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Assessing the Role of Digitization in Human Resource Practices: A Bibliometric Analysis

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Abstract

Purpose - The main objective of this study is to conduct a bibliometric analysis to assess the existing body of research on the intersection of Digitization in Human Resource Practices. By systematically reviewing the scientific literature, this study seeks to determine whether sufficient research has been conducted to elucidate the role of digitization in human resource practices.

Method: This study employed a systematic literature review (SLR) methodology guided by the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) framework. Data were collected from the Scopus and Google Scholar databases, focusing on publications related to Digitization and Human Resource Practices. Bibliometric analysis was conducted using VOS viewer and RStudio's Biblioshiny package to visualize research trends, key contributors, and topic areas within the field.

Result –. The primary data sources for this study are the Scopus database and Google Scholar, which yielded 274 relevant studies published between 2002 and 2025 through the keyword search "digitization AND human AND resource AND practice." Following the application of several filters, 39 studies were identified as directly relevant to this research. The findings indicate a growing interest in the subject, particularly digitalization, and underscore a significant opportunity for conducting empirical research in this domain.

Contribution – This study employs a systematic literature review and bibliometric analysis to examine research on digitization in human resource practice. Using the PRISMA framework and analyzing data with the VOS viewer and RStudio's Biblioshiny, it identifies key trends, influential contributors, and thematic areas. The findings reveal research gaps and provide a foundation for future studies, advancing the understanding of the intersection between digitization and human resource practices.

Keywords: Digitization, Human Resource Practices, Human Resource Management; artificial intelligence.

1. Introduction

Digitization has transformed human resource practices, turning traditional processes into streamlined, data-driven operations. Digital technology allows HR departments to automate tasks, enhance recruitment, and improve employee engagement and development. Cloud-based HR management systems provide real-time data access, enabling informed decision-making and strategic planning. Digital platforms support remote work, promoting flexibility and work-life balance. Additionally, AI and machine learning predict employee performance, identify skill gaps, and personalize training. This transformation boosts operational efficiency, allowing HR professionals to focus on strategic initiatives, enhancing organizational performance and employee satisfaction. This study identifies research trends in digitization's role in HR practices through bibliometric analysis, aiming to determine the scope and identify future research gaps.

As the global community contends with the impacts of the Fourth Industrial Revolution, marked by the incorporation of digital technologies into numerous facets of work, it becomes crucial to examine how these transformations influence employees, organizations' adherence to laws and regulations, and the overall skill level within the workforce (Pea-Assounga & Bindel Sibassaha, 2024). The swift integration of digital technologies into HR practices has transformed how businesses manage employees (Stone et al., 2015). These technological advancements include a variety of tools and platforms such as Human Resource Information Systems (HRIS), Artificial Intelligence (AI), and data analytics. They enhance HR functions by automating routine tasks, streamlining processes, and providing valuable insights for informed decision making (Alhassany & Faisal, 2018) (Attié & Meyer-Waarden, 2022).

The rapid digitalization of modern business operations, coupled with the swift expansion of markets, has fostered a more competitive business landscape. This heightened competition has prompted companies to raise their expectations regarding employee qualifications and quality of work performed. Additionally, this transformation has made traditional human resource management methods insufficient, leading to fur digitalization within the human resources sector (Baykal, 2019).

Digitization involves converting information into a digital format for easy processing, storage, and transmission by computers and digital devices. It has transformed industries by enhancing information efficiency, accuracy, and accessibility. Human Resource (HR) practices include managing people within an organization, such as recruitment, training, performance management, and employee relationships. Traditionally, these practices were labor-intensive and paper-based, leading to errors and inefficiency. Digitization has significantly transformed HR practices. The integration of digital technologies, like Human Resource Information Systems (HRIS), applicant tracking systems, and e-learning platforms, has streamlined processes, improved data accuracy, and enabled better decision-making. This synergy between digitization and HR practices fosters a more agile and responsive workforce, contributing to organizational success and competitiveness.

The effects of digitalization on HRM extend beyond benefits and opportunities, as it also introduces several challenges, including data security threats, skill shortages, and resistance to change. Data security and privacy concerns are particularly important in digital HRM applications. Handling and storing employee information in digital formats increases the risk of data misuse and unauthorized access. Consequently, organizations must implement strategies to mitigate these risks when adopting digital HRM practices (Çoban Kumbalı, 2024). This study offers significant theoretical and practical insights by thoroughly examining the intersection of digitalization and HRM, along with the current literature in this domain. A bibliometric analysis was conducted on quantitative data from publications in this field to identify research trends and central themes. Furthermore, the effects of digitalization on HRM and prominent research topics in this area will be investigated in greater depth through a qualitative content analysis. In this regard, this study aims to contribute to digital HRM research and serve as a guide for future research.

2. Literature review

2.1 What is Digitalization, Technology and Digital Transformation

Digital transformation is the shift organizations undergo by integrating digital technologies into operations to improve efficiency, enhance customer experience, and drive innovation. This involves adopting new business models, reimagining processes, and fostering a digital-first culture. Embracing digital transformation helps companies remain competitive, adapt to changing market demands, and unlock growth opportunities. Digital applications are the tools and software that facilitate this transformation, encompassing functionalities like data analytics, cloud computing, artificial intelligence, and IoT technologies. They enable task automation, valuable data insights, and seamless interactions with customers and stakeholders. Together, digital transformation and applications empower businesses to thrive in the digital age, driving efficiency, agility, and innovation. Digital tools enhance adaptability and enable quicker task completion. Digital HR tools help reduce costs by minimizing paper usage and optimizing processes. Additionally, they offer the benefit of saving time. Likewise, handling routine activities such as payrolling, leave management, and reporting in digital settings conserves both time and resources (Makalesi & Alkahlout, 2024).

2.2 What are Human resource practices and how does digitization affect Human Resource practices in different industries?

Human Resource (HR) practices involve activities and strategies for managing an organization's workforce. These include recruitment, selection, training and development, performance management, compensation and benefits, employee relations, and compliance with labor laws. Recruitment and selection attract and hire talent to meet organizational needs. Training and development enhance employees' skills and knowledge for productivity and career growth. Performance management sets goals, provides feedback, and evaluates performance to align with objectives. Compensation and benefits design and administer fair salary structures, incentives, and packages. Employee relations foster a positive work environment, resolve conflicts, and promote wellbeing. HR practices ensure compliance with labor laws to maintain ethical and legal standards. Overall, HR practices are crucial in building a motivated, skilled, and engaged workforce, contributing to an organization's success.

The term e-HRM refers to the digital transformation of human resource practices encompassing ways technology is integrated with HR management. E-HRM involves implementing HR strategies, policies, and practices within organizations by utilizing web-based technology channels. This includes computer hardware, software, and electronic networks to perform HRM tasks. E-HRM implementation has resulted in cost reductions, increased efficiency, enhanced agility, fulfilment of strategic objectives, improved client services, and greater accuracy in managing human resources. Additionally, it allows for more personalized employee management. Consequently, it is essential to understand the progress of the digital transformation process in HRM departments (Escribá-Carda et al., 2024).

To stay competitive in the modern economy, organizations must adapt to trends and transform their business strategies. A crucial yet rarely discussed dimension in digital transformation and business strategies is the human workforce. Often deemed the most valuable asset, the human workforce is not as intensely discussed in literature as the technological foundation. To remain competitive, organizations must adjust to trends and modify strategies. A significant overlooked aspect in discussions on digital transformation is the human workforce. Although frequently regarded as an organization's most valuable asset, the role of the human workforce in contemporary digital business models is not as extensively covered in the literature as the technological aspects that drive these changes (Agarwal et al., 2022) (Huber, 2022).

3. Method

This study employed a scientific methodology to identify research findings using the Systematic Literature Review (SLR) approach and the Preferred Reporting Items for Systematic Reviews and Meta-Analysis (PRISMA) technique (Page et al., 2021). The author systematically investigated the relationship between digitalization and human resource practices. The SLR approach analyzed current publication trends and integrated various studies without timeframe restrictions, focusing on digitalization's current impact on human resource practices. A literature search was conducted in the Scopus database using the keywords “digitization AND hr AND practice” and TITLE-ABS-KEY (digitization AND human AND resource AND practice) to find relevant articles. Additionally, a manual search was performed on Google Scholar with the keywords “Role of digitization in Human resource practices.” Given the extensive scope of digitalization and human resource practices, inclusion criteria were applied to refine the data and ensure pertinent literature inclusion.

A search using Scopus and Google Scholar databases yielded 274 published articles. The PRISMA Chart illustrates the article selection flowchart. After eliminating 33 duplicates, 241 records were retained. Applying restrictions and excluding 31 books and book chapters left 210 articles for screening. Six articles could not be retrieved due to unavailable full text. Of the remaining 204 articles, 165 were found irrelevant to our study. Ultimately, 39 articles were thoroughly reviewed for inclusion.

Our goal is to pinpoint and examine the prevailing publication trends and robustness of research in this field, understanding future potential and research gaps to enhance academic collections. We performed systematic literature reviews (SLRs) using the PRISMA chart to identify relevant, high-quality articles. We conducted a bibliometric analysis using CSV files from the Scopus database, examined with the R Studio (Biblioshiny) tool. This analysis offers insights including yearly scientific output, authors' productivity, most cited countries, relevant words, a three-field plot graph, trending topics, a word cloud, and word frequency over time.

This systematic literature review was conducted using the PRISMA technique, as shown in table below:

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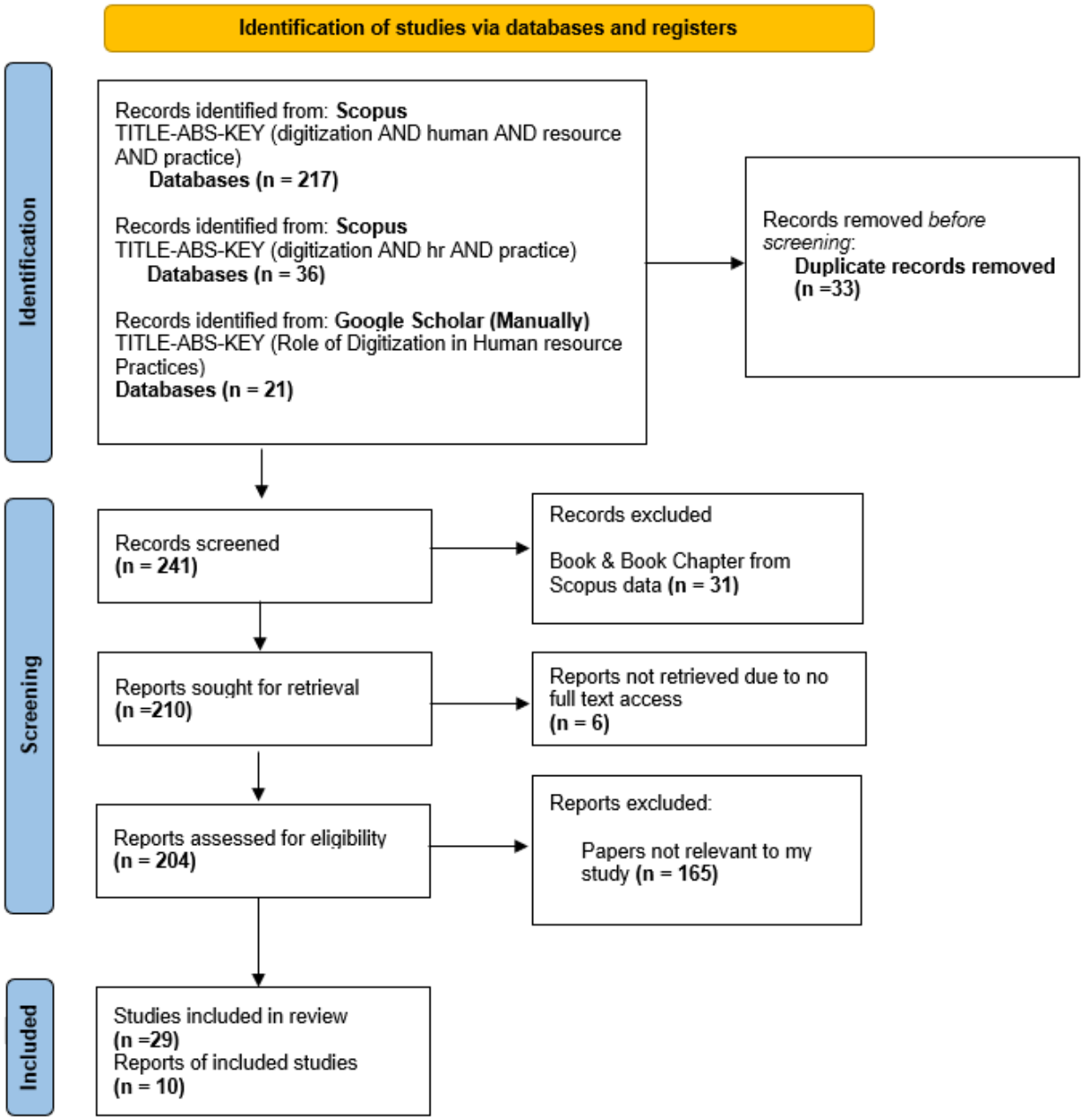

We also conducted a bibliometric analysis using RIS files for the Google database, which was analyzed using VOS Viewer as RIS files are not supported in R-studio. The word cloud and density charts were populated for Google Scholar database search articles. A word cloud was also analyzed in VOS Viewer using the Scopus database.

4. Findings

4.1 Annual Scientific Production

A comprehensive search was conducted in the Scopus database using the keywords TITLE-ABS-KEY digitization AND human AND resource AND practice, resulting in 217 entries, including articles, book chapters, and conference papers. During data analysis in Biblioshiny, filters were applied, selecting publication years from 2014 to 2025 and excluding book chapters and books. Consequently, 177 entries were analyzed, and findings are presented in this study.

The analysis revealed that publications were notably low from 2014 to 2020, followed by a significant increase from 2020 to 2025. As illustrated in Graph 1, there were fewer than 10 publications from 2014 to 2016. The number of publications

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increased from 2018 to 2022, with approximately 30 publications related to the topic. The report indicates a substantial surge in publications in 2023, followed by a sharp decline in late 2024.

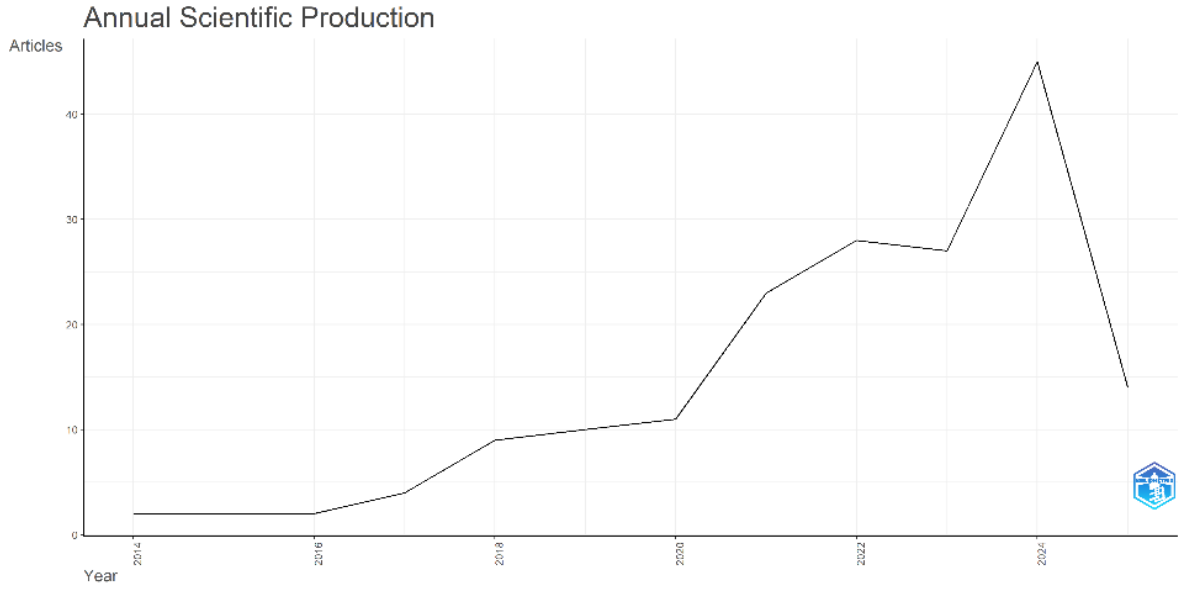

Figure 1: Annual Scientific production

Studies on digitization and human resource practices span various industries, but analysis revealed they were mostly found in health and medical sectors. Additionally, studies in artificial intelligence, sustainability, and digital health underscore the interdisciplinary nature of the study.

4.2 Authors Production Over Time

Authors' production over time has increased, as shown in the graph below, as during the period of 2014 to 2018, only one author, Frey f, has a huge amount of stagnant production over time, and only after 2018 have there been other authors who have done the study in this particular area.

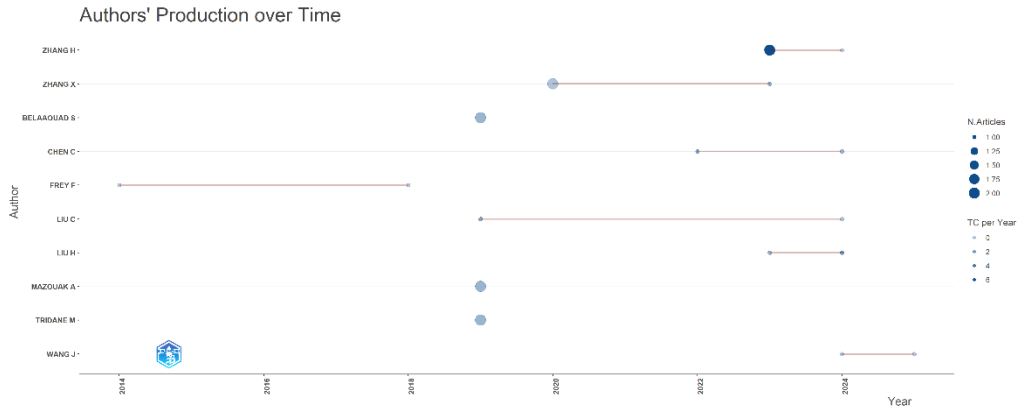

Figure 2: Authors' Production over Time

4.3 Average Citation per year

The graphs below show that most of the average citations per year were during the tie period of 2018 to 2020, and after 2020, the graph declined continuously, which depicts a demand for quality and empirical research in this study.

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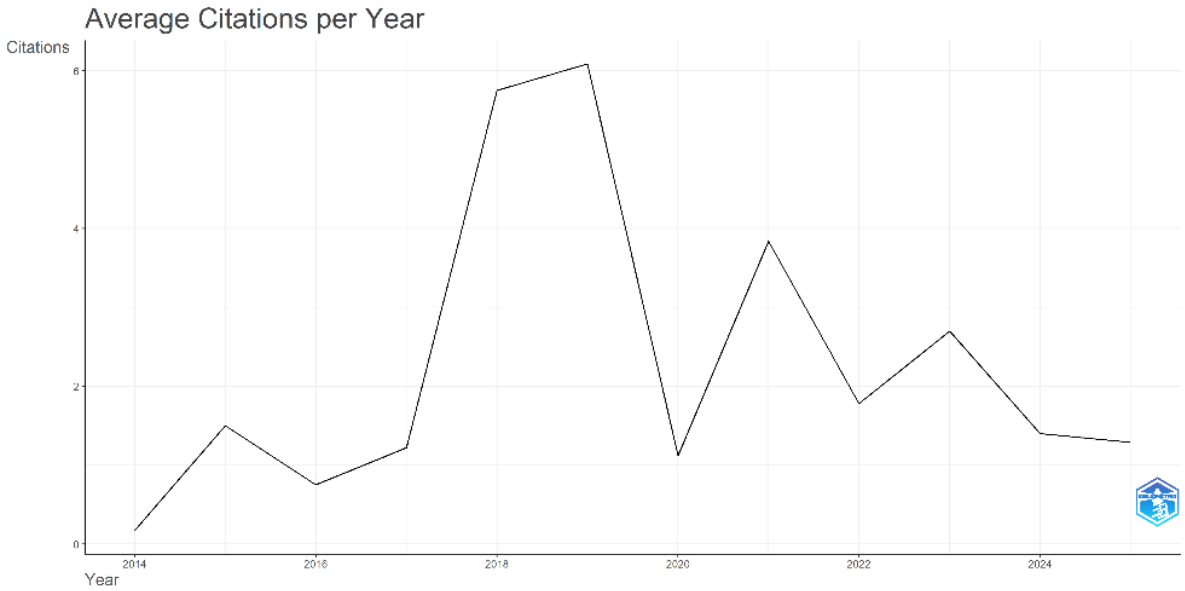

Figure 3: Average Citation Per year

4.4 Most Cited Countries

The graph below illustrates the countries with the highest citation counts in the specified study, with India ranked fourth, following China, Germany, and the leading United States. India's position as fourth indicates a substantial contribution to the study, reflecting the high quality of work conducted in India, which is a positive indicator of its academic impact.

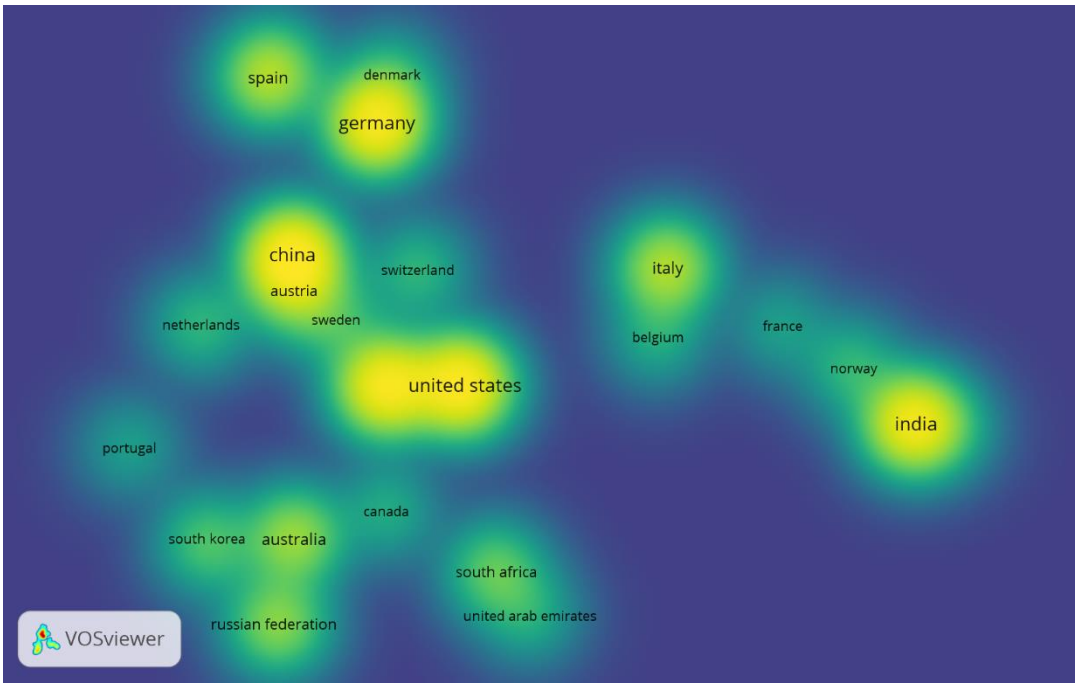

Figure 4: Most Cited countries

4.5 Most Relevant Words

The graph below indicates that the term "digitization" was the most relevant and frequently searched, followed by "human" and "human resource management." Specifically, approximately 52 studies were identified using the keywords "digitization" and "humans." In contrast, 32 studies focused on "human resource management." The term "digitization" and "human"

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appeared 52 times across a total of 177 studies, while "human resource management" was mentioned 32 times within the same corpus of 177 studies.

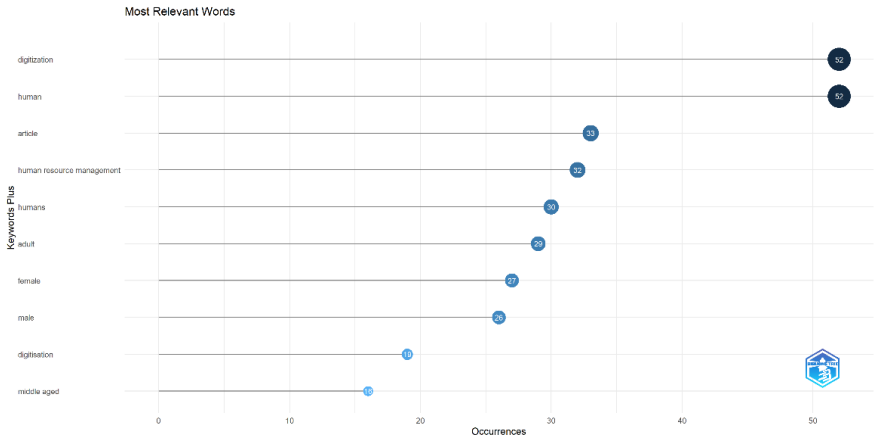

Figure 5: Most relevant Words

4.6 Three field Plot

The analysis also included a three-field plot, which established connections between the keywords, titles, and authors of the studies. The leftmost section lists the keywords, the central section represents the titles, and the rightmost section denotes the authors of the studies. The three-field plots indicate that a significant portion of the research has focused on digitization in relation to various domains, such as management and health.

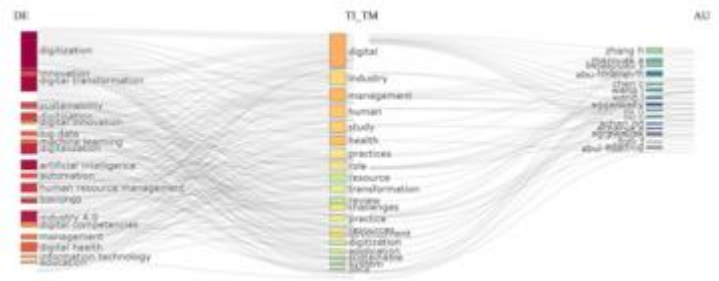

Figure 6: Three Field Plot

4.7 Trend Topics

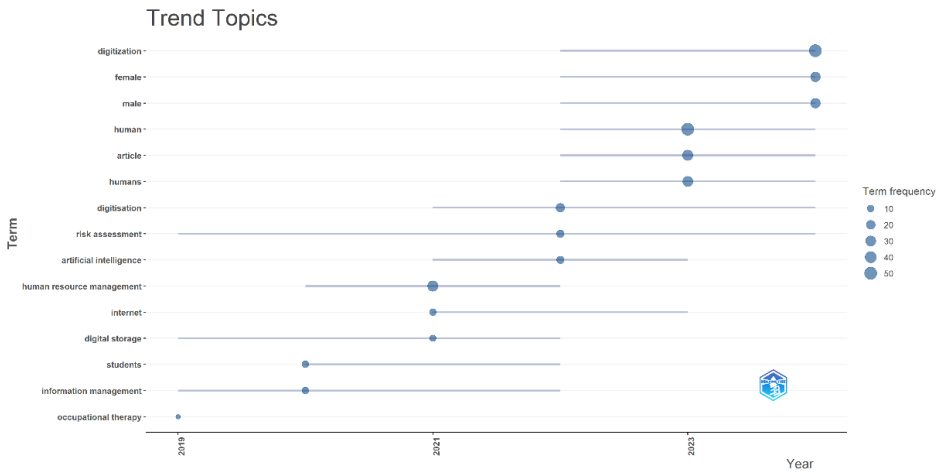

Figure 7: Trend Topics

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The chart above illustrates the trending topics associated with the searched keyword, with "digitization" and "humans" emerging as the most prominent keywords, followed by "females" and "males." Although "humans" was the second most trending term, it appeared in various contexts. The specific keywords related to "human resource practices" were not identified among the trending topics; instead, "human resource management" was noted, with a term frequency of 30, as depicted in the chart.

4.8 Word Cloud

The diagram presented below is a word cloud derived from Scopus data analyzed using VOS viewer, illustrating that the most frequently utilized terms between 2019 and 2023 are "Digitization," "Human," "Human Resource Management," and "Artificial Intelligence." For this analysis, a co-occurrence analysis was conducted, with the unit of analysis designated as all keywords. A minimum threshold of three occurrences per keyword was established, resulting in 224 keywords meeting this criterion. Among these, "digitization" was identified as the most frequently occurring keyword, appearing 89 times, followed by "human" with 54 occurrences. Within the top five keywords, "human" appeared twice, ranking second with 54 occurrences and fourth with 33 occurrences. Figure 8 demonstrates that each keyword exhibits a high degree of correlation with others, with "digitization" being linked to "artificial intelligence," "human," "human resource management," "articles," and "adults." Figures 9 and 10 provide a detailed depiction of the interconnections among keywords, particularly focusing on "digitization" and "human resource management."

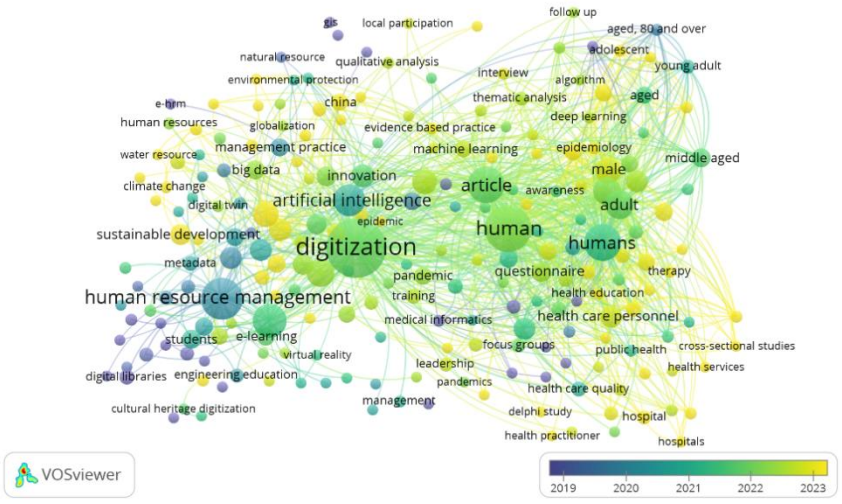

Figure 8: Word Cloud 1 (Scopus database)

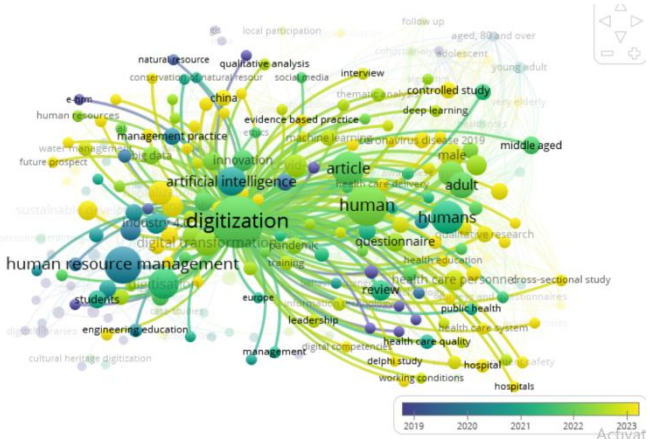

Figure 9: Word cloud 2

Figure 10: Word cloud 3

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A word cloud, analyzed using R Studio (biblioshiny), indicates that the most frequently used terms are "digitization," "human," "human resource management," "male," "female," and "article." The terms "digitization" and "human" appear with a frequency of 52, followed by "human resource management" with a frequency of 32. Figure 10 presents graphical data from a manual search conducted via Google Scholar, illustrating the direct association between digitization and human resources. This dataset comprises 22 downloaded research papers, which collectively yielded 14 interrelated keywords.

Figure 9: Word cloud 4 (Scopus database from Biblioshiny)

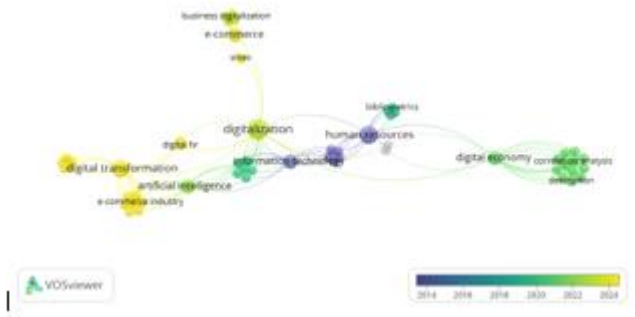

Figure 10: Word Cloud 5 (Google scholar database)

4.9 Words Frequency Over Time

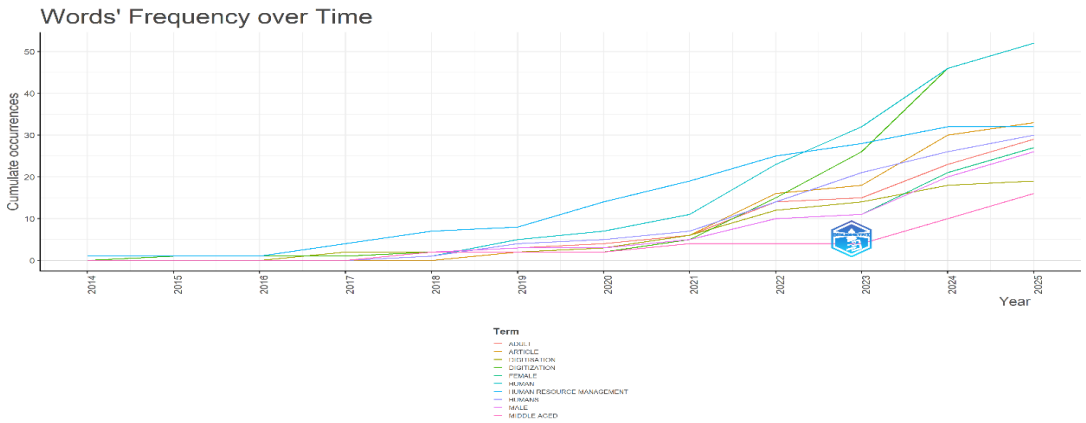

Figure 11: Words Frequency over Time

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4.10 Co-authorship of Authors

In Vos Viewer, the analysis type selected was co-authorship, with authors designated as the unit of analysis. The threshold for the minimum number of documents per author was set to one, resulting in the identification of 844 authors. Among these, 18 authors cited 88, as depicted in Figure 12. The largest cluster of interconnected items comprised these 18 authors.

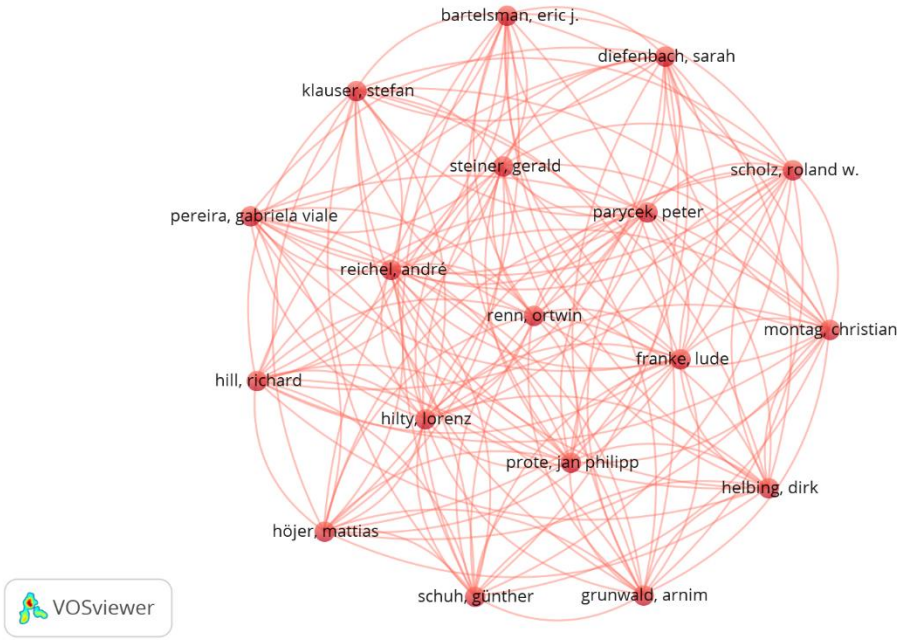

Figure 12: Co-authorship of authors

5. Conclusion

A bibliometric analysis was conducted to investigate the prevailing publication trends, depth, and robustness of research within the domain of digitization and human resource practices. This analysis employed R-Studio and Vos Viewer as analytical tools, alongside the PRISMA technique for a Structured Literature Review (SLR). Initially, the analysis was executed using biblioshiny, revealing that there exists a substantial body of literature on digitization and human resource management as separate entities. This is evidenced by keyword graphs indicating that "digitization" and "human resource management" are frequently utilized terms. However, human resource management is a broad concept, and the study aimed to explore the interconnection between digitization and human resource practices, a linkage not identified in a singular study. Publications that integrate human resource management with digitization are scarce. Nonetheless, upon conducting an SLR and reviewing 39 articles shortlisted via the PRISMA technique, it was observed that empirical studies examining the impact of digitization or digital applications on human resource practices are limited.

The analysis indicates a significant opportunity for further research in this area, where both qualitative and quantitative studies could be conducted to explore the integration of digitization with human resource practices. Such research would contribute to the understanding of practical implications, benefits, drawbacks, and challenges associated with the use of digitization in human resource practices. These studies would not only enrich academic literature but also provide valuable insights for various industries within the HRM sector, particularly those contemplating the integration of digitization into their HRM processes but remain uncertain about its implementation.

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