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How Blockchain Technology can Monetize New Music Ventures: An Examination of New Business Models

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Key words: Blockchain; Business Models; Infomediaries; Music Industry; New Venture Finance

Abstract

The paper examines how blockchain technology is disrupting business models for new venture finance.

The role of blockchain technology in the evolution of new business models to monetize the creative economy is explored, by means of a case study approach. The focus is on the recorded music industry, which is in the vanguard of new forms of intermediation and financialization. There is a particular focus on emerging artists.

The paper provides novel case study insights and concludes by considering how further research can contribute to building a theory of technology-driven business models which apply to the development on the one hand to new forms of financial intermediaries, more correctly referred to as 'infomediaries', and on the other hand to new forms of direct monetization by artists.

Introduction

The paper examines how blockchain, as a disruptive technology, is leading to new business models for new venture finance, focusing on the roles of new emerging financial intermediaries. These are more correctly referred to as ‘infomediaries’ (Hagel & Rayport, 1997), since they utilise new digital technologies to improve financing and payment alongside a range of associated support services. The focus is on emerging new recorded music artists, since this industry is in the vanguard of fundamental changes taking place in the creative sector.

Disruptive technology has long been recognised as a key driver of new business models (Tumasjan & Beutel, 2018; Baden-Fuller & Haefliger, 2013; Chesbrough, 2003, 2010). That is not to say that the *business model* is universally defined and readily understood (George & Bock, 2011). Zott et al.’s (2011) extensive review of business model theory and application demonstrated that, since emerging strongly in the mid-1990s (Teece, 2010), thousands of references present a picture of an evolving system theory unit of analysis which is dynamic and encapsulates elements of business networks and connectivity (holistic approaches), venture (individualistic) and value creation (monetization) approaches, which are influenced in various ways by technology and socio-economic conditioning (institutional factors). Zott et al. (2011) criticise the silo-restricted views of many studies and present the case for more rigorous, and more integrated, theoretical development. This paper develops a holistic technological perspective to emerging infomediary business models as value creators which incorporates wider supply-chain systems (Sitonio & Nucciarelli, 2018); in this case including music recording artists, record labels, publishers and distributors such as music streaming platforms. Crucially, the paper focuses on how these new infomediary business models are seeking to create value and do business more effectively and equitably.

Since this is a newly emerging infomediary activity, with few cases, we adopt a case study approach to examine the role of blockchain technology in the evolution of new business models to monetize recorded music. The industry has experienced an uplift in recent years and is in the vanguard of new forms of intermediation and financialization – notably through Initial Coin Offerings (ICOs) by artists such as DJ Grammatik, and related projects by high-profile artists such as Bjork. A novel evolutionary tiered disruptive technology business model theoretical framework is applied to analyse new forms of financial infomediaries support services to music creators (artists, composers, engineers and producers) and on the other hand to new forms of monetization for new and emerging recorded music artists.

The paper provides the general context, outlining the impact of blockchain, and digital technologies more broadly, on the record music industry. A review of relevant business model literature assists construction of a disruptive technology business analytical framework. The qualitative case study research methodology is then outlined, before presenting key findings, discussion of research implications and conclusions.

Digital and blockchain technology impacts on recorded music industry intermediaries

Blockchain, as a new and disruptive technology, can provide new ways for creative ventures to do business (O'Dair, 2019). This is particularly the case for the recorded music sector, as Elder (2017) proclaimed:

“Twenty years after peer-to-peer (P2P) file sharing decimated the music industry, blockchain is emerging as a new P2P technology that could rip the industry anew. But this time the revolution promises to be different!”

From a technological perspective, the digital era, notably during the last decade, can be viewed as a key driver of the sharing economy, leading to the emergence of disruptive and innovative intermediary business service model platforms such as Uber and Airbnb. Tumasjan and Beutel (2018) note how these centralised internet-based models represent an expanded digital realisation of former advertising and business promotion models, such as newspaper and journal advertising, with added advantages including wider market exposure and real time connectivity. Within the recorded music industry, the recent rise of YouTube, Spotify, Bandcamp, AppleMusic and Soundcloud provide examples of a burgeoning, and highly centralised, internet-based music streaming industry. Whilst such digital models offer new value creation opportunities for artists through potentially global exposure, virtual/real-time performance and artist-fan contact, O'Dair and Owen (2019) find that the do-it-yourself potential in the creative economy is hard to realise, due to the increased competition that is the corollary of lower barriers to entry.

Emerging musicians still struggle to gain attention without access to established distribution channels and large marketing budgets; indeed, ostensibly 'independent' artists still frequent major label networks to distribute their records. Furthermore, whilst recent growth in online music streaming has halted the decline in global recorded music revenue evident since the turn of the millennium (IFPI, 2018), 99% of streaming income reportedly goes to just 10% of tracks (Krukowski, 2018). Successful financing of new music ventures (here referring to new recordings of existing or emerging artists) has typically favoured well-known artists with a track record of commercial success. Although digital technologies ostensibly empower artists, the music industry remains largely centralised and pyramidal; the vast majority of income goes to a relatively small number of established artists, usually linked to the three major record labels (Universal, Sony, Warner). Potential revenue streams do exist beyond recorded music, including live performance and direct-to-fan opportunities. However, since these revenue streams depend on a significant fanbase, they are rarely available to less established artists. Despite claims of digital technology ushering in a revolution in the music industry, then, it can also be argued that there has not in fact been a significant shift of power (Rogers, 2013). Blockchain business models, potential offer more equitable solutions.

Blockchain technology has been hailed as decentralising the digital economy (Nakamoto, 2008; Tumasjan & Beutel, 2018), offering disintermediation and opportunities for new forms of peer to peer (P2P) direct sales business models. Blockchains (and related distributed ledger technologies) offer secure, real-time transactions with immutable recording of activity between parties. Crucially, blockchains also offer a way for parties who may not know or trust one another to reach consensus. Tumasjan and Beutel (2018) suggest that blockchain potentially offers a 'true' sharing economy without intermediaries. They cite OpenBazaar as an example of a blockchain-enabled P2P marketplace with no platform transaction costs, unlike centralised sharing platforms such as eBay and Amazon. However, it should be noted that payments are required in cryptocurrency, such as Bitcoin

or the Ethereum blockchain currency, which in itself requires intermediary exchanges that typically charge for fiat currency exchange.

Within the recorded music industry, blockchain technology is groundbreaking (Tapscott & Tapscott 2018) in reducing the role of third parties. Famously, blockchain technology has facilitated new forms of crowdfunding in the form of token sales or ICOs, including for new music and creative economy ventures. Breaker, a company (formerly known as SingularDTV) that aims to decentralise the entertainment industry to empower creators, raised the equivalent of \$7.5m using the Ethereum blockchain in just 15 minutes in 2016. They did this by means of a token sale or ICO, in which cryptographic tokens are sold to raise finance. DJ Grammatik, a Slovenian electronic music producer and DJ, raised over \$2 million by the same means in 2017, in less than 24 hours. Bjork has not launched an ICO but she did issue a cryptocurrency to fans who purchased her album, *Utopia*, in 2017; Imogen Heap, a singer, songwriter, producer and musician, also made headlines in 2015 by using the Ethereum blockchain to pay all contributors to a track, 'Tiny Human', via a 'smart contract' or programmable transaction executed on the Ethereum blockchain. Arguably more important than ICOs, then, is the fact that blockchains can be used to secure artists' rights, and to automate both royalty payments and licensing through smart contracts (O'Dair, 2019). Blokur, one of the start-ups interviewed for this paper, recently announced a project with Massive Attack that used blockchain technology to track the intellectual property in remixes.

Broadly speaking, music copyright can be split into songs and compositions (publishing rights, typically exploited via a music publisher) and recordings (recording or master rights, typically exploited via a record label). Labels and publishers, then, maintain important databases of copyright ownership – and, when a song is written by more than one person, each represented by a different publisher, these databases can potentially disagree. The problem is compounded by the fact that databases are also maintained by collection societies, responsible for collective or 'blanket' licensing, in countries across the world, and these databases, too, can conflict. Blockchains could transform this landscape of centralised, potentially conflicting copyright databases into a more inclusive world of distributed, networked databases – providing a single source of truth, such as who should receive royalties and respond to licensing requests, for a particular song (O'Dair, 2019). This has the potential to provide a growing range of innovative and important funding streams for artists. It includes income from music streams, but also further commission on future sales, similar to sell-on rights in football transfer agreements by smaller feeder clubs (AMG, 2018) or *droit de suite* in the fine art world. This secondary rights market could exist alongside spillover internet-based activities such as subscription access to artists and micro-metering sales of music segments (Takahashi, 2017).

However, the operation of a fully P2P, decentralised business model system is not without problems, most notably around issues of usability, trust, transparency and regulation – and particularly where market scale-up is envisaged (Beck et al. 2018; Seidel 2017; Voshmgir 2017). Thus, Pinna and Ruttenberg (2016) forecast the need for new intermediation approaches to benefit from blockchain's reduced reconciliation costs, streamlined post-trade value chain and more efficient use of collateral and regulatory capital. Pinna and Ruttenberg (2016) propose three business system operational models: (i) Clusters, which facilitate maintenance of the largely corporate status quo, whilst improving efficiencies and reducing costs (e.g. inter-bank activity); (ii) Collectives, where new intermediary brokers can enter a regulated market operating in 'commons' with smart contracts (potentially new music industry intermediaries such as Breaker); (iii) P2P, where individuals can operate directly with each other within an open market (e.g. OpenBazaar). Pinna and Ruttenberg perceive P2P as complex, invoking regulatory and privacy issues. Therefore, given the necessity for

emerging artists to receive adequate promotion through established, trusted platforms, the ‘Collective’ approach appears most suitable and attractive.

Thus, whilst blockchain technology may be inherently disintermediating, blockchains are unlikely to remove third parties altogether. A thinning of intermediaries may occur; their revenue share may decrease and their position in the value chain may shift. For example, Sintonio and Nucciarelli (2018) point to the rise in digital service aggregators, such as Ditto (established, 2007), which link digital music to customer facing streaming platforms. They suggest that aggregators add another tier of intermediary service costs to label artists, whilst yielding little revenue to new independent artists (since the typically value of a single play is 0.003p), and that blockchain will reduce their role and costs. We can also predict the emergence of new intermediaries. These new financial intermediaries can be understood as infomediaries: that is, ‘custodians, agents, and brokers of customer information’ (Hagel & Rayport 1997). A type of infomediary, playing multiple roles in supporting, promoting and generating revenue streams for new ventures, would appear to be at the heart of the new blockchain financing axis. There is the potential, then, for increased artistic freedom and greater remuneration for artists, especially those artists that are less well established.

Literature Review – Forming a Robust Business Model Research Structure

Since coming to the fore in the mid-1990s, business models have formed a growing theoretical framework to explain how technology influences and impacts on business activity (Teece, 2010). Here, the *business model* is simply defined as *how to do business*, relating to the strategic act of an individual venture within a system (Zott et al, 2011). Our perspective is necessarily systems-based, since it requires consideration of the role of intermediaries (or more precisely, infomediaries) within the business system and specifically focuses on the role of technology (Tumasjan & Beutel, 2018; Baden-Fuller & Haefliger, 2013; Chesbrough, 2003, 2010) – notably recent blockchain technology developments – as a fundamental driver in the evolution of intermediary business services in the recorded music industry (O’Dair, 2019).

Sintonio and Nucciarelli (2018) examine the evolving supply chain linkages in the recorded music industry. They recognise that paradoxically, digitisation led to a more horizontal distribution channel for artists to post (e.g. MP3 downloads) and more latterly stream music either directly from their own websites or through promotional platforms. However, this offered opportunities for unlicensed file sharing and difficult to trace use, which led to the formation of a new tier of digital aggregator services to track down and collect and deliver payments to publishers, labels and artists. Sintonio and Nucciarelli (2018) recognise that blockchain technology can eliminate the unwieldy, inefficient role of aggregators. This will be achieved through combining digital rights with blockchain technology, potentially creating a more horizontal P2P music distribution and payment process for artists. However, they speculate that this will require the new emerging types of infomediaries examined in this paper.

Scholtens and van Wensveen (2003) convincingly argue that if intermediaries are perceived to continue to add value to their clients, they will have a continuing role. A business model system can demonstrate how businesses can develop more effectively through the key evolving role for blockchain-based infomediaries (Hagel & Rayport, 1997). Additionally, sustainability and equitability over socio-environmental rights are increasing concerns, brought about by the need to address climate change and persistent poverty, for institutional business models (Boons & Ludeke-Freund, 2013; Grath, 2010; Morris et al, 2005). Within the recorded music industry, where currently established

digital platforms (e.g. YouTube) have effectively undervalued new music by making it widely freely available, there are strong arguments for more equitable business models (O'Dair & Owen, 2019).

Taking technology as our driver of business model evolution, Baden-Fuller and Haefliger (2013) focus on *value creation*, relating to customer engagement (McGrath and MacMillan, 2009), and *value capture*, relating to how value is delivered and monetized (Teece, 2010). Baden-Fuller and Haefliger (2013) develop this to present a framework which examines: (i) Customer identification and whether different customer types pay or have free access to services (Teece, 2010); (ii) Customer engagement, essentially whether the customer service is one-size-fits-all (mass market) or customised for individual clients (consultative); (iii) Value delivery and linkages relating to how the service adds value to particular customer groups; and (iv) Monetization, or value capture, relating to how payment is secured. Additionally, Baden-Fuller & Haefliger (2013) recognise a complex systems connection within the evolving digital (blockchain) paradigm in terms of complementary service capture between businesses that influence business models. Within the music industry this clearly relates to the use of blockchain technology to facilitate the financial transactions of new music service providers such as Breaker.

Developing a blockchain infomediary business model for the recorded music industry

Having established a broad theoretical base for a blockchain technology business model framework, we now turn our attention to the crucial role of financial intermediaries within the recorded music industry and their evolution through adoption of new technology.

Digital technology is driving the evolution of new business models, for instance in financial services (see Schueffel et al. 2016 review of 200 articles). Advancing Dorfleitner's (2017) categorisation of fintech's digital internet and app activities, four broad groups are evident: (i) financing (e.g. crowdfunding), (ii) asset management and insurance, (iii) payments, blockchain and cryptocurrencies, and (iv) search and artificial intelligence (AI) activities. The latter two groups are particularly relevant to the recorded music industry, because they are already being trialled (e.g. Sodatone's algorithmic search and selection of new artists from streaming, touring and socialmedia data, bought out by Warner's A&R division), and could enhance blockchain technology approaches to contractual ownership and payments for recorded music artists and creators (Rose, 2019).

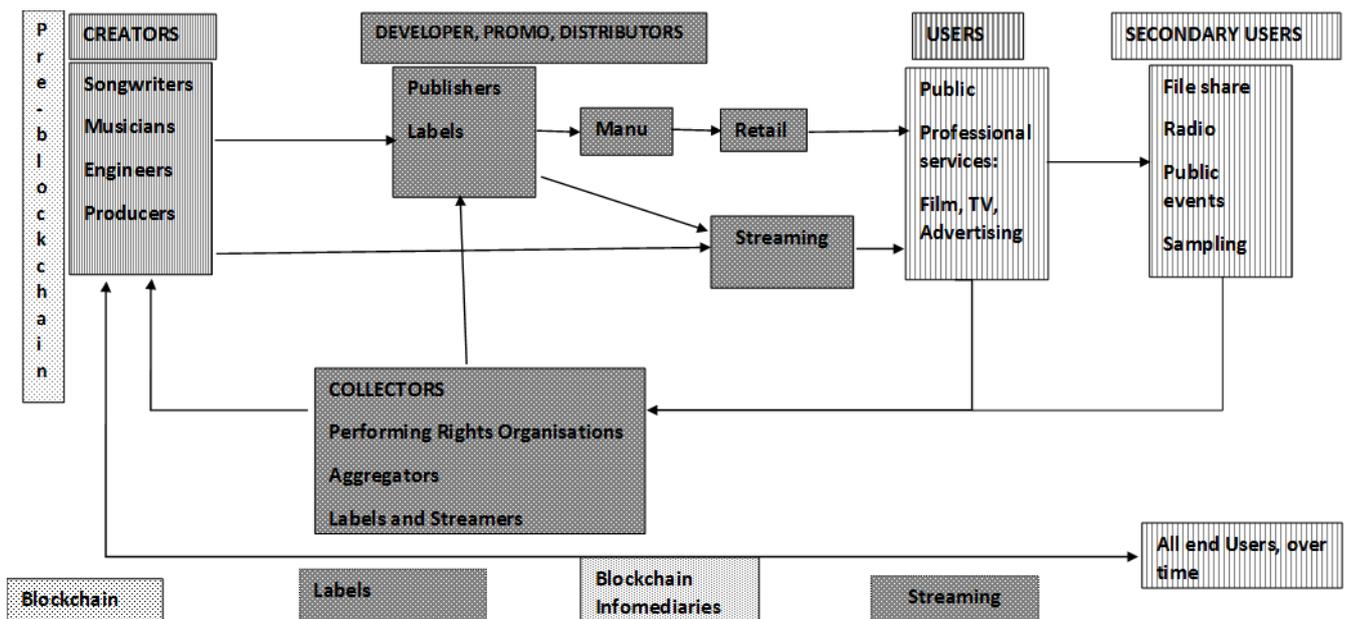
Financial intermediation theory (Leland & Pyle, 1977; Allen & Santomero, 1997) explains that financial intermediaries are institutions or individuals operating as conduits for diverse parties in order to facilitate financial transactions. Financial intermediation theories are primarily founded in reducing information asymmetries (Leland & Pyle, 1977), reducing transaction costs (Benston & Smith, 1976) and the need for regulation and market confidence (Merton, 1995). Key tenets are that they are justified through adding value and, or, reducing the cost of services for their clients. Here the more appropriate term of 'infomediary' (Hagel & Rayport, 1997) is applied, as this includes crucial specialist non-financial service support, often required by early stage ventures; such as legal IP rights, technical marketing and distribution expertise. Traditionally, this was the role corporate A&R staff ('Artists and Repertoire' staff responsible for spotting and developing artists), but has increasingly been taken on by independent labels, incubators, accelerators (e.g. Ignite in the UK and Marathon Labs in Israel, Sweden, Germany and UK) and online network organisations (e.g. The Rattle in London) in the music industry (O'Dair & Owen, 2019).

Combining the technology-driven business model literature with that relating to infomediaries, a novel framework is formulated to facilitate analysis of how blockchain technology is driving the evolution of new business models of financial intermediation in the recorded music industry. Table 1 presents this dynamic framework which incorporates the three key stages of technological evolution from pre-2000 analogue and post-2000 digitisation, downloading and streaming and post-2015 blockchain developments. The framework also incorporates the elements of operating market system and institutional/regulatory external factors, as well as the venture-specific customer and value creation aspects which comprise the business model theory. Figure 1 provides a conceptual flow-chart (adapting and simplifying Sitonio & Nucciarelli, 2018) for the recorded music industry's distribution and remuneration pre-blockchain (pre-digital and early digital) and post-blockchain technology, demonstrating blockchain's potential P2P-related simpler path flow, which will still require some forms of new blockchain infomediary facilitators (see findings and discussion).

Table 1: Technological and Business Model Component Evolution – Recorded Music Industry Infomediaries

Technology/ Business model	Pre-digital/traditional (pre-2000)	Digital/Internet (2000 -)	Blockchain (2015 -)
Operating system	Major / indie labels Copyright information held in silos Physical distribution (retail)	Major/indie labels, growing number of distributors Rise of aggregators in digital distribution Copyright information held in silos Digital distribution through multiple centralised download and streaming platforms	Major/indie labels, growing number of distributors Copyright information networked / distributed, with possibility of automated payments and licensing through smart contracts Possibility of decentralised streaming platforms /P2P
Venture/customer	Recording artist signed to record label and music publisher	Recording artist probably signed to record label or distributor and music publisher Growing range of independent options, especially for established acts	Recording artist signed to record label or distributor and music publisher – although boundaries blurring Range of independent options continues to grow, especially for established artists
Value creation recording and additions	Recorded music (sales – i.e. one-off purchases)	Recorded music (shifting from ownership to access model) Increased emphasis on other revenue streams (live performance, merchandise, sync, direct-to-fan) Crowdfunding	Recorded music (high volume of micropayments) Continued emphasis on other revenue streams (live performance, merchandise, sync, direct-to-fan) Crowdfunding/ICO
Institutional / Regulatory	Copyright, advances from labels and publishers, royalty collection (relatively low numbers of relatively high-value transactions) via collection societies, tax	Copyright, advances from labels (and some distributors) / publishers, digital royalty collection via collection societies, tax	Copyright, advances from labels/distributors and publishers, digital royalty collection (smart contracts arguably reduce role of collection societies and arguably allow real-time micropayments), secondary rights market, tax

Figure 1: Pre and Post Blockchain Distribution and Revenue Model Framework



Source: Adapted from Sintonio and Nucciarelli (2018)

Research methodology

Taking new infomediaries as our unit of analysis for this study of evolving business models of financial intermediation within the recorded music industry, we adopted a literature review and case study approach (Creswell, 2003). Step one required a search of academic and grey literature, the former revealing little evidence and the latter informed mainly by internet-based reviews and evidence from the infomediaries' websites. This provided a shortlist of 16 music-related infomediaries (Annex Table) adopting blockchain technology including networking, streaming, digital rights and payments services. These represent the most established and high-profile cases globally on the internet, and therefore most accessible to find for music artists. After reviewing these infomediaries, the case studies selected were those that were most aligned to assisting new and emerging recording artists and which use, or plan to use, blockchain technology to develop funding streams for artists. This encouraged purposively focus in this paper on the digital rights and payment services which are already engaged with blockchain technology and in some cases operating Beta pilot testing in the market with recorded music artists (Table 2). Four case study infomediary businesses were interviewed (Mycelia, Blokur, Jaak and Dot Blockchain Media). Additionally, as a contextual industry control, a parallel key informant interview was undertaken with a former Vice President of Strategy from a major record label who is now a private music industry consultant.

Case studies were undertaken in February 2019, involving in-depth qualitative Skype interviews with senior staff developing and delivering services. Interviews typically took at least one hour and utilised a topic guide approach which ensured a consistent approach whilst also facilitating opportunity for exploratory lines of questioning. The topic guide was designed, based upon the literature review, to capture information in relation to the evolving business models and contained the following sections: (i) profile of the respondent and the infomediary organisation; (ii) services offered to new recording artists; (iii) the role of new technology and blockchain in the current and planned service offer to

monetize new recorded music; (iv) how blockchain and new technologies are impacting on their business models and industry structure; (v) other external factors impacting on the industry (e.g. institutional and regulatory); (vi) future visions for the industry.

Interviews were recorded, transcribed and checked for factual details and clarifications with the interviewees and supplemented with each infomediary's online web-based and published information and data. The clean and correctly transcribed content was analysed using Excel spreadsheets to derive key phrases and words and inductive findings of trends and approaches which underpin the new business models (Eisenhardt, 1989; Yin, 2003). All findings and interpretations were double-blind checked to avoid individual researcher bias.

Findings

A profile of the four small infomediary business case studies is presented in Table 2. The study's key findings (summarised in Table 3) derived from the interview content analysis gave rise to a set of four headline themes within the technology-driven infomediary business model framework: new blockchain services; customer and monetization; blockchain-based business models; external governance and regulation.

Table 2: Case study summary

	Services	Number of employees	Development stage of blockchain service	Business model
Blokur	Accurate source of global music publishing data	6; further 7 roles just advertised	Beta	SaaS subscription
Dot Blockchain Media	'Collective truth' concerning song and recording copyright; songs as bundles of rights and code	8	Beta	SaaS + services + access
Jaak	Aggregate music rights, low-value/high-volume licensing	16	Beta	Rights network with token; SaaS products
Mycelia	Creative passport: P2P verification for music creators (and other artists)	3-4	Alpha	Services pay to access data; money distributed to creators after maintenance costs deducted

Table 3 Summary of key findings

	Services offered	Blockchain contribution	Broader context	Barriers to adoption	Future scenarios
Blokur	Helps songwriters and publishers get paid what they should, when they should	Distributed database approach more likely to succeed than GRD; genuinely global infrastructure	Copyright law opening up; growth of remix culture requires record of 'granular' use of IP	Small number of players have large amount of influence. GDPR a challenge for some companies (not Blokur)	Ongoing transition from low-volume/high-value to high-volume/low-value necessitates efficient collection
Dot Blockchain Media	New substrate on which multiple parties can share and own information, including 'persistent ownership layer'	Songs as 'bundles of rights and code'; information stored collectively & immutably; provenance; licensing	Biggest threat posed by blockchains is to music distributors	Music industry slow to adopt new technologies, little investment in R&D. Blockchain difficult to understand	Expects one dominant music copyright blockchain, others for licensing. Potential: 'the most powerful system for media that the world has ever known'
Jaak	Aggregated view of music rights; low-value/high-volume licensing	Centralised databases have failed; needs consensus / substrate linking existing databases	More and more services outsourced by record labels	Premature regulation (although in favour in the longer term). Consolidation of value around three major labels	Trend towards smaller organisations. Blurring of content types (music, games, video) and roles (labels, publishers, managers)
Mycelia	Creative passport for all involved in creative process	Blockchain shed light upon problems. Now tech-agnostic: blockchain 'one of the best solutions'	Direct-to-fan potential of digital era is exciting but only goes so far	International politics – nationalism etc – as running counter to global potential of blockchain. GDPR also a factor	In general, intermediaries that do not add value may not survive
Consultant (contextual views)	At major Label, helped with artist 'story', early-stage positioning	n/a	Streaming is about scale, and revenue over time	Problems not technological but human: blockchain perceived as threat. Also, how does this work retrospectively?	Major labels will suffer if do not adapt cost model to fit streaming

New services which require a blockchain operating platform

All of the infomediary business respondents are developing new innovative services which require a blockchain technology platform. The services are clustered around digital rights and the transparent and immutable record of the ownership of those rights – which, in turn, provides a more efficient and effective path to licensing and payment for artists. The focus of this work is around recorded music, primarily because streaming has become the mainstream distribution channel for music and because this channel offers opportunities for new, more efficient approaches to ownership and payment. There is widespread acknowledgment that the Global Repertoire Database (GRD), an unsuccessful attempt to create a centralised aggregate of music rights, was simply too unwieldy, with too many competing interests, whereas blockchain potentially enables a more decentralised, networked solution.

Mycelia, spearheaded by Imogen Heap, are developing a ‘*Creative Passport*’ that will provide peer-to-peer verification for all involved in music creation. The alpha stage, which did not use blockchain technology, has been made available to only a small number of music-makers; the beta, focused on decentralised self-sovereign identity, is expected in Q2/3 2019. The passport is intended as a single place for music-makers to post verified data about themselves; services are expected to pay to access that data, that money being distributed to music-makers after the deduction of maintenance costs:

“It will be a digital container for music makers of IDs, skills, verified information, stored with blockchain technology. It’s literally going to be your digital self. The whole point of creating this platform is to help musicians be ready to do more business with other services or third-party services... At the moment the process is very convoluted... The artist needs to upload a biography in 250 different places. It’s a time-consuming task – and technology would allow the artist to do a hard job [just] one time.”

Dot Blockchain Media is predicated on the belief that the file formats currently used for recorded music are outdated, not least because it is too easy to change the metadata relating to copyright ownership. The Dot Blockchain Media model, instead, is to reconceptualise the song as a ‘bundle of rights and code’, thereby creating the ‘substrate’ for a more modern music industry. The appeal of blockchain technology for Dot Blockchain Media lies in the fact that it cannot be owned by any one party, and the fact that it provides an audit trail: Dot Blockchain Media aims to immutably stamp ownership in a given piece of music, such that a ‘chain of custody’ will persist even, for instance, if a song is remixed. Dot Blockchain Media is currently in beta (‘stealth mode’), and is operating a hybrid business model: software as a service (SaaS) + services + access.

“For artists, it speeds up licensing immensely, it allows them to prove cases of theft, and it also means that you can express rights into it. You can say this song is remixable by anybody as long as it doesn’t contain X Y Z. When I first proposed this, people said, isn’t this DRM [digital rights management]? I said no, it’s digital rights expression... You can build legally binding contracts into the code, so I can assign you my rights for six months on a non-exclusive basis, and it’s machines doing it, not humans pushing paper. That’s how you get this industry to be hundreds of billions a year: it has to work with code, not telegraph cables.”

JAAK are using blockchain technology to build an aggregated view of music copyright ownership, and to use that aggregated view to make music licensing (especially at the low-value/high-volume end) easier and more scalable. Jaak have been through beta testing with rightsholders and are currently beta testing with developers. In terms of their business model, they are building a rights

network, which has a token, and are also building SaaS products on top. Blockchain technology is fundamental to the JAAK vision, because it offers a way to achieve consensus between multiple parties. Without blockchain, copyright databases will be centralised, and attempts to build such a database in the past have failed – the most notorious example being the Global Repertoire Database.

“In the finance sector, if you have six people who want to trade, traditionally you would have a bank in the middle – but in bitcoin, they transact in a network and have confidence that things are being done in the right way. Take that model and apply it to rights. The way you’d be confident in the traditional world is you’d have... a central database that becomes a version of truth. We’re saying, actually, we can get that version of truth without having one single database. Those databases that already exist contribute towards it, but we create the substrate that links them all together and provides that communication and helps consensus to be found across them all.”

Blokur was founded by the person who, in his previous role at Ujo, was responsible for the pioneering Imogen Heap track, ‘Tiny Human’. Blokur use blockchain technology to build an accurate source of global music publishing data. Any given song might have multiple writers, each with their own publishing company, leading to a complex picture in which numerous, low-value payments are collected from across the world and routed back to the relevant writers. Blokur bring together different pieces of that complex jigsaw of publishing rights to ensure that songwriters are properly credited – and properly paid – when their songs are used. They are currently in beta, and their business model is SaaS subscription.

“What Blokur is doing now, in terms of offering this as a software platform, [is broadly similar to] the way that other industries have been transformed into software platforms instead of agencies – like taxis and travel, with Airbnb and Uber. That is new for the music industry. It’s possible for us to make an impact because we are not requiring everybody, from the beginning, to formally sign a bit of paper saying this is how the music industry is going to organise itself in the future, which is what the GRD required. That failed because of the competing interests of everyone round the table. And from a technical perspective, the music industry has not previously had an effective way to do enough automation to make it possible for technology to be the driver of the solution. It’s almost always been driven by people-power when it comes to matching data, resolving conflicts, all those kind of things.”

All of this must be contextualised by the fact that these services are at various stages of alpha and beta testing. As was observed by another respondent, formerly VP of strategy at a major label and currently a consultant:

“I don’t think blockchain is changing the industry structure at the moment. Artists like Imogen [Heap] are in a position to do things but that’s individuals, not at scale It will take a few breakout hits for people to take notice.”

However, it was also recognised that the shift to music streaming has resulted in an industry that privileges the individual track, rather than entire albums, and that the high-volume, low-value return nature of music streaming requires a completely different model to that which dominates the record industry today. Therefore, inevitably, it will create an industry shake-down, in a drive to leaner, more efficient and value-added infomediary services.

Customer and Monetization Model

All of the featured case study businesses are oriented towards providing blockchain-related services for the recorded music industry (and beyond). The key focus is on ensuring that new recorded music creators and artists (including performers, songwriters and, in the case of Mycelia, producers and engineers) can immutably record their authorship of a given piece of music. In some cases, such as Jaak, the vision extends to creating the infrastructure for rights and licensing across the creative economy (e.g. film and photography) where high-volume, low-value transactions take place. Indeed, Jaak's clients include music publishers and record labels, as well as individual artists, whilst Blokur focuses on music publishers, but both retain the aim to use blockchain technology to ensure that artistic ownership is far more readily traceable and therefore that remuneration is accurately and appropriately apportioned. Dot Blockchain Media is working with distributors and collection societies as well as offering services for individual artists, while Mycelia is focused on music creators themselves. As the respondent notes, there are important roles that 'got lost' in the shift to streaming, since liner notes and credits did not survive the transition: Mycelia's Creative Passport is intended for all contributors to a given piece of music, not only featured artists and songwriters, but also session musicians, engineers and producers. Dot Blockchain Media, meanwhile, seek to digitally imprint ownership and rights expression in every song. There is also recognition that the industry faces the challenge of retro-fitting in terms of existing digitised music being re-imaged to enable blockchain tracking.

In terms of how artists get paid, there is universal agreement that the industry has shifted considerably towards an online streaming model that is driven by single tracks and a high volume of low-value (fractions of a cent per play) payments, where income is accrued over time. This initially posed a challenge to record label business models, which were based around the sale of physical vinyl and CDs, yet labels with large catalogues are now seeing the benefit of the shift to streaming. For artists and songwriters, however, streaming is a winner-takes-all scenario in which only the likes of Adele, Drake and Ed Sheeran earn significant sums while everyone else is obliged to seek out additional revenue streams in order to make a living.

There was widespread scepticism regarding ICOs, dismissed as a 'flash in the pan' and a distraction from the true value of blockchain technology, which lies in its ability to provide that single source of truth. One respondent suggested that blockchain start-ups were already turning to more traditional sources of finance, offering equity in return for capital. The problem with every artist issuing their token to be traded on an open market, one respondent suggested, is not technological but economic. Local currencies such as the Oxford Pound, the respondent pointed out, typically fail because '*a pound that you can only spend in Oxford is obviously worth less than a pound that you can spend anywhere in the UK.*' Artist tokens, he suggested, are likely to fail for the same reason.

Respondents also agreed that real-time payments from music streams, though technically possible, are impractical, since the value of payments per stream is so small: 'no artist wakes up and says, if I don't have that tenth of a penny soon, I'm done for.' And as one respondent stated, faced with a choice between fast payments and accurate payments, creators will choose accuracy every time. Respondents were sceptical of blockchain start-ups claiming to allow trading of song rights, and sceptical of those who claim to put smart contracts into songs: 'smart contracts are only intelligent if ownership is secured.' What *is* exciting, then, is not the ability to make micropayments as a track is streamed but the ability to let streaming platforms know instantly if and when ownership information is changed – and for that information to be accessible to all, so that siloed databases are replaced by a single source of aggregated truth. There is also a belief that blockchain technology offers opportunities for

derivative works, particularly for micro-metering, where small sections of music might be sampled and re-used (for instance in the Massive Attack IP tracking of digital re-mixes project being run by Blokur).

New emerging blockchain-based business models

The interviewees acknowledged that blockchain technology has yet to change the structure of the recorded music industry but respondents from Jaak, Blokur and Dot Blockchain Music all believed that it would begin to change that structure in time, leading to new business models. The four case study businesses are themselves at the forefront of these new business models – developing the new infomediary services that blockchain both facilitates and necessitates. Yet, as the industry moves from vertical integration to a more horizontal ecosystem, the demand for value-creating infomediaries is increasing. Dot Blockchain Media anticipate consolidation into a preferred single blockchain for core music rights information. There is also a need for improved licensing to address the evolving high-volume, low-value nature of streaming, with several respondents working on blockchain technologies for this purpose. The Mycelia respondent, together with the consultant, was less wedded to blockchain itself, although both still believed it had some potential. Here there is a view that advancing digital technology in the field of big data analysis and AI (as already noted in the case of Sodatone) will impact on new infomediary service models, alongside blockchain. Here the interest is less with the creation of AI music and more around enabling better distribution and end user experience (BPI, 2016). For example Resonate's embedded playlist approach which combines blockchain with AI algorithms to target streaming sites and provide tailored playlists of their artists to streaming end users, whilst offering improved options to own track downloads to those offered by the streaming sites.

The financing models emerging will vary, but a common theme is that these early emerging services are B2B, typically serving publishers, record labels or collection societies as well as artists and songwriters directly.

External: governance and regulation

The significance of external institutional and regulatory factors upon business models has already been noted: no technology exists in a vacuum.

Interview findings on external factors were relatively limited, but what was striking was the positive attitude towards regulation: these are not bitcoin maximalists, typically anarcho-libertarian in outlook, but attempts to build businesses on top of the technology, committed to discouraging bad actors. The prevailing sense, however, was that regulation should be light-touch (these are small businesses, with no wish to become bogged down in bureaucracy) and should wait until a clearer picture emerges. Premature regulation, the respondent from JAAK suggests, could be problematic. Historically, he suggests, successful business models are usually clear by the time a bubble bursts; regulation, coming in at that point, then provides 'the rails on which true innovation can take place'. The respondent sees the ICO bubble, however, as anomalous, because access to finance was so easy; clear business models have yet to emerge, and we should not introduce regulation until after their emergence. Copyright law is also an important factor, although the respondent from Blokur saw recent changes in European copyright as positive. The respondent also suggested that some blockchain companies may

struggle to comply with GDPR, because of the difficulty of deleting data, although Blokur do not put personal information on the blockchain.

Respondents pointed out that the industry has traditionally underinvested in R&D and struggled to keep pace with technological change. There is also the fact that the recorded music industry is dominated by a small number of big players who may resist change. As the consultant suggested, the industry is built around labels that issue advances and managers who depend on a cut of those advances:

“I have no doubt that there are microfinancing options that would be amazing for artists, but to the extent that they have a manager whose livelihood is taking 25% of a big number then how on Earth are they going to be monetised in this new world? And, therefore, they resist it. The music industry, if it has shown one thing consistently over the last fifty years, it’s that the host organism always tries to reject the invader species... There is a whole ecosystem that is very firmly rooted to a way of financing talent which is linked to their own remuneration, so there is a hesitation to explore things that are going to change that.”

The consultant also pointed out the challenge that we are not starting this afresh: ‘It’s fine if you’re starting out from scratch but how are you going to retrospectively deal with everything?’

Further reflections on external factors are beyond the scope of this paper. For more detail on political, economic, social, legal and environmental barriers to, and risks of, adopting blockchain technology in the creative economy context, see O’Dair (2019).

Discussion

The general trend in the recorded music industry, respondents agreed, is from small numbers of high-value units (vinyl, CDs) to much larger volumes of low-value uses (music streaming). Streaming, as the consultant pointed out, is a high-volume/low-value business in which revenue accrues over time. For individual artists and rightsholders alike, income in the streaming era depends upon being able to efficiently collect micropayments from multiple streams all over the world. It seems very likely that technology (including blockchain and AI) will play a key part of the solution. AI tracking, facilitated by new recorded music metadata, will enhance streaming audience benefits alongside the promotion of new artists (Lyons et al, 2019).

The respondent from Blokur points out that the general trend over recent decades has been for the recorded music industry to become less vertically integrated, as everything from recording studios and manufacturing plants to PR and radio plugging has been gradually outsourced: ‘Over time, it has basically been unbundled into an ecosystem.’ JAAK expect this trend to continue, with record labels focusing increasingly on areas in which they can add most value, such as A&R, and outsourcing other services: ‘My vision for the music industry, is one of small organisations competing with each other over actually providing value to artists’. Again, the decentralising, disintermediating nature of blockchain technology appears aligned to broader industry trends. In the short-term, however, the artists who enjoy the associated freedoms are typically either already established or content to remain relatively underground; those emerging artists who desire commercial success are likely to be obliged to work with major labels for the foreseeable future.

As regards blockchain technology itself, the correspondent from Blokur stated that the technological barriers have largely been overcome, due to a combination of improvements in the technology itself and a better understanding of workarounds such as ‘half-on half-off’ processing. Blockchain cannot solve all issues overnight, but it can operate highly effectively for those wishing to opt in, particularly for new recorded music which can adopt facilitating metadata. This has to address issues of standard identifiers and the interoperability of platforms, which is achievable, given desirability for efficiencies and reduced operational costs for streaming platforms (Lyons et al, 2019). Other barriers to adoption were identified, ranging from the dominance of major record labels to the danger of premature regulation (although respondents were typically in favour of regulation in the longer term). One suggested that some blockchain companies would struggle to adhere to GDPR; another pointed to the music industry’s historic neglect of new technologies and the difficulties of explaining blockchain technology. The consultant argued that blockchain was likely to be perceived as ‘technobabble’ by a music industry ‘jaded by utopians’. The failure of the GRD, a previous attempt to get various parties to collaborate on building a shared music database, was mentioned by more than one respondent. Yet these barriers, as the respondent from Blokur pointed out, are not offputting: ‘For an entrepreneur, barriers to entry are attractive... They are the thing that will create value if you succeed.’

Blockchain technology, the correspondent from Blokur conceded, has so far had ‘zero impact’ on the structure of the music industry, although he expected this to change as the sector matures, anticipating a ‘fundamental upgrade of the music industry’s infrastructure’. He saw the overall impact as positive, although ‘the role of the individual players obviously is going to be subject to change.’ Other respondents agreed that blockchain technology had yet to significantly affect the structure of the recorded music industry, yet one predicted that, within the next three or four years, we would see one blockchain initiative establish itself as the ultimate source of music copyright data, with other blockchains taking care of licensing.

The respondent from Mycelia suggested that she was ultimately tech-agnostic – but that blockchain, at the very least, was an ‘earthquake’ that has introduced a focus on challenges (not least that ‘sometimes there are too many intermediaries not bringing value’) that are hugely important – regardless of whether or not these challenges are ultimately solved by blockchain technology. This is similar to the argument proposed by Baym et al (2019), that blockchain is less a technological solution for the music industry than a ‘convening force’ that brings together disparate actors.

Several respondents pointed out that the potential extends far beyond recorded music, right across the creative economy: ‘This whole thing starts with music and it goes into every other file format.’

Conclusions

The paper has explored the new emerging infomediary services at the vanguard of blockchain technology’s potential transformation of the recorded music industry. In doing so, it has considered the development of a tiered business model approach to analyse these changes and provided novel insights into the future of the industry and wider repercussions for the creative economy. This provides a framework for further research and theory building. Four themes emerge from the case studies. First, that blockchain is enabling *new infomediary services* to develop. The case study evidence suggests that the most advanced of these new services, currently at alpha and beta testing stages, aim to ensure the rights and licensing of recorded music, incorporating artist creator details, smart contract payments and artistic expression into the digitised online streaming and wider artistic

distribution mechanisms facilitated by the internet and blockchain. They not only offer vastly improved, secure payment mechanisms for artists, but also contribute to new forms of service (e.g. micrometering of third-party music extracts for film, television and sampling) artistic control over the increasingly fragmented distribution process (e.g. expression of how the music may be used) – and above all an *immutable forever ownership and payment stream*. Second, blockchain is enabling new infomediary *customer services to monetize* new recorded music far more efficiently through the new online streaming music distribution services. The main customers will be the artist creators, publishers and labels, and the online music streaming services, with the value creation in terms of greater efficiency (speed, accuracy and cost reduction) in establishing artists rights and payments by using blockchain technology, digital encoding and AI search mechanisms to replace physical collection society activities. Third, the new business models are B2B services, with little cost directed towards the artist/creators. The expectations are that the publishers and labels and streaming distributors will pay for these enhanced services, either through licensing rights or small percentage service charges on transactions. Additionally, the streamlining services also have the potential to cover costs by third party advertising and listener memberships (e.g. for premium advertising free services). Finally, all new service providers are in favour of *regulation* as a means of gaining public recognition, trust and acceptance of the blockchain services – the main question here is the extent to which industry regulations can be adopted globally and the desire for a blockchain facilitating light touch approach. So, whilst blockchain is inherently disintermediating, it is also necessarily in need of legal enforcement of global rights and infomediary activities to ensure the promotion and more equitable payment of artists.

The paper is necessarily limited by the lack of data and operational case studies (at least to beta testing) in a fast-developing blockchain service sector. The examples provided therefore represent just the initial vanguard of infomediary services that will most likely develop in the next few years around the digital creative economy – with recorded music and its associated digital add-on services at the forefront.

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Annex Table: New Infomediary Blockchain Business Models in the Recorded Music Industry

Name	Country	Location	Established	Status	Aims/services	Revenue Model
Resonate	Germany	Berlin	2017	Independent	Not-for-profit music streaming service operating on blockchain	30% share of streaming
Breaker (SingularDTV)	USA	Puerto Rico	2016	Independent	Music streaming service for emerging artists and support services - includes Tokit ICO	% of streaming/token revenues
Revelator	Israeli	Jerusalem	2012	Independent	Blockchain asset issuance platform to record creator rights / ownership info, manage IP and exchange value directly without other intermediaries	Flat monthly fee for suite of services and % of income
Mycelia	UK	London	2015	Independent	Creative passport, delivering blockchain smart contracts for new music makers	Services pay to access data; money distributed to creators after maintenance costs deducted
Jaak	UK	London	2017	Independent	Working with labels and artists on digital rights, licensing data using blockchain	Rights network with token; Software as a Service (SaaS) products
Blokur	UK	London	2015	Independent	Music publishing rights, and payments, using blockchain	SaaS subscription
Dot Blockchain Media	UK	New York, London, Portland	2017	Independent	Re-imaging digital rights in music using blockchain, cloud, AI for distribution and payment	SaaS, plus services, plus access
Ujo	USA	New York	2015	Independent	Ethereum backed ConsenSys software offering total P2P solution through open source application programme interface ('Api')	Free to creators, SaaS B2B charges e.g. data analytics, spin-off services
Peertracks	USA/Canada	Texas, New York, Quebec	2014	Independent	Online music store – streaming, smart contracts/licensing, US\$ pegged crypto payments, token add-on VIP services, debit card facility	% of sales of music and add on services (e.g. artist contact, tickets, merch etc.)

Alexandria	USA	New York	2014	Independent	Blockchain-based open source for creators to publish, distribute and smart contract crypto pay	% of sales
BitTunes	UK	London	2013	Independent	Blockchain distribution platform, using Bitcoin, empowering customers as 'music movers'	P2P 50% pyramid selling
Mediachain	USA	New York	2016	Acquired by Spotify (2017)	Open source directory for networked (Api) solutions to music /creative digi data management	B2B service provider to distributors, collectors and data arbiters
Kobalt	USA	New York	2000	Independent	Blockchain enabled creator support, publishing (AWAL), distribution, payment and neighbouring rights collecton	B2B % of artist/label/ Publisher fees retrieved
Choon	UK	Devizes, Wiltshire	2018	Independent	Ethereum based, tokenised music streaming and payment site for independent artists	20% of income generation, including spin-offs (tickets, merch etc.)
Voise	Canada	Ottawa	2017	Independent	Ethereum based tokenised P2P streaming platform with App in beta mode	Free 100% creator revenue, income from Voise token
Musicoin	China	Hong Kong	2017	Independent	Free music streaming platform/App, UBI enables % of mined pay to artists	Free 100% creator revenue, plus tip income from Musicoin