

Sitonio, Camila; Nucciarelli, Alberto

Conference Paper

The Impact of Blockchain on the Music Industry

29th European Regional Conference of the International Telecommunications Society (ITS): "Towards a Digital Future: Turning Technology into Markets?", Trento, Italy, 1st - 4th August, 2018

Provided in Cooperation with:

International Telecommunications Society (ITS)

Suggested Citation: Sitonio, Camila; Nucciarelli, Alberto (2018) : The Impact of Blockchain on the Music Industry, 29th European Regional Conference of the International Telecommunications Society (ITS): "Towards a Digital Future: Turning Technology into Markets?", Trento, Italy, 1st - 4th August, 2018, International Telecommunications Society (ITS), Calgary

This Version is available at:

<https://hdl.handle.net/10419/184968>

Standard-Nutzungsbedingungen:

Die Dokumente auf EconStor dürfen zu eigenen wissenschaftlichen Zwecken und zum Privatgebrauch gespeichert und kopiert werden.

Sie dürfen die Dokumente nicht für öffentliche oder kommerzielle Zwecke vervielfältigen, öffentlich ausstellen, öffentlich zugänglich machen, vertreiben oder anderweitig nutzen.

Sofern die Verfasser die Dokumente unter Open-Content-Lizenzen (insbesondere CC-Lizenzen) zur Verfügung gestellt haben sollten, gelten abweichend von diesen Nutzungsbedingungen die in der dort genannten Lizenz gewährten Nutzungsrechte.

Terms of use:

Documents in EconStor may be saved and copied for your personal and scholarly purposes.

You are not to copy documents for public or commercial purposes, to exhibit the documents publicly, to make them publicly available on the internet, or to distribute or otherwise use the documents in public.

If the documents have been made available under an Open Content Licence (especially Creative Commons Licences), you may exercise further usage rights as specified in the indicated licence.

The Impact of Blockchain on the Music Industry

Camila Sintonio and Alberto Nucciarelli

Department of Economics and Management, University of Trento, via Inama 5, 38122, Trento, Italy,
camila.sales@studenti.unitn.it, alberto.nucciarelli@unitn.it

Abstract. This paper explores the impact of blockchain on the music industry with a focus on the implications technology can have for artists. By investigating the industry’s supply chain, we argue that the on-demand streaming platforms (e.g. Spotify and Apple Music) have allowed consumers to easily access music products but have introduced a level of intermediation between artists and customers leading to inefficiency of the royalty payments systems. The goal of this research is to identify blockchain applications that would enable the disintermediation of the industry, allowing artists to create and capture more value from their own products. This paper discusses some applications and concepts related to blockchain, including smart contracts, record keeping, revenue management, and metadata analysis. By presenting some examples, we assess the current state of the technology’s development in the music industry, how companies are introducing this new model into the market, and some limitations these models may have.

1. Introduction

Blockchain technology is often seen as “the next thing” that can change the structure of different industries. However, the impact of its adoption remains unclear (Yli-Huumo, et al. 2016). The music industry is no exception in that respect as a lot has been already said regarding the implications of blockchain for the industry as a whole, including an increase in the value captured by artists, a shift of market power (from record labels to creators), disintermediation, more transparency and more efficient systems (e.g. distribution and royalty payments) (O’Dair, et al. 2016).

The investigation of these implications are particularly relevant for artists, who envision the possibility of finally being properly rewarded for their efforts and creative endowments (Rogers 2016). Blockchain promises to give power back to musicians by providing a fair distribution channel. In this case, the idea is to provide an environment in which they will have the freedom to access transactional information and be paid more effectively. This new channel also opens the possibility and create the means for the introduction of innovative business models, by the artists themselves or any other stakeholder in the market.

It is likely that any intermediaries that add value to the chain will remain, even with the value created being redistributed and favouring artists and songwriters (O’Dair, et al. 2016). However, it is also imaginable that the roles of those intermediators, such as record labels and publishers, will change in order to accommodate the new requirements of the value chain’s power balance.

In this paper, we investigate the impact blockchain technology already had in the music industry, as well as the potential impacts in the short future. We seek to understand fundamental issues such as “How much has the technology already developed in the industry?”, “How the

technology would fit into the industry’s supply chain?”, “What efforts have been made regarding the usage of blockchain as a mainstream network?”, and “Can artists already start benefiting from the technology?”.

The remainder of this paper is organized as follows. In Section 2, we provide a literature review on business model, blockchain technology and its inner workings. Section 3 analyses the supply chain of the music industry, discussing how the internet revolutionized it in the past and how blockchain can do it once again. In Section 4, we discussed the methodology we followed in this research. Section 5 explains how blockchain could solve some of the issues found in the industry’s supply chain, and how it can cause an increase of value captured by musicians. We also discuss the current state of development of blockchain in the industry, some applications, and services that are already available. We conclude the paper in Section 6 by arguing how well structured the models in placement are and how future contributions should aim in exploring the performance of the blockchain services available in the industry.

2. Literature review

2.1 An overview of relevant literature on business model

A business model defines the way in which the “*business enterprise responds to and delivers value to customers, entices customers to pay for value, and converts those payments to profits [...]*” (Teece 2010, 191). Teece’s (2010) definition allows us to employ the business model concept as a set of interdependent activities that can enable researchers to elaborate on meaningful inferences in terms of cause-effect relationships between its different components, especially in a phase of business model design or innovation (Aversa, et al. 2015)

However, the sparkling debate among management scholars on business models has produced different (and often competing) definitions (Wirtz, et al. 2016; Zott and Amit 2010; Zott, Amit and Massa 2011). From a theoretical perspective, we can interpret business models as attributes of the firm (H. Chesbrough 2010), cognitive schemas (Baden-Fuller and Morgan 2010; Martins, Rindova and Greenbaum 2015) or formal conceptual representations of how business functions (Demil and Lecocq 2010; Casadesus-Masanell and Ricart 2010). From a practitioner’s perspective, business models can be distinguished between two-sided and multi-sided. The former (i.e. dyadic business models) sees transactions taking place between two parties (i.e. a seller and a buyer); the latter (i.e. multi-sided business models) enables transactions among multiple parties (Evans and Schmalensee 2016), where an intermediary creates the conditions for buyers and sellers to encounter and transact. In this very case, the intermediary also acts as a guarantee for both parties. It doesn’t just facilitate the transaction by reducing distances and transaction costs but it also validates their identities and build mutual trust (see Roth (2015) for an interesting social and economic analysis on this).

Massa, Tucci and Afuah (2017, 74) affirm that business models “*may represent a new dimension of innovation that complements traditional ones such as product, process, and organizational innovation, thus broadening the boundaries of innovation-related phenomena and, accordingly, theories of innovation*”. Value for customers - they argue - can in fact be created by designing new governance mechanism for social and economic interactions, especially “*in presence of larger forces at the macro level, such as Internet technology and globalization, [that] are blurring the distinction between industries, lowering barriers to entry, and potentially leading to more intensive rivalry*” (Massa, Tucci and Afuah 2017, 74). The relationship between technology and business model choice can then lead scholars down different research avenues to investigate factors

(e.g. demand, industry structure, technology characteristics) and stakeholders (e.g. user communities, user-innovators, entrepreneurs) influencing the adoption of an innovative business models (see on this Chesbrough and Rosenbloom 2002; Gambardella and McGahan 2010; Sosna, Trevinyo-Rodríguez and Velamuri 2010). However, much still needs to be analysed as the role of customers in the definition of value creation and value capture (Demil, et al. 2015; Nucciarelli, et al. 2017; Priem 2007) and the influence of technological innovation on the structure of the ecosystem including demand- and supply-side actors. In that respect, Adner’s (2017, 42) definition of ecosystem as “*an alignment structure of the multilateral set of partners that need to interact for a focal value proposition to materialize*” poses the accent on the need to investigate not just the single business models but to capture the interactions among them and the set of strategic, social and economic rules governing the complexity.

2.2 What is Blockchain and how does it Work?

Maintaining records, elaborating contracts, and carrying out monetary transactions are some of the basic and time consuming activities of any business. Introduced in October 2008 as the technology behind Bitcoin, blockchain has continuously been appointed as the biggest foundational technology since the internet, with the potential to transform our operational economic systems (Iansiti and Lakhani 2017). As a decentralized, peer-to-peer (P2P) network that acts as a distributive ledge recording transactions among parties, blockchain technology guarantees transparency, high level of security, efficiency and irreversibility to its users.

Blockchain networks can be either private (restricted to members) or public (accessed by any interested party online). Each user, or “node”, has its own alphanumeric address, enabling user anonymity while ensuring transparency of records (Iansiti and Lakhani 2017). All transactions carried in the network are cryptographically protected in a block, broadcasted to the entire network, verified (e.g. ownership of the seller, liquidity of the buyer), and validated by Miners. Miners will compete to solve a complex mathematical puzzle, a process called “work-of-proof”, that not only rewards the first miner to solve the problem, but also allows the blocks to be linear and chronologically added to the chain without creating extra branches (e.g. blocks being verified at the same time) (Crosby, et al. 2016). Finally, with the block included and linked to older blocks, all records of the transaction become available to the entire database - they no longer can be altered, deleted or hidden. The entire chain is continually updated and synchronized, allowing members to prove ownership or analyse data at any given time.

Since its conception, blockchain technology has been successfully introduced in both financial and non-financial applications, especially for its unchangeable and transparent record keeping feature. Concentrating on the non-financial applications, Crosby et al. (2016) believes that, “*We can envision putting proof of existence of all legal documents, health records, royalty payments in the music industry, notary, private securities and marriage licenses in the blockchain. By storing the fingerprint of the digital asset instead of storing the digital asset itself, the anonymity or privacy objective can be achieved.*”. An example of non-financial application is MedRec¹, a service that applies blockchain technology to manage authentication, confidentiality, accountability and data sharing of medical records, creating a unique registry of patients’ healthcare history (Azaria, et al. 2016). Another case is Storj, a P2P distributed cloud storage platform, that allows users to transfer, share and storage data without any third party data provider (Crosby, et al. 2016).

¹ A decentralized record management system to handle electronic medical records, using blockchain technology.

3. The Music Industry

According to Patrik Wikström (2014): *"The overall music industry is based on the creation and exploitation of music-based intellectual properties. Composers and songwriters create songs, lyrics, and arrangements that are performed live on stage; recorded and distributed to consumers; or licensed for some other kind of use, for instance sheet music or as background music for other media (advertising, television, etc.)"*. Following this concept, it is possible to distinguish three main sub-industries within the music industry: the live/performing industry, the recorded music industry, and the music licensing industry. In this paper, we focus on the recorded music industry, therefore, any mention henceforth to the music industry will be specific to this sub-industry.

3.1 The Music Industry turning points

During the pre-internet era, the music industry experienced a long stage of constant growth, with a hand full of record labels, known as the Majors², controlling a US\$ 38.6 billion industry (IFPI 2001). Music was physically distributed (e.g. CDs in a retail music shop), a constraint that gave the record labels control over the entire supply chain. Due to this power, most of the value in the chain was captured by record labels, along with all the data from the transactions. This suggests that any possibility for data managing with innovation objectives would not be available for artists.

With the popularization of the internet, the physical distribution aspect became increasingly irrelevant. The industry's profits started to fall by 2000: 1.3% in value and 1.2% in units compared to 1999 (IFPI 2001). New and disruptive business models were created, such as the controversial NAPSTER, a P2P sharing music network that significantly increased music piracy. In the midst of an exponential decrease in the industry's sales, there was a clear demand for restructure regarding the traditional model.

One of the main turning points for the industry was the launch of the iTunes Store, an online platform created by Apple that would change how we, as a society, consume music. Songs were no longer a physical good, consumers would be able to purchase digital media through all their Apple devices, no extra restraints. Yet, record labels were unhappy with Apple's song pricing and musicians lamented not getting enough royalties from it (Bockstedt, Kauffman and Riggins 2005). Nevertheless, the industry, so threatened by online piracy, finally had a way to profit from digital media.

Another significant revolution in the music industry arose with the On-Demand Streaming platforms. YouTube, Spotify, Deezer, Tidal, and Apple Music are among the most used tools to access music nowadays. Interestingly enough, Apple, which was responsible for the iTunes Store music disruption, was a follower to the streaming model. As evidence of the impact of these business models for consumers, in 2016 the digital music format was responsible for 50% of the industry revenues (IFPI 2017). The distribution stage, core to the Majors, lost its physical constraint, allowing new players and new ways of distribution to emerge. Consumers started to have faster, uncomplicated, unlimited access to media. In many ways, they were the most benefited by the digital media revolution. Musicians, on the other hand, still had little power regarding their own creations and were continuously capturing less value with sales in each of these turning points.

² Sony BMG, Universal Music Group, Warner Music Group, and EMI

3.2 The Music Industry value-chain

Even though, the way we consume music has changed, the work division within the industry remained roughly the same: artists create music, fans consume it, and the intermediaries, such as the record labels and distributors, act as the powerful middlemen (Graham, et al. 2004). Imogen Heap (2017), a Grammy winning recorded artist and big blockchain supporter in this industry, points out that *"A major pain point for creatives in the music industry — such as songwriters, producers and musicians — is that they are the first to put in any of the work, and the last to ever see any profit. They have little to no information about how their royalty payments are calculated, and don't get access to valuable aggregate data about how and where people are listening to their music."*

Traditionally, the recorded music industry supply chain worked vertically integrated, with interdependent activities, transforming the music created into a physical good (Graham, et al. 2004). As shown in Figure 1, this chain starts with the Artists³, that use the support of producers and engineers to create music. Following, the intermediaries, who retained control, add their value to the chain. The final product would finally reach consumers either as a physical good or in a promotional format such as films, commercials, live performances or radio.

In this pre-internet era, Record Labels added a great amount of value to the chain. They would finance and supply the Artists access to equipment, operational support to produce, record, package and promote their music, and provide access to distribution and sales channels. Because of that, Record Labels retained about 30% of the value generated with the final sales in this supply chain, the largest amount gained by any of the actors involved (Hosoi, et al. 2015). The Artist's share it is unclear even to them. Moreover, Record Labels were responsible for collecting and transmitting royalty revenues, a nebulous and long process, as evinced by Imogen Heap's statement above. This configuration, as it was, allowed for extreme information asymmetry among artists, intermediates, and final consumers.

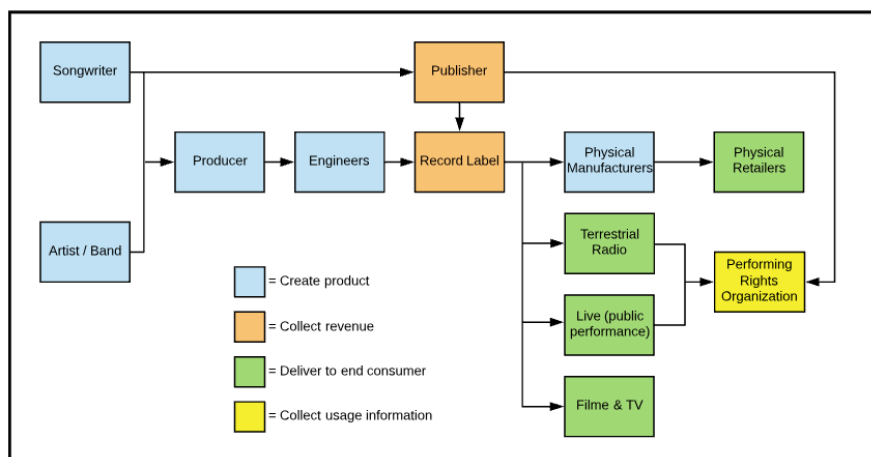


Figure 1. Recorded music supply chain before digital media – adapted from (Hosoi, et al. 2015).

With the introduction of the digital media market, the music industry supply chain changed, and with it, the value generated by each actor. As depicted in the left side of Figure 2, a new actor was introduced to the supply chain – the Aggregator. Selling music, no longer meant selling a physical

³ Even though there is a distinction between performers (artist/band) and songwriters, for the objective of this paper, they will both be referred to simply as Artists.

good. Artists would be able to use both the traditional and the digital supply chain. Additionally, in this new scenario, smaller artists (right side of Figure 2) would now be able to record their music in independent facilities, or even at home, making it available online through the Aggregators directly. These artists would no longer depend on being signed by a Record Label to get published.

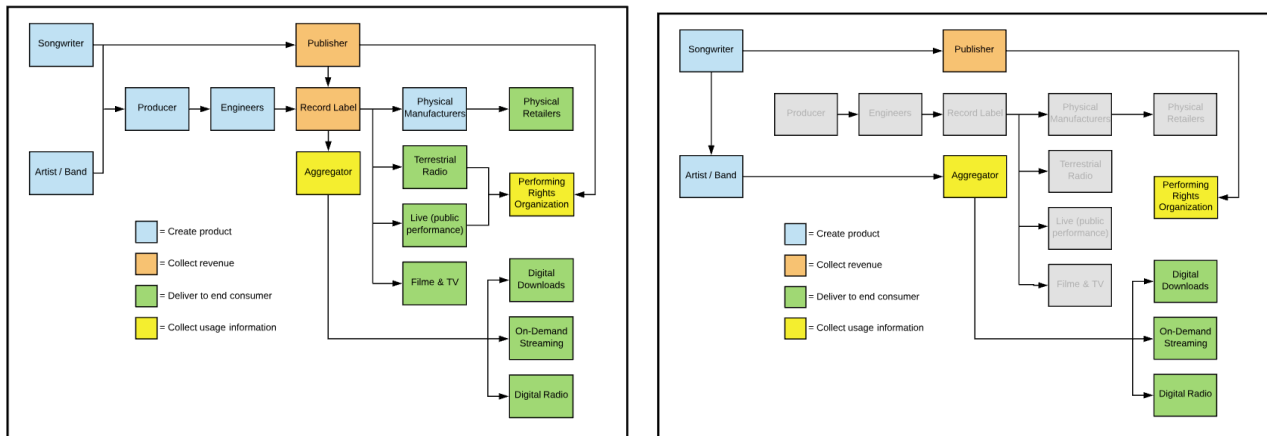


Figure 2. Recorded music supply chain after digital media for major artists (on the left) and small artists (on the right).

On the down side, the value captured with the introduction of this new actor was not evenly redistributed among the stakeholders. Even with the Record Labels losing their monopolistic distributional power and the transactional costs being reduced due to the shift from physical to digital goods, the value captured by the Artists did not increase. As another intermediary, the Aggregators only reinforced the existent information asymmetry in the industry (De Leon and Gupta 2017). According to Hosoi et al. (2015): “*Interestingly, record labels still claim the largest piece at over 50% of the share, despite their changing value to the supply chain. Some reasons for this phenomenon could be the existing contracts with the artists and the licensing/royalty business model that involve the record label as the performance rights holder for the recording.*”

For major artists, the revenue stream created by the Aggregators’ business models decreased the total and flow of payment. For small and independent ones, even though created the possibility for publishing music online, royalties are commonly unpaid (De Leon and Gupta 2017, Gartner Inc. 2017).

Blockchain technology comes as a potential solution to the generators of monopolistic power for intermediators, namely distribution channels, information asymmetry and royalty payments. This P2P network promise to give the power back to Artists and eliminate the need for intermediaries, creating a direct bridge between the artists and consumers. As shown in Figure 3, the main expectation is that music creators publish their songs directly in Blockchain Networks, without needing intermediaries. After that, platforms powered by these networks would reach consumers, reducing transactional costs, allowing artists to access data generated by the transactions, and creating a more efficient system for royalty payments.

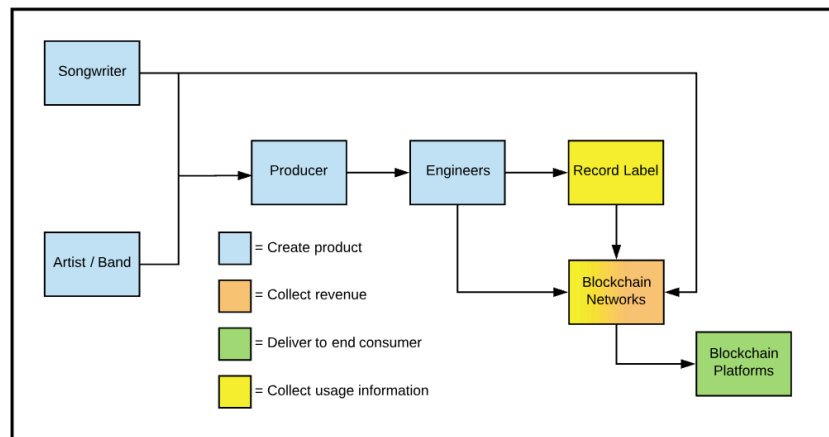


Figure 3. Recorded music supply chain with blockchain technology.

Even though this would be the ideal scenario, note that, nowadays, most mainstream artists are under contract with one of the Majors, which prevents them to go straight from creation to the blockchain networks. While legal contractual issues are not within the scope of this paper, it is safe to say that this constraint would cause a blockage in this envisioned supply chain. One alternative would be not to eliminate the intermediates, but to change their roles within the chain. Thus, instead of acting as a revenue collector and representative of the musicians’ intellectual property (IP), Record Labels would act as collectors of usage information, as well as continue to provide technical, production and marketing assistance according to the scope of each individual agreement. The responsibility regarding royalty payments, including the intermediates share, and the assurance of information transparency, would still be granted by the Blockchain Networks.

4. Methodology

Our aim in conducting this research, was to explore the possible benefits blockchain technology can bring to the music industry. A qualitative approach was chosen, since this type of approach is indicated when using “how” questions such as how blockchain can impact the music industry and how new business models can be introduced due to the technology.

Two sets of literature reviews have been necessary. First, to better the concept of business models, an analysis of the research on this subject from different perspectives. Then, a comprehensive research on blockchain technology in order to identify possible applications to this industry.

An exploratory analysis with secondary data was performed to provide a better view of the traditional music industry supply chain model. The same principle was also applied to identify platforms powered by blockchain networks, their current state of development, and possible gaps in their models.

Finally, primary data is imperative if the current literature on blockchain and business models is to be developed further towards providing a more in-depth understanding of how distributed ledger technology (DLT) can impact on the process of value creation and value capture in business models. We are now collecting primary and secondary data from new ventures employing blockchain technology. These ventures represent different stages of technology development (i.e. early stage to maturity).

5. How can Blockchain Revolutionize the Music Industry

The 2017 Hype Cycle report (Gartner Inc. 2017) suggests that the technology is five to 10 years away to mainstream adoption. The report expects that during these time, some focus will be given to create convergence in architectural styles (private and public) resulting in all distributed ledgers having similar functional characteristics. Moreover, it also states that “*concerns remain about the viability of the technologies, security (software and hardware), scalability, legality and interoperability*”, especially given that public ledgers seem inappropriate for most enterprises internal information. However, even with the technology in its initial stages of development, for the purposes of disintermediation in the music industry, it shows great immediate potential. Two of the main issues identified in our research are:

1. the lack of access to transactional information; and
2. the inefficiencies associated to royalty payments;

Blockchain technology can solve both of these issues, while maintaining transparency throughout the entire chain. Not only that, as we will discuss in section 5, the possibilities for applications go beyond the traditional business models in the industry, enabling a closer relationship between Artists and Consumers.

5.1 Applications and improvements to the industry

Record Keeping

Where Digital Rights Management (DRM) systems⁴ failed, blockchain may succeed. Behind every song, there are songwriters, performers, producers, sound engineers, and other technical staff that contributed to its creation. The process of identifying and correctly paying these stakeholders for their IP usage, is currently out of date. According to Imogen Heap (2017), “*One of the biggest problems in the industry right now is that there’s no verified global registry of music creatives and their works. Attempts to build one have failed to the tune of millions of dollars over the years [...]. This has become a real issue, as evidenced by the \$150 million class action law suit that Spotify is currently wrestling with*”.

The .bc (or dotblockchain) was introduced as a dynamic music file format, such as the MP3 and WAV, designed to modernize rights management of media globally. The idea behind this new media format, is to include within the file all data required to identify the owner, payment rights, and other information attached to the media. Once the file is created, it is introduced to the blockchain network and made available to users. According to its mission, the Dot Blockchain Media (2018), a Benefit Corporation, aims to provide the format and architecture to all musicians, composers, and people in the music industry and its related fields, initially though an open source protocol and licenses. In a 2016 article wrote by the company’s CEO Benji Rogers, he assured that not only there was evidence that this is technically possible, but that they may be very close to a minimum valuable product (MVP) (O’Dair, et al. 2016).

⁴ Refers to a technology application connected to a server or a desktop computer that contains, controls and manages contents (Kwok 2002).

Smart Contracts

The term smart contract refers to blockchain-powered contracts with automatically executable conditional terms, such as payments and asset transfers (Iansiti and Lakhani 2017). This application can be particularly transformative to the music industry as it supports automatic royalty payments to Artists and any other actor that retain its shares. With smart contracts, when a consumer downloads, stream or use music available in the blockchain networks, the amount paid does not go through any third parties. Instead, all the information needed to forward the payment to each shareholder will be located within the chain and executed as specified on the agreement. Not only all the contributors of the song will receive their part immediately after the song is licensed, but all the information generated with the transaction will be also available for data visualization and analysis technics (e.g. data mining).

Even though some believe that blockchain is not suited for high-frequency, low-value transactions (Palfreyman 2017), which would be the case for the stream and download universe, some platforms are already being used to this end, having cryptocurrency as the payment method. Tiny Human, an Imogen Heap track, was the first song ever to automatically distribute payments via a smart contract to all involved in the making and recording of the song (Heap 2017). The single was available in Harper’s own space, Mycelia, powered by the Ethereum network, and sold through Ethereum’s cryptocurrency Ether. According to her, the revenue generated with this approach was not significant at the time, especially because many people are still unfamiliar with the use of cryptocurrencies. However, the fact that fans were willing to experiment the format, and the benefits brought to the creators of the music, confirmed the high potential the technology presents to the music industry.

Data Analysis and Business Model innovation

The information generated by the transactions, and made available through blockchain, can not only increase the level of transparency of the process, but also allow artists, and other users, to create new business models from it. For example, by using data mining techniques, artists may have access to geographic, demographic and purchase preferences of the users. Netflix is a great example of this application for the video streaming industry. The company is well recognized for the analyse of millions of real-time data points generated by viewers, that after being mined, support the firm in evaluating the likability of a pilot’s success (Xu, Frankwick and Ramirez 2016). This technique is also known as big data analytics.

Inclusion on the blocks of information related to the artists, instruments used to make the song, performance dates, details of the process of composition, and so on, can generate enough information to make consumers partners and promoters. Fans could collaborate with artists suggesting new additions (e.g. different instrument in a specific section), or simply promote them with referrals that, in case of success, would generate monetary (through smart contracts) or other types of rewards to the consumers.

Other applications could have some proximity to the model used by PledgeMusic (PledgeMusic 2018). This digital music market tries to include fans into the process of creating, recording and using music. The company specializes in short-run exclusive products that can include guitars used in concerts, backstage passes, autographed CDs or Vinyl’s, and so on. By including blockchain into this model, companies could increase the value captured by the Artists and allow them to get more familiar with their fan community, increasing also the value perceived by the consumers.

Revenue Management

Other industries are already well known for the use of flexible rates, especially those in which

goods are of non-stockable nature, such as tourism. Plane tickets are changeable and usually cheaper depending on the time, antecedence, and weekday of the flight. While music is a stockable good, fluctuations on the prices are also possible and can result in increase of the value captured by the Artists. A song can change its price depending on the time of the day, streams per person, total number of streams/downloads, and even region of the consumer.

For instance, if by analysing the records, it is identified that a specific tune is more played in a certain time frame of the day, it can cost a little more during that time and a little less in other periods. This movement would allow price sensitive consumers to try the product in cheaper times and less sensitive to continue streaming in a higher demanding period. Also, fans that stream the same song for given number of times could have discounts. They could pay less than new users or even not pay at all after these given times. This particular change can create the sense of fidelity and even a concept of “super-fans”.

Some companies are already applying the automatic dynamic pricing concept in other industries. Revenue Management Solutions (<https://www.revenuemanage.com/>) does that in the restaurant business, Revenue Management Systems (<http://www1.revenuemanagement.com/>) for aviation, rail, and cargo, and IDEaS (<https://ideas.com/>) for hotels, events and other business types. The addition of the blockchain technology to the concept, brings more liberty to artists and other stakeholders to create innovative business models from it.

5.2 Current state of development

Investments in research, platforms, and open-source technologies that will allow blockchain to properly function in the industry can already be found. The Open Music Initiative (OMI), for example, is a non-profit organization, supported by a variety of stakeholders (e.g. artists, labels, producers, organizations, publishers) on the music industry, that is creating an open-source protocol for the uniform identification of music rights holders and creators. The idea is not to build a database or a specific product, but to develop an application programming interface (API) with specifications to support other stakeholders in the develop of their own systems. (Open Music Initiative 2018).

Bittunes (<http://www.bittunes.org>), Peertracks (<https://peertracks.com>), and Voise (<https://www.voise.com>) are platforms building their own systems or being powered by existing ones (e.g. Ethereum), that will allow consumers to stream or download music through blockchain. Other companies such as Revelator (<http://revelator.com>) and Blòkur (<https://www.blokur.com>) are focusing on the royalty holder end of the business, offering metadata services to increase productive and revenues through data analysis. Following, we will introduce some examples of streaming/download platforms already available online in their beta versions.

Musicoin

Musicoin (<https://musicoin.org>) is a blockchain platform that allows customers to stream music from their catalogue of independent artists. It promises fair compensation, transparent contracts and no intermediaries. Absolutely free, and with no adds, the platform uses a model called Universal Basic Income (UBI) to ensure each contributor is fairly rewarded in proportion to their contribution (Musicoin 2018). Payments are automatically directed through smart contracts using the Musicoin cryptocurrency. Consumers are also encouraged to tip the musicians using the Musicoin. However, in order to do that, they must first buy the Bitcoin and then convert into Musicoin at Bittrex or Cryptopia cryptocurrency exchange.

For the future, the platform envisions to use Musicoin to sell fan merchandise, music magazines,

subscriptions and other music related products. Their main goal is to increase the power of this currency so that it becomes the base of all economic activity around musical goods and services. Furthermore, the platform also tries to reinforce an open channel between artists and consumers by creating a forum in which they can freely communicate, provide feedback, suggestions, share songs and create playlists.

Resonate

Resonate (<https://resonate.is>) is a music streaming platform with a business model that is very different from the subscription-based models adopted by Spotify and Apple Music. Resonate claims to be more affordable for listeners and to pay artists over twice the rate of their competitors, creating a democratic system of governance built on blockchain (Resonate 2018). Currently, the cooperative has on its catalogue independent artists and labels, having as a goal to increase the performance of its internal functions and include new ones in order to continue serving this market.

Musicians are paid directly through smart contracts and, when joining the cooperative, contribute with 5 dollars each for the membership. Consumers, as new subscribers, are awarded 3 hours of free streaming in Resonate’s #stream2own application. After that, they follow a “pay for what you listen” model. The payment method works with a credit system in which the customer pays in euros/dollars and the artists get payed in cryptocurrency. For example, by adding 5 euros (6.15 after taxes) to your account, the user will be granted 4.0880 credits (will depend on the exchange rate of the day). According to Resonate, it costs less than 5 euros a month for 2 hours of music per day. Additionally, after listening to the same track more than ten times, the fan will no longer pay to access it.

Ujo Music

The Ujo platform uses cryptocurrency and smart contracts to compensate their artists in a paid per song model. In 2015, Imogen Heap collaborated with the company to demonstrate how Ethereum could revolutionize the supply chain of music by cutting off the intermediators (Ujo Music 2018). Since then, the platform offers free and paid streaming options, using Ethereum to build out their licensing system.

6. Final Remarks

Blockchain has continuously been appointed as the biggest foundational technology since the internet, creating great expectations regarding its applications on a variety of industries. Yet, the technology is still in its initial stages and it may be years before it changes our society’s economic systems. Some experimental models, in financial and non-financial industries, are already in place, increasing even further the hype around the technology.

For the music industry specifically, the addition of blockchain powered models may result in a complete change of the industry’s structure. Some of the main issues identified by the analysis of its supply chain models were the lack of transparency through the chain, musician’s low bargaining power, and inefficiency of the royalty payments systems. Through the use of applications such as record keeping, smart contracts and metadata analysis, these issues may be eliminated and intermediation turned obsolete.

It is important to note, however, that even with all the potential benefits to the music industry, the new business models introduced with the technology are also in their initial stages. The mere fact that they function through the use of cryptocurrencies, not money, may still be too controversial to some

consumers. Due to the novelty of blockchain and the platforms powered by the network, the ability to project the success of these models is quite limited.

Another point worth mention is the fact that without a revenue stream, it is unclear how these music platforms will continue to develop and reach consumers with the same power as their competitors Spotify and Apple Music. All three analysed platforms (Musicoin, Resonate and Ujo) have mainly independent artists and labels in their catalogues, making it unlikely a scenario in which those artists would have the means to finance the projects. At the same time, by charging for the use of the platforms, there would be no disintermediation, only an exchange of it. With time, it is possible that the value captured by the artists would go back to decrease and intermediation power to increase.

Nevertheless, it is undeniable that blockchain technology can bring innovative business models to the music industry. The expectation is that new enterprises start to develop applications using the technology and increasing the total amount of usage for corporations and consumers. Furthermore, the involvement of mainstream and independent artists in this process may be of great contribution for the dissemination of blockchain in the music industry.

Due to the initial stages of development, it was difficult to access enough data regarding the performance of the platforms already in use. Ideally, comparing the results of those blockchain powered platforms with the initial results of their competitors using the subscription model could indicate how far they are from mainstream consumption. Similarly, not a lot of research was applied to blockchain in the music industry. Not only literature is limited, but also the perception of the effectiveness of the technology to this industry in particular.

From this research, we have the intention of further evaluate the phase of development of blockchain in the music industry by analysing it from a performance and adoption, by artists and consumers, perspective.

References

- Adner, Ron. 2017. “Ecosystem as Structure: An Actionable Construct for Strategy.” *Journal of Management* (Sage).
- Aversa, Paolo, Stefan Haefliger, Alessandro Rossi, and Charles Baden-Fuller. 2015. “From Business Model to Business Modelling: Modularity and Manipulation.” *Business Models and Modelling (Advances in Strategic Management)* (Emerald).
- Azaria, Asaph, Ariel Ekblaw, Thiago Vieira, and Andrew. Lippman. 2016. “MedRec: Using Blockchain for Medical Data Access and Permission Management.” *International Conference on Open and Big Data*.
- Baden-Fuller, Charles, and Mary Morgan. 2010. “Business Models as Models.” *Long Range Planning* (Elsevier).
- Bockstedt, Jesse, Robert J. Kauffman, and Frederick J. Riggins. 2005. “The Move to Artist-Led Online Music Distribution: Explaining Structural Changes in the Digital Music Market.” *Hawaii International Conference on System Sciences*.
- Casadesus-Masanell, Ramon, and Joan Enric Ricart. 2010. “From Strategy to Business Models and onto Tactics.” *Long Range Planning* (Elsevier).
- Chesbrough, H., and R. S. Rosenbloom. 2002. “The role of the business model in capturing value from innovation: evidence from Xerox Corporation’s technology spin-off companies.” *Industrial and Corporate Change*.
- Chesbrough, Henry. 2010. “Business Model Innovation: Opportunities and Barriers.” *Long Range Planning* (Elsevier).
- Crosby, Michael, Nachiappan, Pradan Pattanayak, Sanjeev Verma, and Vignesh Kalyanaraman. 2016. “BlockChain Technology: Beyond Bitcoin.” *Applied Innovation Review* (Berkeley).
- De Leon, Ignacio, and Ravi Gupta. 2017. *The Impact of Digital Innovation and Blockchain on the Music Industry*. Discussion Paper, Inter-American Development Bank (IDB).
- Demil, Benoît, and Xavier Lecocq. 2010. “Business Model Evolution: In Search of Dynamic Consistency.” *Long Range Planning* (Elsevier).
- Demil, Benoît, Xavier Lecocq, Joan E Ricart, and Christoph Zott. 2015. “Introduction to the SEJ Special Issue on Business Models: Business Models within the Domain of Strategic Entrepreneurship.” *Strategic Entrepreneurship Journal* (Wiley Online Library).
- Dot Blockchain Media. 2018. *About Dot Blockchain Media*. Accessed 05 2018. <http://dotblockchainmusic.com/about/>.

- Evans, David S., and Richard Schmalensee. 2016. *Matchmakers: The New Economics of Multisided Platforms*. Boston: Harvard Business Review Press.
- Gambardella, Alfonso, and Anita M. McGahan. 2010. “Business-Model Innovation: General Purpose Technologies and their Implications for Industry Structure.” *Long Range Planning* (Elsevier).
- Gartner Inc. 2017. “Hype Cycle for Emerging Technologies, 2016.”
- Gillespie, Tarleton. 2009. “Wired Shut, Copyright and the Shape of Digital Culture.” *Journal of Information, Communication and Ethics in Society*.
- Graham, Gary, Bernard Burnes, Gerard J. Lewis, and Janet Langer. 2004. “The transformation of the music industry supply chain: A major label perspective.” *International Journal of Operations & Production Management* (Emerald Insight) 24 (11): 1087-1103.
- Heap, Imogen. 2017. “Blockchain Could Help Musicians Make Money Again.” *Harvard Business Review*.
- Hosoi, Tomo, Joseph Kim, Dennis Stainken, and Felipe Caro. 2015. *Disintermediation in the Recorded Music Supply Chain*. 31 08. Accessed 05 03, 2018. <http://blogs.anderson.ucla.edu/global-supply-chain/2015/08/disintermediation-in-the-recorded-music-supply-chain.html>.
- Iansiti, Marco, and Karim R. Lakhani. 2017. “The Truth About Blockchain.” *Harvard Business Review*.
- IFPI. 2001. “2000 recording industry world sales.” International Federation of the Phonographic Industry.
- IFPI. 2017. “Global Music Report 2017.” International Federation of the Phonographic Industry.
- Kwok, Sai H. 2002. “Digital Rights Management for the Online Music Business.” *Newsletter ACM SIGecom Exchanges*.
- Lemieux, Victoria L. 2016. “Trusting records: is Blockchain technology the answer?” *Emerald Insight*.
- Martins, Luis L., Violina Rindova, and Bruce Greenbaum. 2015. “Unlocking the hidden value of concepts: a cognitive approach to business model innovation.” *Strategic Entrepreneurship Journal* (Wiley Online Library).
- Massa, Lorenzo, Christopher L. Tucci, and Allan Afuah. 2017. “A Critical Assessment of Business Model Research.” *Academy of Management Annals*.
- Musicoin. 2018. *Musicoin*. Accessed 05 2018. <https://musicoin.org/>.
- Nucciarelli, Alberto, Feng Li, Kiran J. Fernandes, Nikolaos Goumagias, Ignazio Cabras, Sam Devlin, Daniel Kudenko, and Peter Cowling. 2017. “From value chains to technological platforms: The effects of crowdfunding in the digital game industry.” *Journal of Business Research* (Elsevier).
- O’Dair, Marcus, Zuleika Beaven, David Neilson, Richard Osborne, and Paul Pacifico. 2016. “Music On The Blockchain.” Blockchain for Creative Industries (BCI), Middlesex University.
- Open Music Initiative. 2018. *About*. <http://open-music.org/about/>.
- Palfreyman, John. 2017. “Ten things blockchain is NOT.” *Industry Insights*, 02.
- PledgeMusic. 2018. *About us*. Accessed 05 2018. <https://www.pledgemusic.com/>.
- Priem, Richard L. 2007. “A consumer perspective on value creation.” *Academy of Management Review*.
- Resonate. 2018. *Resonate Mission*. Accessed 05 2018. <https://resonate.is/>.
- Rogers, Benji. 2016. “How the Blockchain Can Change the Music Industry (Part 2).” *Medium's Premier Music Publications*, 24 06.
- Roth, Angela. 2015. “On the Way to a Systematic Service Innovation Competence Framework.” In *The Handbook of Service Innovation*. Springer.
- Sosna, Marc, Rosa Nelly Trevinyo-Rodríguez, and S. Ramakrishna Velamuri. 2010. “Business Model Innovation through Trial-and-Error Learning: The Naturhouse Case.” *Long Range Planning* (Elsevier).
- Teece, David J. 2010. “Business Models, Business Strategy and Innovation.” *Long Range Planning* (Elsevier).
- Ujo Music. 2018. *Ujo empowering music*. Accessed 05 2018. <https://ujomusic.com/>.
- Wikström, Patrik. 2014. “The Music Industry in an Age of Digital Distribution.” In *Change: 19 Key Essays on How Internet Is Changing Our Lives*. OpenMind.
- Wirtz, Bernd W., Adriano Pistoia, Sebastian Ullrich, and Vincent Gottel. 2016. “Business Models: Origin, Development and Future Research Perspectives.” *Long Range Planning* (Elsevier).
- Xu, Zhenning, Gary L. Frankwick, and Edward Ramirez. 2016. “Effects of big data analytics and traditional marketing analytics on new product success: A knowledge fusion perspective.” *Journal of Business Research* (Elsevier).
- Yli-Huumo, Jesse, Deokyoong Ko, Sujin Choi, Sooyong Park, and Kari Smolander. 2016. “Where Is Current Research on Blockchain Technology?—A Systematic Review.” *PLoS ONE*.
- Zott, Christoph, and Raphael Amit. 2010. “Business Model Design: An Activity System Perspective.” *Long Range Planning* (Elsevier).
- Zott, Christoph, Raphael Amit, and Lorenzo Massa. 2011. “The Business Model: Recent Developments and Future Research.” *Journal of Management*.