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Contents

1. Introduction

2. What is Blockchain

3. The Design Principles of Blockchain

4. Commercial Uses of Blockchain for Music

4.1 A New Music Business Model

4.2 A New Music Ecosystem

4.3 A New Way of Consuming Music

5. Legal Implications of Blockchain on Music

5.1 Blockchain and Rights Management

5.2 Legal Issues

6. Summary

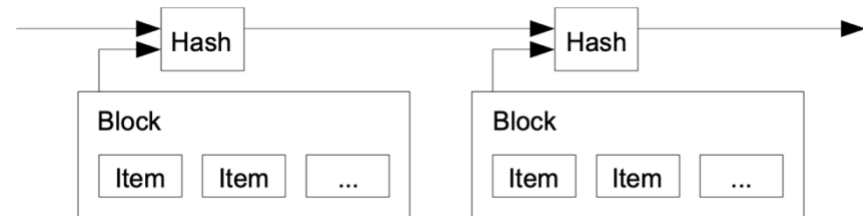
1. Introduction

In this work, I will be explaining how blockchain can affect the music and entertainment industries. I will go through design principles, commercial uses, new business models, as well as the new music ecosystem that will be developed with the universal usage of blockchain in the music industry. Lastly, I will look into the legal implications of adopting this new technology, what it can fix and what new issues may arise.

2. What is Blockchain

Blockchain was created by a person or persons called Satoshi Nakamoto in 2008. The true identity of Satoshi Nakamoto is unknown (Bitcoin.org, 2019). Blockchain acts as a global ledger that records every transaction that has ever occurred. It is available for anyone to download and use on their own devices for free. Transactions are recorded on the blockchain, leveraging a global peer-to-peer network. Each blockchain is distributed around the world on volunteer computers, therefore it has no central database to hack. Anyone can view the blockchain as it is public and resides on the network, not in control of a single body or institution. In addition to this, the whole system is encrypted involving private and public keys. Every 10 minutes every transaction is verified, cleared, and stored, and then time stamped. The time-stamped hash is then made public and is widely published. For a transaction to be valid its block must refer to the preceding block, thereby creating a chain where each new timestamp reinforces the ones before it (See Graph 1). This eliminates the double-spend problem which until now has relied on a central authority to solve. The blockchain system ensures that it is almost

impossible to steal from as you would need to rewrite the entire ledger, in-front of every other person using it.



Graph 1 - (Nakamoto, 2008)

3. The Design Principles of Blockchain

Networked integrity – Users of the blockchain can exchange value directly without having to trust the integrity of the other party. It would be near impossible for a party to act without honesty, requiring a vast amount of money, time, reputation and resources than would be worthwhile.

Distributed power – There is no single point of control, therefore no one can shut it down. This is because blockchain is distributed over every electronic device which has used the system, otherwise known as a Peer-to-Peer system.

Value as an incentive – Blockchain is designed so that the programmed software rewards those who work on it, thereby aligning the incentives of all stakeholders.

Security – There is no single point of failure, blockchain provides confidentiality, authenticity and an assurance that a party cannot deny the truth of something.

Privacy – Blockchain eliminates the need to trust others as it is built into the system. On the blockchain, people are able to control exactly how much of their personal information and identities they wish to share with anyone else.

Rights preserved – Ownership rights are entirely transparent and enforceable, there is a clear record of who owns what. Blockchain can serve as a public registry for documents such as deeds, licenses, titles, and receipts, all of which can be stored safely. In addition to this, it provides the ability to create smart contracts that automatically execute a set of instructions based on the fulfilment of the contract. This ensures compliance with no central authority or third party able to revoke or override it.

Inclusion – As of 2017, 1.7 billion adults do not have access to a bank account (McCarthy, 2018). This is related to the cost of owning one. Now, anyone with a basic phone can have access to the global economy. No proof of citizenship, birth certificate, home address or ownership of a particular currency is needed. Therefore, the barrier to entry for obtaining credit and investing is significantly lower.

4. Commercial Uses of Blockchain for Music

The music industry is currently fragmented with numerous middlemen each taking a cut out of an artist's earnings and causing a delay in royalty payments. In some cases, it can take as long as 12 months

before royalty checks start arriving depending on where the music is played (Lorinczi, 2019). As well as this, the increasingly frequent 360-degree deals allow labels to tighten their control over an artist, receiving a cut of everything an artist makes. As David Byrne from Talking Heads puts it, "it seems to me that the whole model is unsustainable as a means of supporting creative work of any kind." (Byrne, 2013). In addition to this, the majority of music copyright is owned by only a few key players. Blockchain technologies have the ability to restore the rights of the artists by removing intermediaries allowing for the maximisation of the value of their intellectual property.

4.1. A New Music Business Model

With the use of smart contracts on blockchain-based platforms, it is entirely possible that a new music ecosystem will emerge. If an artist uses the blockchain for their release, all rights, ownerships, artwork, and other artist related content could be uploaded to one place. This would allow for easy access for interested parties such as labels, TV shows, producers, fans and more. They would all be able to see the terms of use on the smart contract clearly. If the artist decides a change is necessary to their smart contract, they would have the ability to make the changes as they see fit. For example, an artist may want to give away the usage for free for a limited time and once that time is up the smart contract automatically resets.

Some artists are already making use of blockchain, such as British artist Imogen Heap who made use of it to release her song Tiny Human. Fans, distributors, services, and other interested parties uploaded her songs to various platforms. She gave them non-exclusive

rights to create a profile in her name so long as they give her the login details. Any revenue that was expected would require them to submit payment models, percentages and amounts as part of the smart contract. She also accepted cryptocurrency donations which were donated to charity (Witt, 2015).

4.2. A New Music Ecosystem

Blockchain won't necessarily create an entirely new way of compensation for artists, instead, it provides artists with an enormous array of options and customisation to fit their specific needs. These are some of the options which could be made readily available for artists through the blockchain system.

With the implementation of blockchain, there will be less need for paper contracts. More likely is the creation of value templates that would allow for the construction of deals which see artists as equal partners. In addition to this, revenues could be based fairly and clearly on contribution rather than through a broad generalised contract.

The transparent ledgers of blockchain would allow all parties involved to see exactly how much a song is generating in real-time, as well as who was getting what percentage. Which would help make for easier accounting, auditing and payment of taxes. This could also introduce micro-payments per usage of the track, which could be instantly transferred to the rights holders as real-time royalties. Therefore, there would be no more payment delays or quarterly royalty checks.

The increased usage of music on the blockchain would create a rich database of songs and everything related to those songs. All copyrighted materials such as lyrics, composition, as well as artworks

and the rights that the copyright owners wish to license would be readily available on a distributed ledger that anyone can view. It could also allow for in-depth analytics for the artist all in real-time. Including all demographics of the listeners, age, location, interests. This data could help an artist make tailor-made tours based on cocreate data collected on the blockchain and not an intermediary party. Options such as cross-referencing with other bands' data to pick the perfect support act for the location of the tour could be much easier to do.

Management of digital rights through smart contracts would allow labels and publishers the option to opt into an Artist's terms of usage and expectations of service. For example, the artist may forbid the use of advertising interrupting their music. If firms don't deliver on these terms, then the contract can automatically terminate and notify the artist of the breach.

Dynamic pricing mechanisms could be implemented into the pricing of a release. For instance, demand could affect the price of a song, one month the demand could be high, therefore the price for advertisers increases and vice versa.

Lastly, artists and companies could start being made accountable through credibility scores based on their reputation for fulfilling past contractual obligations. Artists could automatically refuse parties that do not meet certain reputational or financial standards. This would change the industry into one that promotes honesty and fulfilling promises.

4.3. A New Way of Consuming Music

PeerTracks¹ is an example of a new type of streaming model based on the SOUNDAC blockchain which utilises smart contracts. PeerTracks is a streaming platform built onto a blockchain. Every time a track is played it instantly gets reported onto the SOUNDAC blockchain which then automatically pays out royalties, all in real-time. There are no advertisements or any subscription fees to use PeerTracks and it guarantees an honest and transparent way of paying artists. Artists can create and set the limit of their own tokens which can be purchased by users and traded like sport trading cards.

5. Legal Implications of Blockchain on Music

Smart contracts would eliminate much of the industry complexity for artists. Modern music contracts are out of date, more applicable to an artist's career back when production costs were much higher. Many record label contracts sign the copyright away for the lifetime of the copyright and the inflexible nature of these contracts mean that it will be unable to cover to keep a fair deal due to unforeseen technological innovations.

Each business operating in the music industry has its own way of accounting and reporting systems which makes side by side business comparisons difficult. As well as this, the cost of policing royalties has increased with the internet and the subsequent complexity of the industry. Smart contracts can help remove this complexity by making everything automated, verified and efficient.

¹ <https://peertracks.com>

5.1. Blockchain and Rights Management

The music industry lacks a centralised database that could keep an automatic account of the ownership of rights. This injunction with streaming and the increasing amount of user-generated content has made it challenging for a party to distribute and exploit music-related rights. With the introduction of a blockchain system operations can be simplified, establishing a clear way to manage and track musical works and royalties.

Blockchain technology has the ability to track the copyright ownership history associated with a song and allow for the smooth transfer of rights. The process of organising copyright ownership, by way of maintaining, confirming and updating all into a standardised system becomes far more simplified. All changes to the transfer of rights are made public instantly, whilst any duplicative or unauthorised information is refused.

5.2. Legal Issues

Smart contracts are technically not contracts as we know them, but is rather code that puts the terms of the contract into action. Therefore, a separate legal document would still be required. This would be especially important in cases where the smart contract is poorly made and fails to do what was intended. It is likely to be a few years before successful smart contract templates have been fully developed.

Fractional rights can cause issues when the copyright owner does not own all of the rights of a musical work or sound recording. Someone

with a minor stake may bring a claim against a party licensing from the majority owner. In the United States of America, the Music Modernization Act, passed in October 2018 addresses many of the issues surrounding music copyright (Deahl, 2018). By creating a database of all rights holders, which informs licensees who the stakeholders are of each song and by offering a mechanical license which offers broad protection to companies such as streaming services. Steps need to be in place to make sure legislation like this is pushed through in other countries to modernise the way in which music copyright is handled. The passing of the Music Modernizing Act has solved many issues, fractional rights will still be a problem even with blockchain.

Another legal issue that can arise through the use of blockchain is data privacy. The General Data Protection Regulation (GDPR) requires companies to offer certain rights to the people whose data they collect. One of which is the right to be forgotten as well as the right to modify or update your information. This is in conflict with blockchain as it is immutable, impossible to change or edit, therefore making it impossible to be forgotten. Once the information is recorded onto the blockchain ledger it would be almost impossible to remove or edit the information. As a result, companies may face issues complying to GDPR. The answer to this may come in the form of a permission blockchain, wherein the blockchain is made to be invite-only. This allows people to keep control over much of their data.

6. Summary

Blockchain has a lot to offer businesses and artists, the way it's designed allows for greater data security as well as a more streamlined and accountable way of doing business. There will be a number of legal implications with the widespread use of blockchain and it may take years before the right laws are in place and for companies to work out how to exploit it properly to maximise its full potential. But it is also important to note that blockchain will likely affect not only the music industry. Smart contracts and the organisation of secure and reliable information on ledgers will ensure that it will be adopted in most industries to some degree.

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