Blockchain Technology as a Disruptive Innovator in Human Resource Management
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Abstract

Disruptive innovations have the ability to change any aspect of the world. The following paper explores the ways in which Blockchain is classified as a disruptive form of technology, focusing on its impact within Human Resource Management. Blockchain has the capability to revolutionize the way Human Resource professionals recruit, track payroll, and train employees. It also includes “smart contracts” which streamline everyday routine tasks. Although the implementation of this new software technology into HR has many benefits, there are skeptics that do not believe it can be fully functional. Research has shown that the benefits of the implementation of this technology outweighs the concerns and risks. With the close alignment of the General Data Protection Regulations, Blockchain technology has the ability to fully revolutionize the way Human Resource Management is operated.

Keywords: Disruptive Innovation, Human Resources, Blockchain
Introduction

Prior to 1995, the word “disruptive” tended to have a negative connotation when utilized. However, Christensen reclaimed this word and various sectors from education to business have embraced that disruption “has proved to be a powerful way of thinking about innovation-driven growth” (Christensen, Raynor, & McDonald, 2020, p 1). In 2008, the idea of a decentralized and distributed database of information became popularly known as Blockchain Technology. Once solely used to trade cryptocurrency, Blockchain has the ability to revolutionize many different sectors of business, especially Human Resource Management. Although this technology has not been universally utilized within HR, professionals and experts expect it to disrupt the way in which habitual responsibilities and duties are fulfilled. Not only will it create a completely verified and impartial recruitment process, but it will also streamline everyday activities such as payroll and training. Additionally, the implementation of Blockchain sparks controversy when it comes to whether or not its benefits are greater than its concerns, but with the General Data Protection Regulations, it is likely that they will.

Disruptive Innovation

The idea of disruptive innovation has the ability to completely change the way in which any company or organization operates. Clayton Christensen, an American academic and business consultant, described disruptive innovation as “a new market value proposition that disrupts the existing market and displaces traditional business firms, products, or services that used to dominate that market” (Rubio, 2017 p 2). Any industry is susceptible to the effects of disruptive innovation.
To help understand the logistics of disruptive innovation, a common example would be the emergence of online encyclopedias and reference websites. Popular references such as Wikipedia and Google have disrupted the traditional way of searching for information, the Encyclopedia Britannica. Websites such as Wikipedia took over the traditional ways because rather than waiting one to two years for an updated volume, users could log onto their computer and gather the precise and accurate information immediately. Reference websites are constantly updated. Not only does the implementation of disruptive innovation in this example saves time and inconvenience, but it also saves money. A person could have to pay upwards of $1000 for a set of hardcover volumes, (Moore, 2019) whereas online references such as Wikipedia and Google are accessible with no fee. The traditional use of encyclopedias was so extremely disrupted, that in 2012 Encyclopedia Britannica ceased its production (Pepitone, 2012).

**Blockchain as a Disruptive Innovator**

In this case, Blockchain Technology is a strong form of disruptive innovation in the world of Human Resource Management. According to Enrique Rubio (2017), disruptive innovation in Human Resources can be described as creating and delivering a new value proposition to transform its operations and become more agile, using technology as a tool.

Blockchain has the capability, and is projected, to fully transform and disrupt the everyday activities of a Human Resource Manager. The blockchain will allow companies to prosper in an affordable, accessible, and efficient manner. Employers and employees will benefit with the outcomes of the Blockchain disruption within this field.

**What is Blockchain Technology?**
In 2008, Blockchain technology was implemented for the first time in the form of cryptocurrency. As of current day, the creator of the Blockchain is still a mystery. The person identifies himself as “Satoshi Nakamoto”. There is very little information about the inventor of this infamous technology, and although there have been many attempts to reveal his identity, Nakamoto has not been uncovered. There are three people whom professionals such as Rakesh Sharma (2019) believe could be the creator, including Dorian Nakomoto, Craig Wright, and Nick Szabo. Each of these people have denied the assumption when the idea has been provided to them.

As an overview, a blockchain is a tamper resistant, decentralized database of records that is shared in a distributed manner (Yaga, Mell, Roby, & Scarfone, 2018). When calling this software “decentralized”, experts mean there is not just one party or intermediary that controls the entire database. Rather, information is stored in numerous host computers, not just “one silo database” which could be extremely vulnerable to hacking. At its most basic level, Blockchain technology allows a community of users to have access to shared information in a safe manner. Much like the internet, Blockchain as a whole is not owned or controlled by one singular person (Mamoria, 2017).

Fundamentally, Blockchain is a chain of “blocks” ordered in a network of peers. It works to validate records, safeguard entries, and preserve everything that is entered into the software. (Crosby, Nachiappan, Pattanayak, Verma, & Kalyanaraman, 2016) A block is made up of data, a hash, and the hash of the previous block, creating the chain-like design. A single block has the ability to store a variety of different things such as amounts of money, a vote during an election, or in this case, data. When speaking of a “hash”, it is a value that is generated from a string of
text. A hash can be compared as the equivalent of a fingerprint, meaning that each is unique, and gives a type of identity to the block. When the data within the block changes, so does the hash.

When it comes to the privacy of a Blockchain, there are three main levels. First, some blockchains are fully public, meaning that they are open to all users to view, access, and add upon. Second, there are blockchains that are closed to a specific group of users. This type of blockchain can be commonly found within companies, a group of banks, or agencies (Maupin, 2018). Lastly, there are hybrid public-private blockchains as well. In these, users with private access can see the complete assortment of data, while the public can only see portions. In the hybrid blockchain, not everyone has the ability to add to the chain.

Once a block is added to the blockchain it is immutable, meaning that the information cannot be altered or deleted. The basic idea of the blockchain is based on the traditional idea of a financial ledger. If a user desires to create a change in the information within the Blockchain, they cannot rewrite it. Rather, the change is stored in a new block showing the data change and the time of change. In the inevitable case that data previously entered will need to be updated, an indestructible track of data will be created. Blockchain gives its users the ability to store, track, and transfer data, as well as changing the way we operate especially within human resources.

**Implementation of Blockchain in Human Resource Functions**

Although blockchain technology is most commonly known for the cryptocurrency, Bitcoin, it is forecasted to change the “normal” off all areas of business. The technology began with infiltrating the finance, real estate, and energy sectors, but Forbes states that all industries should be ready for Blockchain’s “game-changing” possibilities (Ahmed, 2019). In the aspect of
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this paper, human resources is expected to use the public, permissionless blockchain network to disrupt functions such as recruitment, payroll, and training.

**Employee Recruitment After Blockchain**

As of now, employee recruitment is a complicated process. There is an increasingly competitive landscape when it comes to the hiring process. On average, a company will lose $14,900 on one “bad hire” (Ahmed, 2019). During the process of recruitment, there are two main areas in which they are vulnerable to falsification. With the implementation of Blockchain, the uncertainty of credentials and employment history will completely disappear, saving both time and money. Although this technology may not fit into the current flow of work, human resource professionals should get ready to acknowledge these new ways.

**Credential Verification**

As of 2014, well before this technology was implemented, CareerBuilder found that 58% of hiring managers have reported the fact that they caught a lie on a resume. With the use of Blockchain Technology, this number would closely near 0% (Tarpey, 2014). Many professionals such as Abakar Saidoc believe that when implemented, Blockchain has the potential to wipe out traditional Resume/ CVs. Blockchain will have up-to-the-minute data regarding things such as a candidate’s educational history, skill sets, and accolades/rewards (Biswas, 2018).

Not only will it hold information inputted and verified by other users, but you can also upload actual documents such as training certificates or academic credentials to the platform. Additionally, colleges and universities can publish encrypted credentials allowing potential employers the ability to find. For example, Massachusetts Institute of Technology has already
developed a “digital diploma pilot program” in which students receive certificates when they successfully complete courses (Biswas, 2018).

Another way in which companies can be sure information in the blockchain is truthful is the CVeRification process. CVeRification is a development of blockchain technology that works with decentralized verification programs and platforms to ensure that candidates are presenting truthful background information.

**Employment Histories**

Blockchain will also allow recruiters to see a candidate’s full employment history. It is no surprise that people can offer false employment histories to make their resumes more attractive. As an example, CareerBuilder reported that 55% of candidates embellished responsibilities on their resumes, 34% have falsified their job titles, and 26% have lied pertaining to companies that they work for (Tarpey, 2014).

In today’s day, it can be difficult for recruiters to access references for reasons such as millennials' tendency to “job hop” and it is more likely for people to have experiences overseas. Reference checks tend to be very time consuming, so blockchain can fully revitalize this process. Blockchain will verify the information inputted, and can also be verified by the employer to keep it from false information (Francis, 2018). Once this information is verified by users, it is unable to be altered.

Something that will fully revolutionize the act of hiring will be the fact that not only will positive information be shared in the Blockchain but so will negative. For example, things such as title changes/ raises will be included, as well as reasons for dismissal and negative
performance reviews. This will allow a complete understanding of a candidate’s strengths and weaknesses, allowing the recruiters to make a better decision.

**Streamline Routine Tasks**

Blockchain technology has the ability to completely change and improve many of the everyday, routine activities of a human resource manager. The automation of these processes will save time in some particular tasks, while allowing managers to fully immerse themselves in other areas. Streamlining routine tasks will save both time and money for the human resource professionals, and in turn, the companies.

**Tracking Payroll**

Blockchain can also help revolutionize the way payroll is produced. The “world” of payroll is extremely regulated, and blockchain technology can reduce mistakes and discrepancies that can be made with human error. The automation of this process would also save a lot of time. Companies can use the blockchain technology to track time and attendance, payment options, fraud protection, and benefits administration.

The current payment solutions are not aligned for the process of recurring payments at a large level, meaning that in almost all companies, payroll is processed manually. An additional way that Blockchain could disrupt the payroll function is the use of remunerations, or cryptocurrency. With cryptocurrency, users can send and receive money through the blockchain, creating an untamperable ledger along with it. This is a safe and effective way to send money across individuals. Blockchain has the ability to eliminate all of the constraints that the original way of conducting payroll was associated with.

**Training**
In any business, large or small, proper initial training is crucial to the success of the company. Blockchain technology has the ability to reshape the way in which companies train their employees, and the motivation employees have when it comes to training. With this technology, when an employee learns a new subject or completes a curriculum, it will be made visible in the form of a block. This creates a verifiable and accurate history of training measures.

In this type of system, employees can also be given “skill scores”. These scores will allow employees with expertise, or strong scores, to be noticed by hiring managers and other stakeholders. Not only will tracking employee training with blockchain increase the opportunities for the employees, but it will also create a type of competition and motivation.

There will be an increase in employee competition and motivation because participants can earn tokens in the form of cryptocurrency, by providing value. This value can be in the form of actions such as providing consulting services, answering questions, or becoming an “expert”. Tokens can create an immense source of motivation for employees to become a subject matter expert. When tokens are earned, they can be used in online marketplaces. Marcia Hales, co-founder of Knowledge.io explains, "People can make better decisions based on expert recommendations and reviews, all while earning tokens for their participation, and even more tokens for overachievement" (Carmody, 2017). This benefits both the employee and the company. The employee has the ability to earn tokens by doing exercises, and the organization benefits from having a higher quality employee.

**Smart Contracts**

Smart contracts are forecasted to replace the existing paper-based contracts, which also coincides with the manual and constant attention required. Smart contracts include blockchain
technology agreements. They define the terms for transactions, and the penalties that would be apparent if they terms were violated. These contracts outline and enforce immutable obligations that are automatically followed (Ranosa, 2018). They can streamline functions such as payroll and onboarding by using the idea of “If This, Then That” (Day, 2018). Once a contract and code is set, it is designed to work entirely dependent on that code.

There are a few examples of smart contracts in action, disrupting and changing the original ways of operation. First, when an employee completes the hours that he/she is contracted to work recorded in the blockchain, the employee is paid automatically. A second implementation could include a new hire. When the new hire successfully meets the documentary requirements, such as background checks or terms and conditions agreement, they can be given access to the company’s system.

Although the idea of Smart Contracts seems to be an easy, effective way to enhance business functions, it also comes with some risks. In theory, they are accident proof, which can be a strong benefit, as well as a strong concern. Since it can not be easily changed, the code behind the contract must be perfect. Smart contract payments are irreversible, so if a mistake were to be made there would be no way to fix it.

**Do Blockchain’s Benefits/ Efficiencies Outweigh Concerns?**

As previously mentioned, Blockchain Technology is currently not fully utilized in the realm of Human Resources. In this stage, a relevant question would be, “Is the extreme change resulting from Blockchain worth it?”. There are a number of advantages and disadvantages when it comes to the application of this software.
First, the largest strength relating to the disruption of Blockchain in human resources is the transparency it offers. In the world of HR, it is extremely important to have facts, rather than facetious statements employees can create to give themselves a step ahead, especially in the hiring process. It creates an elevated level of trust between employers and employees. Blockchain also offers higher efficiency, lower cost, and lower risk of hacking (Niranjanamurthy, Nithya, Jagannatha, 2018).

Although there are a number of advantages paired with Blockchain in Human Resources, it also bears disadvantages. To begin, a red flag that is prominent to many people is the fact that transactions and “blocks” are irreversible. In some ways this could be a positive aspect, but to those who wish to easily disregard information, it can become a problem. Another issue that can arise is the reality that Blockchain Technology is still under development (Niranjanamurthy, Nithya, Jagannatha, 2018). The perfection of this technology is still under construction, and is not fully implemented in any sectors, alluding to the fact that no one knows exactly how it can operate at its greatest potential.

Ethics Concerned with Blockchain Technology

General Data Protection Regulation

The General Data Protection Regulation, also known as GDPR, is known as the toughest privacy security law in the world (Wolford, 2019). Originating in Europe, officials created an outline of rules pertaining to the processing of personal data which includes lawfulness, fairness and transparency, purpose limitation, data minimization, accuracy, storage limitation, integrity and confidentiality, and accountability. If any standard included within the GDPR is violated, the offender will receive harsh fines.
Personal data can be defined as “any information relating to an identified or identifiable natural person” (Bennett, Bertin, Cooper, Kostka, Nash, Nonaka, Quathem, 2018). Since the implementation of Blockchain Technology implies the sharing of personal data, it brings controversy whether or not it complies with GDPR principles. The GDPR currently used focuses on centralized databases, which are easily controlled.

The most well known challenge pertaining to Blockchain and GDPR is the idea of the “immutable ledger”. The immutable ledger, in basics, means that blocks cannot be modified or deleted, which in many other scenarios is a major advantage to companies. In the stance of GDPR, the subjects of the data have the right to withdraw personal information, especially if it is inaccurate (De La Torre, 2019). Within the General Data Protection Regulations, this is called the “right to be forgotten”.

Since decentralized systems are seen as “gray areas” in the world of GDPR, many professionals have been finding ways in which softwares like blockchain can comply with it. Researchers from the University of London and University of Cambridge believe that they have found a compromise for this problem. Instead of erasing a block, which is nearly impossible, they found that data can be decrypted. In this scenario, blocks remain physically on the ledger, but are not visible or accessible to users (Arnold, 2018). Therefore, the concepts of Blockchain Technology would abide by the popular GDPR principle, the “right to be forgotten”, as well as dismiss the largest concern of the coexistence of the two.

Conclusion

Blockchain Technology is projected to act as a disruptive innovator, and fully transform the functions of Human Resource Management. Blockchain has the potential to create and
deliver a new value proposition to transform its operations and become more agile, using technology as a tool (Rubio, 2017). Although Blockchain has not been normalized within HR, it is seen to be able to completely verify and simplify the recruitment process. It will also give employers the ability to streamline habitual activities including payroll and training, all while coinciding with the General Data Protection Regulations. The potential of Blockchain technology is endless. Although in this paper the focus revolves around the way Human Resources can be revolutionized with the implementation of this decentralized technology, this possibility spreads across the business world as a whole.
References


