

Analysing e-HRM Practices for Sustainable Development in the Field of HR with the Role of Artificial Intelligence

¹ Ms. Suba D, Ph.D., ² Dr Arockiam Kulandai, ³ Mr. Vinoth D, Ph.D.

¹ Research Scholar, Department of Human Resource Management, St. Joseph's College (Autonomous), Tiruchirappalli – 620 002, Affiliated to Bharathidasan University, Tiruchirappalli, Tamil Nadu, India & Sr. Faculty Associate, XIME Chennai.

² Associate Professor, Dept of Human Resource Management, St. Joseph's College (Autonomous), Affiliated to Bharathidasan University Tiruchirappalli, Tamil Nadu, India

³ Research Scholar, Division of Computer Science and Engineering, Karunya Institute of Technology and Sciences, Karunya Nagar, Coimbatore, 641114, Tamil Nadu, India

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Abstract: In recent years, human resource management has undergone a major shift, with many organizations adopting digital platforms to manage people-related functions more efficiently. This study looks into how electronic Human Resource Management (e-HRM) practices have not only digitized traditional HR activities but also paved the way for newer technologies—particularly Artificial Intelligence (AI) and Emotional Intelligence (EI)—to take root. Through a careful review of academic literature published between 2004 and 2024, the paper explores how AI tools, when embedded within e-HRM systems, streamline everyday tasks such as hiring, training, payroll, and performance tracking. More importantly, it discusses how AI is beginning to learn and mimic human emotions through tools like chatbots, facial recognition software, and natural language processing. These emotion-aware systems help HR departments connect with employees in more meaningful ways, especially in remote or hybrid work settings. By combining operational efficiency with emotional insight, e-HRM is becoming a powerful tool for creating sustainable and human-centered workplaces. The study offers a fresh perspective on how HR is evolving in the age of smart technologies, emphasizing the need for a balanced approach that values both speed and sensitivity.

Keywords: Emotional Intelligence, Artificial Intelligence, Business Operations, e-HRM Practices, HRM

I. Introduction

Humans often fear machine learning and artificial intelligence (AI) due to concerns that these technologies could replace human capabilities such as empathy, persuasion, social awareness, and intuition. However, as interactions with machines increase, emotional elements like empathy are becoming more vital (Rattan et al., 2022). Emotional intelligence, defined as the ability to understand, regulate, and influence one's own and others' emotions, is essential in today's workplaces. It comprises four stages: sensing, interpreting, managing, and reasoning with emotions (Huang et al., 2019).

Emotionally intelligent employees tend to be more productive, organized, and goal-oriented, often showing improved peer relationships and effective time management (Sy & Côté, 2004). This contributes to both personal and organizational success.

Artificial intelligence refers to the simulation of human thinking and behavior in machines. It can exist as hardware or software that processes large volumes of data using intelligent algorithms (Talib et al., 2021). Through methods like the Turing test, rational agent models, and natural language processing, AI can interact with humans in a lifelike manner (Frankel, 2022).

AI is revolutionizing business operations by enhancing forecasting, reducing operational costs, and improving stakeholder satisfaction. It supports functions such as planning, organizing, managing, and controlling across departments and helps leaders set SMART objectives and cultivate strong organizational culture (Srivastava et al., 2022). AI also automates repetitive tasks, improves IT system performance, and provides data-driven insights to enhance customer engagement and quality control.

In sectors like defense and national security, AI is increasingly deployed in areas such as cybersecurity, logistics, battlefield healthcare, and threat detection (Olena et al., 2024). As AI becomes more integrated into organizational functions, it raises concerns about job displacement while simultaneously enhancing judgment-based roles and professional capabilities. This technological shift is driving the creation of virtual workplaces and intelligent machines capable of managing human resources and business functions.

Given this context, the research begins with the following question:

Artificial intelligence (AI) is transforming workplaces by automating tasks and simulating human traits like emotional intelligence (EI). EI helps employees manage emotions, improve productivity, and adapt to technological changes. This study explores how emotional AI enhances e-HRM practices and supports sustainable, people-centric workplaces.

AI plays a crucial role in managing people across all business domains. In HR, it aids in understanding human emotions, sourcing resumes, engaging candidates, and hiring according to company standards. In administration, it supports employee monitoring and

engagement, while in marketing and finance, it helps track consumer behavior and assess financial risks. Since all management areas involve human interaction, emotional AI is essential for fostering innovation and ensuring organizational effectiveness.

Despite ongoing philosophical debates about AI, the growing influence of automation underscores the importance of emotional intelligence in modern workplaces. Hence, research into emotional artificial intelligence is both timely and necessary.

II. Literature Review

e-HRM Practices

Organizations are increasingly adopting technological innovations, driven by changing employee expectations and competitive pressures that propel the use of e-HRM **Strohmeier, S. (2007)**. Both government and private IT firms are actively implementing digital human resource practices, such as e-recruitment, e-tracking, e-learning, e-performance appraisal, and e-grievance systems. The relaxation of foreign policies has further boosted global investment within India's IT industry, leading many companies to operate on an international scale **Myllymäki, D. (2021)**. Research has repeatedly indicated that e-HRM is a cost-efficient, user-friendly method that minimizes administrative tasks. As a crucial component of contemporary HR management, e-HRM utilizes web-based technologies to provide essential HR services effectively.

The Use of Artificial Intelligence at Work

Valerio De Stefano (2018) highlights how AI continuously monitors employee movements and collects data on location, break times, work pace, and productivity, helping organizations identify potential hires. **Agrawal et al. (2017)** and **Goldfarb** emphasize AI's role in streamlining routine tasks, reminding employees of responsibilities, and improving efficiency. AI enables businesses to make data-driven decisions, plan effectively, and identify performance gaps. Its ability to predict consumer behavior and employee turnover is also advancing. **Marc Saner (2015)** notes that standardized computer systems foster uniformity, allowing for global labor outsourcing and consistent production. **The Littler Report (2014)** adds that robotic systems observe workplace activities and implement adjustments based on real-time data, aiding in compensation management and assisting injured employees in operating machinery. Overall, AI enhances productivity, reduces costs, and expands job opportunities by reshaping workplace roles.

Emotional Intelligence in the Workplace

The investigator reviewed some of the scholarly sources to assess the impact of emotional intelligence (EI) in professional settings. Research shows that employees with high EI tend to be more self-driven, experience greater job satisfaction, and display strong interpersonal skills, empathy, and self-awareness (**Nadler, Carswell & Minda, 2020; Schutte & Loi, 2014**). EI enhances focus, conflict resolution, and team performance (**Khosravi, Rezvani & Ashkanasy, 2020**). It is also linked to leadership effectiveness, adaptability, and improved 360-degree feedback outcomes (**Goleman & Richard, 2017; Rosete & Ciarrochi, 2005**). Studies highlight that emotionally intelligent managers inspire creativity, confidence, and resilience (**Chang, 2011**), and foster better employee-employer relationships (**Marques & Allevato, 2008**). **Cooper (1997)** further emphasized that individuals with strong EI perform better professionally and personally. Collectively, these findings underscore the essential role of emotional intelligence in leadership, collaboration, and workplace success.

Emotional Intelligence is Taught to Artificial Intelligence

Advancements in facial coding and deep learning have made artificial emotional intelligence (emotion AI) increasingly viable. Modern AI systems can recognize human gestures, facial expressions, and non-verbal cues. For example, Google's "RankBrain" uses machine learning to generate intelligent responses. Artificial neural networks are widely applied in fields like marketing, finance, HR, and research for predictions and decision-making. **Capgemini (2019)** notes that combining emotional intelligence with AI will be a key future skill, supporting strategic decisions and rapid skill development.

Namita Ramesh (2019) discussed the use of convolutional neural networks for analyzing visual data, while **Sophie Kleber (2018)** emphasized AI's ability to read emotions from voice and facial patterns—a method adopted by companies like Google and Amazon. **Meredith Somers (2019)** highlighted AI's capacity to detect emotional states like frustration or joy by analyzing tone and expressions, aiding in business interpretation. The World Economic **Forum (2018)** pointed to a shift toward emotion-aware AI models trained via techniques like fMRI to understand human bias and behavior.

Further, AI tools such as Siri and Alexa use text-to-speech for natural interaction (**Darlington, 2018**), and technologies like Lyrebird mimic human voices for authenticity. In HR, AI-powered chatbots and coaching tools can assess employee sentiment and performance (**Ahmed, 2018**). Mikko noted that natural language processing and facial tracking improve emotional understanding. **Beck and Libert (2017)** showed AI's value in healthcare, consulting, and finance through large-scale data analysis. While **Stephen Hawking (2014)** warned of job displacement, Sharada and Ramanaiah (2010) proposed neuro-fuzzy systems to handle uncertainty and learning. **Martinez-Miranda and Aldea (2005)** highlighted affective computing's role in training and communication. For instance, Ford's collaboration with Affectiva enables AI to monitor driver emotions and prevent accidents. Ultimately, AI's effectiveness lies in its ability to understand language, reason, detect emotions, and make predictions—driven by programming in languages like Python, Java, and R.

HR & Administration

Organizations are increasingly adopting artificial intelligence (AI) in HR and administrative functions to improve efficiency and allow professionals to focus on strategic tasks. According to **Orhan Yebanci (2020)**, intelligent HR systems can identify key employee traits and engage candidates throughout the recruitment process. **Nir Kshetri (2020)** emphasized AI's role in fraud prevention through document verification, facial recognition, and emotional analysis. **Sekhri and Cheema (2019)** highlighted the use of chatbots on platforms like Facebook, WhatsApp, and LinkedIn for attracting talent, screening resumes, and conducting initial interviews. These tools also manage payroll and deliver customized training via mobile apps.

Conversational AI supports performance evaluation by analyzing employee communication data, while natural language processing (NLP) and machine learning help identify causes of turnover through leave records. **Vivek Yawalkar (2019)** noted AI's contribution to reducing hiring bias and administrative burden while offering tailored training feedback. **Enju and White (2018)** emphasized robotic process automation (RPA) for streamlining tasks such as payroll, onboarding, and data entry, with chatbots handling routine employee queries.

Tian Wang and Jianbang Lin (2018) observed that AI personalizes training based on employee preferences. **Jia et al. (2018)** added that AI helps establish performance metrics and manage scheduling through virtual assistants. **Joshi and Chaturvedi (2017)** discussed AI's role in re-engaging job seekers and supporting HR planning. **Lopes et al.** noted its value in organizing business communications and tracking meeting records. **Mathiason et al. (2014)** concluded that AI can also guide employees through processes like layoffs while promoting retention and workforce planning.

III. Research Methodology

This study adopts a conceptual and bibliometric research design to explore the integration of Artificial Intelligence (AI) within electronic Human Resource Management (e-HRM) practices. The primary objective is to examine how AI is evolving to emulate emotional intelligence and its impact on the effectiveness and sustainability of HR functions. A bibliometric analysis was conducted, combining qualitative content analysis with quantitative review mapping to systematically synthesize research patterns. The review followed a PRISMA-based approach, consisting of four phases: identification, screening, eligibility, and inclusion.

During the identification phase, academic databases and platforms such as Springer, Elsevier, ResearchGate, Academia.edu, Cornell Repository, and the Journal of Business were searched using keywords like "AI in HRM," "Emotion AI," "Emotional Intelligence in the Workplace," and "AI in e-HRM." Additional sources were reviewed from SSRN, MIT Sloan Management Review, Go.Gale, and IJRAR. A total of 60 articles were initially identified; after removing 10 duplicates, 50 were screened. The articles which have published form 2004 to 2024.

Following the screening, 26 articles were excluded based on relevance and quality, resulting in 26 full-text articles meeting the inclusion criteria. These were organized into four key themes:

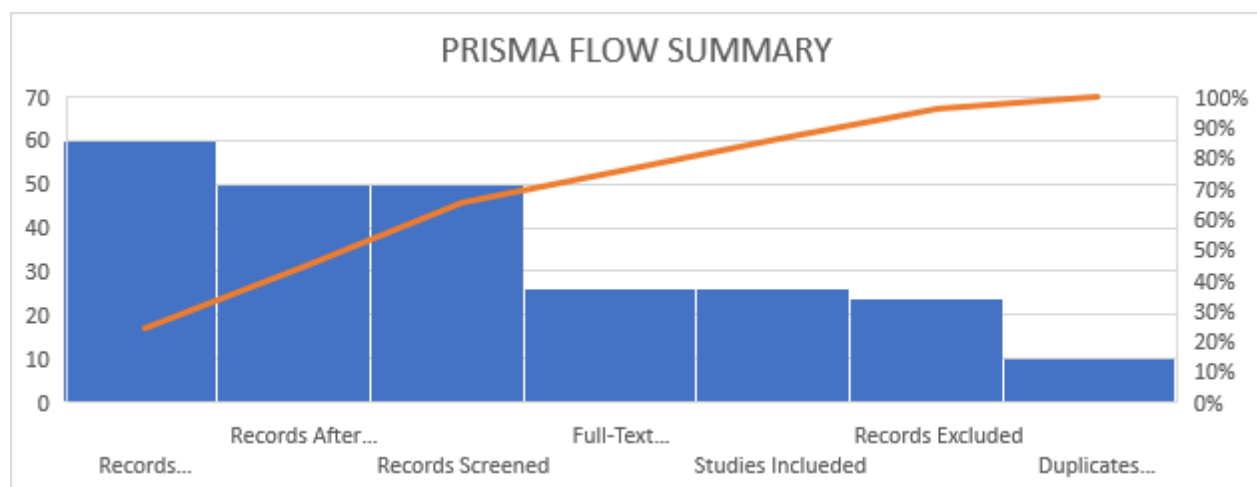
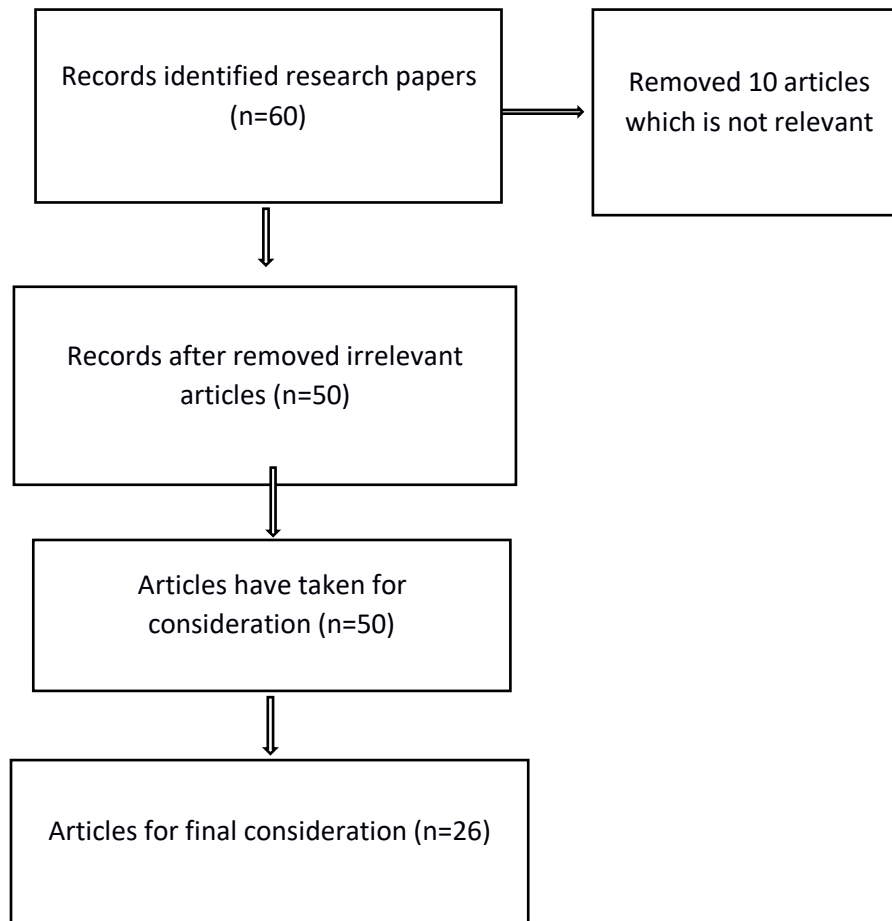
1. Artificial Intelligence in the Workplace
2. AI Learning Emotional Intelligence
3. Emotional Intelligence in the Workplace
4. AI in HR and Administration

These selected studies, comprising both conceptual and empirical work, provided a comprehensive view of how AI-enabled systems influence HR practices through e-HRM. The analysis of this literature formed the foundation for the study's conceptual framework and guided the development of research objectives. This methodology ensures that the study is grounded in credible academic sources and offers meaningful insights into the transformation of HR through emotionally intelligent AI systems.

Prisma Flow Summary

Stage	Count
Records Identified	60
Duplicates Removed	10
Records After Deduplication	50
Records Screened	50
Records Excluded	24
Full-Text Reviewed	26
Studies Included	26

Prisma Flow Chart



IV. Results and Discussions

This conceptual and bibliometric study provided a comprehensive synthesis of how e-HRM practices serve as the foundational framework for integrating Artificial Intelligence (AI) and Emotional Intelligence (EI) into contemporary human resource management. The findings are discussed in relation to the study's three core objectives:

Understanding the Role of AI in e-HRM Practices

e-HRM—defined by its use of web-based technologies to deliver HR functions—has laid the groundwork for the digital transformation of HR. The findings revealed that AI has emerged as a natural extension of e-HRM systems, optimizing traditional

functions such as recruitment, training, onboarding, payroll management, and performance appraisals. AI-driven tools enhance the scalability and responsiveness of e-HRM by automating repetitive tasks, enabling real-time data analysis, and reducing human error. Technologies like robotic process automation (RPA), natural language processing (NLP), and intelligent dashboards are transforming how e-HRM practices are executed, making them faster, more precise, and strategically aligned.

Integration of Emotional Intelligence into AI Systems

A distinctive advancement within modern e-HRM frameworks is the incorporation of emotionally intelligent AI, or emotion AI. This involves embedding human-centric capabilities into machine systems to foster empathetic, context-aware interactions. Tools that utilize facial recognition, voice sentiment analysis, and neural networks now support functions such as employee engagement, coaching, well-being monitoring, and diversity-sensitive recruiting. These technologies are transforming e-HRM from a process-driven system to a people-sensitive ecosystem that prioritizes emotional understanding alongside operational efficiency. However, the review also stresses that the effectiveness of such tools depends heavily on the quality of algorithm training, ethical programming, and contextual relevance.

Evaluating the Effectiveness of AI-Enhanced e-HRM Systems

The findings demonstrated that AI-powered e-HRM practices are not just reactive tools but proactive agents of organizational development. For instance, in talent acquisition, AI chatbots and resume parsers reduce time-to-hire and improve candidate matching. In learning and development, adaptive e-learning platforms tailor content based on individual employee performance. Similarly, AI tools in payroll and compliance ensure timely, accurate execution of critical administrative tasks. Notably, emotion AI elevates traditional e-HRM functions by enabling nuanced human interaction—such as emotional diagnostics during interviews or pulse surveys for real-time sentiment analysis. These capabilities enhance both the functional and strategic layers of HRM.

Overall Implications

This study affirms that e-HRM is not merely a digital upgrade of traditional HR but a transformative platform that facilitates the integration of AI and EI. Emotional intelligence brings human depth to HR practices, while AI introduces speed, scalability, and precision. Together, these dimensions reinforce e-HRM as a dynamic, sustainable, and future-ready approach to people management. The evolution of e-HRM—driven by technological innovation and emotional awareness—repositions HR as a strategic partner capable of balancing efficiency with empathy, automation with personalization, and process with purpose.

V. Conclusion

This bibliometric analysis highlights how e-HRM practices, powered by Artificial Intelligence (AI), are transforming human resource functions by incorporating elements of Emotional Intelligence (EI) through neural networks and intelligent algorithms. Traditional HR tasks—such as attendance monitoring, recruitment, and payroll management—have been significantly streamlined through AI integration, enhancing operational efficiency.

AI-driven tools, including chatbots and automated screening systems, have redefined recruitment by accurately identifying suitable candidates and facilitating initial engagement. In payroll administration, AI has simplified processes involving compensation, benefits, and statutory compliance. These advancements reduce manual workload and foster adaptive learning, innovation, and strategic thinking within HR teams.

Emotional AI, in particular, expands human potential by supporting creativity and improving productivity through emotionally responsive systems. Although the future development of AI remains uncertain, it holds strong potential to advance in areas requiring contextual understanding and decision-making.

The study concludes that organizations should actively embrace virtual workplaces and integrate AI-enabled e-HRM systems. Doing so can alleviate excessive workloads, enhance employee experience, and drive innovation in HR processes, policies, and practices.

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