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Content Page

1. Introduction	3
2. What is blockchain and how does it work?	3
3. The history of blockchain	3
4. Blockchain and the music and entertainment industries	
• 4.1. Royalty collection process	4
• 4.2. Improved Meta Database	5
• 4.3. Bi-directional payments and fundraising	6
• 4.4. Self-publishing channel.....	6
• 4.5. Other entertainment industries	6
5. Conclusion	6
6. References	7
7. Appendix.....	8

1. Introduction

The blockchain technology has been a big topic within all global industries since its introduction alongside Bitcoin to the public in 2008. (Marr, 2018)

Its release stimulated millions of people and companies to join a cryptocurrency network as well as create new ways of using blockchain as a tool to make businesses more efficient.

Two of the industries that might be affected in a great deal by this new technology are the music and entertainment industries and all its members including musicians. To understand how and to which extent this could happen, this essay will first explore what exactly blockchain is, a brief overview of its history, how the technology works and what it is used for. After, it will explore some of the possibilities that arise for the music industry to make certain processes more efficient.

2. What is Blockchain and how does it work?

Blockchain is a digital ledger technology that stores data in a secure and transparent manner without the existence of any middle man such as e.g. a bank.

A group of transactions is stored in a so-called block. These blocks connect to one after the other in chronological order and create a chain of data. Each block can contain up to 1MB of data which equals the size of a few thousand transactions. (Fortney, 2019)

Once viewed and approved to be accurate by another blockchain user, blocks can no longer be removed and are visible to everyone, even non-users. (Moodle Uwtsd, 2020) This transparency ensures the decentralization of the technology. No third institution is involved in the transaction process.

Each block has an individual identifying code called “hash” which makes it unique. It also contains the information of all the previously added blocks. This makes it almost impossible for hackers to meddle with the data as they would have to hack each computer in the network and each block that has ever been added. As of 14th January 2020, more than 612,800 blocks are part of the BITCOIN chain.

(blockchain, 2020) This adds up to around 492m transactions over the timespan from 2008 to January 2020. (blockchain, 2020)

In order to become the owner of a block, it has to be mined. This means solving complex puzzles to find the hash of the block by using computer software with partial input from the previous block. The first miner to solve the puzzle receives pay-out.

3. The History of Blockchain

The theory of blockchain already dates back to 1991 when Stuart Haber and W. Scott Stornetta envisioned a concept very close to the blockchain nowadays. (Goyal, 2018) Their theory of cryptographically linking blocks in an append-only data structure was published in the paper “How to Time-Stamp a Digital Document” (Haber, Stornetta, 1991).

However, despite its early beginnings, blockchain’s whitepaper was not officially released until 2008 by Satoshi Nakamoto. This name is believed to be a pseudonym of one or several persons which stand behind the creation of Bitcoin - Blockchain’s first official application. Nakamoto’s work is a continuation of the original idea as Haber and Stornetta are cited three times within the paper. (Beyer, 2018)

A big argument in Nakamoto’s introduction is the concept of decentralization and its ability to create digital-trust thanks to the lack of a third party in control. (Goyal, 2018)

With Bitcoin’s official release in January 2009, the technology was made public to everyone. Since, several other programs using the blockchain technology have been introduced. A lot of these programs are cryptocurrencies similar to Bitcoin. An example is Ethereum which was introduced in 2013 by Vitalik

Buterin. Its main difference to Bitcoin is that it is not only a cryptocurrency but also a platform for users to develop decentralized applications. (Goyal, 2018)

With the number of applications growing, the number of users grows with it. By the end of 2016 nearly 11m people were using a blockchain wallet. By the end of the third quarter of 2019 this number had quadrupled with more than 42m users. (see Appendix 1)

However, cryptocurrencies are not the only way in which Blockchain can be utilized. Another way for example, to make benefit of the technology is the secure and timebound storage of identity data and meta data.

4. Blockchain and the music and entertainment industries

The landscape of the music industry constantly changes with every new technological invention. Until recently, these inventions mostly affected the way in which music was produced and consumed. Technologies like electrical instruments and synthesizer for example ended the limitations of acoustic instruments and broadened the spectrum of sounds that could be created.

The introduction of the mp3 format allowed music to be shared and consumed digitally and quickly overtook CDs. (SingularDTV, 2020)

Blockchain, however, could revolutionize the music industry in different ways to the technologies before. There is not just one way in which Blockchain could be utilized, but many different possibilities of which I will analyze a few below. The blockchain revolution within the music industry is not just led by scientists but also by musicians, who understand the struggles of artists and their audiences. Two musicians that are currently working on their own blockchain technologies are Imogen Heap and DJ Gareth Emery. (Ehrlich, 2019, Rossow, 2018)

4.1. Royalty Collection Process

One of the main areas that could be made more efficient by applying the blockchain system is the process of royalty collection and distribution to songwriters and music publishers.

In the UK and most countries of the world intellectual property such as musical and lyrical works are protected by law. This law is called Copyright and it protects authors from other people using their work without authorization. It also grants authors the right to persecute anyone who infringes this copyright.

To help songwriters and music publishers enforce this right and collect fees for each public use of music on their behalf, there are royalty collection societies. The society that deals with musicians that reside in the UK is the Performing Rights Society (PRS) for Music in collaboration with Phonographic Performance Limited (PPL) and the Mechanical-Copyright Protection Society (MCPS). The not-for-profit organization PRS is responsible for the literary work of a song, the music itself such as lyrics and melody, PPL is responsible for all live performances including recordings for e.g. tv broadcast and recordings for Jukeboxes and similar and MCPS deals with the physical version of a song. This includes CD and Vinyl but it also refers to digital copies such as mp3 and streaming.

The current royalty distribution system works as follows:

Songwriters and music publishers need to register with the three royalty collection societies.

Membership costs £100 for PRS including PPL and an extra £100 for MCPS. According to PRS, this one-off start-up fee is necessary to cover administration and set up costs and no further fees fall into place after. (Prs, 2020) Instead of further fees, PRS takes percentages from all earned royalties. These

percentages are around 10-13%. The pay-out only happens on four dates a year, in April, July, October and December. (PRS, 2020) It also takes a while for PRS to get notified after a song had been used. This means that if a song is being performed live in e.g. September, PRS will most likely not find out about it until December and therefore will not be paid out to the songwriter until April the following year. This process can take a great deal longer if the royalties are earned outside the UK.

This is where Blockchain comes into play. The concept of decentralization would eliminate the middle man PRS and with it the fees, percentages and pay-out delays. (Moodle Uwtsd, 2020)

If, for example, a song brings in £2,000 pa in royalties of which PRS takes 12%, only £1,760 actually reach the artist while £240 stay with PRS. If the same artist has 5 songs that bring in similar revenue in royalties, each year £1,200 are taken away from the revenue to pay for PRS' services. This is a large sum that could go to the artist directly if PRS was not involved.

Also, if music users could pay the artist directly via cryptocurrency, royalty payment could be received instantly instead of taking several months to years. As blockchain allows micropayments, even tiny royalties could be transferred.

4.2. Improved Meta Database

More effective and accessible storage of meta data is another concept that could simplify and improve several processes within music consumption. (Moodle Uwtsd, 2020)

With the growing interest in streaming and online services as well as virtual intelligent devices such as smart speakers and smart TV, it can become difficult for the audience to find the exact music and artists they are looking for. In the same way, it can be difficult for newer artists and artists with a smaller audience to be visible. This is due to the current music meta data system, which is not very detailed and makes it hard to identify certain audio content. This leads to bigger artists with larger followings to be more easily detected by the system and smaller artists being overlooked.

Other issues with incorrect or insufficient meta data occur with royalty distribution. Currently it is not always possible to match royalties with the rightful music author and therefore payment might not be distributed correctly.

In 2010 PRS announced a project between several international music institutions including iTunes and Universal Music Publishing Group. The aim of the project was to create an international, transparent, more accessible data base that included musical works of artists worldwide. (PRS, 2010) Unfortunately, in 2014 it was announced that the Global Repertoire Database could no longer move forward. (Milosic, 2015) With the help of blockchain technology, this idea of a shared databased could be revised and improved. A blockchain meta data base would ensure correct matching of artist and data and therefore increase visibility of smaller artists as well as simplify the process of finding music for listeners.

PRS has started a blockchain research project in collaboration with the American collection society ASCAP and the French collection society SACEM. PRS states: "The goal of the project is to prototype how the music industry could create and adopt a shared, decentralized database of musical work metadata with real-time update and tracking capabilities." (PRS, 2017)

4.3. Bi-directional payments and fundraising

A third way to use blockchain for music, performance and media purposes is an improved way to payments and fundraising. (Moodle Uwtsd, 2020)

Currently, whenever payment is involved, there are several third parties present. This applies to music downloads on e.g. iTunes, ticket sales via third party ticket websites, the sale of merchandise via third party distributors as well as fundraising via crowdfunding websites. Besides the artist, the label and the fans, banks and third-party service providers benefit from each transaction. Not only does this process take a while to be processed, it also means profit loss for the artist.

With Blockchain technology, bi-directional payments between the artist and the audience are possible which would allow the artist to receive the full amount instantly. Furthermore, this could improve the interaction between the musician and the fans by creating a more transparent, trusting relationship.

4.4. Self-publishing channel

One of the perhaps biggest, yet most difficult to achieve, is the idea of a self-publishing channel for music creators and rights owners. (Moodle Uwtsd, 2020) Such a platform would eliminate the need for labels, publishers, royalty collection societies, streaming platforms and all other third-party institutions altogether. DJ Gareth Emery, who is currently developing the decentralized, blockchain based music platform 'Choon', explains that this system would be underpinned by trust and allow more direct, personal interactions between artists and fans. (Rossow, 2018) Furthermore, it would allow artists to keep 100% of their ownership rights.

4.5 Other entertainment industries

While the previous points analyzed blockchain concepts on the example of music consumption, many of these systems can be used within other parts of the entertainment industries as well. The film industry, for example, faces the same copyright infringement issues that the music industry does. Exploitation of creative content due to incorrectly assigned or unacknowledged rights is an often-seen phenomena. Blockchain could help decrease this risk by creating an immutable data base of all assets included in a film production. Furthermore, independent movie producers could benefit from a decentralized platform to share their films where payment could be received directly and instantly from viewers. (Yadav, 2018)

5. Conclusion

Along with the ever-changing landscape of technology, artist's and music consumer's needs change constantly and rapidly. Old systems, that have worked well until now, quickly become outdated. With the growing digitalization of music consumption, new, more efficient systems in dealing with payments and meta data analysis need to be launched. The blockchain technology could enable many of these new systems to be realized. However, while many theories have been published, no actual, groundbreaking platforms have been introduced and applied yet. It will require collaboration, flexibility and open-mindedness to make this technical revolution happen. The next few years will show which new technologies will prevail and which systems will already be outdated by the time they are ready to launch. The music industry will also have to continue to constantly stay alert of new issues that come alongside the blockchain technology such as false information within the chain or instability due to non-physical copies and other technologies that might replace blockchain.

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7. Appendices

7.1. Number of Blockchain Wallet Users

