companies continue to confront a rapidly evolving labor market, incorporating comprehensive life cycle strategies can lead to better talent retention and a more agile workforce, ultimately enhancing organizational resilience in the face of external challenges.

A major challenge in the current HRM literature is the lack of comprehensive models that integrate these life cycle stages. While individual HR practices such as talent acquisition, performance management, and employee learning and development are widely studied, these topics are often treated in isolation, without consideration of how they work together over the course of an employee's tenure within an organization. This fragmentation limits the effectiveness of HRM systems and hinders our understanding of how HRM practices contribute to organizational outcomes such as performance improvement, innovation, and competitiveness. Furthermore, the competitive environment in which organizations operate is continuously evolving, and HR strategies must be designed to enable adaptability, resilience,

and long-term sustainability. As a result, the integration of life cycle approaches within HRM systems has become an essential framework for addressing these challenges (Loon et al., 2021; McLean & González Ortiz de Zárate, 2024; Thite, 2022).

The importance of adopting a life cycle perspective in HRM has been underscored by recent research emphasizing the evolving nature of workforce demands and the increasing need for HR practices that can adapt to demographic shifts, technological advancements, and changes in the global economy (Cai et al., 2023; Zhang & Morris, 2022). The workforce is now more diverse, with varying skillsets, values, and expectations that organizations must navigate. This dynamic requires organizations to rethink how they approach talent management across the entire employee life cycle, from recruitment and onboarding to career development and eventual separation or retirement. Consequently, HRM must be able to manage the immediate needs of employees and anticipate future trends, ensuring that workforce management strategies are aligned with long-term organizational goals (Aust et al., 2020).

Despite the growing recognition of the life cycle approach in HRM, there is a notable gap in the research on how HRM life cycle practices can contribute to organizational competitiveness. Although several studies have examined the relationship between individual HRM practices and organizational performance, few have explicitly explored how different stages of the employee life cycle can enhance competitiveness through an integrated approach. The absence of a comprehensive, life cycle-based framework for HRM hinders our ability to fully understand the potential of these practices in driving sustainable organizational success. Moreover, research on HRM in the context of organizational competitiveness often focuses on linear, static models that fail to capture the dynamic nature of workforce needs and organizational strategies (Gallardo-Gallardo et al., 2021; Hossain et al., 2025; Rigamonti et al., 2024).

To address this gap, bibliometric analysis offers an effective method for mapping the intellectual structure of research on HRM life cycle approaches and their impact on organizational competitiveness. Bibliometric analysis enables the identification of key trends, influential publications, and the intellectual connections between various subfields within HRM research (Donthu et al., 2021). This method allows researchers to uncover patterns in research productivity, collaboration, and keyword evolution, providing a comprehensive view of how HRM life cycle approaches have been conceptualized and applied in relation to organizational competitiveness. By applying bibliometric analysis to this topic, this study aims to map the intellectual landscape of HRM life cycle research and identify key themes that shape its role in enhancing organizational competitiveness.

This study builds on the growing body of literature examining the intersection of HRM practices and organizational competitiveness, contributing to the theoretical development of HRM life cycle approaches. It also seeks to provide empirical insights that can guide HR practitioners and organizational leaders in designing HRM systems that are responsive to immediate workforce needs and capable of driving long-term competitiveness. The results of this study will highlight core themes within the HRM life cycle research, such as competency development, performance optimization, sustainability, and digital transformation. These themes underscore the interdisciplinary nature of HRM research, reflecting its growing intersection with fields like engineering, environmental management, and technological innovation (Ali & Fedorova, 2024; Bondarouk & Brewster, 2016; Jain & Sharma, 2024).

The integration of sustainability and digital transformation into HRM life cycle practices represents a significant development in HRM theory and practice. Organizations are increasingly recognizing the need to align their HR strategies with sustainability goals, ensuring that workforce management contributes to long-term environmental, social, and economic sustainability (Jackson et al., 2014). Similarly, the digitalization of HRM processes, including the use of HR analytics, artificial intelligence, and digital learning platforms, has transformed how organizations manage their human capital, making it possible to optimize performance across the entire employee life cycle (Strohmeier, 2020). These trends highlight the growing importance of HRM systems that are adaptable, data-driven, and aligned with organizational goals.

Despite these developments, the theoretical consolidation of HRM life cycle approaches remains limited, with no dominant models or frameworks that capture the full scope of HRM practices across the employee life cycle (Gladka et al., 2022; Kwon & Park, 2019). The field is still emerging, and there is a need for further research to integrate these life cycle approaches into coherent models that can guide both academic scholarship and practical applications. This study contributes to the development of such models by mapping the current state of research on HRM life cycle approaches and their impact on organizational competitiveness, providing a foundation for future studies that seek to develop integrated HRM life cycle frameworks.

The goal of this research is to fill the existing gap in the literature by conducting a comprehensive bibliometric analysis of global publications related to HRM life cycle approaches and their relevance to organizational competitiveness. This study will identify research trends, authorship patterns, and key thematic clusters that emerge from the literature, offering valuable insights into how HRM practices across the life cycle contribute to enhancing competitiveness. Furthermore, this research will provide recommendations for future studies that seek to develop integrated models of HRM life cycle practices, strengthen the alignment between HRM and sustainability goals, and promote cross-industry and cross-country collaborations.

In conclusion, this study highlights the growing importance of HRM life cycle approaches in enhancing organizational competitiveness. By mapping the intellectual landscape of this research area, it aims to provide a clearer understanding of how HRM practices across the entire employee life cycle can contribute to long-term organizational success. The results of this study will provide valuable insights for HR practitioners, researchers, and policymakers seeking to design HRM systems that are aligned with the dynamic needs of the workforce and the evolving demands of the global business environment (Delery & Roumpi, 2020; Teece et al., 2016).

## Methodology

This study employs a bibliometric analysis to map and evaluate the development of scientific publications related to life cycle approaches in human resource management (HRM) and their connection to organizational competitiveness. Bibliometric analysis is a recognized and rigorous method that systematically identifies research patterns, intellectual structures, and the thematic evolution within a particular field (Donthu et al., 2021). This approach allows researchers to analyze large datasets objectively, revealing insights on publication performance,

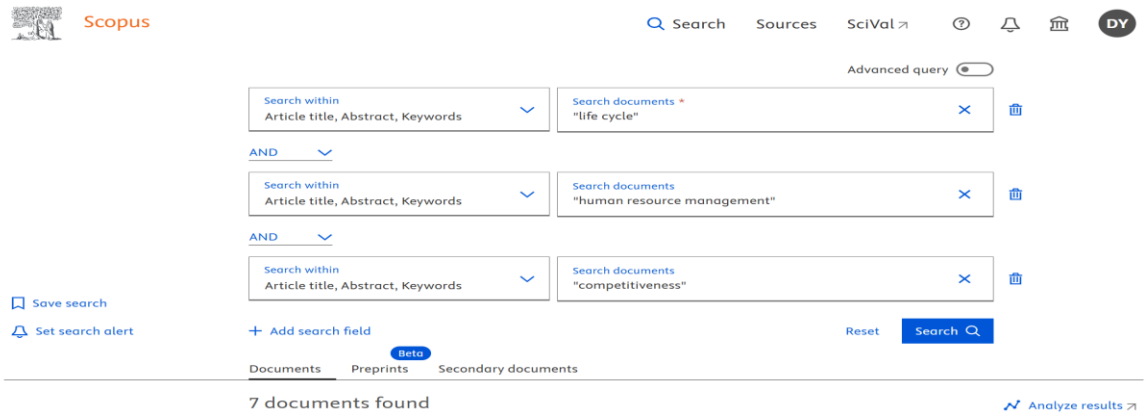
citation influence, co-authorship networks, keyword co-occurrence, and the conceptual linkages embedded within the literature (Aparicio et al., 2019; Aria & Cuccurullo, 2017).

The dataset used in this study was extracted from Scopus, chosen for its broad disciplinary coverage and high indexing standards, which make it a preferred database for bibliometric research in management and social sciences (Martín-Martín et al., 2021). A search was conducted using the following keywords: "life cycle," "human resource management," and "competitiveness," which were combined using Boolean operators. The search was limited to articles that contained these terms in the titles, abstracts, or keywords, ensuring that only relevant publications were included in the analysis. A total of seven documents were identified and included after duplicate removal and relevance screening, in accordance with bibliometric research guidelines (Zupic & Čater, 2015).

Additionally, the study employed VOSviewer software for visualizing bibliometric networks and performing science mapping. VOSviewer enables the creation of co-occurrence networks based on keywords, authorship patterns, and citation relationships, facilitating the identification of thematic clusters within the research domain (Aria & Cuccurullo, 2017). This tool was used to map the relationships between key terms, authors, and institutions, allowing for a more detailed exploration of the interdisciplinary nature of HRM life cycle research. The results from VOSviewer helped identify emerging trends and intellectual connections, contributing to the overall understanding of how HRM life cycle approaches are evolving.

The inclusion criteria for the dataset ensured that only peer-reviewed articles published in English and indexed in Scopus were considered. Exclusion criteria involved removing studies that did not directly address HRM life cycle approaches or those unrelated to organizational competitiveness. By applying these strict inclusion and exclusion criteria, the study was able to ensure the quality and relevance of the dataset, which contributed to a more accurate and meaningful bibliometric analysis. This approach also highlights the importance of using reliable and reputable databases, such as Scopus, to maintain the integrity of the research process.

**Figure 1.** *Scopus search query using combined keywords*



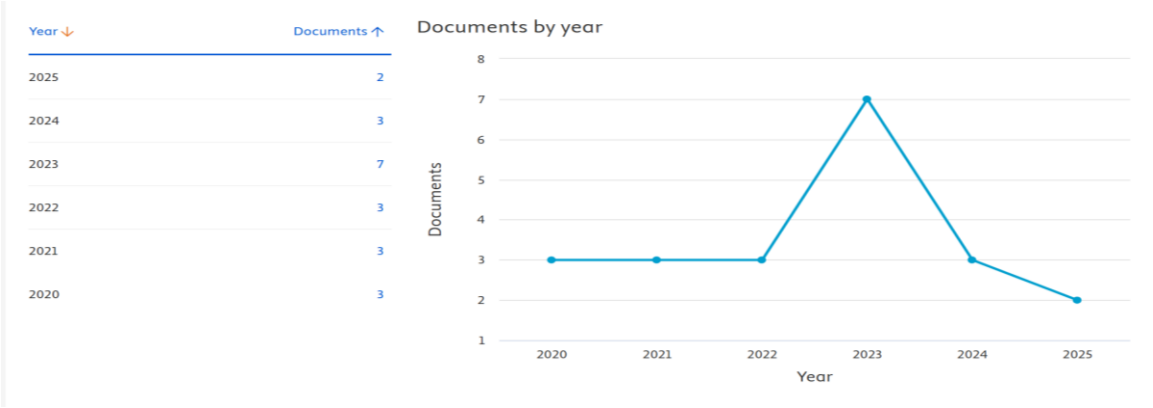

This figure illustrates the search query process used to extract the relevant publications from Scopus. By applying Boolean operators and using the terms "life cycle," "human resource

management," and "competitiveness," the search focused on articles related to the intersection of these topics. This visual represents the search structure that was employed to gather the dataset for analysis.

The bibliometric analysis was conducted using VOSviewer, a software tool designed to visualize bibliometric networks and perform science mapping. VOSviewer is widely used for creating co-occurrence networks based on keywords, authorship patterns, and citation relationships, enabling researchers to identify thematic clusters and intellectual structures within a research domain (Aria & Cuccurullo, 2017). For this study, VOSviewer was used to map keyword co-occurrence and explore the relationships between key terms, authors, and institutions in HRM life cycle research. This process helped to identify emerging themes, key contributors, and the interdisciplinary nature of the field.

To ensure the relevance of the dataset, specific inclusion and exclusion criteria were applied. The inclusion criteria required that the articles be published in peer-reviewed journals or conference proceedings, written in English, and indexed in Scopus. Only publications that directly addressed HRM life cycle approaches and their relationship to organizational competitiveness were considered. Excluded from the analysis were articles that focused on unrelated HRM practices or those that did not explicitly explore the life cycle perspective. Articles from non-peer-reviewed sources, as well as those published in languages other than English, were also excluded to maintain consistency and quality of the dataset.

**Figure 2.** *Trend of publications by year*




This figure shows the distribution of scientific works from 2021 to 2025, based on the selected dataset. It reflects the fluctuating interest in the HRM life cycle and competitiveness, with initial publications starting in 2021, followed by periods of lower output. The trend indicates that scholarly interest in this topic has gained momentum only recently, suggesting that the subject is an emerging area of research.

**Table 1.** *Bibliometric dataset of Scopus-indexed articles on competitive advantage and educational branding*

| No | Article Title | First Author | Year | Journal | DOI | Cited By |
|---|---|---|---|---|---|---|
| 1 | Human resource management in the logistics system of agricultural enterprises | Masa'd, F.M.; Al-Ababneh, H.A.; Al-Maaitah, D.; … | 2025 | Acta Logistica | 10.22306/al.v12i1.591 | 5 |
| 2 | A Case Study Regarding Asset Management at a Brazilian Hospital | Garrido, J.; Vieira, A.C.V.; Farinha, J.T. | 2024 | Mechanisms and Machine Science | 10.1007/978-3-031-49421-5_44 | 0 |
| 3 | Talent Management Performance Assessment in the Construction Industry | Samoilenko, J.; Stukalina, Y. | 2024 | Lecture Notes in Networks and Systems | 10.1007/978-3-031-53598-7_41 | 0 |
| 4 | Expectation vs. Reality: Analyzing the Competencies of Engineering Graduates | Maia, N.; Oran, A.C.; Gadelha, B. | 2023 | International Conference on Enterprise Information Systems | 10.5220/0011853800003467 | 1 |
| 5 | Effectiveness of using visualization technologies... | Urazova, N.G.; Kotelnikov, N.V.; Oparina, T.A.; … | 2021 | IOP Conference Series: Earth and Environmental Science | 10.1088/1755-1315/751/1/012085 | 1 |
| 6 | Application of the CERT Values Measurement Model... | Rodríguez-Ríos, C.Y.; Narváez, A.C.; Jiménez, … | 2021 | Communications in Computer and Information Science | 10.1007/978-3-030-86702-7_34 | 3 |
| 7 | Sustainability in Building Construction: A Comprehensive Review | , | 2021 | Springer Proceedings in Mathematics and Statistics | 10.1007/978-3-030-78570-3_9 | 0 |

Table 1 presents the full metadata of the seven documents included in the bibliometric analysis. This table includes key details such as article titles, first authors, year of publication, journal sources, DOI, and citation counts. The table demonstrates the diversity of publication outlets, with articles published across different types of journals and conference proceedings.

The citation also varies, indicating differences in scholarly impact across studies. This metadata serves as the foundational dataset for subsequent bibliometric mapping, allowing for a more comprehensive analysis of publication trends and intellectual connections within the field.

While bibliometric analysis provides valuable insights into the intellectual landscape of a field, it has limitations. One of the main limitations is that bibliometric methods primarily focus on quantitative aspects of research, such as publication counts, citation analysis, and co-authorship networks. These methods do not capture the full depth of qualitative developments in the field, such as theoretical contributions or empirical findings. Therefore, while bibliometric analysis is effective in mapping research trends and identifying intellectual structures, it cannot fully represent the complexity of the theories and practices discussed within the literature. To address this limitation, future studies could complement bibliometric analysis with qualitative methods, such as content analysis or expert interviews, to gain a deeper understanding of the theoretical and practical implications of HRM life cycle approaches.

The bibliometric methodology used in this study allows for a comprehensive analysis of the development of HRM life cycle research and its connection to organizational competitiveness. By mapping the intellectual structure of the field and identifying key themes and research trends, this study provides valuable insights into the evolution of life cycle-based HRM practices. The findings also highlight the potential for future research in this domain, particularly in terms of integrating life cycle approaches with sustainability and digital transformation and fostering international and cross-industry collaborations.

## Findings

The bibliometric analysis conducted in this study aims to map the intellectual landscape surrounding the intersections of life cycle approaches, human resource management (HRM), and organizational competitiveness. Although the dataset comprises only seven documents, the publication trend reflects a gradual but noticeable rise in scholarly attention toward HRM dynamics and competitiveness, particularly between 2023 and 2025. These findings indicate that the research field is still emerging but are beginning to converge around key themes related to performance improvement, talent development, resource optimization, and organizational sustainability.

### *Publication trends and author contributions*

The publication trend, shown in Figure 2, illustrates the distribution of scientific works from 2021 to 2025. The earliest publications appeared in 2021, with three articles published that year. However, there was a decline in 2022, during which no articles were published. Subsequent years show fluctuating trends, with one publication in 2023, two in 2024, and one in 2025. This fluctuation in publication output suggests that the HRM life cycle and competitiveness are emerging research areas, gaining consistency only recently. The increasing publication frequency from 2023 onward indicates a growing interest in the topic, yet there is still substantial room for exploration.

### *Authorship patterns*

An analysis of authorship patterns reveals that the research field remains decentralized. No single author dominates the publication output, and each author appears only once within the dataset. This even distribution suggests that the field has not yet developed a centralized research community. Contributions come from a diverse set of scholars working independently across various global contexts. Authors such as Masa'd, Al-Ababneh, Garrido, and Samoilenko represent different research pathways, reflecting the international and interdisciplinary nature of HRM life cycle research.

This lack of dominant authors signifies that the field is still in the formative stage, with substantial potential for theoretical consolidation and methodological advancement. It also presents an opportunity for emerging scholars to establish themselves as leading contributors to this growing field.

### *Keyword mapping and thematic clusters*

The keyword co-occurrence network, as visualized in Figure 3, displays four major thematic clusters that emerge from the bibliometric analysis. These clusters represent key themes in HRM life cycle research and its relationship to organizational competitiveness. The interconnectedness among keywords highlights the interdisciplinary nature of the field, merging perspectives from HRM, engineering, sustainability, process improvement, and management science.

### *Cluster 1: HRM efficiency and performance optimization (purple cluster)*

This cluster includes keywords such as "human resources," "efficiency," "digital solutions," "performance management," and "employee turnover." Thematically, it reflects a managerial focus on optimizing HR functions through performance measurement systems and digital technologies. Scholars contributing to this cluster analyze how HRM can enhance organizational competitiveness by improving productivity, retention strategies, and administrative processes. The growing emphasis on digital solutions suggests the increasing use of HR analytics, automation, and digital tools to support strategic decision-making.

### *Cluster 2: Operational, industrial, and process-based themes (green cluster)*

Keywords such as "continuous improvement," "administrative data processing," "industrial equipment," and "asset management" dominate this cluster. These terms indicate that research linking HRM life cycles and competitiveness often occurs within industrial and operational contexts. The focus on process improvement suggests that HRM is studied not in isolation but as part of broader organizational systems, integrating human capital with operational assets. This cluster highlights the importance of HRM in driving organizational process efficiency, workplace innovation, and long-term competitive capability.

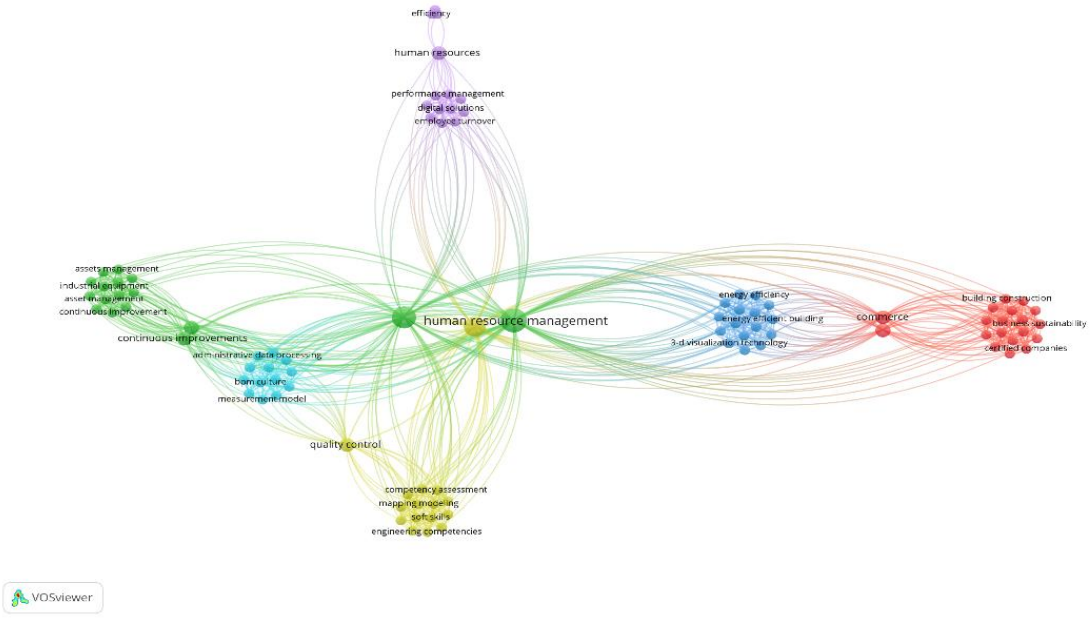
***Cluster 3: Competency development and skill mapping (yellow cluster)***

This cluster emphasizes "competency assessment," "soft skills," "mapping modeling," and "engineering competencies." The focus here is on human capital development, particularly through upskilling and competency evaluation across the employee life cycle. Studies in this area suggest that competitiveness is closely linked to employee skill development and the alignment of competencies with technological and industrial needs. The presence of engineering-related terms suggests that HRM life cycle research often intersects with technical and vocational domains, reflecting global trends toward workforce digitalization and skills-based human capital strategies.

***Cluster 4: Sustainability, construction, and organizational certification (blue & red clusters)***

Keywords like "energy-efficient building," "business sustainability," "certified companies," and "building construction" are prominent in the blue and red clusters. These clusters suggest that HRM life cycle approaches are increasingly integrated with sustainability goals and certification processes, especially in sectors such as construction, engineering, and environmental management. This theme highlights how HRM life cycles influence organizational competitiveness through internal optimization and alignment with global sustainability standards and industry certifications.

**Figure 3.** *Co-occurrence network of keywords using VOSviewer*




This figure presents the co-occurrence network of keywords derived from the bibliometric analysis. It reveals four major thematic clusters: HRM efficiency, performance optimization, competency development, and sustainability.

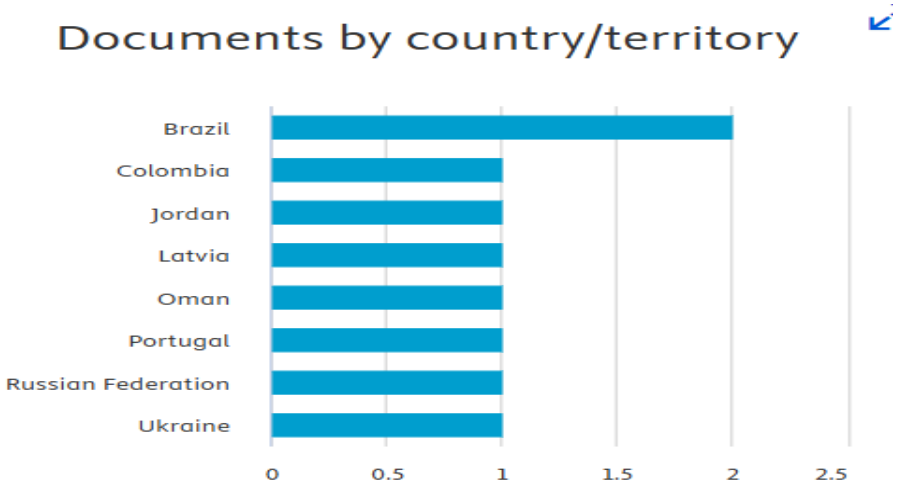
### *Institutional contributions*

An analysis of institutional contributions reveals that each institution contributed exactly one publication to the dataset. The institutions listed—such as Universidade Federal, Universidade da Beira Interior, Irkutskij Gosudarstvennyj University, Instituto Politécnico, Coimbra Polytechnic, and Zarqa University—reflect a wide geographical distribution across Latin America, Eastern Europe, the Middle East, and Western Europe. This global spread underscores the increasing interest in HRM life cycle approaches across diverse economic and cultural contexts. However, the absence of dominant institutions suggests that the research field is still in its developmental stages, with no established research hubs or centers of excellence. This decentralized nature presents an opportunity for future collaboration between institutions from various regions, particularly in interdisciplinary areas such as HRM, engineering, and sustainability.

### *The geographical distribution of research*

The geographical distribution of publications, illustrated in Figure 4, shows that Brazil leads with two publications, followed by contributions from Colombia, Jordan, Latvia, Oman, Portugal, Russia, and Ukraine, each contributing one publication. This distribution highlights the emerging significance of HRM life cycle approaches in developing and transitioning economies, particularly in Latin America and Eastern Europe. There is a lack of representation from traditional HRM powerhouses such as the United States, the United Kingdom, Australia, and Canada. This suggests that HRM life cycle research is not yet fully integrated into the mainstream HRM literature in these countries. The contributions from emerging markets signal a growing recognition of the importance of HRM life cycle approaches in these regions, potentially driven by industrial development, sustainability concerns, and digital transformation.

**Figure 4.** *Documents by country/territory*



This figure shows the geographical distribution of HRM life cycle publications, indicating a significant contribution from emerging economies, with Brazil leading the output.

## Discussion

The findings of this bibliometric analysis provide a comprehensive overview of the emerging research landscape connecting life cycle approaches in human resource management (HRM) to organizational competitiveness. The analysis reveals a research domain characterized by conceptual diversity, methodological fragmentation, and emerging interdisciplinary linkages. This discussion interprets these findings through the lens of contemporary HRM theories and frameworks, focusing on key insights, gaps, and future research directions.

### *Theoretical positioning of life cycle approaches within HRM*

Life cycle approaches conceptualize HRM as a series of interrelated stages—spanning recruitment, onboarding, development, retention, and separation—each contributing to the overall effectiveness and competitiveness of organizations. This perspective aligns well with several dominant theoretical frameworks in HRM, including the resource-based view (RBV), human capital theory, dynamic capabilities theory, and strategic HRM.

The RBV posits that human capital is a source of sustained competitive advantage when it is valuable, rare, inimitable, and well-organized (Barney, 1991). Life cycle approaches build upon this by emphasizing the continuous development and strategic management of human capital across all stages of the employee lifecycle. This integration of HRM functions—from talent acquisition to talent development—enhances organizational flexibility and responsiveness, both essential elements for sustaining competitiveness in dynamic environments (Boon et al., 2019). The RBV suggests that organizations can outperform competitors by managing and deploying human capital effectively over time, and the life cycle perspective supports this view by ensuring that human capital is nurtured and maximized at every stage of the employee's journey within the organization.

Moreover, the dynamic capabilities framework (Teece et al., 2016) emphasizes the need to improve organizations' abilities to adapt and reconfigure resources in response to environmental changes. The life cycle perspective complements this framework by ensuring that HRM practices remain flexible and adaptive, facilitating ongoing improvements in employee performance and aligning organizational capabilities with evolving market demands. As organizations face increasingly unpredictable market conditions, HRM must continuously align its processes with shifting business strategies to sustain long-term competitiveness. This adaptability is critical, as the changing nature of work and workforce dynamics requires HRM systems to adjust and respond to new challenges, such as hybrid work models and digital transformation.

Despite these strong theoretical alignments, the current body of research lacks a cohesive and widely accepted framework that integrates the life cycle approach within HRM theory. The absence of dominant authors and institutions within this field, as observed in the bibliometric analysis, indicates that the conceptual and empirical consolidation of HRM life

cycle research remains in its early stages. This fragmentation represents both a challenge and an opportunity. It emphasizes that there must be more rigorous theoretical development and empirical testing to create unified models that connect HRM practices to long-term organizational competitiveness (Lepak & Snell, 2020; Sanders & Frenkel, 2021). Bridging this gap will require scholars to move beyond isolated studies and create comprehensive models that explicitly link life cycle stages to key organizational outcomes, such as innovation, agility, and sustained growth.

### *Interdisciplinary directions and multi-domain integration*

A prominent finding from the keyword co-occurrence analysis is the interdisciplinary nature of HRM life cycle research. As demonstrated in Figure 3, HRM life cycle research spans several domains, including engineering, operations management, sustainability, and digital transformation. This interdisciplinarity is particularly evident in the integration of technical terms such as "engineering competencies," "continuous improvement," "industrial equipment," and "3D visualization technologies" in the keyword clusters. These findings suggest that HRM life cycle research is not confined to traditional HR disciplines but extends into applied fields where HR practices intersect with technical and operational processes.

Such interdisciplinary linkages align with current debates in HRM, where scholars argue that modern organizations increasingly require HR systems that integrate human capital with technological infrastructure and operational workflows (Bondarouk & Brewster, 2016). The use of digital HR tools, HR analytics, and automation systems is transforming each stage of the employee life cycle. This shift requires HRM to be reactive and proactive in leveraging technological advancements to enhance workforce performance and organizational competitiveness (Marler & Boudreau, 2017). The future of HRM lies in its ability to act as a strategic partner, managing talent and aligning it with technological innovation and operational efficiency.

The growing intersection of sustainability and HRM life cycle research is another notable theme. Keywords related to sustainability, such as "energy-efficient building," "business sustainability," and "certified companies," reflect a broader shift towards incorporating environmental, social, and governance (ESG) factors into HRM practices. Sustainable HRM, which balances economic, ecological, and social goals, has become an increasingly relevant framework in HRM literature (Duvnjak & Kohont, 2021; Ehnert et al., 2016). Life cycle approaches in HRM can play a critical role in supporting organizations' sustainability goals by ensuring that workforce practices align with long-term environmental and social objectives, thus contributing to both organizational competitiveness and corporate responsibility (Jackson et al., 2014). As sustainability becomes an integral part of corporate strategy, HRM will need to incorporate sustainability-driven initiatives, ensuring that talent management aligns with environmental goals, promoting responsible resource usage, and fostering a workforce that is engaged in achieving sustainable outcomes.

Moreover, this interdisciplinary approach in HRM life cycle research signals the increasing need for a holistic approach to talent management that integrates sustainability goals. Sustainability in HRM goes beyond environmental initiatives to encompass social and ethical considerations, such as ensuring diversity and inclusivity in talent management practices. By

embracing interdisciplinary strategies, HRM can contribute to broader organizational goals, such as corporate social responsibility (CSR) and long-term sustainability objectives, which are critical in today's business landscape. This will help organizations stay ahead of competitors while contributing to social welfare and environmental protection.

***Competency development and performance optimization***

The thematic clusters reveal that competency development and performance optimization are central concerns in HRM life cycle research. As shown in Figure 3, the prominent keywords "competency assessment," "soft skills," and "performance management" highlight the strategic importance of developing employee capabilities across the entire life cycle. These findings resonate with human capital theory, which emphasizes the value of employee skills as key drivers of organizational success (Ployhart & Moliterno, 2011).

In the context of life cycle approaches, competency development extends beyond traditional training and development. It includes the alignment of individual competencies with evolving organizational needs, technological advances, and changing market conditions. The integration of performance management systems throughout the employee life cycle ensures that organizations can effectively assess, develop, and retain high-performing employees, which directly contributes to organizational competitiveness (Pfeffer, 1994). The growing emphasis on digital competencies and the integration of HR analytics tools further reinforces the role of HRM in driving organizational performance. As organizations adapt to digital and technological changes, HRM practices must be flexible enough to support the acquisition of new competencies while ensuring the retention of critical skills that sustain organizational innovation.

The analysis closely links the concept of performance optimization to organizational agility. HRM systems that adapt to changing external conditions—such as market fluctuations, technological disruptions, and employee expectations—are essential for maintaining competitive advantage. The presence of keywords like "digital solutions" and "employee turnover" suggests that HRM systems must continuously evolve to improve organizational efficiency, employee engagement, and retention. Recent studies confirm that organizations leveraging performance optimization frameworks are more likely to thrive in uncertain business environments (Boudreau & Lawler, 2017). HRM's role in optimizing performance will be increasingly tied to its ability to harness real-time data and predictive analytics to anticipate workforce needs and organizational challenges.

Additionally, performance optimization within the HRM life cycle can enhance organizational agility, which is crucial in today's fast-paced and ever-changing business environment. With HR systems evolving rapidly due to advancements in artificial intelligence (AI) and big data analytics, organizations can streamline their HR functions, predict trends, and optimize performance outcomes. These advancements offer HR departments the opportunity to be more strategic and less reactive, improving their contribution to business success and boosting long-term sustainability.

### *Digital transformation and its influence on HRM life cycles*

Digital transformation is a major force reshaping HRM practices, as evidenced by the prominence of digital HRM tools and keywords related to data processing, HR analytics, and digital solutions. The findings underscore the growing role of technology in optimizing each stage of the employee life cycle. Digital tools such as AI-driven recruitment platforms, performance monitoring systems, and virtual learning environments are transforming how organizations manage human capital (Strohmeier, 2020). These tools enhance the efficiency of HRM processes AND enable data-driven decision-making that improves organizational performance.

Digital HRM has the potential to optimize the entire employee life cycle by providing real-time insights into employee performance, engagement, and development needs. This is especially important in a business world that changes quickly, where being able to adapt quickly is key to staying competitive. As organizations increasingly rely on digital solutions, HRM systems must integrate technology seamlessly to support both operational and strategic goals. The convergence of HRM with emerging technologies such as AI, machine learning, and big data analytics offers organizations new ways to enhance their workforce capabilities, streamline HR functions, and make better-informed decisions that drive competitiveness (Tambe et al., 2019).

Moreover, the influence of digital transformation on HRM life cycles is undeniable, as the integration of digital tools into every aspect of the employee journey—from recruitment to retirement—allows organizations to optimize employee experience. In doing so, digital HRM systems can drive operational efficiency and strategic agility, enabling organizations to adapt quickly to changing market conditions and capitalize on new opportunities. Embracing digital transformation can ultimately lead to enhanced organizational competitiveness by fostering more innovative, data-driven, and adaptive HR practices.

### *Sustainability in HRM's life cycle approaches*

The increasing presence of sustainability-related terms within HRM life cycle research is noteworthy. "Sustainability," "business sustainability," and "certified companies" indicate a growing alignment between HRM practices and sustainability objectives. Sustainable HRM is a growing field of study that looks at how HR practices can help the environment and society while also making businesses more competitive (Aust et al., 2020). Life cycle approaches, which span the entire employee journey from recruitment to separation, provide an invaluable starting point for integrating sustainability into HRM practices.

Incorporating sustainability into HRM life cycles involves aligning workforce development with environmental goals, ensuring that employee practices are efficient and responsible. As organizations face increasing pressure to meet sustainability targets, HRM systems will need to play a key role in driving workforce initiatives that support long-term ecological and social objectives, further strengthening the connection between HRM and organizational competitiveness (Jackson et al., 2014). Sustainability in HRM will become more critical as organizations seek to improve their corporate social responsibility (CSR) profiles

and reduce their environmental footprint, ensuring that workforce practices contribute to both short-term operational goals and long-term sustainable growth.

Furthermore, sustainability in HRM is not limited to environmental concerns alone. It also involves fostering social sustainability by creating inclusive workplaces, promoting diversity, and ensuring fair labor practices. This broader definition of sustainability within HRM emphasizes the long-term value of human capital and reinforces the idea that workforce practices should contribute to profitability and to the overall well-being of society. As organizations increasingly focus on sustainable development goals, HRM will play a key role in embedding sustainability into organizational culture, ensuring that sustainability objectives are embedded in HR practices at every stage of the employee life cycle.

### *Fragmentation and gaps in the current research landscape*

Despite its emerging nature, the field of HRM life cycle research remains fragmented. The absence of prominent authors and institutions indicates that the research domain has not yet formed a cohesive body of knowledge. This fragmentation presents both a challenge and an opportunity. On the one hand, it indicates that the field is in its early stages, and more research is needed to develop integrated models that connect HRM life cycle practices to organizational competitiveness. On the other hand, this fragmentation offers an open landscape for innovative theoretical and empirical contributions (Lepak & Snell, 2020).

Theoretical development in HRM life cycle research is still needed. Scholars must work towards integrating life cycle perspectives with broader strategic HRM frameworks to create cohesive, theoretically grounded models. This necessitates interdisciplinary collaboration and an emphasis on empirical research that examines the impact of HRM life cycle practices on organizational success across various sectors and regions (Jiang & Messersmith, 2018). Further empirical research is necessary to establish the impact of HRM life cycle approaches on organizational performance, particularly in sectors facing rapid technological advancements and workforce transformations.

Moreover, the lack of a dominant framework or comprehensive theoretical model leaves a gap in understanding how different stages of the employee life cycle contribute to organizational competitiveness in a systematic way. This gap provides opportunities for researchers to explore how life cycle models can be integrated with modern HRM technologies, such as HR analytics and artificial intelligence, to improve decision-making and drive performance. Future research should aim at bridging these gaps, developing more robust and integrated life cycle models, and exploring the dynamic role of HRM practices in fostering organizational sustainability and competitive advantage.

## Conclusion

This study provides a comprehensive bibliometric analysis of the emerging field of human resource management (HRM) life cycle approaches and their impact on organizational competitiveness. The findings reveal a dynamic and interdisciplinary research area characterized by emerging themes related to performance optimization, competency development, sustainability, and digital transformation. While the field is still in its formative

stages, the increasing volume of publications recently indicates growing interest in understanding how HRM practices, throughout the entire employee life cycle, contribute to long-term organizational success.

The analysis highlights that HRM life cycle research is evolving and is increasingly integrating with other domains such as sustainability, digital transformation, and engineering. The growing emphasis on digital tools, sustainability, and competency management within the employee life cycle suggests that HRM practices must adapt to the rapidly changing business environment to maintain organizational competitiveness. However, the absence of a cohesive theoretical framework and the decentralization of key authors and institutions in the field indicate the need for more focused research and the development of integrated models.

Despite the progress made, the research landscape remains fragmented, and several gaps need to be addressed. Future studies should work towards the consolidation of HRM life cycle models, incorporating new dimensions such as sustainability and digital innovation. There is also a need for cross-sectoral and interdisciplinary research to explore how HRM practices across various industries contribute to competitive advantage in different geographical and economic contexts.

This study contributes to the growing body of knowledge on HRM life cycle approaches and provides advantageous perspectives for both researchers and practitioners. It emphasizes the necessity of formulating comprehensive HRM strategies that encompass the entire employee lifecycle, thereby preparing organizations to confront the challenges of a swiftly changing business environment. As HRM practices increasingly align with organizational strategies, additional empirical research is required to investigate the practical ramifications of HRM life cycle models in bolstering organizational competitiveness within a globalized, digital, and sustainable economy.

## Disclosure Statement

No potential conflict of interest was reported by the authors.

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