Disruptive Technologies Transforming HR Service Delivery in the IT Industry- A Bibliometric Analysis

LRK Krishnan, Murali Ramachandran, Swetha Babu &V Mahalakshmi

This study explores the current use of technologies in HR practices through scholarly articles in the Scopus database. It explores how advanced tools like artificial intelligence, machine learning, augmented reality, and virtual reality can be used in recruitment, onboarding, training and development, performance management, compensation, employee engagement, and well-being. The bibliometric analysis provides an overview of disruptive technologies in HR service delivery within the IT industry. By examining 119 research articles published between 2007 and 2024, the study identifies emerging trends, key themes, and research gaps using the PRISMA framework. Artificial intelligence emerges as a central theme in the study.

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Introduction

Technological advancements have significantly accelerated the fast-changing field of human resources within the information technology sector. Nowadays, the development of new technologies influences nearly every part of our lives. This research mainly explores how these innovative developments impact human resource practices through a bibliometric analysis. Effective human-computer interaction is a component of computing, and significant technological advancements have been made in this field. Businesses are increasingly adopting remote work and seeking new ways to manage geographic distances. One approach is the use of artificial intelligence, machine learning, augmented reality, and virtual reality, which have revolutionized HR support systems. In recent years, compa-

nies have focused more on training employees in techno-functional skills like cloud computing, blockchain, artificial intelligence, security, etc. The IT industry has gone through a paradigm shift in recent years, which has made conventional human resources strategies outdated. The need for qualified workers continues, but the widespread adoption of remote work models has fundamentally changed the dynamics of hiring, onboarding, training, and employee engagement.

A cloud-based human resource management system is an open-source platform that provides employee self-service, personal information management, benefits administration, pay management, and leave tracking. In HR, to tackle complex decision-making challenges involving large datasets across various scenarios, cluster analysis can be integrated with the Best-Worst Method to enhance multiple criteria decision analysis within a structured framework.(Ijadi Maghsoodi et al., 2020).Customers are searching for innovative solutions that address the ever-present issue of market competitiveness and offer long-term benefits through the use of disruptive technological breakthroughs (Sardana, 2020). As an essential component of innovation, the IT industry is always pushing beyond its limits in terms of technological enhancement, which results in recruitment, selection, performance management, compensation, training, and development. The seamless integration of a remote workforce dispersed across a few geographic areas presents a unique challenge for the Human Resources management environment within this dynamic sector (Lawton, 2021)

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Virtual Reality (VR) enhances employee training and safety in the raw materials industry by providing immersive, interactive learning experiences that improve skill development and efficiency, though high costs and specialized requirements remain challenges. (Holuša et al., 2023). A virtual reality system equipped with heart rate, gaze, and fear rating helped the employee overcome fear and anxiety during self-training (Tursunbayeva, 2019). The metaverse is transforming HR training by enhancing interactivity, flexibility, and immersive learning. While it offers benefits like real-time collaboration and feedback, challenges such as accessibility, ethics, and security remain. (Saeed et al., 2024).Traditional HR support frameworks have immense difficulties in effectively engaging, instructing, and fostering a cohesive culture through dispersed teams as firms increasingly adopt remote work models. Introducing and discovering new VR simulations to conduct and evaluate the applied candidates helped the team identify the right candidate with the required talent (Lawton, 2021 b. Leading multinational companies in India are adopting VR for employee onboarding, with

Accenture's 'Nth Floor' showcasing years of advancements in HR technology.(Evangeline, 2025). Organizations use robots for a variety of HR tasks, including candidate verification, answering staff members' questions, and managing attendance. Cloud computing introduced a new model in the IT sector by providing customers with on-demand, flexible, and widely accessible computing resources.(Donyagard Vahed et al., 2019). People analytics enables businesses and human resources professionals to reduce employee turnover by transforming the approach to attracting and retaining talent with the help of data science and big data analytics.(Yahia et al., 2021a).

AR and VR enhance HRM by simulating real-world scenarios and improving communication between virtual and real environments, (Syal, 2024). Employee engagement can have several beneficial effects on the business's organizational and financial outcomes in addition to the individual and his or her team. Organizations will be more than happy to embrace AI if it can be utilized as a tool to support EE(Saxena & Mishra, 2023).

Organizations with a solid recruitment strategy can hire the right people to adapt to the growing business environment and the digital age. This makes recruitment the key factor for any company aiming to hire skilled workers who can be more productive and efficient in achieving job goals. Artificial intelligence can serve as an effective alternative to humans in the hiring process.(Nawaz, 2019). Artificial intelligence is designed to act and respond like a human, with the main goal of enabling computers to carry out tasks that people usually do. AI is highly accurate and can make decisions quickly. (Geetha & Reddy, 2018). The capabilities of AI technologies, including natural language processing, machine vision, automation, and augmentation, have a significant impact on the recruitment and selection process. These technologies can lead to several benefits, such as saving time, improving accuracy, eliminating bias, reducing workload, increasing efficiency, and enhancing the experience for candidates.(Hemalatha et al., 2021).

Several factors influence the broad use of artificial intelligence technology in human resources for talent hiring. The adoption of AI for talent acquisition is positively affected by the involvement of top management, the readiness of human resources, cost efficiency, competitive advantages, and support from AI providers.(Mao et al., 2017).The implementation of artificial intelligence has a positive effect on training and development, and most companies tend to use these tools through more innovative, comprehensive, and technologically advanced methods.(Maity, 2019; Niehueser & Boak, 2020)

AI is strongly connected to innovation and usability, highlighting how it impacts human resources through these two factors.(Kumar & Raza, 2015; Bhardwaj et al., 2020). An AI-driven digital human resources ecosystem that includes platforms and applications for human resource management improves both em-

ployee experience and engagement. (Malik et al., 2023).

The connection between the adoption of AI technology and its practical application in talent acquisition is negatively impacted by a preference for traditional methods.

The actual use of AI technology in talent acquisition is affected by both its adoption and how well it fits the tasks at hand. Research shows that the connection between the adoption of AI technology and its practical application in talent acquisition is negatively impacted by a preference for traditional methods. (Pillai & Sivathanu, 2020).The use of artificial intelligence and machine learning technologies is transforming progressive work practices through automation of repetitive tasks, real-time feedback, and improved decision-making. These advancements contribute to a better work-life balance, increased job satisfaction, and higher employee retention.(Chuang et al., 2025)

In the age of data science and big data analytics, people analytics assists businesses and their human resources professionals in reducing employee turnover by changing how they attract and retain talent. In this context, high staff turnover presents a significant threat to an organization's ability to ensure continuity in planning and maintain productivity.(Yahia et al., 2021b)HR managers believe that combining machine learning with their organization's various functional complexities will improve and enrich the overall experience for employees. (Alkhazraji & Buhaliba, 2020). Machine learning algorithms are already commonly employed in the hiring process. Applications analyze applicants' social media profiles to gain insights into their skills and personalities. This information is then used to perform a comprehensive behavioral analysis, which is presented to HR managers for further evaluation (Faliagka et al., 2012).

Context of the Research

Disruptive technologies are causing a major shift in the IT industry's HR service delivery model. Understanding the history of this change is essential to appreciating its possibilities and ramifications. (Tursunbayeva, 2019b).The use of AI and ML in recruitment processes, along with the adoption of cloud-based human resources solutions for improved operational efficiency, are among the key areas of focus. A review of conventional HR procedures is required in light of the increasing prevalence of remote work and virtual collaboration platforms. IT organizations must comprehend how these disruptive technologies affect organizational culture, HR effectiveness, and employee experience if they want to remain competitive in luring, keeping, and growing top people. To examine these developments and how they affect HR service delivery in the IT sector, this background study will be helpful to both researchers and practitioners. (Zaki, 2019).

As time passes, the use of technology becomes increasingly prevalent in our daily lives. digital technologies like

AI and automation are transforming industries, disrupting jobs, and requiring new strategies for economic adaptation. (Brynjolfsson & McAfee, 2014) Every advancement in technology and the ongoing, rapid changes in corporate structures compel us to adopt a new approach to human resource management that relies on knowledge and data gathering. The first step in this transition is the implementation of personnel monitoring systems in various businesses. Here, 'monitoring' refers to the process or system for gathering, storing, and analyzing data from various sources and reporting on the performance and actions of the staff members (Ball et al., 2010). The importance of employees utilizing multi-criteria decision-making methods is highlighted by the practice of assigning relative weights to achievements and fuzzy criteria through inter-criteria correlation. Employers are grouped using the Compromise Solution approach and various measurement alternatives.(Chaudhary et al., 2022). HR analytics enhances organizational performance by assisting companies in monitoring their human capital management(Kiran et al., 2022).

Technology has made IT industries establish more talent pools by conducting virtual job fairs that include webcasts, webinars, and videos to interact with candidates and employees across the world. Prospects are allowed to learn about the organization and search through areas that interest them which is a part of the recruitment process that includes uploading the resumes and they can identify those candidates with right value and coordinate them using tools such as text-based (or) video chats**.** The integration of supply chain management and Industry 4.0 promises manufacturing businesses enormous growth and development prospects (Dhamija et al., 2020). By leveraging datasets, emerging technologies are enabling corporate executives to make decisions more quickly and consistently by replacing human labor with robots for information processing that is considerably faster and more accurate. Artificial intelligence is transforming the field of management and leadership by leveraging data analytics to get better results (Krishnan & Krishnan, 2022).

Machine learning is centered on enabling computers to adapt to innovations and knowledge, allowing them to reason logically and draw conclusions. While AI simplifies and transforms data into a comprehensible format, Machine learning is an advanced type of artificial intelligence that examines data to identify patterns and adapts program execution based on those insights. This field emphasizes the creation of algorithms that improve human resource decisions by producing accurate predictions.(Fomude et al., 2023). Algorithms using AI and ML can identify patterns that are hidden from view. It might be utilized to much more quickly and effectively discover the ideal candidate for the available job opportunity. Any industry aiming to succeed in this highly competitive environment must improve talent acquisition and management by fully leveraging artificial intelligence and shifting the focus from an ethical human resources system to an ethical human resources department that incorporates AI. Technologies within arti-

ficial intelligence, such as natural language processing, machine vision, automation, and augmentation, significantly impact the hiring and selection process. These technologies can result in beneficial outcomes, including decreased workload, enhanced efficiency, greater accuracy, elimination of bias, time savings, and an improved experience for candidates.(Dhamija et al., 2020). Artificial intelligence models are increasingly being utilized at various stages of employee lifecycle management to facilitate data-driven decision-making. (Nosratabadi et al., 2022).

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The establishment of HRM Dynamic Capacities through HR procedures and both internal and external resources, as well as how these contribute to different results,. including employee happiness, business performance, and resource and practice changes. The performance of the company can be enhanced by placing more focus on organizational-level strategic HRM processes (Apascaritei & Elvira, 2022). Virtual storage and resource management are the most often used cloud applications by IT and business enterprises. Corporate buyers have spent a lot of money on training headsets, and millions more have expressed interest in using them for amusement and productivity. Augmented reality is also used in human resources as part of VR intensity. VR uses specialized goggles and headsets to create a 3D experience, whereas AR augments, rather than replaces, the real world with 3D data. High-stakes training, which includes safety and other concerns, is done using Virtual Reality. Employees used to have to go to training facilities all over the world for practical instruction, which resulted in expensive lodging and transportation expenses. Motorola produced online training sites by simulating an assembly line environment. The drawback is that workers had trouble installing the sites and obtaining the expensive yet necessary machinery. After conducting a few tests, they found that the employees who were trained through VR platforms scored comparatively higher than those who were trained in a traditional method (Minehan,1996). The application of AI in businesses and sectors, tackling implementation challenges and the interaction between partner businesses, clients, and enterprises. By leveraging the capabilities of AI, organizations can encourage positive social, environmental, and economic outcomes, which will ultimately contribute to the achievement of the Sustainable Development Goals.(Kulkov et al., 2023).

The World Economic Forum predicts over 75 million job losses, leading to a demand for more HR specialists due to the creation of 133 million new roles driven by artificial intelligence and machine learning, resulting in higher costs for organizations, but incorporating AI in hiring may yield benefits that exceed initial implementation expenses.(Mukherjee & Krishnan, 2022)

The structures from the integrated theoretical framework can be used to accurately forecast compensation by utilizing a variety of advanced machine learning methods(Jaiswal et al., 2023).

When diversity management strategies are effectively implemented inside the company, learning within the company will improve.

Table 1 Summary of Key Findings from the Literature on Focus Area Relevant to the Study

Focus Area	Author	Findings
Fourth Industrial Revolution	Venturini, 2022	The Fourth Industrial Revolution (4IR) involves intelligent technologies like AI, big data, and automation, with much focus on their adoption but less on the development of related knowledge.
	Chaudhary et al., 2022	The use of multi-criteria decision-making methods, such as CRITIC and MARCOS, allows employers to effectively categorize employees and make informed decisions through a thorough evaluation of performance metrics.
	Kiran et al., 2022	The application of HR analytics improves organizational performance by offering insightful information for tracking and refining HR procedures.
	Dhamija et al., 2020	Manufacturing companies have enormous prospects for rapid expansion and development because of the synergistic integration of Industry 4.0 and supply chain management.
Integration of AI and ML	Sashreek & Krishnan, 2022	The convergence of emerging technologies and data analytics, particularly through artificial intelligence, is revolutionizing management and leadership paradigms, enabling rapid and precise decision-making while reducing reliance on human labour for information processing.
	Fomude et al., 2023	In the rapidly changing field of artificial intelligence, the move toward strategic thinking emphasizes how crucial machine learning is to HR decision-making by providing precise estimates based on data analysis.
	Pillai et al., 2024.	Employees' receptiveness to change beliefs positively correlates with factors supporting AI integration like perceived intelligence and customization, while it exhibits no influence on attitudes towards 'reasons against' such as perceived risk and technology anxiety
	Nosratabadi et al., 2022	As data-driven approaches transform decision-making processes, artificial intelligence models are increasingly being utilized at different stages of employee lifecycle management.
	Apascaritei & Elvira, 2021	Fostering HRM Dynamic Capacities through strategic HRM processes enhances company performance by positively influencing employee happiness, business performance, and organizational resource and practice

	adaptations
Kulkov et al., 2023	Leveraging AI's potential for business purposes encourages cooperation between clients, partners, and enterprises, resulting in favourable social, environmental, and economic consequences that support the Sustainable Development Goals.
Mukherjee & Krishnan, 2022	As organizations face a shift due to AI and ML, incorporating AI recruitment tools can offset rising HR costs by demonstrating cost-effectiveness through efficient operations.
Jaiswal et al., 2023	The integrated theoretical framework provides accurate compensation forecasts through the application of diverse advanced machine learning methods, enhancing precision in compensation management.

Source: Synthesized based Scopus Database

Research Methodology

This research explores the influence of disruptive technologies on HR service delivery in the IT sector through a bibliometric analysis. The study was conducted by sourcing and analyzing papers published in the Scopus database. The final dataset comprised 119 documents published between 2007 and 2024, reflecting an annual growth rate of 16.79%. The average age of the documents was 2.35 years, indicating they are relatively recent. Each document had an average of 8.37 citations.

The authors employed bibliometric tools using the bibliometrics package developed by Aria & Cuccurullo (2017) to identify trends, logical connections between the keywords, and potential research gaps. Network visualizations were used to illustrate the relationships between key concepts and author collaborations. Overlay visualizations of keywords were created using Vos Viewer to identify clusters of related terms. Network visualizations pictorially represented the connections between research themes and author networks, and overlay visualization illustrated shifts in research focus and publication trends. (Van Eck & Waltman,2014). Citation impact charts offered a comparative view of the significance of earlier and more recent contributions, and geographic maps visually represented the global spread of research efforts.

RQ1: How are artificial intelligence and data analytics transforming recruitment and decision-making processes in HR within the IT sector?

RQ2: What are the emerging trends and challenges in HRM's adoption of AI technologies in the IT sector?

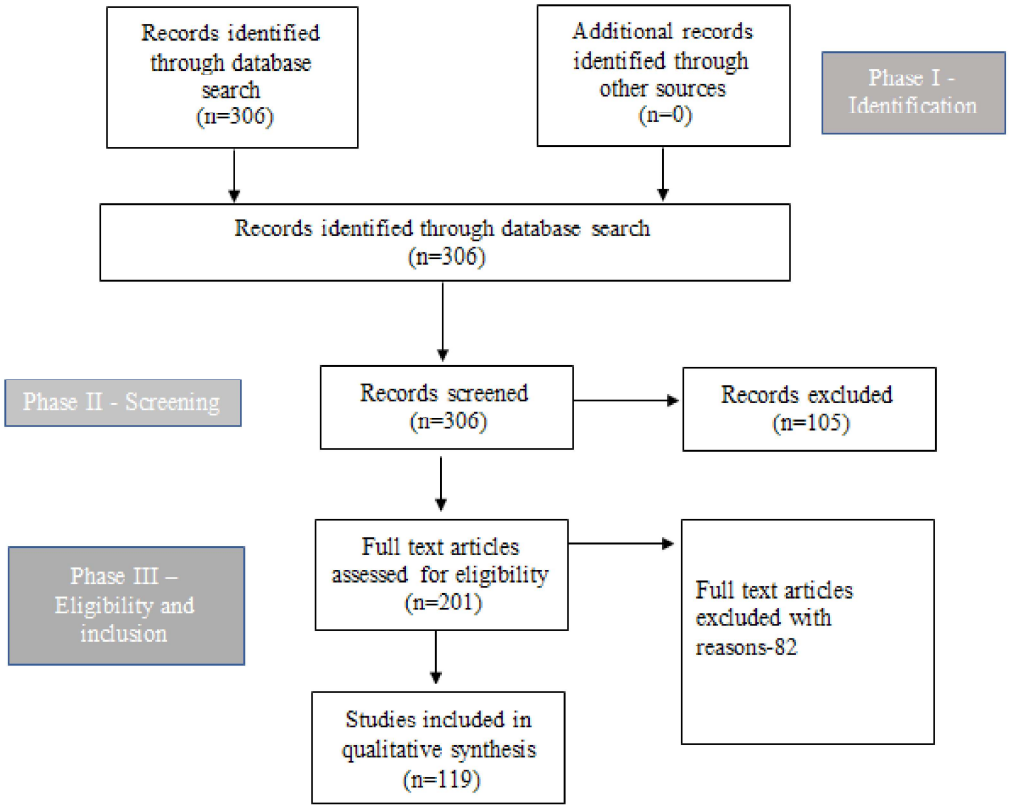
To maintain the relevance of the selected studies, particular inclusion and exclusion criteria were established based on the PRISMA framework. (Page et al.,2020). The inclusion criteria stipulated that studies must specifically address HR service delivery and disruptive technologies in the IT sector and be published between 2007 and 2024. The analysis focused on empirical research articles relevant to the IT industry and excluded

Table 2 Keywords Used in the Study

Parameter	Search Query
Industry Keywords	'Tech sector,' 'IT industry'
HR Keywords	'PMS,' 'onboarding,' 'employee engagement,' 'recruitment,' 'training and development'
Primary Keywords	'ML,' 'AR,' 'VR,' 'AI,' 'MR,' 'disruptive technologies'
Boolean Search Query for Scopus	('HR service delivery' OR'onboarding' OR 'employee engagement' OR 'recruitment' OR 'PMS') AND ('mixed reality' OR 'artificial intelligence' OR 'machine learning' OR 'virtual reality' OR 'augmented reality' OR 'disruptive technologies') AND ('tech sector' OR 'IT industry')

Source: Authors' own formulation

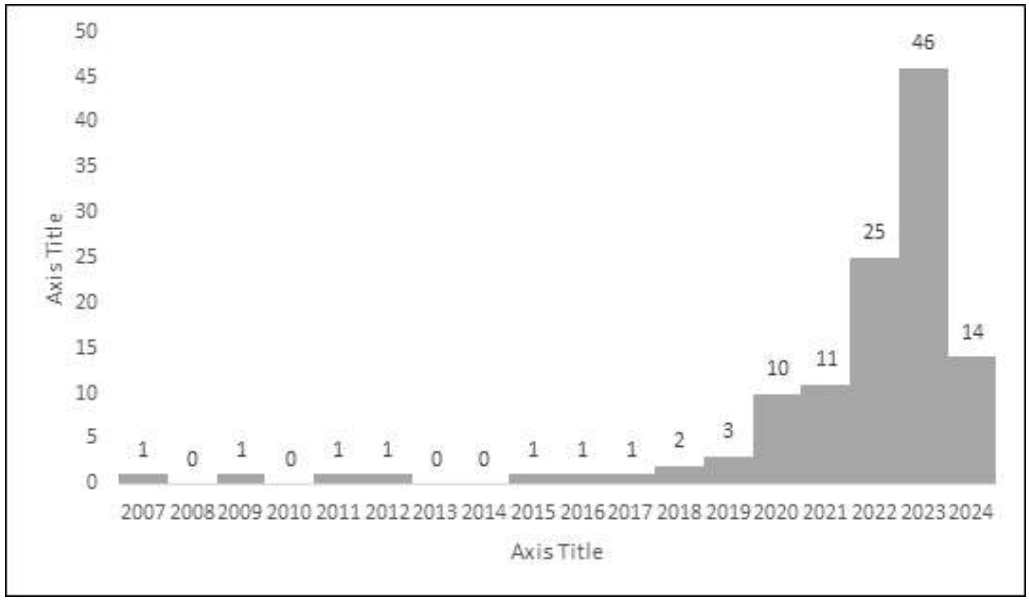
Fig. 1 Prisma Flow Diagram



Source: Adapted from Page et al. (2020).

those related to unrelated sectors such as healthcare, education, textiles, tourism, and hospitals. This approach resulted in the final selection of 119 papers from an initial set of 306, which were meticulously reviewed and filtered to ensure a systematic and transparent selection process. (Fig.1)

Fig. 2 Annual Scientific Production



Source: Data retrieved from Scopus

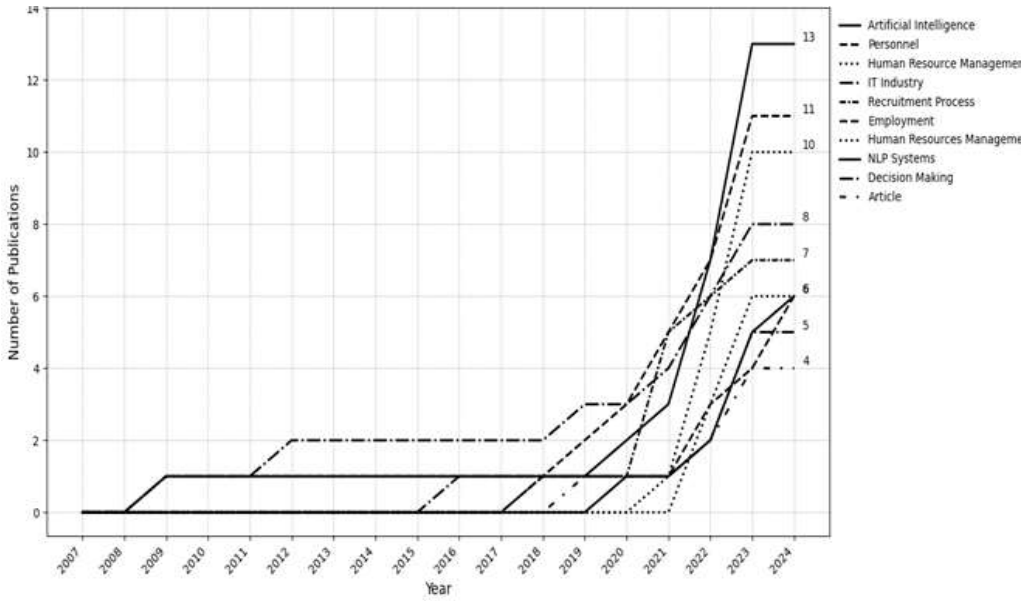
The number of articles released annually between 2007 and 2024 reveals fluctuations in publication activity over time. There were only very few publications between 2007 and 2010, one in each of the years 2007 through 2009, and none in the years 2008 through 2010. From 2011 onward, the trend began to exhibit greater consistency, where years of publication and non-publication alternated until 2015. There has been a noticeable rise in the frequency of publications since 2016. The number of published papers has significantly risen each year, with two articles released in 2018 and three in 2019. The number of papers is higher between 2022 and 2023, demonstrating a significant rise in publication activity over these years. After reaching its peak in 2023, publishing activity may have stabilized or returned to a lower but more steady level, as indicated by the small decline in the number of articles published in 2024 compared to 2023. (Fig. 2)

The analysis provides insights into the terms that are associated with human resources in the IT sector. With a frequency of 13, 'artificial intelligence' stands out in particular, indicating its growing significance in HR procedures. The terms 'personnel,' 'human resource management,' and 'IT industry' are also important. These terms emphasize recruitment procedures, technology integration, and essential HR activities. The existence of phrases like 'deep learning' and 'natural language processing systems' highlights how contemporary technology has affected HR procedures. All things considered, this graphic effectively conveys the dynamic convergence of analytics, AI, and people-centered approaches in IT-related human resources. (Fig. 3)

Fig. 3 Word Cloud

Source : Scopus database, analysis performed using the bibliometrix R package

Fig. 4 Word frequency over the years



Source : Scopus database, analysis performed using the bibliometrix R package

The occurrences of words over time illustrate the frequency of publications or mentions across several topics from 2007 to 2024. A gradual increase is observed, primarily in Artificial Intelligence (AI), Personnel, and the IT Industry, with consistently low activity in these areas especially in the years 2017-2018 evidenced a slight rise, with the keyword 'Decision Making' emerging along with AI. From the year 2019 onwards, there is a significant growth in the keywords AI, Personnel, IT Industry, and the introduction of Employment. This trend continues with a surge in 2021, expanding to include Human Resource Management (HRM), Recruitment Process, and Natural Language Processing (NLP) Systems. By 2022, all topics show increased activity, with the keywords 'AI' and 'Personnel' leading the research activity. (Fig. 4)

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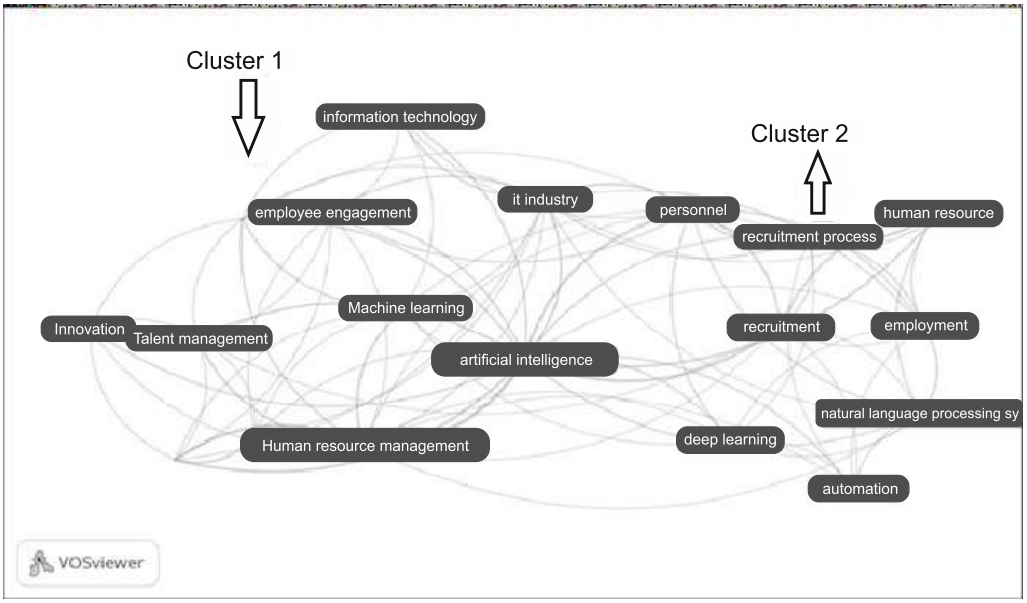
Fig. 5 Network visualization of keywords



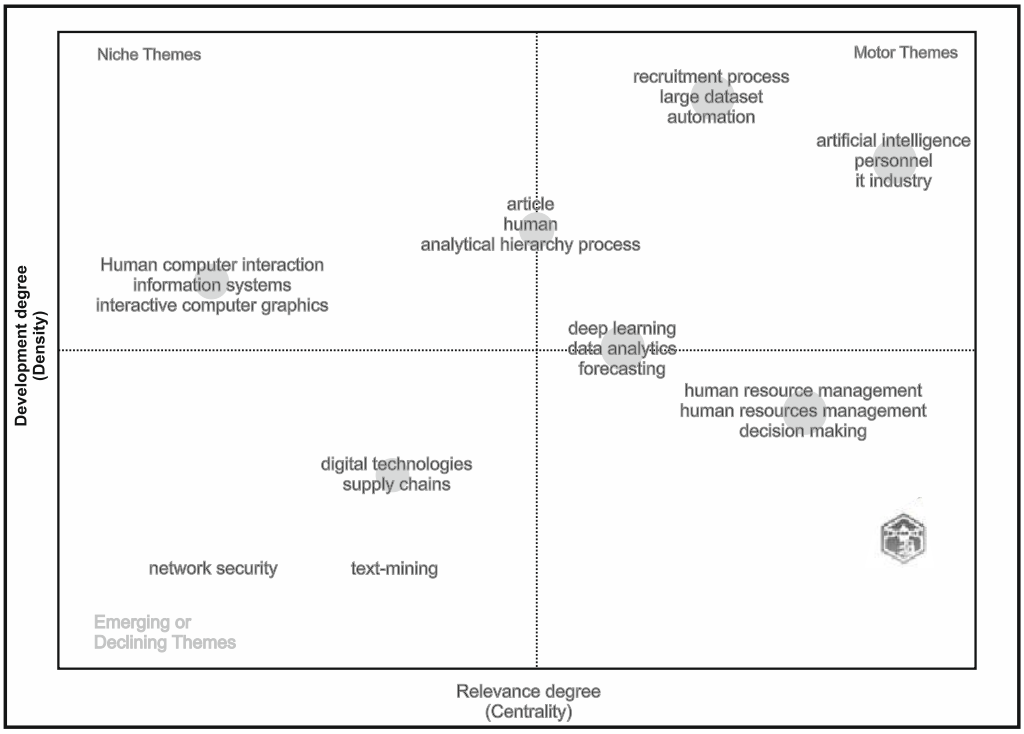
Source: Scopus database, analysis performed using Vos Viewer

The importance and interconnectedness of different technologies and Human Resource Management concepts are highlighted through the network described. Artificial intelligence serves as a key link between different HR and technology-related topics. It is at the heart of this network, with closely associated terms such as 'machine learning,' 'deep learning,' and 'natural language processing' highlighting the integration of advanced technology into HR practices. In the context of human resources, terms like 'employment,' 'recruitment process,' 'personnel,' and 'hiring' are grouped, reflecting a strong

focus on the impact of technology on conventional HR functions.

Technological advancements have a profound effect on the areas of 'employee engagement,' 'talent management,' and 'human resource management,' highlighting progress in managing and engaging the workforce. The relationship between the HR keywords 'information technology' and 'IT industry' highlights how IT has revolutionized HR procedures. The use of 'automation' indicates the trend toward HR procedures being automated to improve productivity. Disruptive technologies, including artificial intelligence and machine learning, are reshaping HR operations and strategies by illustrating the dynamic relationship between human resource management and these innovative technologies. (Fig. 5)

Fig. 6 Thematic Map of Keywords



Source: Scopus database, analysis performed using the bibliometrix R package

The thematic map provides the development and relevance of four themes. **Motor themes** such as Artificial Intelligence, Automation, and Large Dataset management are pivotal, driving significant advancements in Human Resources in the IT sector due to their high centrality and development. **Niche themes** like Human-Computer Interaction and Interactive Computer Graphics are well-developed within their specialized areas but have limited broader relevance, focusing

Table 3 Thematic Map -Quadrant-wise Explanation.

Quadrant	Description	Themes
Motor Themes	It is Well-developed and has highly relevant themes.	Artificial Intelligence, Personnel, IT Industry, Recruitment Process, Large Dataset, Automation
Niche Themes	It is well-developed but less relevant.	Human-Computer Interaction, Information Systems, Interactive Computer Graphics
Basic Themes	Basic and transversal themes	Human Resource Management, Decision Making, Deep Learning, Data Analytics, Forecasting
Emerging or Declining Themes	Emerging or declining (i.e. less relevant)	Network Security, Text-Mining, Digital Technologies, Supply Chains

Source: Scopus database, analysis performed using the bibliometrix R package

on enhancing user experiences and information visualization.

Basic themes such as Human Resource Management, Decision Making, and Data Analytics form the foundational aspects of the field, essential for understanding but needing further development to arise as a central theme. **Emerging or Declining themes** like Network Security, text mining, and Digital Technologies indicate areas that are either gaining traction or losing relevance. Analytical Hierarchical Process (AHP) intersects between Niche Themes and Motor Themes, which shows that it is foundational as well for further innovation in it. (Fig.6 & Table 3)

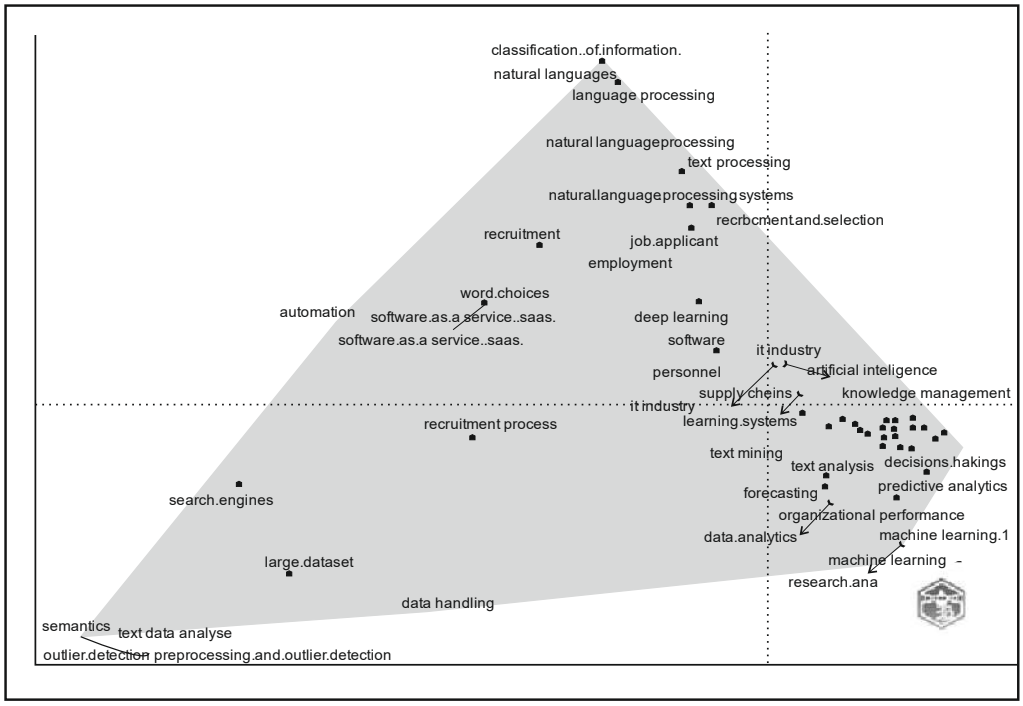
The spread of keywords highlights the multifaceted role of AI in HR, linking advanced technologies with practical HR applications to improve various aspects of workforce management.

Fig. 14 shows the diverse background of AI applications in HR, highlighting a blend of technical and applied themes. The horizontal axis of the factorial analysis provides a shift from technical facets like 'semantics' and 'outlier detection' on the right to practical applications like 'recruitment,' 'text mining,' and 'predictive analytics' on the left. It progresses vertically to 'natural language processing,' which is used for evaluating job applicants within the recruitment system and assessing organizational performance. AI-driven recruitment and selection processes, along with machine learning and data analytics, are employed to improve organizational performance and automate HR tasks through AI tools. The spread of keywords in the same cluster but with subthemes shows the multifaceted role of AI in HR, linking advanced technologies with practical HR applications. (Fig. 7).

Discussion

IR 4.0 seems to be the integration of technologies into various other sectors, which is significantly transforming the business process of organizations, especially in the field of HR. Brynjolfsson and McAfee (2014) highlighted the shift towards this revolution despite initial resistance from

Fig. 7 Factorial Analysis



Source: Scopus database, analysis performed using the bibliometrix R package

management, heightening the global role of technology in modern life. The use of multi-criteria decision-making methods such as CRITIC, and MARCOS, as discussed by Chaudhary et al.(2022) allows organizations to make informed decisions through a comprehensive evaluation of performance metrics. Human capital management also sees significant enhancement through the application of HR analytics, which, according to Kiran et al (2022), mediates improved organizational performance by refining HR processes. Collectively, these studies illustrate the profound impact of the fourth technological revolution on productivity, decision-making, and organizational efficiency, driven by advanced technologies and data analytics.

Disruptive technologies are significantly transforming HR service delivery in the IT sector, and their impact is increasing. The integration of artificial intelligence, machine learning, robotic process automation, and data analytics into daily operations is reshaping the field. The HR practices have shown significant positive outcomes. The HR leaders of the IT industry leveraged these technologies to enhance the employee experience, improve decision-making through data insights, and accelerate HR operations.

Important trends and insights in the research publications are identified through this study. There were only a few publi-

cations on 'disruptive technologies' between 2007 and 2010. There was a steady pattern of academic publishing starting in 2011, continuing in alternating years until 2015. Publication frequency has increased dramatically from 2016, reaching a high between 2022 and 2023, and the upward trend will continue in 2024 and beyond.

There are key distinctions in the scholarly impact of publication activity, and future research is necessary to fully understand why India leads the world in publication frequency. Keywords like 'artificial intelligence', and 'deep learning' are becoming more common, which shows that Artificial intelligence is increasingly being integrated into HR practices.

Artificial intelligence is increasingly being integrated into HR practices.

The connection between human resources and technology emphasizes the transformative role of artificial intelligence in HR processes. Terms such as recruitment, employment, and traditional HR concepts are grouped with natural language processing, deep learning and machine learning, illustrating how technology is reshaping workforce management. The thematic clusters and research gaps are underscored by the bibliometric analysis, which illustrates the interdependence of disruptive technologies in HRM.

Logical Interconnectedness

Thematic Map: The thematic map connects these themes, showing a comprehensive picture of the research field. Motor themes like Artificial Intelligence and Automation are critical in transforming recruitment processes and large dataset management, which aligns with the use of deep learning and data analytics from the basic themes. Although niche themes such as Human-Computer Interaction and Information Systems support the broader application of AI, they are not as immediately relevant.

Connecting Dots through Factorial Analysis: The Natural Language Processing and Recruitment clubbed together in a cluster demonstrating a relationship between applying natural language processing techniques in the selection process. The connection between software and automation demonstrates how deep learning technologies are integrated into software services, especially within the IT industry and recruitment processes, indicating the essential role of SaaS models in improving effectiveness.

The connection between analytics and decision-making highlights various advanced analytical techniques, including predictive analytics, machine learning, and text mining, which can be utilized to enhance decision-making processes. This also emphasizes the importance of AI and knowledge management in boosting organizational performance.

A connection is evidenced between natural language processing (NLP) and recruitment, highlighting the potential for NLP technologies to transform recruitment and selection processes. Implementing NLP systems can improve job appli-

cation management efficiency, automate the initial screening process, and identify the best candidates based on language analysis. This can lead to more efficient and effective recruitment strategies, reducing the time and cost associated with traditional hiring methods, indicating a shift towards more automated and technology-driven recruitment and IT management practices.

Implications

The phrase 'AI' was introduced by John McCarthy, marking 1956 as the widely accepted starting point for the field of AI. The AI reached its fiftieth anniversary in 2006 itself.(Cordeschi, 2007). Now we can see that all the sectors are leveraging the technology, which shows the height of advancement in this dynamic era. As artificial intelligence and Internet of Things connections become more prevalent, human resource management is undergoing substantial changes and is now referred to as smart HR.(Srivastava et al., 2022). Only a small number of businesses are implementing artificial intelligence in their human resource management or creating AI-driven HR software, as this field is still relatively new and not widely adopted, particularly in India.(Murugesan et al., 2023). Now, small companies and startups would understand the importance of AI in better HR decision-making. This nascent stage of AI implementation should be focused on, and the barriers shall be overcome by drafting a global-level policy on AI adaptation, especially in countries like India. The IT policy shall be revised, as India is the hub for the major Western countries in terms of backend support. Multi-criteria decision-making methods (MCDM) shall be leveraged as the tools significantly enhance HR practices by providing a structured approach to evaluating complex decisions. It can also aid in selecting training programs and designing compensation packages by weighing factors like cost and efficacy. Recent advancements in text mining and natural language processing allow companies to leverage these tools to enhance their human resource practices.(Guo et al., 2024).By leveraging NLP, HR leaders can quickly analyze large amounts of text data, such as resumes, exit interview data, and feedback. This helps them make optimal decisions about hiring the best talents.

Human resource management is undergoing substantial changes and is now referred to as smart HR.

Conclusion

Disruptive technologies fundamentally transform how HR services are delivered in the IT sector, leading to a new era marked by improved employee experiences, informed decision-making, and greater efficiency. These technologies have many advantages, but they also have drawbacks and difficulties, including the need to upskill the workforce, implementation costs, and data protection issues. Organizations can, however, fully realize the promise of disruptive HR technology by tackling these issues through strategic planning, funding, and

cooperation. To optimize their HRM strategies and stay competitive in this digital age. IT companies need to cultivate an innovative and adaptable culture. The importance of embracing change and utilizing technology to drive organizational success in the digital age is highlighted by the disruptive technologies' overall transformative impact on HR service delivery in the IT industry.

Limitations

This study offered valuable insights into the impact of disruptive technologies on HR service delivery within the IT industry only. The research fetched the data from the Scopus database from 2007 to 2024 alone; other databases were not considered. Only research papers related to the IT industry were included.

References

Alkhazraji, Ibrahim and Buhaliba, Ali Saeed 2020, "Using Machine Learning Software in the Human Resource Recruiting Process for Candidates from Dubai Police Academy. Thesis. Rochester Institute of Technology. Accessed from https://repository. rit.edu/theses/10727

Apascaritei, P., & Elvira, M. M (2022), "Dynamizing Human Resources: An Integrative Review of SHRM and Dynamic Capabilities Research", *Human Resource Management Review,* 32 (4):100878. https://doi.org/10.1016/j.hrmr.2021.100878

Aria, M., & Cuccurullo, C. (2017), "Bibliometrix: An R-tool for Comprehensive Science Mapping Analysis". *Journal of Informetrics*, *11*(4): 959-75. https://doi.org/10.1016/j.joi.2017.08.007.

Bhardwaj, G., Singh, S. V., & Kumar, V (2020), "An Empirical Study of Artificial Intelligence and Its Impact on Human Resource Functions", 2020 International Conference on Computation, Automation and Knowledge Management (ICCAKM), 47–51. https://doi.org/10.1109/ICCAKM46823.2020.9051544

Brynjolfsson, E., & McAfee, A. (2014). The second machine age: Work, progress, and prosperity in a time of brilliant technologies. In The second machine age: Work, progress, and prosperity in a time of brilliant technologies. W W Norton & Co.

Chaudhary, M., Gaur, L., Jhanjhi, N., Masud, M., & Aljahdali, S (2022), "Envisaging Employee Churn Using MCDM and Machine Learning.", *Intelligent Automation & Soft Computing*, 33 (2): 1009–24. https://doi.org/10.32604/iasc.2022.023417

Chuang, Y.-T., Chiang, H.-L., & Lin, A.-P. (2025). "Insights from the Job Demands–Resources Model: AI's dual impact on employees' work and life well-being". International Journal of Information Management, 83, 102887. https://doi.org/10.1016/j.ijinfomgt. 2025.102887

Cordeschi, R (2007), "AI Turns Fifty: Revisiting Origins". *Applied Artificial Intelligence*, 21 (4–5): 259–79. https://doi.org/10.1080/08839510701252304

Dhamija, P., Bedi, M., & Gupta, M. L (2020), "Industry 4.0 and Supply Chain Management", *International Journal of Business Analytics*, 7 (1): 1–23. https://doi.org/10.4018/IJBAN.2020010101

Donyagard Vahed, N., Ghobaei Arani, M., & Souri, A (2019), "Multiobjective Virtual Machine Placement Mechanisms Using Nature inspired Metaheuristic Algorithms in Cloud Environments: A Comprehensive Review", *International Journal of Communication Systems,* 32 (14). https://doi.org/10.1002/dac.4068

Faliagka, E., Ramantas, K., Tsakalidis, A., & Tzimas, G. (2012). "Application of Machine Learning Algorithms to an Online Recruitment System. ICIW 2012: The Sev-

enth International Conference on Internet and Web Applications and Services, Stuttgart, 27 May-1 June 2012, 215-220.

Fomude, A. H., Yang, C., Agordzo, G. K., Serwah, A. V., & Abangbila, L (2023), "AI Model to Improve HR Decision-Making with Machine Learning Predictions Algorithm" 25th International Conference on Advanced Communication Technology (ICACT), 206–212. https://doi.org/10.23919/ICACT56868.2023.10079282

Geetha, R. & Reddy, D. (2018), "Recruitment Through Artificial Intelligence: A Conceptual Study". *International Journal of Mechanical Engineering and Technology*. 9: 63-70.

Guo, F., Gallagher, C. M., Sun, T., Tavoosi, S., & Min, H (2024), "Smarter People Analytics with Organizational Text Data: Demonstrations Using Classic and Advanced NLP Models". *Human Resource Management Journal*, 34 (1): 39–54. https://doi.org/10.1111/1748-8583.12426

Hemalatha, A., Kumari, P. B., Nawaz, N., & Gajenderan, V (2021), "Impact of Artificial Intelligence on Recruitment and Selection of Information Technology Companies". International Conference on Artificial Intelligence and Smart Systems (ICAIS), 60–66. https://doi.org/10.1109/ICAIS50930.2021.9396036

Holuša, V., Vanìk, M., Beneš, F., Švub, J., & Staša, P. (2023), "Virtual Reality as a Tool for Sustainable Training and Education of Employees in Industrial Enterprises", *Sustainability*, *15*(17): 12886. https://doi.org/10.3390/su151712886

Ijadi Maghsoodi, A., Riahi, D., Herrera-Viedma, E., & Zavadskas, E. K (2020). "An Integrated Parallel Big Data Decision Support Tool Using the W-CLUS-MCDA: A Multiscenario Personnel Assessment", *Knowledge-Based Systems,* 195: 105749. https://doi.org/10.1016/j.knosys.2020.105749

Jaiswal, R., Gupta, S., & Tiwari, A. K (2023), "Dissecting the Compensation Conundrum: A Machine Learning-based Prognostication of Key Determinants in a Complex Labor Market", *Management Decision,* 61 (8): 2322–53. https://doi.org/10.1108/MD-07-2022-0976

Kiran, V. S., Shanmugam, V., Raju, R. K., & Kanagasabapathy, J. R (2022), "Impact of Human Capital Management on Organizational Performance With the Mediation Effect of Human Resource Analytics", *International Journal of Professional Business Review,* 7 (3): e0667. https://doi.org/10.26668/businessreview/2022.v7i3.0667

Kulkov, I., Kulkova, J., Rohrbeck, R., Menvielle, L., Kaartemo, V., & Makkonen, H (2023). "Artificial Intelligence driven sustainable development: Examining Oganizational, Technical, and Processing Approaches to Achieving Global Goals", *Sustainable Development*. https://doi.org/10.1002/sd.2773

Kumar, D., & Raza, Z (2015), "A PSO Based VM Resource Scheduling Model for Cloud Computing", 2015 International Conference on Computational Intelligence & Communication Technology, https://doi.org/10.1109/CICT.2015.35

Lawton, G. (2021). VR in HR: How human resources can use VR and AR technology. HR Software. Retrieved from https://www.techtarget.com/searchhrsoftware/tip/VR-in-HR-How-human-resources-can-use-VR-and-AR-technology

Maity, S. (2019). Identifying opportunities for artificial intelligence in the evolution of training and development practices. *Journal of Management Development*, *38*(8), 651–663. https://doi.org/10.1108/JMD-03-2019-0069

Malik, A., Budhwar, P., Mohan, H., & N. R., S. (2023). Employee experience –the missing link for engaging employees: Insights from an MNE's AI-based HR ecosystem. *Human Resource Management*, *62*(1), 97–115. https://doi.org/10.1002/hrm.22133

Mao, K., Capra, L., Harman, M., & Jia, Y (2017), "A Survey of the Use of Crowdsourcing in

Software Engineering", *Journal of Systems and Software*, 126: 57–84. https://doi.org/10.1016/j.jss.2016.09.015

Minehan, M. (1996), "Virtual Reality: The Next Step in Training", *HR MAGAZINE*, *41*: 144.

Mukherjee, I., & Krishnan, LRK (2022), "Impact of AI on Aiding Employee Recruitment and Selection Process", *Journal of the International Academy for Case Studies, 28*(S2): 1–15.

Murugesan, U., Subramanian, P., Srivastava, S., & Dwivedi, A (2023), "A Study of Artificial Intelligence Impacts on Human Resource Digitalization in Industry 4.0", *Decision Analytics Journal*, 7: 100249. https://doi.org/10.1016/j.dajour.2023.100249

Nawaz, N. (2019). "Artificial Intelligence Interchange Human Intervention in the Recruitment Process in Indian Software Industry", *International Journal of Advanced Trends in Computer Science and Engineering,* 8(4), 1062-67. https://doi.org/10.30534/ijatcse/2019/62842019

Niehueser, W., & Boak, G. (2020). "Introducing Artificial Intelligence into a Human Resources Function". *Industrial and Commercial Training*, *52*(2): 121–30. https://doi.org/10.1108/ICT-10-2019-0097

Nosratabadi, S., Zahed, R. K., Ponkratov, V. V., & Kostyrin, E. V (2022), "Artificial Intelligence Models and Employee Lifecycle Management: A Systematic Literature Review.", Organizacija, 55 (3):181–98. https://doi.org/10.2478/orga-2022-0012

Page, M. J., McKenzie, J. E., Bossuyt, P. M., Boutron, I., Hoffmann, T. C., Mulrow, C. D., Shamseer, L., Tetzlaff, J. M., Akl, E. A., Brennan, S. E., Chou, R., Glanville, J., Grimshaw, J. M., Hróbjartsson, A., Lalu, M. M., Li, T., Loder, E. W., Mayo-Wilson, E., McDonald, S., … Moher, D. (2021). "The PRISMA 2020 Statement: An Updated Guideline for Reporting Systematic Reviews". *BMJ*, n71. https://doi.org/10.1136/bmj.n71

Pillai, R., & Sivathanu, B (2020), "Adoption of Artificial Intelligence (AI) for Talent Acquisition in IT/ITeS Organizations", *Benchmarking: An International Journal,* 27 (9): 2599–2629. https://doi.org/10.1108/BIJ-04-2020-0186

Pillai, R., Ghanghorkar, Y., Sivathanu, B., Algharabat, R., & Rana, N. P (2024), "Adoption of Artificial Intelligence (AI) Based Employee experience (EEX) *chatbots. Information Technology & People, 37* (1), 449–478. https://doi.org/10.1108/ITP-04-2022-0287

Saeed, A., Ali, A., & Ashfaq, S. (2024), "Employees' Training Experience in a Metaverse Environment? Feedback Analysis Using Structural Topic Modeling", *Technological Forecasting and Social Change*, *208*: 123636. https://doi.org/10.1016/j.techfore.2024.123636

Sardana, A (2020), "Achieving Disruptive Growth &Amp; Technical Innovations: in &Amp; Through the HR. JIMS8M: *The Journal of Indian Management & Strategy,* 25 (1): 56. https://doi.org/10.5958/0973-9343.2020.00008.3

Sashreek, K., & Krishnan, LRK (2022), "Impact of AI and ML in Leadership Behaviors and Decision-making: Driving Business Results", *International Journal of Research in Computer Application and Management,* 12(10): 6.

Saxena, M., & Mishra, D. K (2023), "Artificial Intelligence: the Way Ahead for Employee Engagement in Corporate India", *Global Knowledge, Memory and Communication*. https://doi.org/10.1108/GKMC-09-2022-0215

Srivastava, Y. P., Ganguli, S., Rajest, S. S., & Regin, R. (2022). "Smart HR competencies and their applications in Industry 4.0". *In P. Kumar, A. J. Obaid, K. Cengiz, A. Khanna, & V. E. Balas (Eds.), A fusion of artificial intelligence and Internet of Things for emerging cyber systems (Intelligent Systems Reference Library, Vol. 210* Springer,

Cham. https://doi.org/10.1007/978-3-030-76653-5_16

Syal, S. (2024), Role of Human Resource Management in the Era of Augmented Reality (AR) and Virtual Reality (VR) in the Global Market, https://doi.org/10.4018/979-8-3693-2215-4.ch016

Tursunbayeva, A (2019), "Human Resource Technology Disruptions and Their Implications for Human Resources Management in Healthcare Organizations", *BMC Health Services Research,* 19 (1): 268. https://doi.org/10.1186/s12913-019-4068-3

Van Eck, N. J., & Waltman, L. (2014). "Visualizing Bibliometric Networks". In Y. Ding, R. Rousseau, & D. Wolfram (Eds.), Measuring Scholarly Impact: Methods and Practice Springer. https://doi.org/10.1007/978-3-319-10377-8_13

Venturini, F. (2022). "Intelligent Technologies and Productivity Spillovers: Evidence from the Fourth Industrial Revolution". *Journal of Economic Behavior & Organization,* 194: 220–43. https://doi.org/10.1016/j.jebo.2021.12.018

Yahia, N. Ben, Hlel, J., & Colomo-Palacios, R (2021), "From Big Data to Deep Data to Support People Analytics for Employee Attrition Prediction", IEEE Access, 9: 60447–58. https://doi.org/10.1109/ACCESS.2021.3074559

Zaki, M (2019), Digital Transformation: Harnessing Digital Technologies for the Next Generation of Services", *Journal of Services Marketing,* 33 (4) 429–35. https://doi.org/10.1108/JSM-01-2019-0034