BLOCKCHAIN TECHNOLOGY AS A TOOL FOR EFFECTIVE RECRUITMENT: A DESIGN THINKING APPROACH

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ABSTRACT

New technologies have a substantial and long-lasting impact on every area of our lives, jobs, and enterprises. Among other cutting-edge technologies, blockchain and artificial intelligence are having a significant impact on almost all company processes, including the majority of HR-related tasks. As HR departments spend countless hours reviewing applicants and verifying records to reduce the likelihood of poor hiring, the HR sector is currently faced with a number of difficulties. Using distributed ledger technology built on the blockchain, a system that is intelligent, safe, and transparent can be created. Additionally, to create a transparent and safe environment in the age of Industry 4.0, every organisation must adopt blockchain-based technology for human resource management. By recognising talents, expertise, and experience, the blockchain-based technology can assist in finding the ideal applicant, which can significantly increase business efficiency. When building their digital strategy, HR functions and responsibilities need to start considering the blockchain alongside other emerging technologies. Examining the blockchain's potential to increase effectiveness and efficiency should be taken into account along with the wider implications for future work. In contrast to the current recruiting system, this study article advances the notion that blockchain-based technology enhances the recruitment and selection procedures and aids in employer evaluation.

Keywords: *Blockchain, Recruitment, Design Thinking, Hiring, Trust, Artificial Intelligence*

INTRODUCTION

Blockchain is a digital, open transaction database that was first developed to support Bitcoin. The term "transaction" can be used to describe anything from a payment made between two

parties to the automatic authentication of sensitive personal data. Any information can be kept and tracked with it. One of the key elements in the transition of the industrial structure to the future Industry 4.0 is the Blockchain. Both the public and private sectors, as well as the academic community, have embraced the pervasiveness of the blockchain concept, which will revolutionise the world. It also appears to be a key component of the future.

The smart industry is innovated by digital accounting technology, which offers good, fair, transparency, security, and cost-effectiveness. To screen and verify candidates during recruitment, blockchain stores all personal information about applicants in a secure, confidential manner. It is a digital technology that also facilitates the exchange of private information between parties and lowers the likelihood of candidates' past performance information being wrong. Although blockchain gives the impression of being complex, as it may, its fundamental idea is straightforward. A blockchain or database is a type of digital ledger. Understanding databases is required before understanding blockchain.

A blockchain is a type of electronic ledger that arranges data into units called blocks, each of which is made up of several different data sets. When a block is full, it is linked to the one before it creating a data chain known as a "blockchain". Blocks have specific storage capacities. After that first block is added, all subsequent data is assembled into a new block, which is then added to the chain once it is full. In order to better understand blockchain, it can be beneficial to consider how Bitcoin has used it. Similar to a database, Bitcoin's blockchain is stored on a network of computers. This blockchain is just a database for Bitcoin that records every transaction that has ever taken place.

DESIGN THINKING METHODOLOGY

In order to evaluate how Blockchain might be used for recruitment effectiveness in Industry 4.0, a Design Thinking approach is applied in this study. Design thinking is a method of problem-solving that centres the procedure around the requirements and experiences of the user or customer. This approach is used to create original responses to challenging issues. The collaborative and iterative design thinking methodology attempts to provide solutions that are appealing, doable, and viable.

Five steps make up the design thinking process: Empathize, Define, Ideate, Prototype, and Test. In the empathise stage, the team begins by gathering information about the wants and experiences of the user or customer. The problem is then specified in step two using the knowledge gathered in step one. Thirdly, the team creates numerous potential solutions to the problem during the ideate stage. Fourth, at the prototype stage, the team develops a prototype of the prospective solution. The team then runs the prototype by testing it with users or customers to find any problems and improve the fix.

EMPATHY

Empathy is the ability to understand and share the feelings, thoughts, and experiences of others, especially those of the clients or end users for whom the product or service is being developed. Empathy is a key component of design thinking since it aids designers in better comprehending the desires, worries, and aspirations of their clients. In the context of design thinking, empathy means listening to what people are saying, observing how they behave and interact with goods or services, and engaging in dialogue with them to understand more about their experiences. The first stage of this research work tries to get answers for the following questions.

- What is blockchain technology?
- What are the applications of Blockchain technology, especially in Human Resource division?
- What are the challenges faced by the HR department in the traditional way of recruitment / selection?
- Does the blockchain mechanism has any limitations or challenges in using?

New technologies have a substantial and long-lasting impact on every area of our lives, jobs, and enterprises. Among other cutting-edge technologies, Blockchain and Artificial Intelligence are having a significant impact on almost all company processes, including the majority of HR related tasks. As HR departments spend countless hours reviewing applicants and verifying records to reduce the likelihood of poor hiring, the HR sector is currently faced with a number of difficulties. With the help of this technology, it is possible to create a trustful and self-sustaining economic system. Blockchain technology provides peer-to-peer communication in the search and selection process for discovering appropriate candidates for job opportunities, facilitating the flow of information in the recruiting process and lowering costs because there are no middlemen. Consequently, blockchain technology makes it possible for job seekers to communicate directly with recruiters while also maintaining their privacy, (Michailidis, 2021).

Blockchain often makes it possible to cut out middlemen like recruiters. Additionally, blockchain makes it easier to comply with fiscal, social security, and labour laws that are regulated by labour unions and agencies. Law that governs one of the most significant facets of societal relations includes labour legislation and regulation. Consequently, the relationship between the labour legislation and significant socioeconomic factors and production outputs is close and direct, (Koncheva & Odintsov, 2019).

Blockchain will help close the business gap, benefiting HR and its employees greatly, (Mallick, Sengupta, Ingawale, & Aljapurkar, 2022). Due to the increase in cyber risks, there is a perception that technology has eroded confidence in recent years. In order to restore confidence, blockchain is now creating a technology-based strategy. HR roles and responsibilities need to start taking the blockchain into account with other cutting-edge technology when developing their digital strategy. Along with considering the broader

implications for future work, it is important to look at the blockchain's potential to improve efficacy and efficiency.

The traditional human resource management system is beset by issues like the inability to guarantee the quality of staff recruitment, the inconsistency of training performance with actual performance, the unfairness of enterprise performance appraisals, and the unequal distribution of salaries, all of which have a negative impact on employees' motivation and loyalty and pose a risk to the survival and growth of businesses. (LI, ZHANG, & DONG, 2021) discovered that blockchain technology and human resource management systems work well together. Additionally, the research project developed a blockchain-based human resource management mechanism, innovated blockchain application scenarios, and offers some guidance for the future creation of human resource management systems and process optimisation.

(Ramadhan, 2021) demonstrated the Blockchain technology is a cutting-edge technology that can offer a number of advantages in the screening process, including time, money, and energy savings, credential verification, and job history. The lack of explicit rules controlling the usage of Blockchain in Indonesia is further highlighted as a limitation of this technology, as well as the fact that many computer systems still do not support it.

(Shruthi & Kavitha, 2022) conducted a study to evaluate how individuals see blockchain technology. The requirement for human resources will be drastically reduced globally in the coming decades, according to HR professionals, who feel that advanced and sophisticated blockchain technology threatens the survival of the human race. On the other hand, other researchers believe that blockchain technology is one of the most cutting-edge aids created for people and that it can never fully replace human labour. According to the study, employees did not view blockchain technology as a benefit and had only good opinions about it. It also demonstrated that companies should continually concentrate on integrating blockchain technology into tasks associated with human resource management, such as planning and decision-making, hiring, training and development, performance evaluation, and work-life balance.

(Fachrunnisa & Hussain, 2020) created a blockchain-based human resource (HR) framework to align employee competencies with organisational needs. This framework will be utilised by the Corporate Training Centre to standardise the competencies, after which the HR Department will use them to develop the training materials. The contemporary organisations struggle to meet the requirements of the workers while maintaining industrial quality standards. As a result, this will make it easier for everyone to come to terms with the needs of the sector and those of the job market. Corporate Training Centre will serve as a middleman or liaison to coordinate data from organisations, training centres, and professional certification organisations through the proper institution. As a result, in the long run, the demand for workers in these areas who possess the qualifications the company demands will

always be met. Blockchain enables the processing of the information and data required by each party, facilitating efficient and effective communication between the parties.

(Rhemananda, Simbolon, & Fachrunnisa, 2021) developed the concept of utilising blockchain technology in the field of human resource management, especially in the recruitment and employment of staff. The benefit of HR blockchain is that it puts a strong emphasis on productivity gains. Being able to better match people's abilities and skills to open opportunities will enhance productivity. Particularly Small and Medium-sized Enterprises (SMEs) may profit. Smaller firms have a particularly tough time discovering and hiring the proper talent, so anything that may make this process more effective and efficient for them will increase productivity. By making it easier to reliably identify the talents, expertise, and experiences of possible applicants, blockchain will streamline the process of hiring new employees.

(Aishwarya, 2018) examined the uses of blockchain in many industries and how HR processes including hiring, performance review, talent management, and pay employ blockchain technology. Blockchain makes it easier for recruiters to find a pool of highly qualified human resources. Blockchain also protects hiring managers from "Resume Polishers," who make up qualifications for themselves in order to boost the likelihood that they would get chosen. The Massachusetts Institute of Technology in the US has started a project called "Digital Certificates" where they are developing an ecosystem for developing, exchanging, and verifying blockchain-based educational certificates. Their digital certificates, which are tamper-proof and cryptographically signed and have the same codebase as cert-schema, cert-issuer, and cert-viewer, are registered on the blockchain ledger.

DEFINE

Define is the second stage of Design Thinking process followed by Empathy stage in which review of literature were carried out. From the detailed literature review, the present study proposed the use of blockchain in Human Resource department especially in the field of sourcing and recruitment. This is only explorative research where the outcomes are the collective research done by previous researchers in the field of block chain technology.

BLOCKCHAIN AS A TOOL FOR HIRING

Some job seekers purposefully overstate their skills and talents by sending fraudulent applications with fake references, awards, promotions, and other documents. For instance, Amazon offers a $5000 compensation to a worker who wants to end a labour agreement (but currently the plan is dropped), (Tan, 2022). As a result, businesses wind up shelling out a lot of money to get rid of undesirable hires. With the advent of blockchain technology, the drawbacks of manual hiring can be reduced while still producing qualified candidates for employment. In the blockchain, everything is connected digitally, in contrast to the previous recruitment system, which relied on handwritten records. Because the information is better

arranged, there will be no more lengthy decision-making processes. As a result, businesses can reach decisions more rapidly or create a shortlist of applicants who fit the requirements.

Additionally, the expense of the hiring procedure is significantly more affordable and effective. For instance, some potential employees register and state that they worked for the same company five years prior. The data might have been lost via the manual process. But everything can be easily traceable thanks to blockchain technology. Given that the veracity of the applicant's profile is among the most crucial factors, the data verification procedure is ensured. Digital verification can take the place of the laborious human method. The phases of a digital database-based hiring process will then be shorter, more effective, and more efficient. Additionally, it is anticipated that decision-making will go more swiftly and precisely than data collection and verification.

SUBMISSION OF POTENTIAL EMPLOYEES' PROFILE

Before applying for a position, prospective employees must register by submitting their Curriculum Vitae (CV) to the company's blockchain. Prospective employees are asked to fill out the registration form and upload their resume on the company's blockchain website. The potential employee will instantly receive a code from the system after submitting. By comparing the data codes, blockchain will determine if the inputted data is valid or invalid. The blockchain will immediately declare the data to be invalid if a discrepancy is found between the data codes. Employee input must therefore match the identification of the potential employee as it is in reality. Naturally, this lowers the possibility of data fraud and speeds up the process of validating data.

Additionally, once the information has been provided, potential employees cannot update it without the company's and their own consent. The corporate office no longer requires applicants for employment to bring a hard copy of their data files. They only need to provide data to the company's blockchain technology, and it will further validate it on its own. The information and resume that a potential employee enters when applying for a job at company A and uploading them to the company's blockchain website say that the applicant is a graduate of a respected college and has participated in an approved apprenticeship programme at a sizeable firm B.

The indicated university code is correct, but the firm's blockchain system has determined that the code for experience in a certified apprenticeship at company B is either incorrect or invalid. As a result, despite the fact that the prospective employee is listed as enrolled in the university, he has never participated in an approved apprenticeship programme sponsored by firm B. In light of this, it is possible that the potential employee engaged in data fraud.

CHOICE OF POTENTIAL EMPLOYEES

The job screening benchmark report from (HireRight, 2018) found that 84% of candidates fabricated information on their resumes. Systematic fraud prevention, time savings, and

increased ecosystem confidence can all be achieved with the use of blockchain based credential verification. Blockchain technology will be used to verify prospective employees' files or data before they join the system between businesses and the organisations that issue files or certificates. Without the employer's involvement, the certificate issuer can utilise the blockchain to verify a prospective employee's self-identity, educational background, job history, and college information. Blockchain directly gets data that is exceptionally accurate and real-time since data in this system cannot be modified or falsified without the knowledge and consent of the persons involved. This means that even though potential employees have worked with organizations, governments, and other entities, the blockchain can reduce fraud or data manipulation by them.

When a prospective employee includes data indicating that he is a recent graduate of university A who graduated at the end of the year, the blockchain can recognise the recorded data code that indicates there is a discrepancy between the data code inputted by the prospective employee and the data code that is in the university blockchain system A. The potential employee is still enrolled in school and will graduate at the beginning of the following year, according to information from the blockchain. Despite the prospective employee's participation with the organisation, the blockchain's code is secure and cannot be discovered or changed without consensus from all of its parts. Additionally, all changes are automatically and indefinitely logged in the system.

The blockchain system has automated processes that guarantee the efficiency of hiring and HRM procedures. This approach to handling, storing, validating, and ranking data is totally transparent and secure. A blockchain system's security cannot be easily breached by hackers or system administrators. Data tampering or information leakage are exceedingly unlikely given the many layered keys and hash encryption used to secure the blockchain system. The distributed structure of this system makes it possible to track information changes and retrieve the original data.

MAKE DECISIONS MORE QUICKLY

The selection and hiring procedure's decision-making process is sped up and made simpler by blockchain technology. It employs cutting-edge technology and does not require the assistance of a third party to search for data from agencies, businesses, and governments in order to ascertain the accuracy of the prospective employee's data. Blockchain can be used to store data related to employment contracts, including electronic signatures from applicants, payroll information, security access codes, performance reviews, and even psychometric data.

Blockchain based organizations, businesses, and governments automatically verify the accuracy of their data. Finding the truth on the blockchain requires about seven seconds of labour time. Theoretically, an applicant could be hired right away, given a contract, and have their payroll number assigned instantly. As a result, the business may quickly examine the outcomes of the real-time data it has collected and decide which employees have passed.

Businesses and prospective employees may immediately obtain and discover the results of the selection and recruitment process thanks to the usage of blockchain technology. The firm can quickly reject applicants with data issues thanks to a quick data input and validation stage. Businesses can also use blockchain technology to directly decide things. Based on the authenticity of his personal information and the qualifications of other confirmed prospective employees, the system can immediately advise a prospective employee of his acceptance or rejection.

PUTTING WORKERS IN THE APPROPRIATE POSITION

According to (Reston, 2015), about 60% of job candidates exaggerate their qualifications on their resumes. The employer is undoubtedly surprised by this fact, but thanks to blockchain technology, the hiring team can now instantly, accurately, and completely access any candidate's potential and employment history. Employee placement can be based on the accuracy of potential employee data gathered via blockchain technology. For instance, a hiring decision or placement in corporate finance might be made based on the information of potential employee A, who graduated from a prestigious university with a 9.0 GPA and achieved strong grades in accounting classes. Businesses can rely on the data produced by the blockchain system, which can also be used as a manual for selecting and assigning workers based on their vocations.

TRUST AND CONFIDENTIALITY IN BLOCKCHAIN TECHNOLOGY

Blockchain technology is built on a distributed, decentralised ledger that enables safe, open transactions. Two crucial components of blockchain technology that support ensuring its dependability and integrity are trust and confidentiality, (Fremont & Jonathan, 2018).

Blockchain technology incorporates consensus procedures and cryptography to create a trustworthy system. Blockchain's usage of cryptographic methods makes sure that the data is secure and unchangeable. Consensus techniques make ensuring that all participants to a transaction concur that it is valid, helping to thwart fraud and other nefarious acts.

Another crucial component of blockchain technology is confidentiality. Although anybody may examine blockchain transactions, the identities of the persons engaged in the transaction are often kept private. Public and private keys are used to achieve this, enabling users to conduct transactions on the blockchain without disclosing their identities.

In general, since they contribute to ensuring the security and dependability of transactions on the blockchain, trust and confidentiality are crucial elements of blockchain technology.

SECURITY, FRAUD PREVENTION AND PRODUCTIVITY GAINS

When it comes to security, preventing fraud, and boosting efficiency, blockchain technology offers a number of advantages.

Security:
Since blockchain technology is built on encryption, it is extremely difficult to alter the data that is kept there. The blockchain establishes a chain of blocks that is very challenging to change since each block has a hash of the one before it. Blockchain technology is therefore very safe and resistant to hacker attempts.

Fraud Prevention:
Blockchain technology can be used to prevent fraud in a variety of industries. For example, in supply chain management, blockchain can be used to track the movement of goods from the manufacturer to the end consumer. This ensures that the products are authentic and have not been tampered with or counterfeited. In the financial industry, blockchain technology can be used to prevent fraudulent transactions by providing a secure and transparent ledger of all transactions.

Productivity Gains:
By eliminating the need for middlemen and optimising processes, blockchain technology can potentially increase productivity. Blockchain technology, for instance, can be used to automate the transfer of property titles in the real estate sector, which can greatly cut down on the time and expense involved in the process, (Kitsantas, Vazakidis, & Chytis, 2019). Blockchain can be used in the supply chain sector to automate the process of confirming the legitimacy of goods, which can assist to cut down on the time and expense involved with manual verification methods.

Overall, there are several advantages in using blockchain technology for security, reducing fraud, and increasing efficiency, (Makridakis & Christodoulou, 2019). It is a desirable alternative for a range of businesses because to its decentralised structure and capacity to guarantee data quality and openness.

CONCLUSION
HR must start applying this technology as soon as they create their digital strategies in order to keep up with technological development. It's crucial to assess the blockchain's ability to increase efficacy and efficiency in addition to the bigger consequences of future work. In the future, employers will have access to a wider and more trustworthy talent pool, and job seekers will be aware that they shouldn't waste time on hurried job searches. By utilising the blockchain to fix a broken system, the HR sector can meet the upcoming global talent shortages.

In the blockchain era, there will be more demand on recruiters to add value. But they will also have more powerful tools to assist them in doing it. The next step should be to create prototypes that can develop into Proof of Concepts (POCs), with an emphasis on high-value scenarios. It is obvious that the use of blockchain technology in the human resources sector

has increased. If the goal is a more thorough and cost-effective employment procedure, it is time to use the blockchain. The HR function must get involved to stay ahead of the competition in the race to adopt blockchain technology to establish a competitive edge.

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