

The definition, commercial uses, and legal implications of Blockchain on the music and entertainment industries

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"Blockchain technology allows a network of computers to agree at regular intervals on the true state of a distributed ledger, these ledgers can contain different types of shared data, such as transaction records, attributes of transactions, credentials, or other pieces of information."
(Catalini, 2017)ⁱ

This was the definition provided by MIT Sloan professor Christian Catalini, a well-practiced expert in the field of blockchain technology and crypto currency. By definition this new technology seems simple enough, a system that tracks all transactions and verifies each alteration or transaction via an expansive network of participating servers. However how can a technology that seems so simple to understand after some basic research, be almost completely un-hackable? And why is this new technology being adopted by so many stagnating companies, emerging start-ups, and the independent artists around the world? This essay will further explain the full definition of blockchain technology, its legal implications, and how its being used across the music and entertainment business, to bring a much-needed new lease of life to an industry that has been criticised heavily in recent years.

Definition, purpose, and benefits

The word "blockchain" is frequently used to refer to a whole new set of technologies. Because the technology is still in its infancy and can be used in a variety of ways depending on the goal, there is a great deal of uncertainty surrounding its definition.

Many explain a blockchain as a cutting-edge digital method of keeping records, it is the fundamental technology that powers numerous cryptocurrencies, including Bitcoin and Ethereum, but it also has uses outside of cryptocurrencies due to its distinctive method of securely storing and sharing data.

A distributed ledger is a specific kind of blockchain. DLT, or distributed ledger technology, enables the sharing of records, data, and files amongst numerous computers, or "nodes." A node can be any user of the blockchain, but it requires a lot of computing power to run. Nodes store data in the ledger and check, authorise, and save it. This is distinct from conventional record-keeping techniques, which preserve data in a single location, such as a computer server or on the iCloud.

A blockchain divides newly contributed data into blocks, or collections of data. New blocks are continuously added to the ledger, forming a chain, because each block can only carry a certain amount of data. A cryptographic "hash" serves as the individual identifier for each block. The hash safeguards the block's position in the chain by identifying the block that came before it, as well as the data included in the block from anyone without the necessary code.

According to Vikas Agarwal, a partner in PwC's Financial Services Advisory Practice, the cryptographic hash is *"a combination of numbers and letters that can be up to 64 digits long."* (Little, 2022) ⁱⁱThat is the special code that enables the puzzle pieces to interlock.

Information that has been added to the blockchain and hashed is permanent and cannot be changed. Every node has a copy of the complete history of data stored on the blockchain dating

all the way back to its inception. The data saved by other nodes wouldn't be changed if someone tampered with or breached one computer and changed the data for their own benefit. Since it differs from the majority, the altered record is simple to identify and rectify.

The way the system operates makes it nearly impossible for someone to duplicate the computational power used to reverse-engineer it and determine the contents of all those hashes. As previously mentioned, blockchains are not entirely secure and are in fact hackable and can be successfully altered with adequate computing power. For example, in 2020 Chinese scientists developed a quantum computer that solved an immensely complicated mathematical equation in 200 seconds, in comparison this same equation would have taken a typical supercomputer close to 2.5 billion years to complete.

Even with this immense power possessed by some of the most advanced organisations in the world such as IBM (international business machines corporation), they are still far from being able to hack any area of blockchains such as crypto currency such as Bitcoin. The quantum computer from IBM can produce 127 cubits of computing power, but it would need several millions more to even begin to stand a chance at breaking into any area of blockchain. In short, this technology is currently un hackable, but this will definitely change in years to come with computing technology developing at an unprecedented rate.

Usage

Companies and investors are struggling to find the correct corner of the market to maximise the potential of the technology, for the music industry this no different with Warner Music Group recently entering into a partnership with blockchain gaming developer Splinterlands. All areas of the music industry are being introduced to this new technology, from artists producing their own NFT artwork to the potential of introducing instant royalty distribution, the music industry is embracing the change. Just as it took music business bosses some time to find out how to harness the power of the internet into profitable development opportunities after they saw a massive drop in revenue, especially right off the back of its most profitable era, the CD. It is as seen before with the internet, taking modern businesses some time to grasp how to harness the possibilities of blockchain into real and lasting sources of value. Many business executives are still unaware of how to identify the components required to apply a new standard and guarantee meaningful returns on their investment, despite increased interest in the technology.

Although mass adoption of blockchain technology hasn't come to fruition in the music industry, there are still enough cases of its usage to provide proof of its potential. The music business and entertainment industry have been using blockchain technology in the following ways:

- NFT artwork releases
- Track releases
- Ticketing for events
- Equitable royalty distribution
- Identifying writers, producers, and owners of copyright and intellectual property
- Instant royalty distribution

Legal Implications

As is the case with the introduction of many new technologies, legislation often requires updating or adapting to accommodate new ideas and methodology of producing material. An example of this is the ongoing discussion around artificial intelligence, and the new laws and bills being passed to prevent new 'robots' or devices from doing harm or operating at a detriment to the interacting user. (EU Commission, 2022)ⁱⁱⁱ This may seem like an obvious requirement from an AI device, however before legislation was introduced, AI could be argued to be responsible for any malicious action to a certain

extent. This is an example that is part of an entire host of laws introduced to keep up to date with how our technology is changing, this is certainly no different in the case of blockchain technology. So, what are the legal issues, implications and questions surrounding blockchain, crypto and the surge in popularity of NFTs.

The first point of contention for the new technology is its issue of jurisdictional coverage. As a decentralised ledger, the blockchain's nodes can be found in multiple territories across the world. This implies that every transaction recorded on the blockchain may potentially be subject to the laws of every single state where a node or member server of the network is located, thereby subjecting the blockchain network to an unmanageable number of laws and regulations that can potentially halt this technology in its tracks and limit its potential. Part of blockchain's value lies in its anonymity, security and transactional speeds, however regulation and new legislation can remove this entirely unique aspect of the technology. Furthermore, even sustained fundamental concepts such as proper ownership and contract law are subject to varying laws and regulations in different jurisdictions. What counts as a binding agreement in one territory could be void in another. The law governing the transactions must be predetermined by an internal governance structure to prevent this confusion. The users would then be able to assess the legality of the contracts as well as their rights and duties thereunder. A method of dispute settlement that is acceptable to all parties concerned should also be specified. Change in legislation on this potential scale may be both compulsory as well as monumental in scale in the near future and may be a key aspect in securing the future of blockchain.

Although blockchain technology is thought to be extremely safe and tamper-proof, this benefit is lost if the data that is stored on the blockchain is infiltrated in the first place. Cybercriminals attack the data entryways rather than the ledger itself, which culminates in the storage of inaccurate or misleading information. When a 15-year-old boy from the US created a proof-of-concept code (Echarri, 2022)^{iv} that allowed backdoor access to hardware wallets, he demonstrated the viability of these types of attacks. Using this methodology, attackers may change payment quantities and wallet destinations, even redirect payments to their own accounts covertly while making it appear as though funds had arrived in the target wallet. However, these attacks are rare and are as a result of human error not that of the technology. Although there is still room for human error, this margin of error can be limited and protected against much more thoroughly than other methods of data storage, distribution and verification such as the internet (web 2) or even physical documents and printed material.

The next area of change that will dramatically impact not only the music industry and entertainment business, but also wider sectors is smart contracts. Prewritten computer codes make up smart contracts. The contract's conditions are laid down in terms of "if" and "otherwise", this means that blockchain-based contracts automatically carry out their purpose when the required conditions of the smart contract are satisfied, this means that a third party is not required to confirm the transaction. This calls into question whether such contracts can be enforced in court. There isn't much room for discussion because everything is automated therefore, they are very much set in stone and can't be tampered with.

There is also a possibility that software developers may be held accountable for or accused of sub-standard coding that causes customers to lose money. This might happen as a result of a bug in the code, or it works differently to how the parties to the transaction planned. Smart contracts will allow for immensely complicated tracks with multiple credited writers, to get paid almost instantaneously and correctly every time a stream is recorded. However, the validity of these smart contracts has been called into question as these contracts are social rather than legally binding in execution, therefore it is contended that these contracts are reliant on each member party trusting the other to fulfil the agreed upon exchange of services or goods rendered in totality. This issue of trust comes about if one member party is unable to properly read and understand the code involved in the distribution and payment of monies due to them. These smart contracts are entirely composed of code arranged and put in place by human input, therefore they are even harder than traditional contracts to read and may even render the analytical services of a traditional lawyer useless, in favour of a programmer or code development consultant who will be able to more accurately explain the elements and implications of the smart contract.

Blockchain technology will revolutionise how record labels, publishers and independent artists track and manage Intellectual property within the next decade. It will benefit rights management in several key areas. Copyright management companies will benefit from a stronger, more secure, and fixed data base that can catalogue all versions, iterations, and contributions to a single track or composition. The product can come as a complete package that has all the inputs for finished product, such as a movie, video game, music video or the marketing campaign, all held in one place with a log of all data including alterations, sales and interactions of the final product and its assets included in the package. Additionally, operations between suppliers, distributors, and third parties will be improved by the ability to move quickly between partners with enforceable contract conditions, removing the middlemen that take a cut of the incoming royalties before they reach the rights holder. Additionally, the live flow of payments and licencing is recorded, offering a clear and reliable log of all activity concerning the final product. According to this model, even those with a small contribution or share in the contract or product, can do so, while still maintaining awareness of the product's market performance and financial obligation or money owed to them.

What makes this even more appealing to specifically creative industries such as the music and art business is the ability to create and fix copyright ownership to “provably unique” (Ernst & Young Global Limited, 2019)^v works or creations.

One of the overlooked benefits to this technology is it allows for micro-payments (payments amounting to a sum/denomination to a value lesser than £0.01) to be paid and distributed to the relevant parties. This makes a lot of sense to all artists making their content available to stream across a variety of DSPs (digital service providers) as an artist’s income no longer comes in the form of £0.99 transactions as it once might on services such as iTunes, but rather is denominations lesser than £0.99.

Streaming services currently pay on average the following per stream:

- Spotify - \$0.00318
- Apple Music - \$0.00402
- Tidal - \$0.01284
- YouTube Music - \$0.002

These royalties are currently paid in lump sums up to 9 months after they have been recorded as sales, collected by the relevant societies and distributed back to the relevant parties. The micro-payments generated by streams can now, for the first time be distributed within seconds to the parties concerned, no matter the sum. Every year millions in unpaid royalties known to the industry as “black box royalties” are left unallocated and unclaimed by artists across the industry, supposedly left in the dark and unaware to their earnings. A 2021 study estimated that the total amounted to \$500m on an annual basis, these royalties having been affected directly by poor data allocation, improper royalty collection or the lack thereof.

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- ⁱ Catalini, C. (2017) *Blockchain, explained, MIT Sloan*. Available at: <https://mitsloan.mit.edu/ideas-made-to-matter/blockchain-explained> (Accessed: November 19, 2022).
- ⁱⁱ Little, K. (2022) *What is blockchain and how does it work? | nextadvisor with Time, Time*. Available at: <https://time.com/nextadvisor/investing/cryptocurrency/what-is-blockchain/> (Accessed: November 15, 2022).
- ⁱⁱⁱ EU Commission (2022) *New liability rules on products and AI to protect consumers and foster innovation, European Commission - European Commission*. Available at: https://ec.europa.eu/commission/presscorner/detail/en/ip_22_5807 (Accessed: November 19, 2022).
- ^{iv} Dutta, T.S. (2019) *This 15-year-old boy hacks 'unhackable' cryptocurrency wallet, TechViral*. Available at: <https://techviral.net/15-year-old-boy-hacks-cryptocurrency-wallet/> (Accessed: November 19, 2022).
- ^v Ernst & Young Global Limited (2019) *How blockchain can impact the intellectual property life cycle, Ernst & Young Global Limited*. EY. Available at: https://www.ey.com/en_gl/consulting/how-blockchain-can-impact-the-intellectual-property-life-cycle (Accessed: November 19, 2022).