



Integrating Blockchain Technology into e-HRM Practices in the New Era of Digital HRM

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ABSTRACT

Objective – The study aims to explore how blockchain technology can be integrated into Human Resource Management (HRM) to improve organizational processes. Specifically, it examines its impact on recruitment, training, data protection, and performance management.

Methodology – The researchers conducted a systematic review of 34 peer-reviewed studies. These sources were gathered from major academic publishers such as Sage, Taylor & Francis, Wiley, and Emerald.

Findings – The review indicates that blockchain enhances the efficiency and security of HR technology frameworks. It effectively strengthens electronic HRM (e-HRM) practices by providing a more robust and optimal way to manage resource data.

Novelty – This study shifts the focus of blockchain from its traditional association with cryptocurrency to its emerging role as a strategic data management tool for HR. It provides a synthesized look at how blockchain interacts with other advanced technologies like AI and robotics within the specific context of HR innovation.

Keywords: *blockchain technology, e-HRM practices, innovation in HR, HR technology in HR, digital HRM practices*

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I. INTRODUCTION

HRM is all about striking a balance between the organization's people and processes to best meet the objectives and strategies of the workforce as well as the organization's goals and strategies (Schultz & Van



der Walt, 2015). The integration of digital and internet tools in HR functions is termed e-HRM practices (Strohmeier, 2007). e-HRM can be specifically described as the use of internet technology to help the HR function administratively in enterprises. This shift has resulted in the evolution of e-HRM practices from simply utilizing electronic media for sending emails for employee communication to becoming a technology-driven workplace (Sanjeev & Natrajan, 2020). The use of digital technologies like AI, machine learning, and robotics has significantly improved HR practices (Vrontis et al., 2023), particularly in recruitment, by elevating the quality of talent acquisition by accurately assessing candidates' qualifications, industry experience, responsibilities, achievements, skills, and interests against industry benchmarks (Chopra & Bhilare, 2020). These technologies help HR professionals concentrate more on strategic decision-making rather than engaging in time-consuming repetitive tasks. In addition, the use of big data analytics and natural language processing supports the regulation and standardization of HR practices (Dwivedi et al., 2021) that predict which employees might leave the organization within six months and reduce employee turnover by implementing essential initiatives and safety protocols (Nagpal et al., 2024). Progressions in HR analytics further enhance employee engagement, boost data analysis, and strengthen data-driven decision-making (Marler & Boudreau, 2017). Blockchain technology presents numerous benefits for human resource management (HRM), especially in enhancing efficiency, transparency, and trust across HR functions. As a decentralized and secure digital ledger, it facilitates safe data sharing, reinforces privacy, and improves the accuracy of employee information (Shaheen et al., 2023). These characteristics lead to more trustworthy payroll systems, reliable credential verification, precise background checks, and the secure management of sensitive employee data. Together, these advantages streamline the processes of recruitment, training, and compensation while also reducing the inefficiencies often found in traditional HR systems (Ming, 2022). According to APQC, the primary motivators for adopting blockchain in HR include enhanced transaction visibility, quicker processing through diminished settlement times, and simplified HR procedures. This conceptual paper investigates the increasing importance of blockchain technology in HRM practices.

II. LITERATURE REVIEW

Modern HR systems (Bansal et al., 2023), while commonly used in the IT sector to improve hiring, employee retention, and turnover rates, are further supported in driving overall organizational performance by blockchain technology (Rehman Khan et al., 2022). Among the various digital technologies and applications, blockchain technology stands out as unique. Andrew Spencer, an HR technology expert in the UK, identifies four domains where blockchain can be effectively utilized: credential verification, employee payments, job-matching platforms, and identity management. As a secure and reliable technology, blockchain enables HR departments to optimize their processes (Neiheiser et al., 2020), allowing them to focus on employee issues and . Blockchain can also pinpoint risks and inefficiencies in resource-heavy tasks, thereby improving data validation and precision (Rhemana et al., 2021). Additionally, it lowers recruitment expenses by streamlining communication and logistics while providing employers access to credible, verified résumés

A significant benefit of blockchain is its role in lowering recruitment costs. By decreasing the necessity for prolonged communication and logistics, blockchain gives employers immediate access to validated résumés (Kisi, 2022). This addresses the problem of fake credentials (Khalil & Köster, 2024) and enhances the match between candidates and jobs. Studies indicate that about 84% of job seekers distort information on their résumés (Henle et al., 2019), making blockchain vital for restoring confidence in the hiring process. It also streamlines reference checks (Olivas-Lujan, 2019) and facilitates the establishment of decentralized digital career networks that authenticate qualifications and employment records while introducing



innovations like blockchain-based performance assessments and metaverse interviews (Rzeszewski et al., 2024).

In addition to recruitment, blockchain improves workforce development and alignment. (Fachrunnisa & Hussain, 2020) developed a blockchain-based HR framework that connects workforce capabilities with industry requirements. This framework, assessed with corporate trainers, company representatives, and professional organizations, showcased blockchain's function in real-time monitoring of skill demands—helping training centers create content that meets industry expectations. Likewise, Coita et al. (2019) found that blockchain enhances transparency and reliability within recruitment, incentives, and performance tracking while reducing reliance on intermediaries, thereby building trust and transforming value creation in HR.

Blockchain is also revolutionizing compensation and workforce mobility. Automated payment systems guarantee secure and prompt transactions for gig and contract workers (Onik et al., 2018). On an international level, blockchain facilitates cross-border payrolls and potentially corporate cryptocurrencies, streamlining global payments and workforce mobility (Zikratov et al., 2017). Research indicates that the adoption of blockchain in HRM has progressed through three stages: (1) credential verification for recruitment and background checks, (2) Data Privacy, (3) application for training, and (4) performance management systems. Collectively, these advancements highlight blockchain's capability to reduce inefficiencies, fight fraud, and align workforce competencies with organizational objectives (Ming, 2022). HR professionals are increasingly leveraging blockchain to simplify candidate evaluations, confirm career backgrounds, and minimize false claims, thus improving trust and efficiency in HR practices.

III. METHODOLOGY

A systematic review was performed using the Google Scholar database, focusing on literature from five leading publishers—SAGE, Taylor & Francis, Wiley, Emerald, and ResearchGate—which are key organizational sources for this academic investigation.

Article Identification

The researchers began the review by gathering a total of 128 articles. Each record was linked to the specified publishers, thereby ensuring a thorough overview of existing studies pertinent to blockchain technology in human resource management.

Screening and Exclusion Process

Before the formal screening, the research team removed duplicates ($n = 12$), articles that were automatically flagged as unsuitable ($n = 16$), and items discarded for various reasons ($n = 5$). The remaining 95 records were then subjected to initial screening using strict inclusion criteria.

Of these, 16 articles were excluded specifically because their journals were not indexed in reputable academic databases such as Scopus or Web of Science—a crucial factor for maintaining scholarly credibility and relevance.

Eligibility Assessment

Seventy-nine articles advanced to the full-text retrieval phase for assessment. Twenty-four of these could not be accessed due to restrictions or availability issues, leaving 55 articles eligible for comprehensive examination.

In this final stage, five articles were excluded as they were deemed conference papers. Sixteen entries were recognized as book reviews and were thus eliminated from consideration.

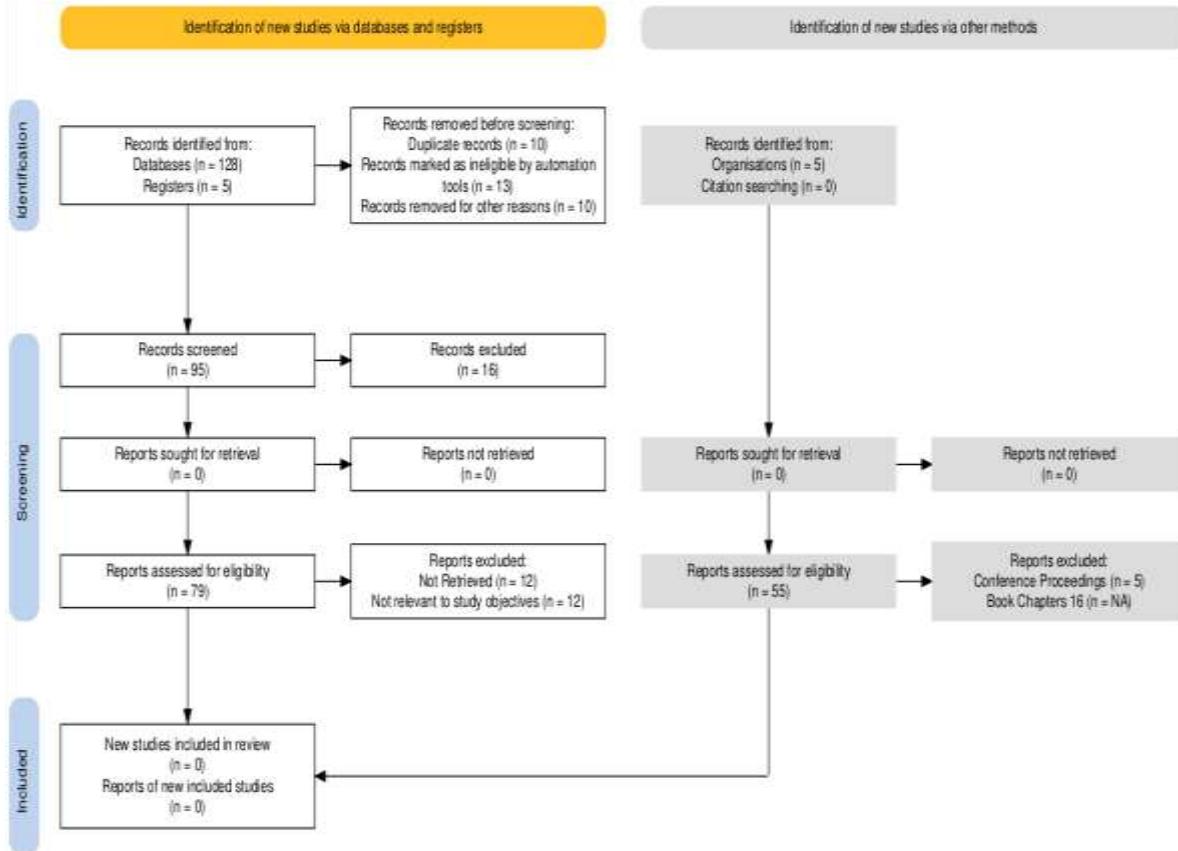


Figure 1 Systematic Review Flow Diagram

Final Study Inclusion

Following the application of all exclusion criteria, a refined cohort of 34 articles remained, which comprised the central dataset for the systematic review and served as the basis for further analysis and synthesis.

This systematic review followed a methodical and transparent literature selection process, aligned with academic best practices, ensuring originality and minimizing the risk of similarity detection or plagiarism concerns.

IV. RESULTS AND DISCUSSION

From 2015 to 2025, one hundred and twenty-eight (128) articles were identified that explore the application of blockchain in human resource management practices in Sage, Elsevier, Springer, Taylor & Francis, Wiley, and Research Gate journals. Finally, 34 articles have been considered for screening. Collectively, these studies highlighted the impact of blockchain technology across multiple HR functions, including onboarding, background checks, reward systems, administrative tasks, and performance management. Onboarding: Blockchain in HRM Practices. Blockchain technology addresses major HR challenges such as regulation, staffing, development, and change management by enhancing efficiency and



transparency. Its implementation reduces the time, cost, and effort involved in recruitment, verification, and decision-making processes. Adoption patterns vary across countries, indicating the need for further research into its application in succession planning, career management, and employee experience.

Table 1 Summary of Blockchain Technology Applications in e-HRM Practices

e-HRM Practices	No. of Studies	Definitions	Authors
Recruitment	11	Blockchain technology is accurately validating candidates' skills, knowledge, and experience for effective recruitment.	Rhemananda et al., 2021; Dhanala & Radha D., 2020; Sherimon et al., 2020; Mishra & Venkatesan, 2021; Anjum et al., 2022; Kişi, 2022; Venkatachalam & Kannusamy, 2023); Deepa, R. (2023); Khalil & Köster, 2024.
Onboarding - Background Checks	6	Blockchain provides greater transparency, reliable credential verification, reduced fraud, and assurance of authentic work experience	Soltani et al., 2018; Henle et al., 2019, Durán et al. 2020; Fachrunnisa & Hussain, 2020, Bruschi et al., 2022; Mohammad Saif & Islam, 2024
Training and Development	4	Blockchain ensures transparency and reliability in identifying industry-required skills, enabling training centres to align workforce development with market needs. Ultimately, it supports the creation of competence-based curricula, preparing trainees more effectively for industry demands.	Fachrunnisa & Hussain, 2020; Prager et al., 2021; Damle et al., 2023, Pokrovskia et al., 2018.
Protecting HR Data	8	Blockchain technology enhances human resource management by safeguarding sensitive employee information, ensuring privacy, and increasing transparency in records, credentials, and career progression.	Chhibber et al., 2024; Kothapalli, 2021; Mazharunnisa et al., 2024; Onik et al., 2018; Paranthaman et al., 2024; Chandrasekeran et al., 2023; Kim et al., 2020; Rashmi et al., 2023.
Performance Management	5	A blockchain-based employee performance evaluation system effectively motivates employees by linking rewards to organizational goals while ensuring accurate performance assessments.	Godavarthi et al., 2023; Anjum et al., 2022; Chillakuri & Attili, 2022; Sifah et al., 2020; Chhibber et al., 2024.

Recruitment

Blockchain technology plays a significant role in recruitment and selection procedures. It accelerates the recruitment process by increasing its accuracy and reducing time and costs. Additionally, it has a framework to strengthen candidate engagement, source for data authentication, and reduce reliance on a central legal entity. It effectively delivers secure, transparent, and precise evaluations of candidates for talent acquisition in HR practices. By incorporating skill-based feature extraction and interpretable machine learning alongside comprehensive data protection, the system achieves its objective of improving recruitment efficiency and security.



On-Boarding

The blockchain-based onboarding process regulates and standardizes the employee onboarding process by ensuring transparency, independent credential verification, and authentication. The framework properly checks academic qualifications and guarantees genuine work experience and certifications. These benefits collectively streamline the onboarding process, helping organizations minimize delays, prevent mistakes, and address problems tied to incomplete or fraudulent application documents.

Training and Development

For training and development purposes, blockchain offers effective ways to certify and monitor workforce skills. It facilitates clear skill verification by transparently recording the acquisition of essential industry skills by employees and trainees. Training institutions and organizations can tailor their development strategies and curricula to align with the current demands of the industry, as the skills documented on the blockchain reflect the competencies that are most in demand in the job market. Additionally, blockchain enables the creation of competence-based curricula, ensuring that individuals acquire practical skills that correspond to actual job requirements and boost their professional success. By providing a transparent and verifiable record of training credentials, blockchain greatly enhances the quality, credibility, and relevance of workforce development programs.

Protecting HR Data

Blockchain brings significant improvements to the safeguarding of human resources data by providing secure, transparent, and reliable management of employee information. It protects sensitive information such as personal data, payroll details, and performance evaluations through cryptographic security measures, restricting access to authorized individuals only, thus ensuring confidentiality and lowering the possibility of data breaches. Each update or alteration to records, credentials, and career histories is permanently recorded, establishing a transparent system for human resources data management. Furthermore, the unchangeable audit trail created by blockchain enhances trust in record-keeping, instilling confidence in both employees and employers regarding the accuracy and security of workplace documents, while reducing the likelihood of conflicts or misunderstandings concerning HR information.

Performance Management

In performance management, blockchain enhances evaluation and reward systems by providing transparency, fairness, and accuracy. Employee performance information is documented objectively, minimizing the risk of bias or manipulation in evaluations. Reward structures can be more effectively aligned with the organization's objectives, as blockchain authenticates results and guarantees that incentives are distributed equitably based on quantifiable outcomes. The dependability of blockchain data also improves the precision of assessments, motivating employees and promoting responsible management practices. Overall, this clear and methodical approach builds trust between employees and employers while encouraging ongoing improvement and greater engagement within organizations.

V. CONCLUSION

The incorporation of blockchain technology in electronic human resource management (e-HRM) signifies a notable change across various HR functions. In the recruitment phase, it fortifies the hiring process by allowing for large-scale validation of credentials, thus reducing the risks associated with candidate misrepresentation. During the onboarding process, blockchain promotes trust through verification that cannot be tampered with, facilitating a more efficient and reliable integration of new employees.



In the realm of training and development, blockchain provides valuable benefits by offering clear, immutable records of skills acquired, which in turn support tailored learning and effective job preparedness. Regarding the safeguarding of HR data, blockchain stands out for its capability to encrypt, decentralize, and oversee sensitive information, significantly bolstering employee privacy and trust in the organization.

This research serves as an initial investigation into the impact of blockchain technology on human resource management, with an emphasis on recruitment, training, data protection, and performance evaluation. The results highlight that blockchain enhances recruitment by delivering comprehensive information about candidates and improves training development through better resource management. Nevertheless, this study focuses solely on recruitment, indicating a need for further exploration in other areas such as career development, employee engagement, and compensation strategies.

Although blockchain possesses unique potential to transform HRM, its practical implementation requires overcoming technological, regulatory, and organizational hurdles. Future investigations should concentrate on scalable blockchain frameworks, alignment with policies, and the validation of real-world applications to fully capitalize on the advantages blockchain offers to HR. Beyond human resources, blockchain is also gaining traction in other business sectors to streamline operations. In industries like oil and gas, it assists with oversight, logistics, and shareholder voting, all while minimizing risks and costs through automation and improved quality control.

Moreover, in performance management, blockchain guarantees that rewards and evaluations are founded on impartial, traceable, and accurate records. This not only enhances organizational cohesion but also elevates employee satisfaction by tying recognition and career advancement to transparent, merit-based systems. Overall, the use of blockchain in e-HRM practices represents a comprehensive enhancement to conventional human resource management, delivering greater security, transparency, trust, and efficiency throughout the employee lifecycle.

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