
Using blockchain technology for recruitment effectiveness in industry 4.0

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ABSTRACT

In this Industry 4.0, with the growing technology and the cyber risk is growing and technology loses its trust, and there comes the concept of Blockchain. Blockchain-based on a distributed digital ledger technology, which helps to create a smart, secure and transparent system. And in Industry 4.0 it becomes a need for any organization to adapt blockchain-based technology in Human Resource functions to ensure a transparent and secure environment. The blockchain-based technology can help to find the right candidate by identifying skills, knowledge, and experience, and as a result, it can boost the productivity of the business very effectively. Blockchain will help fill the business gap, which brings great results to HR and its employees. There is a feeling that technology has dissolve trust in current years, due to rise of cyber threats. So, now blockchain is developing a way to use technology to regain trust. HR purposes and responsibilities need to start putting the blockchain next to other arising technologies in developing their digital strategy. Exploring the potential blockchain to improve efficiency and effectiveness should be considered along with the broader implications for future work. This research paper develops the idea that Blockchain-based technology improves recruitment and selection processes compared to the existing recruitment system and helps in employer evaluation.

KEYWORDS: Blockchain, management, human resource, workforce.

1. INTRODUCTION

Blockchain is a digital, public database of transactions that was first created as a backbone of Bitcoin. The term “transaction” can refer to anything from a payment between two parties to automatic authentication of the important information of someone’s identity. It may be used to keep and track of any information. The Blockchain is one of the crucial factors when it comes to the transformation of industry structure to the next Industry 4.0. The concept of Blockchain will change the world and pervasiveness has been embraced by both

the public as well as private sectors as well as the research community and it seems to be the crucial element of the future. Digital accounting technology innovates the smart industry by providing good, fair, transparency, security, and cost-effectiveness. Blockchain reserve all the personal data regarding candidates securely and confidentially which help while screening and verifying the candidates while recruitment. It is also a digital technology that helps in the transaction of confidential information between two parties and reduces the risk of inaccurate historical data of candidates.

Although blockchain appears to be sophisticated, as it can be, its core notion is simple. A database, or blockchain, is a sort of digital ledger. To comprehend blockchain, it is necessary to first comprehend what a database is.

A blockchain is a digital ledger that organizes data into groups called blocks, each of which contains a collection of data. Blocks have specific storage capabilities, and when they are filled, they are linked to the previous block, establishing a data chain known as a "blockchain." All additional information added after that newly added block is compiled into a new block, which is then added to the chain after it is filled. It's helpful to think about blockchain in terms of how it's been implemented by Bitcoin to gain a better grasp of it. Bitcoin, like a database, relies on a network of computers to store its blockchain. This blockchain is simply a form of a database for Bitcoin that keeps every Bitcoin transaction ever made.

Uses of Blockchain in Human resource

The word block in blockchain means record. So, basically, blockchain is used to keep the track of records. The benefit of Blockchain in Human resource Management characteristic will assist collab and moreover, it helps in reviewing of employees with proper competencies and updating talent and understanding the employees. This function may also present an updated statistics approximately what the enterprise needs and what the schooling issuer has to do to meet the need of the enterprise. In addition, the blockchain can have a huge impact on both sides of the employment relationship, ranging from people's ability to maintain and control access – to a complete, reliable blockchain record based on their training, talent, and workplace performance. By using statistics in data, companies could be able to suit character to roles a lot greater as it should be and more efficient. This may be particularly relevant, as skills and knowledge need to change in view of the fourth industrial revolution. Blockchain will come to pervade commercial enterprise, bringing huge implications to the way wherein the academic qualifications of a person are maintained. Blockchain-based employee lifecycle control tactics would provide the HR region with a truthful, dependable, and obvious way of wearing out a collection of HR activities. Other blockchain benefits Human resources in directing production benefits. Improved ability to compare human capabilities and job performance will provide an increase in corporate productivity. It is very difficult to recruit and select the right potential candidate, especially for the emerging or start-up companies, and anything which helps them do making an end-to-end recruitment process more efficient and effective will boost their productivity level. The huge level of employee data with the proper security makes blockchain technology so good that it matches with the HR Industry as it maintains and manages a wide range of data about a company and its employees. The foremost important reason for using Blockchain technology in HR is that it helps while hiring the right kind of people for the job. Blockchain also enables businesses to automate and ensure payment to contractors and suppliers. Blockchain also helps in decreasing the load of paperwork as saves the time and energy of HR while reimbursing the employee expenses.

Recruitment & Selection

Recruitment is a process of attracting a huge number of candidates with the proper skills and knowledge to fill the position of the organization. On the other hand, the selection is the process of identifying the most eligible candidate with appropriate competencies and for the specific role and organization, that will help the organization to achieve its goal and

objectives. It is very necessary for the organization to recruit people with the required skills units and goals aligned with a company to achieve organizational success. Each year, HR departments spend most of their efforts and money to meet the hiring needs of the organization. They are also required to strike a balance between demand and staff provide to ensure that there is no shortage or excess of candidates. Therefore, choosing the right candidate in the right place is very necessary. Blockchain technology will still do its basic task in recruiting that is eliminating the requirement of a middleman while making sure that the data that candidates are claiming are true and verified. This would lead to an overall increase in the trust level between the employer and employee right from the point where the recruitment process begins. Also, it poses benefits for both the sides of employer and employee, a brief example would be that “potential employees will be able to handle their own data and will not have to depend upon the middlemen industries like job portals, platforms like LinkedIn, etc. In addition to that with blockchain, it would be of higher possibility that the recruiters will be able to do justice to the job requirements of the candidate according to their profile which means that fewer chances of dissatisfaction arising from a mismatch between actual work and work profile of the candidate. “In the Recruitment and selection process, we use metrics to track the measurement and optimize the whole process. Here below there are some metrics that help to measure the performance.

Time to Fill

This matrix is the total amount of time that any candidate needs to fill for a certain position. This help to understand how much time takes for the hiring process. For calculating this matrix, we use the formula as:- Total time to fill for each position in a given period divided by a number of roles. It has been found that the average time to fill any position is 36 days (2017 Talent Acquisition Benchmarking Report)

Time to hire

It measures the total time when a candidate entered through the talent pipeline (application or sourcing) to the time when they finally accept job offer. It has been observed that 70 per cent of the company’s average time to hire is around 1 to 4 months (LinkedIn report). From this matrix we can also find out how efficient companies’ selection process is because if time to hire is more companies may lose top candidates. It has been found that around 57 percent job seekers lose interest if hiring process is too long (Robert Half’s Report).

Source of Hire

This matrix shows the overall percentage of the total number of employees entering the pipeline from different sources (online, referrals, career page etc.). This is the most important matrix in the recruitment process as we can find out how many CV we will get in the future and companies can also find out which source is suitable for the companies. This matrix will help the company to minimize the recruitment cost as it helps us to understand which agencies to invest in, where to allocate your advertising budget and how effective is your hiring team.

Cost per hire

It is one of the most important metrics while hiring. To calculate Cost per hire we refer to the total cost of bringing a new employee into the company which includes recruitment expenses, advertising equipment, cost of travel, administrative cost, etc. This indicator will help the company to track and measure the cost of a recruitment team’s efficiency and effectiveness by quickly filling vacant positions with qualified employees.

Turnaround Time

It is a time interval from when the process is submitted until it is completed. It is a very common type of matrices that calculates start and end times. It is calculated as a mean or average.

Number of Checks

It is the time taken to verify each candidate's background. As the documents they are showing are cross verified from their last organization, government authorize sites, and educational sites also it has been checked whether they have any criminal background or not.

Cost Per Check

It speaks about the value to check one's background. For checking the background, it is necessary to verify their documents first and to verify these documents a certain amount of money is needed which is the cost per check.

2. LITERATURE REVIEW

Uses of Blockchain and features

Blockchain has turned the industry into a new jargon that brings out the attention and interest of practitioners, businesses, and academics (ZALAN,2018). It is a disseminated, shared and distributed ledger, resistant to a temper that makes it easier to record transactions and pursue assets in a business network (PWC 2017a; Gupta, 2017; Hsiao et al., 2018). It also helps to avoid double payout (Nakamoto, 2008). A cryptographic hash ensures links and recognizes the broaden the list of records, which are described as time-stamped blocks. To construct a blockchain these blocks are linked sequentially through nodes that carry the hash of the preceding block (Crosby et al, 2016). With the data protection and integrity attributes, Blockchain automation has the resume to attract leaders and managers from a diversity of businesses (Dunham, 2017).

By integrating all the parties engaged in a single program, Blockchain Technology has the possibility to disrupt the sectors and increase transmission and efficiencies inside and outside of the business (Schatsky and Muraskin, 2015).

A Blockchain operation is made up of four steps. First, the sender or generator makes a public declaration about the transaction. Second, members of the sender's Blockchain category must permit the transaction by validating both the sender and the receiver. These procedures are accepted using a variety of consensus or sanction methods, including Proof of Work (PoW), Proof of Stake (PoS), Proof of Activity, Ripple, Practical Byzantine Fault Tolerance (PBFT), and others (Pass, R., Seeman, L., & Shelat, A. 2017 April). Finally, if the transaction is successfully confirmed and received it is brought off among the parties involved. Lastly, the block carrying the current transaction is attached to the existing chain of blocks (Zheng, Z., Xie, S., Dai 2016) after double hashing the contents.

Human resource management methods are being transformed by technology. HR procedures, according to Stone et al. (2015), need to be more technologically advanced. HRM's future is technologically dependent. In a recent study, Sivathanu and Pillai (2019) found that technology's effect on talent management, as well as talent analytics, were discovered. talent management helps create a pool of high-performing employees, which in turn enables the effectiveness of the organization. This shows that technology must be used effectively. Though HR's use of technology and software applications isn't unusual a brand-new phenomenon (Ball, 2001; Shrivastava and shaw, 2003; Hendrickson, 2003; Townsend and Bennett, 2003; Poba- Nzaou et al, 2018). These programs are mainly used inside an organization like talent acquisition, development, and retention are only a few examples. (Pillai, 2019). The argument about the digital transformation in the workplace is heating up and it seems beneficial for strategically minded HR managers (Gainey and Klaas, 2008; Boudreau and Lawler, 2009; Marler and Parry, 2019). According to research, there are five crucial areas when third-party recruitment processes face challenges and double the total cost. These are in the following order: candidate promotion, contacts, cost, process, and cost again (Marsden-Huggins, S. 2017;Marvel (M.R., Davis, J. L., & Sproul) illustrated how technology

usage in HR works as a bridge between technological and human. Due to inadequate network equipment maintenance, companies wind up spending a lot of money to store and handle HR-related data (Onik, M. M. H., AL-Zaben, n., Phan Hoo, H., & Kim, C. S. 2017)

3. RESEARCH METHODOLOGY

The research paper is based on secondary research. Here we adapt a methodology, this methodology is based on the blockchain based recruitment management system (). These block chain-based methods are mainly used to protect the data privacy and make it more secure.

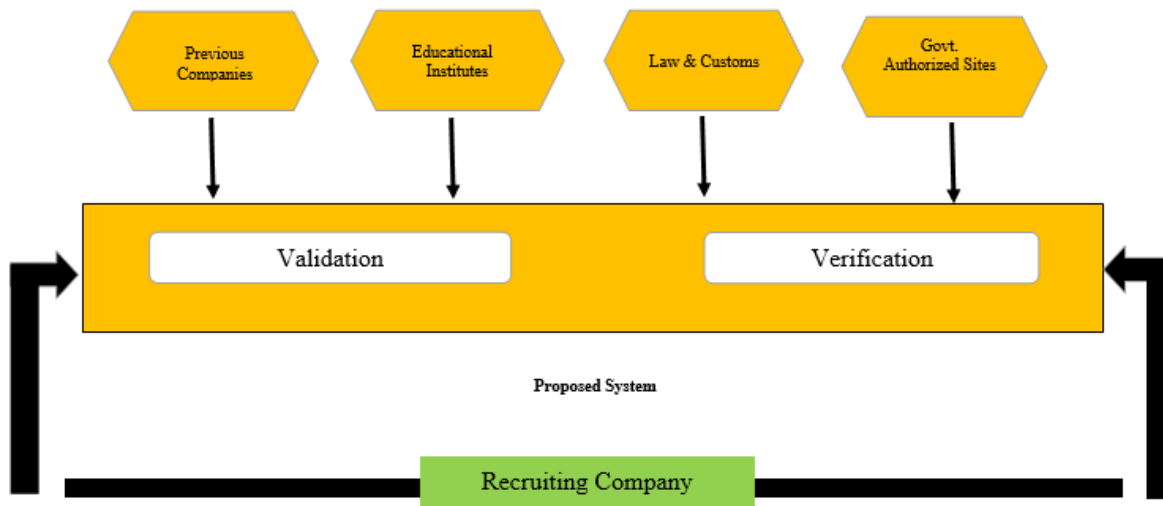
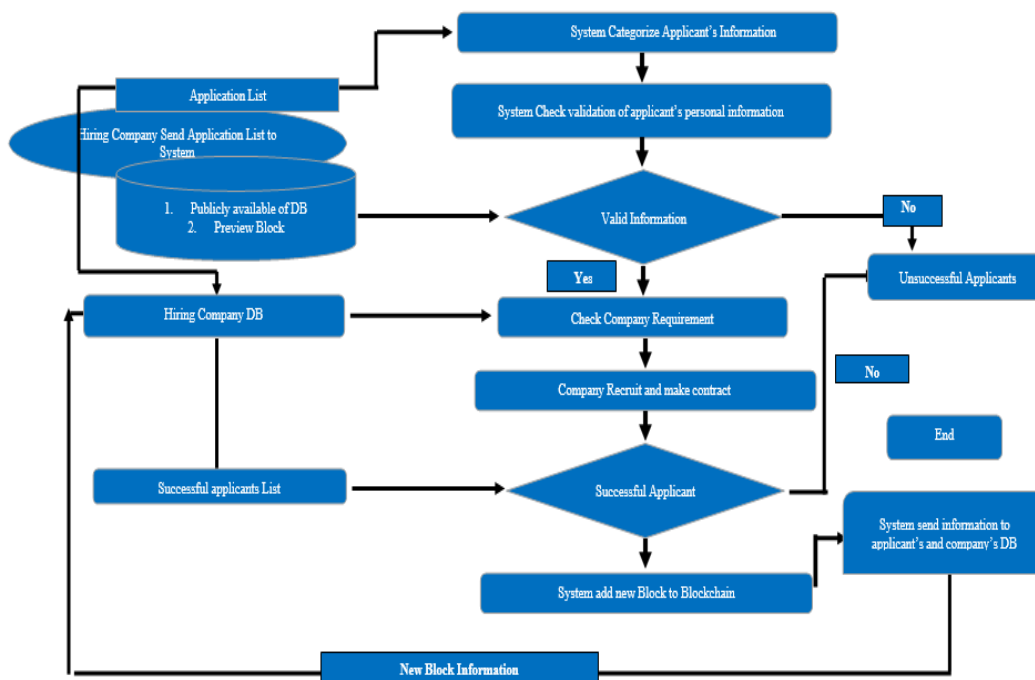


Fig: 1 is a pictorial representation of how the blockchain helps in the recruitment and selection process and makes it more secure and transparent. As per the below presentation, this will first receive the bulk of the applicant’s CV and then it will validate this CV and Verify the information from other sources, it will vary to the requirements of the company to company. This will help to verify the documents from the last workplace to the educational authorized sides and even like govt authorized sides for PAN card, Aadhar card. In this process, if any irrelevant or fake information or any law-related issues then this proposed system will discard this CV.



After verification this blockchain based method will provide a score on based upon the requirement of every individual company. After that the recruitment process will going on for the shortlisted candidates and the selected candidates who will join the company when sign the employee contract it will subsequently add a new block and it will be part of their job experience. Here the data like his calling no, current organization name, employer details and their feedback will be added. It will help the next organization or even the existing organization to know about him secure and transparently.

4. CONCLUSION

We have presented BcRMS and BcHRMS which is dependent on Blockchain technology in this study to reduce the possibility of incorrect recruiting and biased Human Resource Management systems. Blockchain is one of the important technologies for the fourth industrial revolution's future industries. Our suggested representation of models can confirm and store recruitment and other HRM-related data, resulting in a low-priced solution that eliminates the necessity for middlemen. COVID-19 has presented HR executives with an unrivalled opportunity to sail through turbulent seas, playing a critical role in preserving the health, safety, and well-being of employees while continuing to collaborate with leaders, customer, suppliers, and other shareholders. While HR directors are busy finding methods to return to the past normal, now is an excellent time to accelerate process digitization, with blockchain appearing to be a promising option for the whole HR gamut of services.

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