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Blockchain Technology in Human Resource Management: Role in the World of Work

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Keywords

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Abstract. This research aims to investigate the role of blockchain technology in human resource management, especially in the world of work. Blockchain technology, which has become known for its security, transparency, and ability to manage data efficiently, has the potential to change the human resource management landscape. A qualitative research approach was used to analyze how blockchain technology can be integrated in the employee selection and recruitment process. Through a comprehensive literature review, we discuss the basic concepts of blockchain technology, security principles, and applications of blockchain in various industries. Apart from that, we also explore the basic concepts of human resource management, focusing on employee selection and recruitment. If we consider the industries and sectors that can benefit most from blockchain technology, it cannot be denied that the Human Resources (HR) department is one of the most prominent. Blockchain's key advantages in data management, combined with its ability to operate globally, make it a very suitable solution for the HR field. This technology enables HR to manage sensitive information with a high level of security and transparency, and facilitates processes such as payroll, recruitment, and performance management with unmatched efficiency and accuracy. Thus, blockchain brings positive changes in the way HR manages data and optimizes their operations in an increasingly complex and globally connected work environment.

1 INTRODUCTION

Human Resources Management (HR) plays a central role in shaping the success of an organization in the modern era which continues to develop. The world of work has undergone rapid transformation, with increasingly complex and dynamic demands (Nugroho, 2021). Globalization, digital technology and social change have drastically changed the work landscape. To face these challenges, organizations must adopt a more sophisticated approach in managing their workforce (Purnawanto, 2010). This includes strategies for recruiting, developing and retaining the best talent, as well as optimizing employee performance. Effective HR management not only has an impact on the company's productivity and profitability, but also on the quality of life of employees and the long-term sustainability of the organization (Setiyati & Hikmawati, 2019).

In this context, the use of technology and information systems is increasingly becoming an important component in HR management. Organizations that successfully utilize technology to support their HR processes have a significant competitive advantage (Ellitan, 2002). This includes the use of information systems for employee data management, data analysis for evidence-based decision making, and collaborative platforms to increase employee engagement. With a more sophisticated approach and the right technology, organizations can better face changes in the world of work, optimize their human resources, and achieve long-term success (Darmawan et al., 2023). One of the technologies that has emerged and changed the paradigm in resource management Human Resources (HR) is blockchain technology.

Blockchain is an immutable distributed ledger, which allows recording transactions and monitoring assets in a business network safely and transparently (Pratiwi, 2022). This technology brings fundamental innovation in the way data and assets are managed, as it allows transaction records that cannot be manipulated and are open to all participating parties (Ihsan, 2022). With blockchain, assets include not only physical objects such as houses or cars, but also intangible assets such as intellectual property, copyrights, patents, and brands. This changes how organizations manage and protect their assets, which is an important element in HR management (Rahardja, 2022).

In the world of work, blockchain is starting to play an important role in various aspects. The use of blockchain in the recruitment process can increase the validity of candidate career records, reduce

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the risk of falsifying information, and facilitate rapid verification of references (Fachrunnisa & Hussain, 2020). Additionally, blockchain can be used to record employee skills and certifications transparently, allowing organizations to monitor employee progress more accurately (Heriyanto, 2020). Additionally, in terms of compensation and attendance management, blockchain can be used for secure and automatic payments and employee attendance monitoring without the need for intermediaries (Roberto, 2020). Thus, blockchain technology has brought significant changes to the world of work, helping organizations optimize their HR management efficiently and securely.

Top of Form

Blockchain, originally conceived as the foundation for digital currencies such as Bitcoin, has developed into much more than just that, reverberating across various industrial sectors, including Human Resources (HR) management (Saif & Islam, 2022). With the main characteristics of decentralization that eliminates intermediaries, a high level of security thanks to strong cryptography, and undeniable transparency, blockchain brings revolutionary potential in changing the paradigm of management, recruitment, and workforce development for organizations (Saleh et al., 2020). This opens the door to more efficient, accurate HR management and provides peace of mind in terms of data security, all of which are key to success in this modern era.

The aim of this research is to investigate the role of blockchain technology in Human Resources (HR) management and to understand how this technology can improve efficiency, security and transparency in HR management in the world of work. By studying blockchain implementation in the HR context, this research aims to provide organizations and policy makers with in-depth insight into the potential benefits of this technology, such as simplifying the recruitment process, verifying employee qualifications, and more efficient and fair compensation management. The benefits of this research include increasing productivity and operational efficiency of organizations, reducing risks in HR management, and contributing to technological developments that will support a better future in the world of work.

2 METHOD

The research methodology employed in this study is a qualitative technique. The utilization of a qualitative method entails the development of a research strategy that prioritizes the use of words rather than numerical data in the process of data collecting and analysis. Additionally, this approach stresses an inductive approach in establishing the connection between theory and research, ultimately leading to the generation of new theoretical frameworks. According to Moleong (2014), a distinguishing feature of the qualitative method is its emphasis on the examination of processes and outcomes. Qualitative researchers possess a keen interest in comprehending the process of emergence. According to this viewpoint, researchers employing a qualitative technique prioritize the examination of the current reality by means of monitoring the study subject and identifying the underlying elements contributing to its occurrence. Subsequently, they endeavor to identify potential resolutions for the prevailing issues. The chosen methodology for this study is qualitative, as it serves multiple purposes. In addition to providing a descriptive account of events and social reality, it aims to uncover and elucidate the impact of blockchain technology on human resource management, particularly in the context of employee selection and recruiting.

3 RESULTS AND DISCUSSION

Human Resources Management (HR) is a part of business operations that relies heavily on the flow of fast and accurate information. The faster and more precisely this information is available, the better the results (Laili, 2016). Blockchain technology, which records data instantly, is transparent, and stores it permanently in a distributed ledger that can only be accessed by authorized network members, is a very suitable option for information distribution in this context (Asari et al., 2023). In HR management, blockchain networks can be used to monitor various aspects, including orders, payroll administration, user accounts, employee documentation, and much more (Saif & Islam, 2022).

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How blockchain works in the context of Human Resources (HR) management can be described in three key stages that enable this technology to become a powerful tool for monitoring, recording and processing HR information safely and reliably. First, the blockchain records every activity as a data block. In an HR context, the information recorded includes a variety of details, such as who was involved in an event, what happened, when and where the event occurred, the amount involved in the transaction, and even additional conditions such as the employee's temperature or the time the employee returned to work after experiencing COVID-19. This creates a comprehensive and detailed digital footprint of HR activities within the organization.

Second, these multiple data blocks are connected together to form a data chain. This chain plays an important role in ensuring accurate timelines and a legitimate chain of events. In addition, the data blocks are securely linked together, thereby preventing the possibility of unauthorized data changes or insertion. In other words, no blocks can be modified or added between the already recorded blocks, firmly maintaining data integrity. Finally, these data blocks form an immutable chain. Each additional block added to the chain strengthens the validity and authenticity of the previous block, which in turn, secures the entire blockchain. This means that there is no possibility of interference by unauthorized or malicious parties in the system. Blockchain creates an immovable ledger of HR operations, which organizations can completely rely on in their HR management.

In the context of HR management, blockchain technology provides a strong layer of security and high reliability. This eliminates the risk of data manipulation or unauthorized insertion of information, creating a trustworthy database for all HR-related transactions and activities within the organization (Koncheva et al, 2019). Thus, blockchain has a positive impact in increasing efficiency, security and transparency in HR management in an increasingly complex and dynamic world of work.

Thanks to its immutable data structure and decentralized storage, blockchain can be used for a number of key HR applications. These include:

a) Streamlining talent sources

Recruitment is a very important stage in managing Human Resources (HR) in an organization. However, it is often a long, complicated and time-consuming process. To overcome these challenges, many businesses choose to rely on third-party agencies or external recruitment companies. While third-party agencies can assist in finding suitable candidates for required positions, this decision is often too expensive, considering the fees charged by the agency. In this context, blockchain technology has emerged as an attractive solution to address cost and efficiency issues in recruitment. Blockchain allows recruiters to verify applicant information in a much faster and more efficient manner than conventional verification processes. Applicant data and records, such as employment history, education, and references, can be recorded on the blockchain securely and transparently. This gives recruiters confidence that the information provided by applicants is accurate and cannot be manipulated.

One of the main advantages of blockchain is its ability to provide practical verification in real-time. This means that recruiters can access and verify applicant information quickly, reducing the time required for the overall recruiting process. Additionally, blockchain also eliminates the need for intermediaries, such as third-party agencies, which can save significantly on hiring costs. By using blockchain technology in recruitment, organizations can speed up the selection process of potential candidates and reduce the costs associated with the process. This helps organizations to gain faster access to suitable talent and improves overall HR management efficiency. Although still in the development stage, blockchain's potential in changing the recruiting landscape to make it more efficient and economical has become attractive to many organizations looking for ways to improve their HR processes.

b) Payroll for international employees and freelancers

Transnational payroll processing is a major challenge in Human Resources (HR) management in the current era of globalization. Managing payments to workers across borders with multiple currencies and different banking systems can be a complex and expensive process. However, blockchain technology has provided an innovative solution in this regard. Various institutions have

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emerged that allow companies to make cross-border payments by converting fiat currency into bitcoin or other cryptocurrencies. This process can be done quickly and securely, avoiding the high fees usually associated with traditional currency conversions. Once the payment is completed, the transaction history recorded in the blockchain makes it easily traceable, providing the necessary transparency in a company's financial management.

Apart from that, blockchain platforms also open up opportunities for freelancers or independent contractors who work across borders. They can accept payments in the form of cryptocurrency, which can be accessed and converted into local currency anytime and anywhere via the blockchain platform. This facilitates more flexible and efficient payments for freelancers who often operate in multiple countries. Thus, blockchain technology not only makes transnational payroll processing easier for companies, but also provides better financial solutions for freelancers, creating a more connected and efficient global work environment.

c) Management of employee archives

The Human Resources Department has a major responsibility in managing sensitive information related to employees and organizational operations. Data such as employee personal information, salary data, and performance evaluations are very important assets and must be strictly protected. In an era where digital security threats are increasing, protecting this information is a top priority. One interesting solution is the utilization of blockchain technology, which is a powerful decentralized data storage system. By using blockchain, HR departments can store this information securely and encrypted. Once information is documented in the blockchain, the data becomes unable to be changed or manipulated without appropriate authorization. Blockchain security is based on strong cryptography, so that only individuals or entities with access rights can access and modify the data. This means that the risk of information theft or breach is greatly minimized, given that the data stored in the blockchain cannot be easily compromised by unauthorized parties.

Thus, blockchain technology provides a high level of protection for sensitive information managed by HR departments. This provides organizations with peace of mind when it comes to the security of their employee data and operations, as well as ensuring compliance with increasingly stringent privacy and security regulations. With the use of blockchain, HR departments can optimize their management of sensitive data, ensure the confidentiality and integrity of information, and ultimately, provide more secure and reliable services to employees and organizations.

d) Performance management and feedback

With the implementation of real-time updated blockchain technology, organizations can create a sophisticated monitoring system of their employees' efficiency. This opens up great opportunities in making more informed decisions regarding employee training and development. In an environment that supports dynamic change, organizations can easily track the performance of individual staff members, identify areas requiring improvement, and determine training that suits individual needs. Blockchain can also be used as a means to solicit feedback from employees anonymously, allowing them to express opinions and input without fear of retaliation. It also creates transparency in the manager's performance evaluation process and increases accountability in the organization as a whole. With this technology, organizations can create an environment that is more collaborative and responsive to employee needs and expectations, ultimately improving work efficiency and quality.

e) Smart contracts for seasonal and contingent workers

The concept of smart contracts is a revolutionary evolution in contract governance and transaction management in the business world. Smart contracts, which are actually contracts that are set up and executed automatically based on a specific code, are located within a secure and decentralized blockchain network. Its uniqueness lies in its ability to independently monitor and process transactions based on predetermined criteria and conditions, without the need for human intervention.

In the context of Human Resources (HR) management, smart contracts have great potential to optimize various processes involving employment agreements, confidentiality contracts and other legal documents. For example, blockchain-based smart contracts can automatically trigger employee

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employment contract extensions according to predetermined conditions. This eliminates the need to manually process contract extensions, saving valuable time and resources. Additionally, smart contracts can also be used to release escrow assets directly to employees after they complete their assigned responsibilities or at the end of the work season. This not only reduces delays in employee payments, but also helps overcome business cash flow challenges.

With the adoption of smart contracts in HR management, organizations can achieve greater efficiency in contract processes and transactions involving their employees. This not only reduces administrative costs, but also increases trust and transparency in the relationship between the company and employees. In other words, blockchain-based smart contracts can help create a work environment that is more efficient, fair, and responsive to the needs of all parties involved.

f) engagement , rewards and recognition

In addition to providing efficiencies in contract and transaction management, blockchain technology also has the potential to significantly increase employee engagement. Organizations can leverage blockchain to create innovative incentive programs and motivate employees to achieve certain goals or achievements. In this case, employers can offer rewards and benefits to high-achieving employees, with all transactions and rewards recorded in a secure blockchain. Blockchain-based incentive programs allow rewards to be stored in blockchain-protected digital wallets. This gives employees confidence and assurance that their rewards are secure and transparently recorded. This creates real and meaningful incentives, which can be a powerful motivator for improving employee performance. Employees can see the progress of their accumulated rewards in real time, providing a better understanding of their achievements and positively impacting their engagement at work.

By leveraging blockchain technology for incentive programs, organizations can create a more dynamic and motivated work environment, where employees feel recognized and rewarded for their efforts. This can not only increase employee productivity and performance, but also help in building a company culture that focuses on achievement and collaboration. Thus, blockchain is not only a tool for managing transactions, but also a tool that can have a positive impact on employee motivation and engagement, which is crucial in achieving long-term success.

4 CONCLUSION

When examining the industries and sectors that stand to gain the most advantages from the implementation of blockchain technology, it is evident that the Human Resources (HR) department holds a significant position. The utilization of blockchain technology in the HR industry is highly advantageous due to its inherent benefits in data management and its capacity for worldwide operations. This technology allows human resources (HR) departments to effectively handle confidential information while maintaining a strong emphasis on security and transparency. Additionally, it streamlines several HR procedures, including payroll management, recruitment, and performance evaluation, by offering unparalleled levels of efficiency and precision. Therefore, the implementation of blockchain technology in human resources (HR) facilitates advantageous transformations in data management and operational efficiency, particularly within the context of a more intricate and interconnected global work environment.

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