

New Technology In The Music & Entertainment Industry



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Introduction

Over the past decades, digital technologies have permeated the music and entertainment industry. These industries have undergone significant changes and developments ever since technology has been implemented within our society. The adaptation to these technologies and their continuous developments have immensely affected the business models. This led to a new and evolving modern music industry. There have been shifts within the music industry, as there have been periods of significant transition. These transitions have influenced the change towards music in digital form and the shift of revenues away from physical sales. This disruption within the business model has stimulated growth, yet a disruptive impact on commercial operations and how music and entertainment are consumed. Therefore, sparking the critical evaluation of how new technology has transformed the music industry from a product to a service.

The Digital Revolution

The single technological development that had the most significant influence in the field of music, and caused the first major shift was the invention of sound recording in 1877 invented by Thomas Edison (Malm, 1992). For the first time, people could preserve, transport, and reproduce sounds that initially been produced elsewhere. From 1877 through 1890, these recordings were primarily used for speech and only to a limited extent for music (Malm, 1992). However, by the mid-1890s, two recording technology systems had become available to the public. The first being the Edison phonograph and the other, the Berliner gramophone system, as these were designed for the mass production of sound recordings (Bellis, 2019). Advanced record players were established in 1910-20 that exceeded similar principles of the gramophone, in gradually more sophisticated versions ("History of Gramophone," n.d). These essentially remained the same until 1982, when compact disc (CD) technology was launched (Waniata, 2018). Today, as the recording and distribution of music continue to improve, it is essential to remember that these devices led the industry to its modern-day success.

Music has been encoded in various digital forms such as CDs, laserdisc, and digital versatile discs (DVDs) (Lam & Tan, 2001). Such digital technologies proved great popularity due to their quality and portability, allowing consumers to procure and play high-quality music through a digital form directly from the Internet. Accelerating the development of the Internet as an infotainment hub allows for the prediction of it becoming the main conduit for both information and entertainment

(Lam & Tan, 2001). As the traditional business model was developing into the modern music industry, it specifically forced record labels to change and adapt to the rapid expansion of technology. The digital revolution changed many things within the music industry, the biggest being the notion of file sharing. As the compact disc was the first step in allowing music to be stored digitally, it led the digital evolution towards making music more mobile (H. Nobumoto, 2002). This was followed by the further evolvement of technological advances, as the concept of MP3 compression technology arrived. The illegal copying of CDs was not yet considered a problem, as there was nothing to copy the content onto. This was until the PC was created, causing the CD to become a symbol of the music industries inability to consider the development of technology. The traditional business models have changed entirely since technology, as access to music has changed enormously.

As the music and entertainment industry were struggling to adapt to this technological shift, they responded by launching information campaigns such as IFPI's 'Home taping is killing music' (Wikström, 2013, pg. 154). Due to the growing digital market, the industry created several initiatives, which have been directly aimed at consumers. Firstly, the number of information campaigns that were launched, which had a purpose of influencing the understanding, especially of young people, about the issues relating to copyright. Another initiative was launched by trade organisations representing record labels, which filed lawsuits against organisations and individuals who violated copyright legislation (Wikström, 2013, pg. 155). Their initial reaction was to sue over 35,000 music consumers for illegally downloading and file sharing. The music recording industry took action by supporting the development of various techniques in order to control and restrict the illegal copying of music. These technologies have made listening to CDs through certain players demanding in an attempt to reduce music piracy (Borland, 2005). As the music industry realised it was not possible to fight the evolvement of technology, they instead decided to adapt themselves to these changes within the traditional music business model. The shift from CDs, to downloading, to streaming was known as the digital revolution, which meant that digital technology allowed consumers to have more choice over buying music conveniently. This change allowed consumers in having the option to buy individual tracks, rather than an entire album. Since the digital revolution, consumers tend to prefer convenience over quality (Rogers, 2013, pg. 86).

Streaming Services

The co-existence of paid and free online services has caused a change in the traditional supply chain of the music industry (Alves, 2004). Disintermediation between record companies and retailers occurred when digital music distribution services were introduced. This caused business models to derive towards the claim that such technologies would lead to the music industry's demise, therefore forcing adaptation (Alves, 2004). The battle derived from these adaptations were primarily concerning the stakeholders of the music industry, as they were forced to learn about new roles and find their position within the evolving supply chain. Once a new online business model was executed concerning both position in both the physical and online markets, conflict against digital music services began to descend.

Rather than owning a large number of CDs, the option of streaming music through streaming services such as Apple Music, Spotify, SoundCloud, Youtube and Tidal are now accessible. These platforms have allowed for the complete convenience of consuming and obtaining music at any time. Instead of having a home stereo or record player, individuals can now have their music with them at all times on their phones, laptops, or MP3 players, again allowing individuals for that sense of 'freedom' and convenience (McDonald, 2017). A quote by Jeremy Silver, vice president of New Media, stated that;

"The threat to the music industry is not MP3s, but the arrival of a consumer distribution channel that is not controlled by the music industry."

(Lam & Tan, The Internet is Changing the Music Industry, 2001)

The first company to successfully create an online service for legal sales and distribution of music was Apple Computer, as it was called at the time (Wikstöröm, n.d). Due to the large digital disruption, in 2003 Apple was able to convince significant labels that music consumers would buy music legally if a simple service were offered to them where they could buy and download music at a moderate cost. This service was called 'iTunes Music Store', which was an extreme change for the music and entertainment industry. iTunes Music was the first service which offered music catalogues from all major music companies, and allowed consumers to de-bundle the concept of music albums and instead buys individual tracks (Wikstöröm, n.d).

This innovation of iTunes Music demonstrated how Apple was correct in their predictions of consumer behaviour, and how the industries adaptation to this shift deemed to be successful. In 2013, iTunes Music Store became the world's largest music retailer for both online and offline and sold more than 25 billion songs since its launch in 2003 (Apple, 2013). This demonstrates the notable shift towards a service sector within the music and entertainment industry. Therefore substantiating that revenue is no longer within the physical product sale of music, but preferably within the service that is digital streaming. The service has evolved exceedingly, with several competitors using a similar business model as they enter the digital download music market.

Another thriving service, known as Spotify, was founded in 2006 by Daniel Ek and Martin Lorentzon. This service was created with the ambition to create a legal ad-supported music service that was free for the music listeners, and instead generated licensing revenues to copyright holders (BBC, 2018). Spotify was required to implement a fundamental change in their business model, where they developed a more advanced version of the service which was funded by subscription fees. This was required in order to prevent the service from solely being funded by advertisements. This strategy was implemented as this service caused the royalty business models to be disrupted. Music companies generally use the royalty model where a licensee pays a fixed amount per song sold, played, or distributed in any way (Wikstörn, n.d). This model is challenging to apply to an access-based service, as the revenues generated by this service are not dependant on the songs sold, played or used. Instead, revenue is primarily based on the number of users of the service. Spotify is considered as a milestone in the reshaping of the new music economy as the company successfully convinced major music companies to take a share in Spotify's revenue instead of taking fixed lances fees generated per track (O'Marah, 2018). Spotify reported that 70% of revenue comes from advertising and that subscriptions are paid in royalties to rights holders (Hu, 2017). In 2013, it was reported that the service had generated more than a billion dollars for rights holders, which is proof that their model is thriving. This further demonstrates the change in commercial operations as services such as Spotify now allow for digital revenue through digital marketing.

Blockchain Technology

In order to stay as relevant as possible, it is essential for any industry to continuously develop based on the digital revolution that is making the world more technologically advanced. To sustain this, the music and entertainment industry are forced to continuously adapt their business models to new technology, as previously demonstrated in this paper. With a new type of Internet, Blockchain, a

further shift within the music and entertainment industry is identified. Nevertheless, to what extent is Blockchain technology affecting the music and entertainment industry, and is this a positive change or first seen as a further disruption? Within the music industry, Blockchain could have the ability to transform publishing, monetisation, and the relationship of artists with their fans (Dickson, 2016). Technology such as Blockchain could lead to the elimination of brands being a conduit to connect people to music (McKinsey, 2018). Blockchain technology can establish the owner of the intellectual property rights by making use of a distributed ledger. Music can be published on this ledger, and with this comes a unique ID and timestamps where this becomes virtually unalterable (Dickson, 2016). In theory, these aspects of Blockchain technology can be used as clear evidence of ownership and could solve and potentially illuminate the issue of digital content being copied, modified and downloaded. Another way in which Blockchain technology is affecting the music business model is through its fast and frictionless royalty payments (O'Dair, 2016). Royalty payments are one of the most critical ways in which the majority of artists generate their income. However, this can take up to months and sometimes even years to reach the rights holders (O'Dair, 2016). As the digital shift within the music industry has led artists to distribute their music on streaming services, it has created a level of intermediation between the artist and its consumer and has led to the inefficiency of royalty payments (Sitonio, 2018). Through the use of Blockchain and by putting content on this distribution ledger, will allow for the connectivity and peer-to-peer transactions via a digital currency such as Bitcoin (Hern, 2018).

Artificial Intelligence

Artificial Intelligence (AI), perhaps the newest challenge in the music and entertainment industry, has already shown great change and adaptation. AI is a sub-field of computer science, intending to enable the development of computers that can complete intelligent tasks generally done by people (Hammond, 2015). This is generated through the automating of services, discovering patterns, and insight into enormous data sets to help increase efficiency rates to drive growth and innovation (Marr, 2019). Companies and services within the music and entertainment industry need to accept and prepare for the further development of AI and how it will transform businesses. According to McKinsey, who studies the impact of artificial intelligence on the world economy, the average simulation shows that around 70% of companies will have adopted at least one type of AI technology by 2030 (McKinsey, 2018). Cohen, a leader in the digital development to the music industry, explained that approximately 20,000 new tracks are uploaded onto streaming services such

as Spotify every day (Marr, 2019). AI is critical, in that it helps sort through the delivering of recommendations to listeners based on the algorithms on what music the listener consumer in the past. AI-generated playlists are no longer based on music genre. Instead, they are created through a large amount of data accessible to gain insight on what is determined to be ‘good music’ (Marr, 2019). Further disruption based on A.I is the live music industry, as augmented and virtual realities are being incorporated within live-concert experiences.

Another way in which artificial intelligence is shaping the music industry is through its ability to composing music. AI analyses large sets of data from different compositions and composers when creating its musical pieces. This is done through reinforcement learning; the algorithms learn the characteristics and patterns that makeup music or that mimic certain musical genres (Neftci & Averbek, 2019). This combination of AI and music composing has been introduced through a service called AIVA (Artificial Intelligence Virtual Artist) co-founded in 2016 by Pierre and Vincent Barreau (AIVA, 2016). This is an artificial intelligence service, capable of composing emotional soundtracks for films, video games, commercials and any type of entertainment content (AIVA, 2016). This service has been learning the art of music composition by reading the data and algorithms from a large collection of music partitions. This data set includes many of the greatest composers, such as Mozart and Beethoven. In order for AIVA to use these algorithms, a mathematical model representation is created filled with data and is then used to write unique music (Machuron, 2016). Music which has been generated by this service will primarily be used in the advertising of campaigns, film scores, and video game scores. Therefore further changing the traditional music business model as the composing of music by musicians is now being implemented by advanced technological services. AIVA Technologies’ music composing A.I has demonstrated considerable success as it becomes the first A.I in the world to be officially recognised and given the status of the composer (Lauder, 2018). This goes a long way to prove the significance of artificial intelligence and the shift to the service sector.

Conclusion

To conclude this paper, constructive evidence has been given to demonstrate that the music and entertainment industry has drastically changed over the past decades. As technological advances surface and digital media continues to develop traditional business models, are forced to adapt and allow for new business models to emerge. This paper discussed various aspects of how this transformation continuous, and how access-based music services play a substantial role in the significant music industry revolution that led to the change from a product to a service. The digital revolution sparked the shift towards digital distribution and the notion of file sharing, allowing the consumer to have more choice over buying music conveniently. Digital music distribution services have changed stakeholder roles in the music industry, whether this change is applied for the benefit purely for the industry as a whole or whether it continues as a battle between companies and consumers is still to be seen (Alves, 2004). Streaming services established great successful within these industries, as revenue shifted towards the streaming of tracks and digital marketing of advertisements. Blockchain technology can establish intellectual property rights and potentially illuminates the issue of digital content being copied, modified and downloaded. Artificial intelligence shows the next great disruption to the music and entertainment industry as generated playlists are created based on individual data of each consumer. Further development confirms the creation of services such as AIVA, can now use data and algorithms in a mathematical model that composes unique music for any entertainment services.

Bibliography

- Alves, K. "Digital Distribution Music Services and the Demise of the Traditional Music Industry: Three Case Studies on mp3.Com, Napster and Kazaa." *University of Wollongong Thesis Collection*, Faculty of Engineering & Information Sciences, 2004.
- Bellis, Mary. "Meet Emile Berliner: Inventor of the Gramophone." *ThoughtCo*, ThoughtCo, 4 Nov. 2019.
- Bruin, Simone de. "More about: Music - A Digital Disruption In The Music Industry." *Medium*, The Innovation Station, 26 June 2017.
- Budgen, Jacques, et al. "Notes from the AI Frontier: Modeling the Impact of AI on the World Economy." *McKinsey & Company*, Sept. 2018.
- Dickson, Ben. "How Blockchain Can Change the Music Industry." *TechCrunch*, TechCrunch, 8 Oct. 2016.
- Hammond, Kris. "What Is Artificial Intelligence?" *Computerworld*, Computerworld, 10 Apr. 2015.
- "History of Gramophone - Who Invented Gramophone?" *Gramophone History - Invention of the Gramophone and Vinyl*, Sound Recording History.
- "How Spotify Came to Be Worth Billions." *BBC News*, BBC, 1 Mar. 2018.
- Hu, Cherie. "Spotify Records Surging Revenues, Continued Losses in First Half of 2017." *Billboard*, 12 Oct. 2017.
- "iTunes Store Sets New Record with 25 Billion Songs Sold." *Apple Newsroom*, 26 Feb. 2013.
- Janssens, Jelle, et al. "The Music Industry On The Line? Surviving Piracy in a Digital Era." *HeinOnline*, 2009.
- Jones, Angela Cresswell., and Rebecca Jane. Bennett. *The Digital Evolution of Live Music*. Routledge, 2015.

- Lauder, Ed. "Aiva Is the First AI to Officially Be Recognised as a Composer." *The World's Number One Portal for Artificial Intelligence in Business*, 9 Nov. 2018.
- Malm, Krister. "Chapter XV The Music Industry ." *Ethnomusicology. An Introduction.*, 1992.
- Marr, Bernard. "The Amazing Ways Artificial Intelligence Is Transforming The Music Industry." *Forbes*, Forbes Magazine, 9 July 2019.
- McDonald, Heather. "Why Record Labels Have Such Tremendous Influence on the Music Industry." *The Balance*, 2017.
- Neftci, Emre O., and Bruno B. Averbeck. "Reinforcement Learning in Artificial and Biological Systems." *Nature News*, Nature Publishing Group, 4 Mar. 2019.
- Nobumoto, Fernando H. "Patent Equipment and Process for Music Digitalization Storage, Access, and Listening." *Google Scholar Patents*, 20 Aug. 2002.
- O'Dair. "Blockchain in the Music Industry." *Digital Catapult - Home*, 2016.
- O'Marah, Kevin. "Spotify Shows The Way To A Content Economy." *Forbes*, Forbes Magazine, 5 Apr. 2018.
- Rogers, Jim. "The Death and Life of the Music Industry in the Digital Age." *Google Scholar Books*, 2013.
- Voogt, Budi. "Understanding the Music Industry: Artist Managers and Booking Agents - What They Do and Why You Need Them." *Heroic Academy*, 24 July 2017.
- Waniata, Ryan. "Remembering the Rise (and Final Fall) of the Late, Great Compact Disc." *Digital Trends*, Digital Trends, 9 Feb. 2018.
- Wikström, Patrik, and Queensland University of Technology. "The Music Industry in an Age of Digital Distribution." *OpenMind BBVA*, Queensland University of Technology, Brisbane, Australia.
- Yan, Calvin K.M, and Bernard C.Y Tan. *The Internet Is Changing TheMusic Industry*. COMMUNICATIONS OF THE ACM, Aug. 2001.