The Impact of Artificial Intelligence on the Music Industry

Joel Alem

Dissertation written under the supervision of professor Peter V. Rajsingh

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Abstract

This dissertation explores the impact of artificial intelligence on the music industry by analyzing the changing roles of traditional artists, producers, and consumers. The significance of these technological developments is increasing in the processes of music creation, production, distribution, and consumption. They provide both opportunities and challenges that possess the capacity to fundamentally transform the music industry. This study examines the influence of artificial intelligence on creativity and the economics of the music industry. It employs a mixed-methods technique, which involves conducting an online survey and conducting interviews with experts.

The findings of the study reveal that the use of AI significantly enhances the efficiency and productivity of music production by automating and optimizing tasks like mixing and mastering tracks. However, the integration of AI also raises ethical and legal concerns regarding the cultural and emotional aspect of music, while also adding complexity to copyright regulations. Although AI has the potential to make music production more accessible, a balanced strategy that upholds artistic integrity and an efficient use of technological advancements is needed.

The study highlights the dual nature of AI in music, serving both as a catalyst for innovation and change and also as a disruptor of existing standards. The changing landscape of the music industry necessitates updated legal frameworks and ethical norms.

Keywords: Artificial Intelligence, Music Industry, Intellectual Property, Copyright, Legal Framework, Competitive Advantage

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Author: Joel Alem

Sumário

Esta dissertação explora o impacto da inteligência artificial na indústria musical, analisando a mudança de papéis dos artistas, produtores e consumidores tradicionais. A importância destes desenvolvimentos tecnológicos está a aumentar nos processos de criação, produção, distribuição e consumo de música. Proporcionam oportunidades e desafios que têm a capacidade de transformar fundamentalmente a indústria musical. Este estudo examina a influência da inteligência artificial na criatividade e na economia da indústria musical. Utiliza uma técnica de métodos mistos, que envolve a realização de um inquérito em linha e de entrevistas com especialistas.

Os resultados do estudo revelam que a utilização da IA aumenta significativamente a eficiência e a produtividade da produção musical, automatizando e optimizando tarefas como a mistura e a masterização de faixas. No entanto, a integração da IA também suscita preocupações éticas e jurídicas relativamente ao aspeto cultural e emocional da música, ao mesmo tempo que aumenta a complexidade dos regulamentos relativos aos direitos de autor. Embora a IA tenha o potencial de tornar a produção musical mais acessível, é necessária uma estratégia equilibrada que defenda a integridade artística e uma utilização eficiente dos avanços tecnológicos.

O estudo salienta a natureza dupla da IA na música, servindo simultaneamente como catalisador da inovação e da mudança e como fator de perturbação das normas existentes. O panorama em mutação da indústria musical exige quadros jurídicos e normas éticas actualizados.

Palavras-chave: Inteligência Artificial, Indústria Musical, Propriedade Intelectual, Direitos de Autor, Enquadramento Legal, Vantagem Competitiva

Título: O Impacto da Inteligência Artificial na Indústria da Música

Autor: Joel Alem

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List of Abbreviations

AI - Artificial Intelligence

MEP - Member of the European Parliament

ARA - Artists Rights Alliance

EMI - Experiments in Musical Intelligence

AIVA - Artificial Intelligence Virtual Artist

ANOVAs - Analysis of Variance

RIAA - Recording Industry Association of America

PWC - PricewaterhouseCoopers

CAGR - Compound Annual Growth Rate

IP - Intellectual Property

RBV - Resource-Based View

DCV - Dynamic Capabilities View

DSPs - Digital Service Providers

WTP - Willingness to Pay

1. Introduction

"We are not going to award AI creativity." Harvey Mason Jr. (2023)
Chief Executive Officer, The Recording Academy

1.1 Relevance

Since the inception of the music business, artists have been pleading for fair compensation. For decades, the recurring narrative has accompanied the music industry (Lesser, 2018). From prominent examples like Prince vs. Warner Bros or the Beatles vs. EMI, and to remember the plight of lesser-known artists. The seismic shift in distribution channels from physical media to digital platforms drastically changed the income generation dynamics for artists (Taylor, 2020). This issue has even reached the desk of the EU parliament (2024), calling for legislation to make the music industry fairer and more sustainable. In a resolution 17.01.2024 passed by a large majority, the Members of the European Parliament (MEP) call for correcting the unbalanced revenue distribution in the music streaming market. Through rapid technological advances, the call for equity and transparency has also reached artificial intelligence and machine learning. In this constantly evolving environment, AI is playing an increasingly central role in the music industry. It is not only transforming the way music is produced, mixed, and recommended but also raising fundamental concerns about authorship, creativity, and the role of humans in the music industry (Civit et al., 2022). Specifically, the question arises as to who possesses the rights to a musical composition when its author and composer are an algorithm rather than a human being (Sturm et al., 2019).

In an open letter signed by over 200 artists, including Stevie Wonder, the estates of Bob Marley and Frank Sinatra, and many more, the Artists Rights Alliance (ARA) aimed to tackle the threats AI poses to artistic integrity. The main concern pertains to copyright infringement, as AI models are often trained on copyrighted material without authorization. The individuals who signed the letter stress that AI use can negatively impact the music ecosystem by reducing compensation and misusing copyrighted works (Rys, 2024).

AI's influence on music has been a double-edged sword. It offers tools for creativity and democratizes music production but also prompts debates about the loss of the human touch.

1.2. Research Gap

The recency of the topic of AI in music indicates that there are several research gaps. Firstly, there is a disparity between the rapid advancement of technology and the understanding of its long-term impact on the creative process within music. Research into how AI influences creative decision-making and whether this could lead to a standardization of music has yet to be explored sufficiently. Secondly, there needs to be more empirical research regarding the economic impact of AI on revenue streams and job roles within the music industry. As a result of this, the impact on independent artists and small labels is unclear. Thirdly, the legal aspects of using AI, such as intellectual property and copyright, have not yet been fully discovered as existing legislation has not kept up with technological developments. Finally, the ethical dimension of AI use in the music industry, particularly in connection to authenticity and artistic integrity, is an area that requires more in-depth consideration. The possibility of AI tools to influence or even replace humans' ability to participate in creative processes has the potential to fundamentally shape how individuals operate in various fields, such as music, film, and other parts of the entertainment industry. This research aims to unravel the complex interactions between AI and music industry stakeholders and provide strategic insights into the industry's future development.

1.3 Research Question

Research Question: How does the application of artificial intelligence in music creation influence the traditional roles of artists, producers, and consumers within the industry?

To answer this research question, existing literature will be examined, and two experimental studies will be conducted, including quantitative research in the form of an online survey and qualitative research in the form of expert interviews.

2. Literature Review

This chapter provides an analysis of the music industry's theoretical foundations of artificial intelligence (AI). It examines the dualistic nature of AI's involvement in creative processes, production, distribution, and consumption. This research examines the extent to which the industry's dependence on AI ranges from cautious exploitation to complete endorsement and the elements contributing to the successful integration of AI.

2.1 Historical Overview of AI in Music

The emergence of AI and music began more than half a century ago. The integration of AI in music aims to explore how AI can assist in music composition, performance, and analysis (Yu et al., 2023). The origin of AI-generated music can be traced back to the mid-20th century, leading to the recent trend of machine learning and AI technology advancing, making AI-generated music a viable and engaging field. The Illiac Suite is considered the first piece of music composed by a computer. This pioneering research by Lejaren Hiller, in collaboration with Leonard Issacson (1958), employed strict algorithms on the Illinois Automatic Computer (Illiac I) to compose the "String Quartet."

In the 1980s, the programming of so-called expert systems that use data and then processed using handcrafted algorithms increasingly focused on improving the automation of creative processes by programming compositions (Marcus, 1988). David Cope (1991) developed a process called Experiments in Musical Intelligence (EMI), which produces style copies from the analysis of several existing works. The program first breaks down the scores stored in a suitable data structure into small pieces to create new musical compositions.

These advancements fostered development in all facets of music production and songwriting. The Verbasizer is a tool developed in the 1990s by David Bowie in collaboration with software developer Ty Roberts to revolutionize the lyric writing process. It was an early example of an application that generated random word combinations from Bowie's lyrics to inspire an unconventional writing method (Braga, 2016). Throughout this period of progress, music technology was created to carry out activities previously believed limited to human artists (Roads, 1985).

AI's abilities in music creation have been especially remarkable, as demonstrated by technologies such as AIVA. The AI tool AIVA, which stands for "Artificial Intelligence Virtual Artist," was developed by a team of developers and musicians as part of a project

funded by the EU in 2016. The aim was to create a tool to help composers, filmmakers, game developers, and other creatives create customized soundtracks and background music. As of today, it is the most popular and advanced AI tool in music production. The algorithm is trained with a massive dataset of existing music from different genres, periods, and artists (Frid et al., 2020).

As of today, in the current phase of music production, AI tools have taken on an essential role, significantly influencing both creative and technical processes. The ongoing integration of AI into music points to a future where the boundaries between technology and musical expression will continue to blur. The upward trajectory of AI's influence on music disrupts conventional methods and prompts questions about the future role of human artists and producers (Carnovalini & Rodà, 2020).

2.2 Impact of AI on Music Creation

The application of AI in music creation is a groundbreaking transformation that has modified traditional approaches and broadened the scope of cultural expression. Therefore, this part of the literature review comprehensively evaluates the contributions and findings in the field of music study, aiming to explain various ways AI impacts music composition and production.

Descriptive and generative AI are two fundamentally different uses of AI (Wu et al., 2018). The process of musical analysis and interpretation performed by descriptive AI can be utilized to generate distinct music categories by considering diverse parameters. This, in turn, enables more precise recommendation systems and analytics. This type of AI can assist in categorizing music by genre, mood, or other parameters and is valuable for music recommendation systems and analytical tasks (Kulkarni & Rodd, 2020). However, generative AI makes significant creative advancements by generating original music. Through extensive datasets, it can generate novel melodies, harmonies, and rhythms, successfully imitating the creative process of a human composer. Generative AI analyzes music and generates it, presenting novel opportunities for innovation in music creation and questioning conventional ideas of authorship and creativity in the arts (Louie, 2020).

In the music creation process, AI's capabilities shine across a spectrum of creative and technical tasks such as songwriting, composition and arrangement, production, and mastering.

In songwriting, AI enables artists to overcome creative blockades by generating lyrics. Tools like OpenAI's Jukebox use neural networks to generate lyrics and melodies for different styles

of music. These tools can also analyze the music's moods and themes to create a tailor-made end product (Huang, 2020).

When it comes to music composition, AI tools like AIVA can construct complex musical structures by analyzing large musical data sets to learn stylistic elements and create an independent composition (Gioti, 2021). Furthermore, when it comes to arranging, AI can suggest instrumentation, chord progressions, and structuring, expanding the creative scope of musicians and producers (Tan & Li, 2021).

Music production benefits from AI through automated mixing and sound design processes. AI can analyze the sound characteristics of recordings and suggest or automatically implement improvements (Weng & Chen, 2020). Tools like AMPER Music also help with sound selection by making recommendations based on the genre or desired mood (Zhou, 2023).

In mastering, AI allows fine-tuned sound processing based on the newest industry standards. AI tools such as LANDR can analyze and optimize the volume, EQ, and dynamics of a track to ensure consistent playback quality (Sterne & Razlogova, 2019).

These tools allow even those without a technical background in recording to quickly start recording projects, organize tracks, apply effects, and produce music, thus removing significant barriers to creativity and productivity (Anantrasirichai & Bull, 2021).

The connection between music and emotions is naturally evident and is a significant component of the music production process (Ferreira et al., 2020). The AI tools mentioned, like AIVA, AMPER Music, and IBM Watson Beat, are capable of not only analyzing and structuring music but also understanding and implementing emotional context. These AI-based affective music generation systems highlight the potential to influence listeners' emotional states through AI-generated music. This emerging field presents a new frontier in music creation, where AI's ability to evoke specific emotions through music opens up new avenues for artistic expression and audience engagement (Dash & Agres, 2023). However, this also introduces challenges in developing systems that can authentically replicate human emotional and cultural nuances in music.

In a nutshell, AI harnesses the power to transform music-making, and it is challenging and enriching the traditional processes.

2.3 Evolution of Revenue Streams in the Music Industry

In this chapter of the literature review, the transformative journey of music revenue streams, tracing the metamorphosis from traditional physical sales to the various digital channels of today is explored. Major changes in the distribution, consumption, and monetization of music were brought about by the digital age.

In the past, the industry mainly depended on physical sales of vinyl, cassettes, and CDs. But the introduction of the internet and digital technology has completely changed the game, causing conventional revenue streams to go and new ones to develop (Daniel, 2019). This transition period became the very embodiment of the disruption. The music industry's slow adoption of digital innovations, especially the reluctance to leave traditional physical distribution models, made the transition difficult (Bourreau et al., 2008).

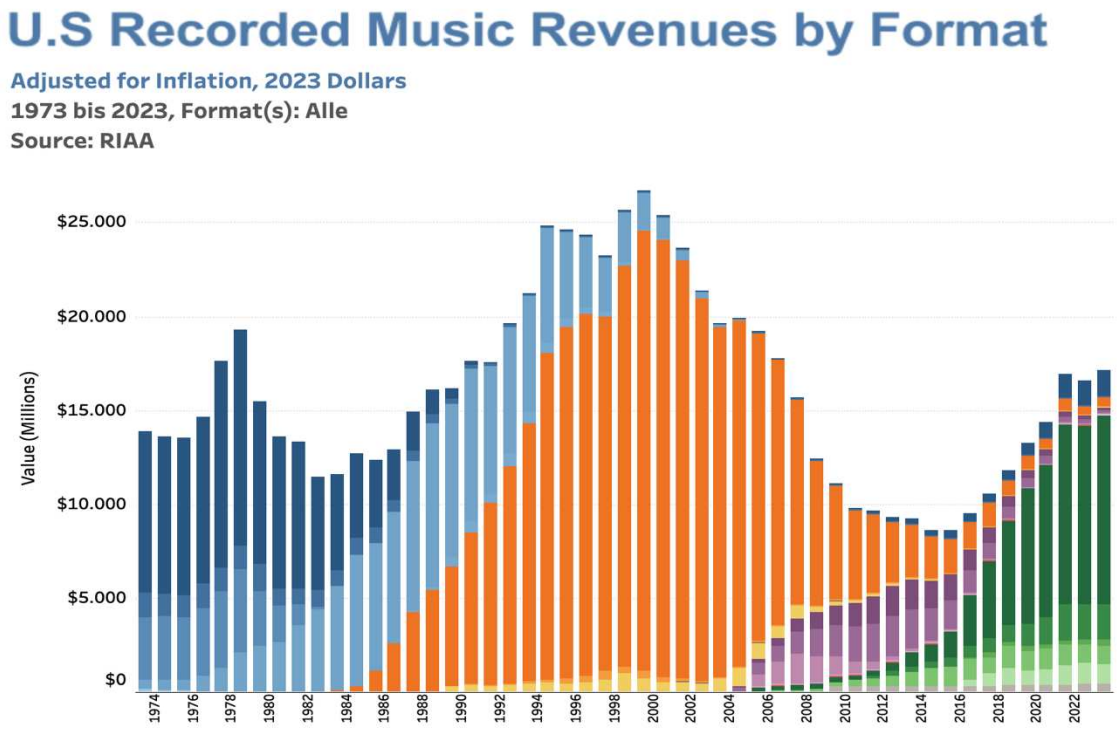

Figure 1: Music Revenue (RIAA, 2022)

The emergence of streaming services like Spotify in 2008 demonstrated a new milestone, dictating the direction of the music industry (Wlömert & Papies, 2016). This has led to rejuvenated revenues for the music industry through streaming services (Drott, 2021).

Despite these challenges and hurdles, digital formats have provided opportunities for artists to reach larger audiences at lower costs and to exercise greater control over their work ultimately

leading to the rise of streaming services, which was another critical development in the music industry (Leenders et al., 2015). The unfair distribution of revenues by major recording labels led to calls for better royalty structures to ensure that artists are adequately compensated for their work, especially in the streaming era (Marshall, 2015).

Live music has experienced a resurgence in the digital age, with a gradual increase in revenue share in the music industry (Naveed et al., 2017). During the plight of fair compensation, the live music sector represents a large income stream for artists. Live events like concerts and festivals do not only generate income from ticketing and merchandising but also foster a closer connection to the audience. According to the global entertainment report from PWC (2023), the global revenue from live music reached over US $25 billion, with a compound annual growth rate (CAGR) of 3.33%.

Digital transformation has reshaped the landscape of music distribution and monetization, putting the industry through a period of radical changes, ending the era of physical sales and the birth of new avenues like paid subscription models.

2.4 Economic Implications of AI in Music

AI in the music industry has revolutionized the way music is created and commoditized, thus forcing industry practices and regulations to be rewritten. The rapid advancement of AI in the music industry has not only transformed the way music is created but has also significantly impacted traditional monetization strategies (Sturm et al., 2019). As AI-generated music becomes more prevalent, it introduces a new dynamic to the music market, challenging the established norms of copyright, performance rights, and the distribution of profits (Horzyk, 2023).

AI technology made it possible to give rise to innovative opportunities in the creation process of music. Different companies, ranging from local startups to global players, are increasingly employing AI to produce music, displaying the increasing relevance and importance of AI in the music industry (Zulić, 2019). This development has led to a shift in traditional monetization strategies, as AI-generated music compositions blur the boundaries between the rights of composition and performance (Drott, 2020). Traditionally, music composers and performers were seen as distinct roles with specific rights, but the ambiguity surrounding the identity of composers and performers in AI-generated music challenges this distinction (Zulić, 2019). AI has put a newfound competitive edge into the music industry, leveling the playing

field and allowing the public to generate high-quality music compositions, which were previously only available to a select few. These new competitors in the market potentially diminish the market standing of human composers (Birtchnell & Elliot, 2018). Not only is the position of human composers in jeopardy, but so is the position of major labels like Sony Music, Universal, and Warner (Drott, 2020). In order to maintain their market share, major labels opted to invest in the field of AI (Mou, 2019).

These technological advancements' disruptive nature requires the adaptation of the economic and legal frameworks. The legal framework surrounding AI-generated music is complex, as current copyright laws may not fully accommodate the nuances of music generated by AI. This legal ambiguity necessitates a careful balance between nurturing creativity and protecting the rights of creators and innovators (Tako & Marashi, 2019).

One of the critical challenges in monetizing AI-generated music lies in defining the rights associated with music creation versus AI generation.

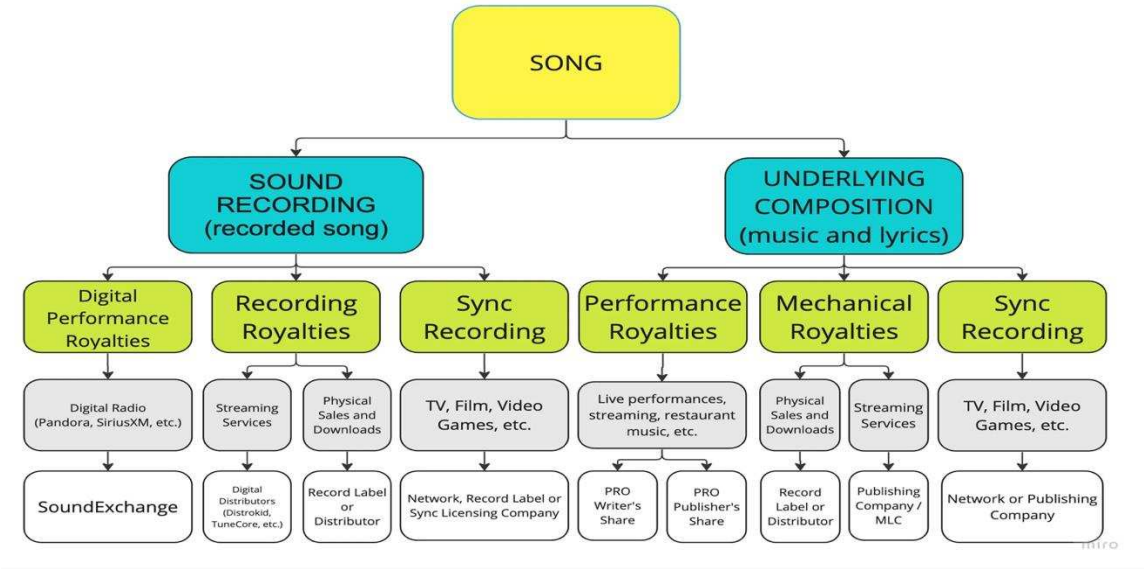

Figure 2: Copyright Revenue (PLLC, 2023)

Traditional copyright laws assign copyright to human authors, but the question of whether AI-generated music compositions can be considered the creative output of authors remains unclear. As the music industry navigates these challenges, it is essential to consider the roles of human creators and performers in the AI music generation process to ensure fair distribution of benefits and lawful use (Horzyk, 2023).

AI's entry into the music industry requires that copyright laws, revenue models, authorship, and creativity need to be reassessed, so that needs of all stakeholders are accommodated and fairness as well as sustainability can be ensured.

2.5 Intellectual Property

Intellectual Property (IP) is a legal principle that grants exclusive rights to creators over their creations, thereby providing a framework for safeguarding and utilizing intellectual investments in various fields (Menell & Scotchmer, 2007). IP encompasses a variety of products of human creativity, such as inventions, literary and artistic expressions, designs, trademarks, and images used in commerce. IP includes many rights that are specifically designed to safeguard different parts of creative works. These rights include patents, copyrights, trademarks, trade secrets, and more (Bainbridge, 2007). Such legal instruments are created to promote innovation by guaranteeing that creators can reap the benefits of their efforts, hence cultivating a culture of ongoing development and invention (Brown, 2012). The acceptance and recognition of IP allows creators to reap the benefits of their work in the form of royalties, copyrights, and the ability to buy, sell, or license their IP (Maskus, 2000). IP has a broader impact than just on the individual creator, affecting socioeconomic development, creativity, and access to knowledge and technologies. IP rights are crucial in fostering economic growth and technical progress in countries by offering a means to safeguard and profit from intellectual contributions. They provide incentives for individuals and businesses to invest in research and development, thereby contributing to the collective body of knowledge and technological progress (Menell & Scotchmer, 2007). IP rights are essential for protecting intellectual assets and ensuring the integrity of this system by preventing violations. Firmly enforce and protect the rights of artists, maintaining the value and integrity of intellectual works in a knowledge-driven economy (Warburton, 2020). At the organizational level, IP strategy is considered a key component of a company's competitive edge and ability to innovate. This highlights the need for organizations to effectively manage IPs to protect their interests and foster an innovation culture (Reitzig, 2004). Hence, it is indisputable that IP plays a vital role in the modern economy by offering a legal framework to protect and monetize creative and imaginative concepts. IP has far-reaching implications across multiple sectors, that includes creators, businesses, and policymakers (Voss et al., 2017).

The emergence of AI questions raises questions regarding the holder of the rights from AI generated contents, leading to the reevaluation of the existing understanding and laws of IP and copyrights.

2.6 Copyrights

Copyright is one of the major layers of the music business and if it is not present, the music creators and producers artworks would be unprotected. Moreover, it has always been a subject of discussion because the ways of making, transmitting, and gaining access to music have changed over time (Marshall & Frith, 2013).

Copyright protection is essential in the music industry to protect the rights of creators and producers. Composition copyright is a form of copyright that primarily protects the musical composition itself (Marshall & Frith, 2013). This includes the melody, harmony, lyrics, and other essential parts of the song as they are expressed in sheet music or other forms of notation. This kind of copyright guarantees that the originator of the composition maintains authority over the utilization of their creation, encompassing the privileges to duplicate, distribute, execute, and modify the song. The ownership of the composition copyright often belongs to either the songwriter or the publisher. This ownership grants them the legal right to take action against any unauthorized use of musical compositions (Liebowitz & Watt, 2006).

Conversely, the master recording copyright safeguards the particular recorded rendition of a song or performance, commonly known as the "master." The ownership of this copyright belongs mainly to the artist or record company, who then have exclusive rights to the reproduction, sale, modification, and licensing of the recorded performance. This is the main difference between the recorded performance and composition (Carroll, 2005)).

The copyright for the master recording is separate from the copyright for the composition. It specifically applies to the expression of the song in its recorded form, encompassing the performance, production, and engineering of the track. This system of copyright consists of two layers, which guarantee that both the music authors and the producers of the recordings are acknowledged and safeguarded by copyright legislation (Lund, 2012). The digital era has brought about enormous changes to the music industry, affecting the creation, distribution, and consumption of music (Curien & Moreau, 2009).

The switch towards digital streaming services adds complexity to copyright enforcement, including fair compensation for artists and the relationship between musicians and record

labels (Thomson, 2013). The inception of streaming services initially contributed to an uproar of optimism in the industry due to the overall growth of revenues and the regulation of the internet piracy crisis. This was later met by concerns regarding the share for artists and the sustainability of earnings (Sinclair & Green, 2015).

Despite the progress made due to technological advances, the existing royalty system is still unclear and obsolete, sometimes favoring intermediaries over creators. The lack of openness and slow rate of technological adoption in the music industry has created an ecosystem that is not well-aligned, resulting in untapped opportunities for more transparency and fairness in copyright management (Borgmann, 2018), heading further away from a balanced and equitable system, that gives acknowledgment to the contributions of all parties involved.

Considering this transformation there has been a mutual understanding between stakeholders in the music industry including record labels, publishers, performing rights societies, streaming services, managers, artists, and startups, that the current situation regarding copyright needs be readdressed (Frid et al., 2020).

2.7 Ethical Considerations and Future Implications for AI in Music

This chapter assesses the most important debates regarding AI's effect on music, with particular emphasis on authorship, emotional expression, cultural sensitivity, the role of a musician, music access, and consumption patterns.

AI as an innovative tool that opens up new doors, also raises significant ethical doubts and questions (Müller, 2020). The primary ethical concern is a gray area between human creativity and AI output, raising question of who the owner of music created by AI is (Drott, 2020). This matter is problematic since determining who the rightful owner of the piece of music is. Is it the AI, the programmer, or a collaborative entity (Eshraghian, 2020).

The role of emotions in music is unprecedented. Therefore, AI-generated music aims to imitate human emotions. This evolution prompts us to reconsider what constitutes authenticity in music and whether AI-generated compositions can hold the same emotional value and connection as those created by humans (Novelli & Proksch, 2022).

Since AI systems acquire their knowledge from pre-existing data, they are susceptible to biases. This could lead to the perpetuation of stereotypes and standardization of sound (Youngblood, 2019). In addition to that, the risk of cultural appropriation, where AI might use

elements of diverse cultures without acknowledging or respecting their significance, could dilute cultural identities and even result in loss of culture (Naylor, 2014).

The ongoing evolution of AI in music creation could potentially change the role of the artist. Artists might increasingly become curators or editors of AI-generated content, focusing on giving creative directions rather than creating from ground zero. This could lead to a shift that redefines the way we think of artistic skill sets and the way we perceive human creativity (Gioti, 2021). AI in music offers a chance to democratize music production, enabling everyone to write and produce music without the proper education (Zhou, 2023). This would open up the possibility for people without formal training to create and distribute music, which may lead to greater diversification but also raises concerns about professional standards and devaluing the labor of accomplished professionals (Britchnell & Elliot, 2018).

Contrary, Dash and Agres (2023) considered the notable change in music consumption patterns. Personalized music, generated on-the-fly to suit individual tastes and moods, could become the norm, changing the way we experience albums and artist discographies. Even changing how listeners consume music and affecting the live music experience.

In conclusion, the crossroads of AI and music are fertile ground for innovation, with unexplored areas of ethical issues. Solving the equation of the preservation of human values, rights, and cultural integrity is vital for the future success of the industry. In order to navigate this landscape, continuous dialogue among the different stakeholder like artists, labels, policymakers, etc. is essential for AI in music to align with societal goals and respecting the essence of music as a cornerstone of human culture.

2.8 Management Theory

2.8.1 Porter Five Forces Model – Competitive Advantage

Within the context of strategic management, it is essential to understand the origins of competitive advantages within an industry. Michael Porter's groundbreaking studies established the Five Forces Framework, a fundamental instrument for assessing the competitive landscape of an industry (Grundy, 2006). This model illustrates the significance

of five crucial forces: Competitive Rivalry, Bargaining Power of Buyers, Threat of Substitutes, Bargaining Power of Suppliers, and Threat of New Entrants. Each variable significantly influences the methods that companies might use to gain and maintain a competitive edge.

Figure 3: Porter's Five Forces Model

Porter's model functions as a structured approach to examine a company's external competitive environment, allowing it to pinpoint the sources of its competitive advantage. Porter (1985) posited that organizations might attain a competitive advantage by employing cost leadership, differentiation, or focus strategies. These methods are not mutually exclusive. A company can adopt multiple approaches to surpass its competitors. Cost leadership refers to the strategy of selling products or services at a lower price than competitors, while differentiation entails providing distinctive products or services that are highly appreciated by customers (Fainshmidt et al., 2018). The strategy involves concentrating efforts on specific market niches.

The concept of competitive advantage is further elaborated on by Barney (2005), who introduced the organization's Resource-Based-View (RBV). This viewpoint argues that a firm's competitive advantage arises from its distinctive resources and competencies, which are valued, scarce, inimitable, and non-substitutable. The RBV enhances Porter's Five Forces framework by highlighting the internal capabilities and assets of a company as key drivers of its competitive advantage.

In addition, the Dynamic Capabilities View (DCV) expands upon the RBV by emphasizing a company's capacity to effectively integrate, build, and reconfigure internal and external competencies to address rapidly changing environments (Teece & Pisano, 2003). This

perspective further enhances the significance of being flexible and creative to sustain a competitive edge in ever-changing markets (Barreto, 2010).

To achieve a competitive edge, it is necessary to adopt a comprehensive strategy that considers both the external competitive pressures, internal resources, and the company's capabilities.

2.8.2 Competitive Advantage of AI in the Music Industry

In the context of the music industry, the integration of AI is redefining what gives companies and artists the upper hand. This technological revolution is transforming every facet of music from creation and production to distribution and consumption, establishing new opportunities and ways to create cost efficiency, enabling unique user experiences, driving innovation, enhancing productivity, offering insightful data analysis, broadening market reach, and improving consumer engagement. These technological advancements are leading to the reinvention of the music industry and setting new standards for success and competition.

AI technologies in music production can bring about a great upheaval in the sphere of classic music-making and distribution, which are very expensive. Therefore, AI's contribution to costs cutting in production and distribution is the most effective way to help small labels and independent artists overcome financial hurdles (McGarry et al., 2021). This way, AI makes it possible for small-scale companies to deal with mixing and mastering processes that are complex and costly thus, they can compete more effectively with big industry players. The playing field has been leveled, and a shift in power in favor of indie artists and small labels is a positive thing for the underdogs who are fighting the "big boys." The accessibility of these tools fosters a more vibrant music production scene, giving a significant edge in a market where cost can be a major barrier (Nicholls, 2018). AI stands out as a game-changer in creating personalized music experiences. Its ability to sift through user preferences and behaviors allows for the crafting of customized playlists and songs, providing a level of personalization that was once unattainable (Liebman et al., 2019).

This is the level of personalization that was previously impossible to reach since AI can differentiate the music and intensify listener connection, providing a solid competitive advantage, which in turn makes the market share and loyalty grow. AI is a powerful stimulus for the artists' creativity because it catalyzes auditory exploration and inspires them with various sound-crafting tools. These technological breakthroughs help artists go beyond the

limits of their individual expression, and they also allow them to have a new genre and be the seeds of future trends in music (Mazzone & Elgammal, 2019). AI's automation capabilities are the real deal in music production, which enable tasks like vocal tuning and track mixing to be done quickly and efficiently. It is this shift that makes it possible for creative talents to devote more time and effort to the artistic side of music production, which consequently nurtures a creative environment where artistic expression can be cultivated, and innovation is encouraged (Moffat & Sandler, 2019). The ripple effect of this enhanced productivity means quicker production times and more frequent releases, keeping audiences engaged and excited. This increased productivity is not just visible in the factory but also in the marketplace, with quicker production times and more frequent releases keeping audiences entertained and enthusiastic. AI does the splitting and making sense of all the data sets that are huge in size, which provides both insights into the listener preferences as well as emerging trends. This gives the music industry a strategic advantage. This knowledge allows one to make well-informed decisions both about single releases as well as marketing strategies, optimizing success chances and thus the competitive pressure in the market today, which is characterized by data-driven approaches (Zhou, 2023). AI is also paving the way for new players, especially tech companies, to enter the music scene, bringing fresh innovations and expanding the industry's horizons. This influx of new ideas and services not only diversifies the market but also spurs traditional industry players to adapt and innovate, enriching the music ecosystem (Sturm et al., 2019).

The general notion of AI's influence on music consumers is that AI is upgrading the listening experience with smart recommendations, interactive and adaptive music environments, and personal packages. These breakthroughs are redefining consumer interaction with music, which is becoming increasingly engaging and immersive, vital for keeping the user base consistent and maintaining their interest in a highly competitive market.

2.8.3 Creative Destruction

"At the heart of capitalism is creative destruction." – Joseph A. Schumpeter

Joseph Schumpeter's notion of creative destruction illustrates how innovation may profoundly affect economic systems. It involves the introduction of new technologies that disrupt and eventually replace older ones, leading to both economic and societal progress.

This concept has been used convincingly in the field of music, especially with the emergence of AI. The use of AI in the process of composing, producing, and distributing music serves as a vivid example of creative destruction. This phenomenon is transforming the music industry by altering its structure and questioning traditional paradigms of musical creativity and consumption.

As previously discussed in Chapter 2.2, the production of music has seen substantial changes as a result of AI. Technological advances in the area of machine learning have led to the transformation of music production, allowing for more efficient and innovative methods. The use of AI can help with the processes of mixing and mastering records, forecasting patterns in music consumption, and even creating music (Sturm et al., 2019). These developments not only make music production more accessible to a broader spectrum of people but also prompt inquiries regarding the future role of human producers (Anantrasirichai & Bull, 2021).

Furthermore, AI has a major effect on the distribution and consumption of music. Platforms take advantage of algorithms to create customized playlists for individual listeners, fundamentally altering the process of discovering and enjoying music. The impact of algorithmic music recommendation systems exemplifies a trend of creative destruction, where traditional music distribution channels like radio and TV are replaced by digital platforms (Schedl et al., 2021).

To summarize, the use of AI in music depicts the process of creative destruction, highlighting the ability of technical progress to bring about meaningful change. As AI further progresses and becomes more prevalent in music creation, production, and distribution it is important to carefully evaluate its influence. Most importantly focusing on upholding the cultural and emotional aspects of music. The ability to maintain the equilibrium between commercial success and cultural enhancement is essential in navigating the future of music.

3. Methodology

3.1 Research Design

In this study, data was gathered using semi-structured interviews with experts in the music industry, ranging from executives and entertainment lawyers to producers. To consider the consumer perspective on AI in the Music Industry, a survey was conducted. The collected data was described and analyzed using t-tests, linear regressions, descriptive methods, ANOVA, and Chi-Squared tests.

We employed a mixed-methods approach, combining both expert interviews and a survey to gather relevant insights. This method was chosen to leverage the strengths of qualitative and quantitative research techniques. Expert interviews were conducted to dive deeper into the nuanced and insightful knowledge of industry professionals within the music industry. To complement these qualitative insights, we administered a survey to address a broader audience. The survey allowed for a view of the consumer's perspective on AI. By integrating these two approaches, we aim to construct a well-rounded analysis, providing a holistic view of AI's impact on the music industry.

3.2 Qualitative Research

The main objective of this qualitative study is to examine the impact of AI on music. To obtain comprehensive insights, expert interviews are employed as a crucial tool. The interviews might differ in their level of organization, often following semi-structured approaches, mainly because they are conducted as interviews based on guidelines. Kallio et al. (2016) reinforces the significance of this methodology on the incorporation of an interview guide as a fundamental component, so setting it apart from alternative methodologies.

One notable and crucial element of expert interviews involves the intentional choice of interviewees who possess specialized knowledge that surpasses fundamental understanding in the field of artificial intelligence in music. The acquisition of this knowledge, frequently originating from their professional positions or societal status, offers distinct viewpoints that are crucial for the investigation (Meuser & Nagel, 2009). However, defining who qualifies as an expert is a topic of debate among researchers. Some argue that expertise is a broad concept, suggesting that anyone with experience in a relevant field could be considered an expert. In contrast, others propose a more selective approach, limiting this status to individuals in specific professional categories (Doringer, 2021).

This study's objective is to collect viewpoints and assessments from individuals directly impacted by the advancement of AI in the music industry. Opting for expert interviews as the research approach is predicated on the necessity to tap into the expertise provided by these individuals, giving a path to appreciating the complexity and probable effects of AI in music.

3.3 Quantitative Research

In order to get a consumer-based insights about the impact of AI on music, an online survey was conducted. Online surveys represent the most common method used to analyze consumer behavior, preferences, and decision-making processes.

Quantitative research, particularly in the context of online surveys, is a powerful tool for gathering and analyzing numerical data to understand patterns, trends, and relationships within a specific population. Online surveys have become an increasingly popular method for conducting quantitative research due to their cost-effectiveness, reach, and ease of use (Evans & Marthur, 2005).

The survey was designed to gather quantitative data from a diverse sample of music consumers. It comprised a structured questionnaire with closed-ended questions with five-point Likert scales, allowing for a systematic analysis of responses. Participants were asked about their familiarity with AI technology in the context of music, their attitudes towards AI-generated music, and their opinions on the potential impact of AI on the future of music creation and consumption. Additionally, the survey sought to understand the extent to which individuals believe AI can enhance or disrupt the traditional processes of music production and distribution.

4. Survey

4.1 Participants

The study was distributed via different social media channels (e.g., Instagram, WhatsApp, Linked In, etc.) and my personal network. The participation was voluntary, and a total of 235 questionnaires were completed between April 26 and May 1, 2024. Out of the total 235 participants, a valid sample of 175 passed the attention test and completed the survey. The remaining 60 participants did not complete the survey in its entirety and are therefore not considered in the following analysis. The gender distribution of the valid sample, consisting of 175 participants, is as follows: 67% of the participants were men, and 33% of the participants were women.

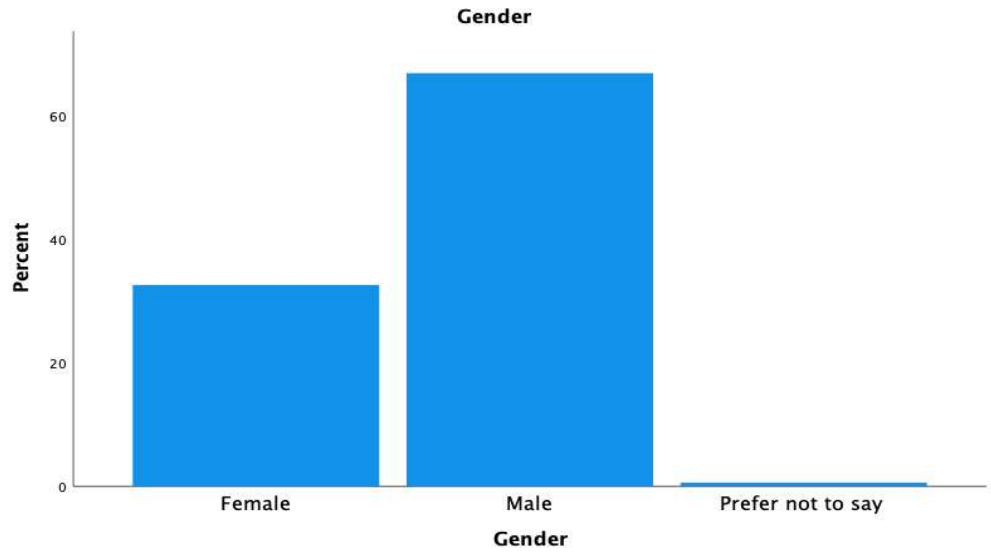

Figure 4: Gender Distribution

The ages of the participants ranged from 15 to 46, with an average of 25.62 (SD=3.95). Since the survey was mainly distributed through private channels, the vast majority of the sample, slightly over 90%, is from Germany. The educational level of the participants covers a broad spectrum, with the majority either holding a bachelor's degree or secondary education. Both groups each account for 37.1% of the participants. A further 16% of respondents had a master's degree, while 8,6% stated that their educational level fell into another unspecified category. The results also show a diverse occupational breakdown. The largest group was made up of employees, with 46.3% reflecting a stable employment situation among the sample. Students also made up a significant portion at 29.1%. Further noteworthy is the group of students who are students and also work. They represented 12.9%. "Freelancers" and

"Unemployed" were relatively small, at 2.9% and 3.4% respectively. Corresponding the distribution of monthly income is as follows: 33.1% earn between 1000€-2499€. This is closely followed by the income group of 2500€-3999€ with 28.6%. 20.6% of the participants earn less than 1000€. The income bracket of 4000€-5499€ is represented by 5.7% of respondents, while only 2.3% earn more than 5500€.

Music Preference

In order to get further insights from the participants, the music preference section aimed to gather information about favorite genres, ways of consumption, influencing factors, and live music. The participants were asked about their favorite music genres through a multiple-choice format, totaling up to 475 answers. Hip-hop/Rap emerged as the most popular genre amongst the participants, with 32% naming it as one of their favorite genres. Highlighting the global appeal of HipHop/Rap. The next most popular genre was R&B/Soul, which was selected by 23% of the participants. Pop music also held a significant portion, with 21% of the participants choosing the genre as one of their favorites. Electronic music, with 8%, and Rock, with 6%, demonstrated a smaller audience in this sample. Preferences for genres like Jazz and Classical were chosen by 5% and 3% of the participants, indicating a more niche audience.

When it came to the way the participants consumed music, a significant majority preferred streaming platforms such as Spotify, Apple Music, etc. YouTube also served as a significant source of music, with 15 participants using it as their main platform. Traditional and physical platforms such as CDs and vinyl records showed minimal usage, with only two participants favoring CDs and only one participant each preferred vinyl records, digital downloads, and radio.

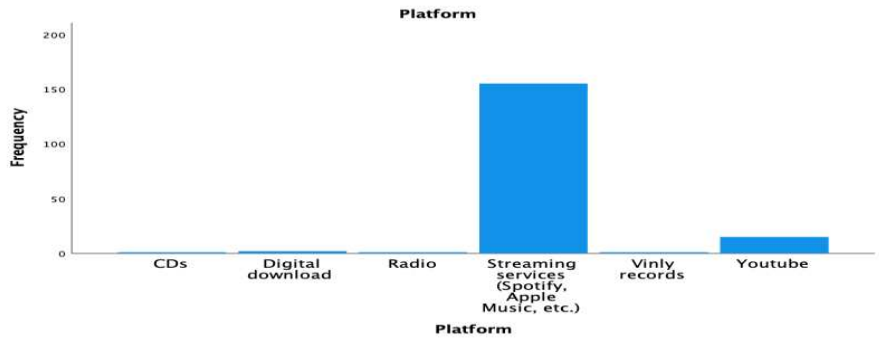

Figure 5: Preferred Music Platforms

Investigating the factors that influence the choice of music revealed that the music genre was the most significant factor, with 70 participants. The participants' choice of music was also significantly influenced by their mood/emotional state, as evidenced by 58 respondents indicating it as a key factor. The preference for a specific artist was deemed to be a deciding factor for 33 participants. Further, 11 participants stated that recommendations, whether from algorithms or friends and family, influenced their choice of music. The three participants who chose "Other" indicated a mixture of the above-mentioned factors.

The participants had a clear preference for recorded music over live music. 110 participants prefer recorded music, suggesting a notable inclination towards the convenience, variety and accessibility of recorded media. Conversely only 20 participants expressed a preference for live music. Notably, 45 participants expressed indifference towards live music and recorded music, suggesting a flexible attitude towards music consumption.

The survey findings revealed varied levels of live concert attendance. 94 participants attended 1-4 concerts per year. A smaller group of 13 respondents attended 4-6 concerts per year, and an even smaller group of six respondents attended 7-9 concerts per year. Only two respondents attended ten or more concerts.

4.2 Results

Perception of AI

In the first section of the survey, the participants were asked to state their general opinion on AI and its impact on society, its potential benefits and challenges.

The results showed that the participants had a positive outlook on AI across several dimensions. The majority believed that AI has the potential to improve their lives, with 69 respondents strongly agreeing and 86 respondents somewhat agreeing, showing optimism about the future benefits of AI on their personal lives. Similarly, there was a high level of confidence in the capabilities of AI. Among the 175 respondents, 57 strongly agreed, 99 somewhat agreed, and 19 neither agreed nor disagreed that AI is capable of performing tasks that normally require human intelligence.

In addition to that, the adaptability of AI was also viewed positively, with 67 respondents strongly agreeing and 89 somewhat agreeing that AI can learn and adapt. Regarding the use of AI in improving efficiency and productivity, 76 respondents strongly agree, and 82 somewhat

agree. However, on the flip side, there is noticeable concern about the potential threat AI may pose to humanity. 45 respondents strongly agree, and 83 somewhat agree, illustrating a significant level of concern about the downsides of AI.

Awareness of AI-generated Music

Questions 6 and 7 (see Appendix) served as an introduction questions to the topic of AI-generated music and assessed the participants' awareness of the topic. The results indicated that the respondents were very aware but were not really engaging with AI-generated music. More precisely, 124 out of 175 respondents had indicated their awareness of AI-generated music, demonstrating a widespread recognition of the technological advances in the music industry. Despite the high level of awareness, only 72 out of 175 respondents had actually knowingly listened to and engaged with AI-generated music. This discrepancy would be further investigated.

Are you aware of AI-generated music? * Have you ever knowingly listened to AI-generated music? Crosstabulation

Count

		Have you ever knowingly listened to AI-generated music?		
		No	Yes	Total
Are you aware of AI-generated music?	No	48	3	51
	Yes	55	69	124
Total		103	72	175

Figure 6: Crosstabulation

The crosstabulation analyzed the relationship between the awareness of AI-generated music and actual listening. Out of the 124 respondents who were aware, 69 had actually listened to AI-generated music, indicating a strong likelihood that awareness had correlated with the actual listening experience.

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	36,955[a]	1	<,001		
Continuity Correction[b]	34,928	1	<,001		
Likelihood Ratio	43,945	1	<,001		
Fisher's Exact Test				<,001	<,001
N of Valid Cases	175				

a. 0 cells (0,0%) have expected count less than 5. The minimum expected count is 20,98.

b. Computed only for a 2x2 table

Figure 7: Chi-Square Tests

This was further proven by tests like the Pearson Chi-Square (Value:36.955, p=0.001), indicating a highly significant association and affirming a strong relationship between awareness and listening.

Impact of AI on creativity in music production

Questions 8 and 9 addressed the impact of AI on the creativity in the music industry. The participants revealed a cautious and skeptical attitude towards the impact of AI on creativity. When asked whether AI enhances the creative process in music production, only nine respondents strongly agreed and 45 somewhat agreed. In a large group, 65 respondents remained neutral, while 40 respondents somewhat disagreed and 16 strongly disagreed.

Similarly, there was even more skepticism about whether other creative aspects such as songwriting and performing would be positively impacted by AI. Only seven respondents strongly agreed and 63 respondents somewhat agreed with the statement. Again, a considerable share of the respondents remained neutral. The neutral stance of many participants may implied uncertainty or unfamiliarity with the ways AI could be advantageous in creative processes.

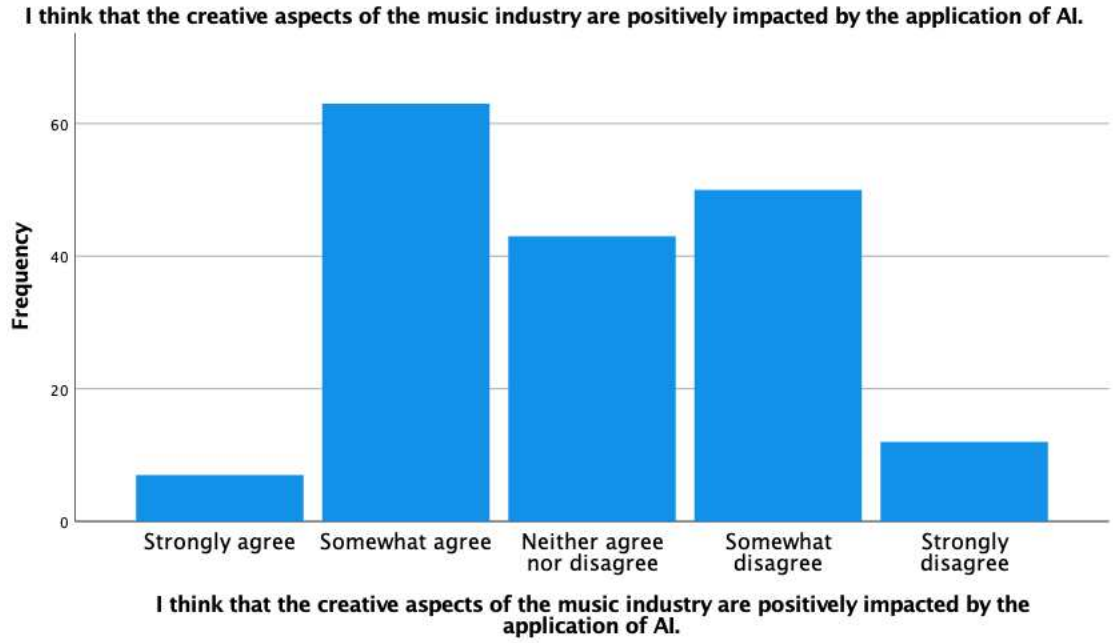

Figure 8: AI's Impact on Creativity

Democratization of Music Production through AI

According to the survey results AI was seen as a means to democratize music production. 23 participants strongly agreed and 84 participants somewhat agreed with the statement that AI makes music production more accessible to people without formal musical backgrounds. This further suggested that many view AI as a tool that lowers the entry barriers to music production.

AI as a Supporting Tool

The consumers were asked whether they believe AI helps in recording, editing, mixing, and mastering processes in music production and whether they believe that AI aids as a supporting tool in aspects of the music industry, like distribution, social media, artwork, marketing, and promotion. These questions were posed to determine how the participants perceived AI as a helping tool. Figure 2 shows that a significant proportion, with 26 respondents and 79 somewhat agree that AI improves technical aspects of music production, indicating the recognition of the effectiveness of AI in improving production quality and workflow.

The support went beyond the production, for instance, different aspects of the music industry like distribution, social media, artwork, marketing, and promotion. The participants clearly viewed AI as a valuable tool when it came to broader tasks in the music industry outside of production (Figure 3), with 40 participants strongly agreeing and 106 participants somewhat agreeing.

Copyright

This section of the survey (Q13-17) shed light on the complex dilemma of recognition and copyright of AI-generated music. This revealed an intricate picture of perceptions regarding the integration of technology and creative rights.

The majority of participants did not perceive music made with the assistance of AI as a genuine artistic creation, with 62 participants somewhat disagreeing and 31 participants strongly disagreeing. This suggests notable doubt over the acceptance of AI-generated music as genuine art, potentially because of concerns about authenticity and the perceived worth of human creativity.

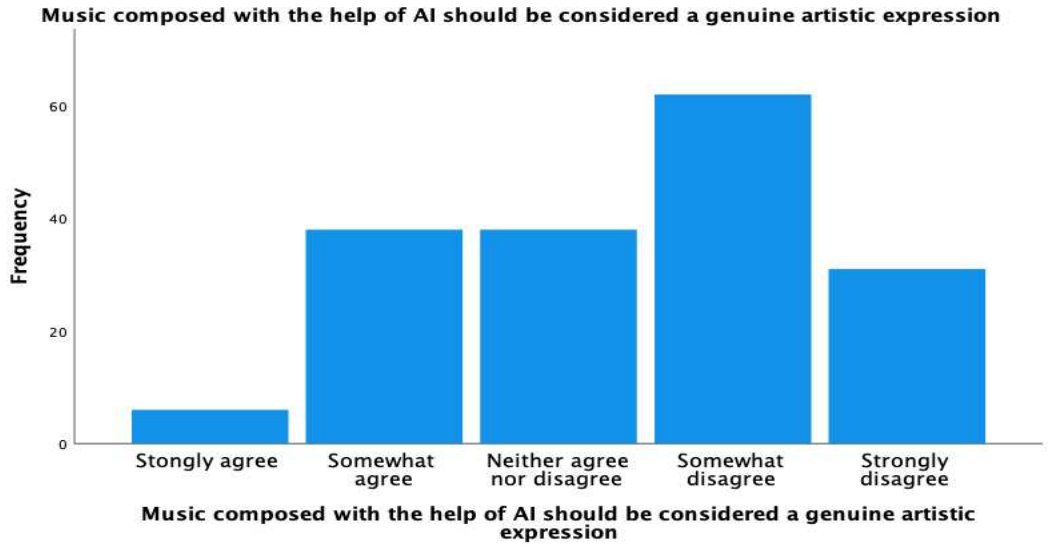

Figure 9: Copyright

Opinions on the attribution of credit for the composition of AI-generated music were diverse. A significant number of participants disagreed (51 somewhat and 18 strongly), suggesting that there was a lack of consensus about the attribution of human creators vs autonomous capabilities of AI. It was still noteworthy that 16 participants strongly agreed and 57 participants somewhat agreed that the developer of the used AI should be credited.

The question of whether AI-generated music should be protected by copyright laws similar to human-created music also revealed divided opinions. There was growing acknowledgment of the need to protect intellectual property rights. This was supported by the fact that most participants were inclined to agree, with 11 strongly agreeing and 58 somewhat agreeing.

On the other hand, the conventional viewpoint that artist should own the rights to their creations still prevailed. In total, 83 participants strongly agreed, and 63 participants somewhat agreed that copyright for human-created music should be granted to musicians themselves.

Finally, the idea of directly assigning copyright to AI was strongly opposed, with 59 participants somewhat disagreeing and 40 participants strongly disagreeing. This demonstrated the belief that IP should remain in the possession of people and should not be delegated to non-sentient entities.

Willingness to pay

In order to assess the willingness to pay (WTP) for the emerging market of AI-generated music, the respondents were asked to indicate what they would pay for a song and album, giving the reference prices of 0,99€ and 9,99€. The average WTP for a song was €0.49. Further analyzing the data revealed a varied WTP among participants, which suggested a diversity in value perception of AI-generated music. The WTP for songs exhibited a substantial range, ranging from €0 to €5. This is accompanied by a relatively high standard deviation of €0.74. This fluctuation was a reflection of the many ways in which respondents perceived the worth of AI-generated music.

The WTP for albums showed a similar range, with amounts ranging from €0 to €20. The mean for an album was €4.95 (SD=4.15). Similar to the previous question, this pattern suggest that some participants sensed considerable worth in buying an AI-generated album and others were more hesitant.

4.3 Analysis

Regression Model I

In order to explore a relationship the general perception of AI on the WTP for a AI generated music a regression analysis was conducted. Conducting this analysis was crucial for understanding how various aspects of AI, including its perceived advantages and potential risk, impacted consumer behavior. This was especially important in the context of adopting new technologies in the music industry.

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	,538	,256		2,102	,037
	AI has the potential to improve my life.	-,040	,094	-,035	-,425	,671
	AI is capable to perform tasks that normally require human intelligence.	-,090	,098	-,076	-,919	,359
	AI can learn and adapt.	-,033	,094	-,032	-,356	,722
	The use of AI can lead to significant improvements in efficiency and productivity.	,151	,086	,156	1,760	,080
	AI technology has the potential to be a threat to humanity.	-,007	,058	-,009	-,113	,910

a. Dependent Variable: How much would you be knowingly pay for a song generated by artificial intelligence, given that a typical song on iTunes costs $0.99?

Figure 10: Regression Model I

The regression model provided output showed an analysis of how various perceptions of AI might influenced the amount someone was willing to pay for a song generated by AI. In this case the WTP for an AI-generated song compared to the reference price of €0.99.

AI has the potential to change my life.

Given that the coefficient for this predictor was -0.040 and the p-value was 0.671, it could be inferred that the predictor did not significantly influence the WTP. Interestingly, it had a slightly negative correlation with the WTP, albeit a negligible one, suggesting that consumers might have been skeptical towards AI-generated music.

AI is capable of performing tasks that normally require human intelligence.

This variable also has a negative coefficient that was not statistically significant (p=0.359), meaning the p-value was not below 5%. This suggests that the recognition of AI's capabilities to replace human jobs did not ultimately lead to higher valuation of AI-generated music.

AI can learn and adapt.

In addition, this predicator demonstrated that it did not have a significant impact on the WTP (p=0.722), as indicated by its coefficient of -0.033. This could mean that learnability and adaptability of AI were either undervalued or not giving much importance in creative fields like music. The use of AI could lead to significant improvements in efficiency and productivity.

Despite the fact that this coefficient was marginally significant (p=0.08), this was the only positive predicator (+0.151) indicating a slight increase in the WTP. This implied that consumers that believe AI increases efficiency and productivity, were slightly more inclined to value AI-generated music higher.

AI technology has the potential to be a threat to humanity.

This variable shows a negligible and statistically insignificant negative impact (-0.007, p=0.91) on the WTP. Therefore, it may be inferred that worries regarding AI posing a threat to humanity did not impact economic decision-making regarding AI music consumption.

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	,148[a]	,022	-,007	,74149	2,217

a. Predictors: (Constant), AI technology has the potential to be a threat to humanity., AI can learn and adapt., AI has the potential to improve my life., AI is capable to perform tasks that normally require human intelligence., The use of AI can lead to significant improvements in efficiency and productivity.

b. Dependent Variable: How much would you be knowingly pay for a song generated by artificial intelligence, given that a typical song on iTunes costs $0.99?

Figure 11: R-Squared I

R-squared (R^2), also known as the coefficient of determination, is a statistical metric that quantifies the proportion of variability in a dependent variable that can be explained through independent variables in a regression model (Cameron & Windmeijer, 1997).

In the case of this regression model, only 2.2% of the variability in the WTP for an AI-generated song were explained by the general perception. Considering this extremely low R^2 it is likely that these predictors are insufficient in accurately representing the factors that influence the WTP for an AI-generated song. The model's limited explanatory power implied that other factors play a more significant role in determining the WTP.

Regression Model II

The present study employed a regression model to examine the relationship between different viewpoints on music made by AI, specifically in relation to intellectual property rights and the desire to financially support such music.

Coefficients[a]

Model		Unstandardized Coefficients B	Unstandardized Coefficients Std. Error	Standardized Coefficients Beta	t	Sig.
1	(Constant)	1,405	,258		5,437	<,001
	Music composed with the help of AI should be considered a genuine artistic expression	-,085	,052	-,128	-1,620	,107
	The programmer or developer of the AI should be credited for any music compositions created by their AI systems.	-,036	,051	-,057	-,698	,486
	AI-generated compositions should be protected under copyright laws similar to those for human-created music.	-,104	,058	-,156	-1,782	,077
	Copyright for music created by a human artist should be assigned to the artist themselves.	,044	,057	,056	,768	,443
	Copyright for music generated by artificial intelligence should be assigned to the AI itself.	-,080	,050	-,124	-1,590	,114

a. Dependent Variable: How much would you be knowingly pay for a song generated by artificial intelligence, given that a typical song on iTunes costs $0.99?

Figure 12: Regression Model II

Music composed with the help of AI should be considered a genuine artistic expression.

The first statement aimed to assess the artistic authenticity for AI-generated music, suggesting a stronger agreement slightly reduced the WTP (-0.085), although this effect is statistically insignificant (p=0.107).

The programmer or developer of the AI should be credited for any music compositions created by AI systems.

Regarding the recognition of the programmer's contribution, there seemed to be a minimal negative (-0.036) and statistically insignificant impact (p=0.486) on the WTP. This result could have implied a lack of appreciation for the technical skill in producing AI-generated music.

AI-generated compositions should be protected under copyright laws similar to those for human-created music.

This predictor was significant (p=0.077) to the 10% level and indicated that stronger agreement with the protection of AI-generated music similar to human-created music corresponds with a reduced WTP. The fact that consumers were hesitant to fully equate music created by AI with human creativity in terms of legal and financial ramifications was reflected by this finding.

Copyright for music created by a human artist should be assigned to the artist themselves.

Although not statistically significant (p=0.443), the positive coefficient here suggested that greater agreement with assigning copyright to the human artist might marginally increase the WTP, highlighting a possible preference for human creativity.

Copyright for music generated by artificial intelligence should be assigned to AI itself.

The negative impact (-0.080) of agreeing that AI itself should hold copyrights suggested a reduced WTP, although this effect was not statistically significant (p=0.114). This could be interpreted as skepticism towards the notion of AI as an autonomous creator from a legal standpoint.

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	,336[a]	,113	,087	,70610	2,270

a. Predictors: (Constant), Copyright for music generated by artificial intelligence should be assigned to the AI itself., Copyright for music created by a human artist should be assigned to the artist themselves., Music composed with the help of AI should be considered a genuine artistic expression, The programmer or developer of the AI should be credited for any music compositions created by their AI systems., AI-generated compositions should be protected under copyright laws similar to those for human-created music.

b. Dependent Variable: How much would you be knowingly pay for a song generated by artificial intelligence, given that a typical song on iTunes costs $0.99?

Figure 13: R-Squared II

The regression analysis yielded an R2 of 0.113, suggesting that the variable accounts for approximately 11.3% of variance in the WTP. Despite the low percentage, it implies that these copyright perceptions have a small impact on the consumer behavior.

Ultimately the study shed light on the relationship between copyright perceptions, AI, and consumer behavior. However, the limited explanatory power of this model implied that copyright and intellectual property perception alone did not fully capture the factors influencing the WTP in the AI music market.

5. Expert Interviews

5.1 Participants and Procedure

Following the survey that quantified the general attitudes and perceptions towards AI in the music industry. This chapter aims to look over the boundaries of the survey and delve deeper into the subject through expert interviews. In order to understand how AI impacted the music industry, particularly in terms of how artists, producers and consumers operate, we transitioned from a quantitative approach to a qualitative study.

The objective of these interviews was to extend the findings of the survey by exploring themes that require a depth of insight beyond standardized answers can offer. The experts selected for these interviews include producers, sound engineers, artists, managers, entertainment lawyer, and other professionals.

Table 1: List of Experts

Number of Expert	**Job Title**	**Professional Background**
Expert 1	Artist & Product Manager	Senior Artist Manager at a Major Independent Music Management Company
Expert 2	Artist Manager	Senior Artist Manager at a Major Independent Music Management Company
Expert 3	Producer	Renowned Independent Music Producer
Expert 4	Entertainment Lawyer	Entertainment Lawyer at a Medium-Sized Law Firm Specializing in Music and Media Law
Expert 5	Sound/Recording Engineer & Producer	Independent Sound/Recording Engineer & Music Producer Specializing in German Rap
Expert 6	DJ	Independent DJ
Expert 7	Producer	Producer signed to Major Record Label
Expert 8	Teacher & Composer	Music Teacher for over 40 years
Expert 9	Artist & Producer	Independent Artist and Producer
Expert 10	Artist Manager/A&R	Senior Artist Manager and A&R at a Major Independent Music Management Company

The importance of these perspectives lies in their first-hand experience, technical knowledge, and strategic insights. The experts were contacted through a diverse approach, mainly leveraging personal networks and social media channels, such as LinkedIn and Xing. To

ensure an accurate understanding of the subject matter, deliberate efforts were made to incorporate a wide range of experts regarding their professional backgrounds, gender, and cultural backgrounds. The majority of the interviews were carried out in a virtual setting through Microsoft Teams and Zoom to ensure that geographical and time-related barriers could be avoided. The duration of the interviews ranged from 15 to 45 minutes. The interviews were conducted in German and translated for the purpose of this paper.

5.2 Results

The findings of the expert interviews are presented, utilizing the category system derived from the qualitative content analysis. The categorization of the different subjects corresponds with the category system that was constructed by a combination of inductive and deductive reasoning. Firstly, the definition of the respective category is described. The main statements of the experts are then presented and quoted.

5.2.1 Personal Experience and Familiarity with AI in Music

The first category pertained to the experts' direct relationship and engagement with AI in the context of the music industry. The significance of this category lies in the ability to gauge the level of understanding and practical experience the experts possess. In order to adequately answer this category, the different responsibilities and utilization of AI by experts had to be taken into account. A distinction had to be made between Experts 3,5,6,7,8,9, who were actually involved in the production process, and Experts 1,2,4 and 10, who are part of the industry but are not embedded in music composition but rather in the economic aspect of the industry.

Most experts viewed AI as a novel innovation that is deeply ingrained and unavoidable in the field of music. Experts across the field recognized the transformative power of AI and acknowledge its role in driving innovation. Expert 9 explained the evolving nature of AI as follows:"… I have continued to learn over time and am now familiar with digital production methods and AI tools. These technologies make it possible to open up new creative processes and design more efficient workflows, and nowadays, these are unavoidable." This statement emphasizes the required ongoing learning process in order to keep up with technological advancements.

AI is deemed a very helpful tool that mainly finds it use in the post production process also called mixing and mastering of records. In this process the final recording is polished to make

sure the final product is acoustically pleasing and meets the professional industry standards. Expert 5 shared their specific use of AI, stating:" However, I only use AI in the 'mixing' process, i.e. after the actual music production and recording. For which I use the application LANDR."

On the other Expert 8 offered the viewpoint of industry veterans and expressed skepticism and reluctance regarding the use of AI in music and highlighted a more traditional approach, stressing the importance of human elements in music. " As a music teacher and composer with decades of experience in the music industry, I am deeply rooted in traditional, analog music production. My knowledge of AI in music production is limited, as I personally prefer the manual aspects of music making and composing."

The examination of personal experience and familiarity with AI among industry experts who are not directly involved in the music production process yielded varied insights. These insights revealed a diverse yet strategic understanding of the role AI plays. Expert 1 who is actively involved in artist and product management, highlighted the importance of AI in the distribution of music by, stating "…Nevertheless, I would say that AI is very relevant in the distribution of music. It is a top priority to position our artists so that they are listed in the playlists of the DSPs."

Similarly, Expert 2, who also works in artist management, offered a nuanced viewpoint that emphasized the use of AI in promotional and advertising activities: "My application of AI and role in the music industry comes into play more after the production process, for example in the creation of advertising copy." This demonstrates the utilitarian use of AI in enhancing marketing efforts.

On the legal side, Expert 4, an entertainment lawyer, discussed the intricacies arising from the use of AI in the music industry from a legal perspective:" The integration of AI in the music industry is still a relatively new and at the same time very recent phenomenon… we have already given many seminars to clarify and explain the current legal situation with regard to the use of AI…" This indicates a proactive approach to addressing and educating stakeholders about the legal ramifications.

The experiences and perspectives of these experts collectively highlight a wide range of engagement with AI that spans various production and non-production tasks. Their insights

reveal how AI is transforming activities such as mixing and mastering, as well as marketing and distribution.

5.2.2 Impact of AI on Creativity and Economic Consequences

The analysis of the experts regarding creative and economic consequences revealed a wide range of impacts, from improved production methods to raised concerns about cultural implications.

For instance, Expert 3, an experienced producer, valued the practical benefits of AI, noting, "… AI plugins have simplified the isolation of individual audio tracks from existing songs to such an extent that we have discovered completely new possibilities for ourselves in the course of sampling." This statement fosters the beneficial influence of AI in music production by further expanding already available tools.

Similarly, Expert 5, a sound/recording engineer and producer echoes this sentiment and highlighted the efficiency AI introduces and even labelled it a competitive advantage:"… And I sometimes use AI to filter out interfering frequencies more quickly, for example, or to perfectly harmonize the timing of two different recordings. I would definitely agree and say that AI is a competitive advantage in this area of music production."

However, given the favorable assessments, several experts voiced concern. Expert 4, who specializes in entertainment law, presented a well-rounded perspective on the difficulties and possibilities:" From a legal point of view, AI faces the problem that there is still no uniform legislation for this, and there are many grey areas. One of our clients was sued by the sender due to the use of a private voice message in a song; this problem could be remedied by using AI as the reinvented voice of the same voice message and did not constitute a legal violation of data protection law when sued again." This highlights the complex legal landscape AI has to navigate through.

Expert 7, another producer, expressed concern regarding the implementation of AI in music production: "This completely takes away the creativity of the music. Beats are created at the touch of a button. This also jeopardizes my job." His critical perspective reflects a fear that AI could diminish the role of the human in music production.

These insights collectively demonstrated how AI serves both as a tool for enhancing productivity and creativity, as well as a catalyst for change in legal frameworks, economic

models, and creative processes. The contrasting perspectives point to a future with AI that requires a balance between innovation and cultural tradition.

5.2.3 Concerns Regarding Legal and Ethical Implications

This category explores the legal and ethical issues brought up by different experts who are worried that AI might undermine established legal and moral standards in the business. Expert 4 actually called for a complete set of laws that addresses the problems AI is causing in the music industry: "Another problem is the practical lack of legislation for AI and its use. Lawyers and artists continue to lack a coherent system in the law and currently have to cope with the current standards of other laws…" This statement reflects the urgent need for regulatory clarity to navigate through this novel legal terrain AI introduced to music and copyright.

The main concern on the side of the artists is maintaining clear ownership and control over AI-generated content. Expert 2 clearly stated: "Artists must remain one hundred percent owners and rights holders of their own voice and works." This insistence shows how important it is for AI to be used clearly and openly in music, calling for all AI-generated content to be labelled top stop deceptive practices.

The potential misuse of AI, especially when it comes to unauthorized use of voices, is a large concern for Expert 3. He argued: " Without appropriate consent, the use of other people's voices should be absolutely prohibited." The ask for immediate change was clearly voiced by Expert 6, who had already experienced the impact in his work life: "Laws need to be introduced that cover everything to do with AI-generated music before it's too late. I've seen examples myself on social media where AI-generated voices have been used by artists without their consent. I've even been asked to play an AI-generated song by Drake and The Weeknd at a gig that had previously attracted attention on social media."

Collectively, the insights from the experts clearly indicate how important a robust legal framework is and how urgent change is needed. While they are aware of the many ways AI can help the music business, they are also aware of the big challenges it poses. The necessity for thoughtful regulation is clear, balancing technological advancements with fairness and artistic integrity.

5.2.4 Future Challenges and Recommendations

The last category deals with future challenges and recommendations and aims to outline strategic direction for leveraging AI technologies while preserving the artistic integrity and the economic viability of the music industry.

Expert 5 offered a strong perspective regarding the role of AI, particularly its capacity to replace humans in technical tasks. "I think AI will replace technology-based jobs in the music industry…" While AI could make certain jobs obsolete, it could also change other job descriptions. He suggests that jobs that require interpersonal skills, such as Artists and Repertoire (A&R) and managers, might become even more important. From this perspective, as AI takes over technical tasks, the human touch will gain more significance in areas that require emotional intelligence and creative discernment.

Further ethical concerns were expressed by Expert 8, emphasizing that "AI could undermine the art of music making and diminish cultural and creative diversity." She advocated for protective regulations to ensure that AI does not overshadow human creativity or the authenticity of music. Expert 3 shared a similar sentiment and offered a solution to this problem, calling for clear labeling: "In my opinion, any kind of AI use should be subject to mandatory labeling." This call for clarity in the use of AI technology highlights the need for improved and updated industry standards.

Despite the mentioned issues, Expert 1 still saw an upside in this situation. AI as a tool offers vast opportunities to those who choose to utilize it effectively to improve creative processes. "If the players in the music industry cannot agree on a legal basis for the use of AI, opportunities to utilize it in a positive way will be missed."

Experts 6,7 and 10 shared a hopeful yet cautious perspective on the future of AI in the music industry. They expressed strong desires for the establishment of clear regulations:" I definitely hope that in the next year or two we will have firm regulations on how and where AI can be used…" The effects of new technologies on creativity seem to be inevitable, leading to speculations about the future and contemplating whether artists will maintain the ability to innovate. Expert 10 questioned: " Who will still manage to be creative in ten years' time, or will new social media technologies simply take away our concentration to such an extent that our creativity may ultimately suffer and, as I said, we will become numb?" This reflection

underlines the duality of the challenge of adopting new technologies while maintaining artistic and creative integrity.

6. Discussion

In the following, the results from previous chapters are compared to the theories and findings presented in Chapter 2 to answer the research question: How does the application of artificial intelligence in music creation influence the traditional roles of artists, producers, and consumers within the industry?

The impact of AI has been felt in society for quite some time, especially with the emergence of ChatGPT in November of 2022. The survey revealed a general optimism about AI's potential to improve efficiency in music production, with over 60% of participants acknowledging its benefits in areas such as mixing and mastering. Correspondingly, experts emphasized AI's capabilities to streamline production processes, thereby reducing the time and costs associated with music creation. This convergence between consumer perceptions and professional insights strengthens the argument for AI's value in the technical aspects of music production.

However, contrasts were evident in attitude towards AI's role in creativity. While some experts seemed unfaced or even praised AI to an extent, enabling new ways of creating art, the survey participants were more reserved, with a significant amount of participants expressing skepticism about AI's ability to enhance creativity. This discrepancy highlights a potential gap in the understanding of the innovative uses of AI.

Throughout the thesis, the dual impact of AI on the music industry was addressed, stressing the enhancement of creative abilities and potential risks. Several experts praised the technical advancements of AI in music production but also acknowledged the diminishing role of humans in technical tasks. The disruption of traditional roles and production methods is reflected in Joseph Schumpeter's "Creative Destruction" and can be seen as evolutionary process redefining the industry's structure.

A significant majority (124 out of 175) were aware of AI-generated music, yet only 72 respondents have actually engaged with it. This significant gap can be interpreted as a lack of recognition and the perception of it not being equal to human creativity. Furthermore, awareness does not always translate to engagement. Without the indication that consumers are actually listening to AI-generated music, they might not realize it. As seen in the survey, the

majority of the participants (151 out of 175) prefer to listen to their music on streaming platforms like Spotify and Apple Music. Consumers might know about AI-generated music and also unknowingly encounter it on their preferred music consumption channels, which affects their ability to actively engage with it. The monetary valuation of AI-generated music reflects a lower perceived value of AI-generated content with an average WTP of a song of €0.49 and for an album of €4.95, which is half of the given reference price. The drastically lower WTP, to an extent, could also be explained by the subscription model of streaming services, allowing consumers to listen to a large variety of music at a set price.

The essence of music is intrinsically linked to human creativity and emotions, aspects consumers may feel are neglected in AI-generated compositions.

Concerns regarding the ethical and legal consequences of AI in music were expressed by both the survey participants and experts. Survey participants were notably apprehensive about copyright issues and the authenticity of AI-generated music, reflecting a widespread unease about the displacement of human creativity. Experts added depth to these concerns by discussing specific instances where AI's use in music has led to legal disputes. Integrating these insights, it is evident that there is a critical need for updated legal frameworks and ethical guidelines.

In the past, music production was limited to select view with access to education and equipment. The introduction of AI has democratized music production and represents a significant shift by decreasing entry barriers, costs reduction, and increasing the output. This further showcases how AI in music production can be described as a competitive advantage in Michael Porter's Five Forces Framework (see Figure 2).

Ultimately the comprehensive examination of AI's impact on the music industry reveals its ambiguous nature. As new technologies continue to interact with and transform traditional practices in the arts and businesses, it is crucial that we engage in ongoing dialogue and adaptation to fully exploit the advantages of AI.

7. Conclusion

Music is and remains of great importance to mankind. However, the music industry will have to operate under different circumstances in the future than it does today. Technological advancements in AI may turn music into a mass phenomenon for the first time in human history.

AI's role in music extends from enhancing creative processes to revolutionizing distribution and consumption. The technology's capacity to generate music and assist in composition and mastering has democratized music production and made it accessible to a broader audience. Democratization comes with concerns about the dilution of artistic authenticity and potential job displacement within the industry. AI-driven music recommendation systems have personalized consumer experiences, yet they also raise questions about the future of consumer choice and privacy. In music production, AI has proved itself to be a valuable tool and is also seen as such by the majority of experts in the field, even to an extent where AI could replace certain jobs.

A critical area of concern that emerged from the study revolves around the legal and ethical implications of AI in music. It is evident that we need well-defined regulations that are tailored to accommodate these new technologies. Initially, copyright laws were established to protect human creators, but they must be changed to address creations where the "author" is an algorithm. Moreover, the ethical dimensions of AI in music, such as the potential for culture homogenization and infringement of IP, require diligent attention and proactive management. To address these issues, it should be mandatory to label the usage of AI in music creation.

Open communication in the development of AI-generated music could potentially lead to the creation of a subgenre in the music industry. As artists, developers, and audiences share ideas the collective input can drive AI music to different heights. This type of development could redefine the boundaries of traditional music and create a hybrid environment, where art and technology can coexist.

Monetarily, AI has the potential to reshape revenue models within the music industry. By lowering production costs and creating new revenue streams through personalized music and automated services, AI could potentially enhance profitability. Consequently, this could lead

to the disruption of traditional revenue models, necessitating new business models and strategies for record labels, artists, and producers.

The question of whether it is possible for artificial intelligence to produce creative music that can also evoke emotions and feelings in a person remains unanswered. Here, human beings are still too closely associated with the entire work, including the artist. After all, it's not for nothing that listeners like to go to a live concert by a band just to feel the atmosphere, further emphasizing the importance of human interaction in music. Nevertheless, it is reasonable to assert that employing AI as a tool in the music industry has the capacity to add value and accords with the notion of dynamic capabilities whereby firms try to be flexible and creative to sustain a competitive edge in ever-changing markets (Barreto, 2010).

In summary, AI's role in music creation and distribution is reshaping the traditional roles within the industry, offering both opportunities and challenges. As this technology continues to evolve, so too must the industry's approaches to integrating AI in ways that enhance artistic expression and ensure fair economic outcomes for all stakeholders.

8. Limitations and Future Research

The findings of this study may have to be seen in light of some limitations, including a sampling bias. Mainly due to time and accessibility reasons, a large portion of the survey participants and every expert were from Germany. The geographical concentration does not provide a global outlook and limits the generalizability of the results. Recruiting participants through social media and networks might lead to a non-random sample and a self-selection bias.

In the analysis of the survey data a notable limitation arises from insignificant findings, which has implication for the predictive validity of the conclusions. This is seen in the relatively low R2 of the regression models.

Due to budget and time constraints of this study, the whole experimental design of the survey was limited to an online questionnaire. In an optimal setting, the participants would have been asked to listen to and evaluate music compositions produced by humans and AI. This would enable the participants to judge the quality of the music impartially and make an objective statement about their WTP.

Understanding AI and its effects on the music industry in its entirety also requires addressing limitations brought up by the novelty of the topic and limited availability of literature. The rapid advancement of AI technology is causing a gap between academic and practical knowledge, which can have a substantial effect on present and future research.

Bibliography

Anantrasirichai, N., & Bull, D. (2021). Artificial Intelligence in the Creative industries: A Review. *Artificial Intelligence Review*, *55*(1). https://doi.org/10.1007/s10462-021-10039-7

Bainbridge, D. I. (2007). *Intellectual property*. Pearson Education.

Barney, J. B., & Arikan, A. M. (2005). The Resource-based View. *The Blackwell Handbook of Strategic Management*, 123–182. https://doi.org/10.1111/b.9780631218616.2006.00006.x

Barreto, I. (2010). Dynamic Capabilities: A Review of Past Research and an Agenda for the Future. *Journal of Management*, *36*(1), 256–280.

Birtchnell, T., & Elliott, A. (2018). Automating the black art: Creative places for artificial intelligence in audio mastering. *Geoforum*, *96*, 77–86. https://doi.org/10.1016/j.geoforum.2018.08.005

Borgmann, C. P. (2018). *The future of streaming music: The music modernization act and new copyright royalties regulations*. U. Denv. Sports & Ent. LJ.

Bourreau, M., Moreau, F., & Gensollen, M. (2008). The Digitization of the Recorded Music Industry: Impact on Business Models and Scenarios of Evolution. *SSRN Electronic Journal*. https://doi.org/10.2139/ssrn.1092138

Braga, M. (2016, January 11). *The Verbasizer was David Bowie's 1995 Lyric-Writing Mac App*. Www.vice.com. https://www.vice.com/en/article/xygxpn/the-verbasizer-was-david-bowies-1995-lyric-writing-mac-app

Brown, A. E. L. (2012). *Intellectual property, human rights and competition: Access to essential innovation and technology.* Edward Elgar Publishing.

Carnovalini, F., & Rodà, A. (2020). Computational Creativity and Music Generation Systems: An Introduction to the State of the Art. *Frontiers in Artificial Intelligence*, *3*(3). https://doi.org/10.3389/frai.2020.00014

Carroll, M. W. (2005). *The struggle for music copyright*. Fla. L. Rev.

Cheng Zhi Huang, Hendrik Vincent Koops, Newton-Rex, E., Dinculescu, M., & Cai, C. J. (2020). *AI Song Contest: Human-AI Co-Creation in Songwriting*. https://doi.org/10.48550/arxiv.2010.05388

Civit, M., Civit-Masot, J., Cuadrado, F., & Escalona, M. J. (2022). A systematic review of artificial intelligence-based music generation: Scope, applications, and future trends. *Expert Systems with Applications*, *209*, 118190. https://doi.org/10.1016/j.eswa.2022.118190

Cope, D. (1991). *Computers and Musical Style*. Oxford University Press.

Curien, N., & Moreau, F. (2009). The Music Industry in the Digital Era: Toward New Contracts. *Journal of Media Economics*, *22*(2), 102–113. https://doi.org/10.1080/08997760902900254

Daniel, R. (2019). Digital disruption in the music industry: The case of the compact disc. *Creative Industries Journal*, *12*(2), 159–166. https://doi.org/10.1080/17510694.2019.1570775

Dash, A., & Agres, K. (2023). AI-Based Affective Music Generation Systems: A Review of Methods, and Challenges. *ArXiv (Cornell University)*. https://doi.org/10.48550/arxiv.2301.06890

Döringer, S. (2021). "The problem-centred expert interview". Combining qualitative interviewing approaches for investigating implicit expert knowledge. *International Journal of Social Research Methodology*, *24*(3), 1–14. https://doi.org/10.1080/13645579.2020.1766777

Drott, E. (2020). Copyright, compensation, and commons in the music AI industry. *Creative Industries Journal*, *14*(2), 1–18. https://doi.org/10.1080/17510694.2020.1839702

Eshraghian, J. K. (2020). Human ownership of artificial creativity. *Nature Machine Intelligence*, *2*(3), 157–160. https://doi.org/10.1038/s42256-020-0161-x

Evans, J. R., & Mathur, A. (2018). The Value of Online Surveys: a Look Back and a Look Ahead. *Internet Research*, *28*(4), 854–887. Emerald. https://doi.org/10.1108/intr-03-2018-0089

Fainshmidt, S., Wenger, L., Pezeshkan, A., & Mallon, M. R. (2019). When do Dynamic Capabilities Lead to Competitive Advantage? The Importance of Strategic Fit. *Journal of Management Studies*, *56*(4). https://doi.org/10.1111/joms.12415

Frid, E., Gomes, C., & Jin, Z. (2020). Music Creation by Example. *Proceedings of the 2020 CHI Conference on Human Factors in Computing Systems*, 1–13. https://doi.org/10.1145/3313831.3376514

Gioti, A.-M. (2021). Artificial Intelligence for Music Composition. *Handbook of Artificial Intelligence for Music*, 53–73. https://doi.org/10.1007/978-3-030-72116-9_3

Grundy, T. (2006). Rethinking and Reinventing Michael Porter's Five Forces Model. *Strategic Change*, *15*(5), 213–229. https://onlinelibrary.wiley.com/doi/abs/10.1002/jsc.764

Guillot, J. D. (2024, January 17). *Music streaming sector: EU must ensure just pay for artists and fair algorithms | News | European Parliament*. Www.europarl.europa.eu. https://www.europarl.europa.eu/news/en/press-room/20240112IPR16773/music-streaming-sector-eu-must-ensure-just-pay-for-artists-and-fair-algorithms

Hiller, L., & Isaacson, L. (1958). Musical Composition with a High-Speed Digital Computer. *Journal of the Audio Engineering Society,*.

Horzyk, A. M. (2023). How AI Affects Our Understanding of Musical Works That Should Be Protected by Copyright. *International Joint Conference on Neural Networks (IJCNN)*. https://doi.org/10.1109/ijcnn54540.2023.10191524

Kallio, H., Pietilä, A.-M., Johnson, M., & Kangasniemi, M. (2016). Systematic methodological review: Developing a framework for a qualitative semi-structured interview guide. *Journal of Advanced Nursing*, *72*(12), 2954–2965.

Kulkarni, S., & Rodd, S. F. (2020). Context Aware Recommendation Systems: A review of the state of the art techniques. *Computer Science Review*, *37*, 100255. https://doi.org/10.1016/j.cosrev.2020.100255

Leenders, M. A. A. M., Farrell, M. A., Zwaan, K., & ter Bogt, T. F. M. (2015). How are young music artists configuring their media and sales platforms in the digital age? *Journal of Marketing Management*, *31*(17-18), 1799–1817. https://doi.org/10.1080/0267257x.2015.1034158

Lesser, B. (2018). Record Labels Shot the Artists, but They Did Not Share the Equity. *THE GEORGETOWN JOURNAL of LAW & PUBLIC POLICY*, *16*(1), 289–314.

Liebman, E., Saar-Tsechansky, M., & Stone, P. (2019). The Right Music at the Right Time: Adaptive Personalized Playlists Based on Sequence Modeling. *MIS Quarterly*, *43*(3), 765–786. https://doi.org/10.25300/misq/2019/14750

Liebowitz, S. J., & Watt, R. (2006). HOW TO BEST ENSURE REMUNERATION FOR CREATORS IN THE MARKET FOR MUSIC? COPYRIGHT AND ITS ALTERNATIVES. *Journal of Economic Surveys*, *20*(4), 513–545. https://doi.org/10.1111/j.1467-6419.2006.00259.x

Lund, J. (2013). *Fixing music copyright*. Brook. L. Rev.

Marcus, S. L. (1988). Automating Knowledge Acquisition for Expert Systems. In *Springer eBooks*. Springer Nature. https://doi.org/10.1007/978-1-4684-7122-9

Marshall, L. (2015). "Let's keep music special. F—Spotify": on-demand streaming and the controversy over artist royalties. *Creative Industries Journal*, *8*(2), 177–189. https://doi.org/10.1080/17510694.2015.1096618

Marshall, L., & Frith, S. (2013). *Music and Copyright*. Routledge. https://doi.org/10.4324/9780203036105

Marx, K. (1973). *Grundrisse*. Penguin Books in association with New Left Review.

Maskus, K. E. (2000). Intellectual Property Rights And Foreign Direct Investment. *SSRN Electronic Journal*. https://doi.org/10.2139/ssrn.231122

Mazzone, M., & Elgammal, A. (2019). Art, Creativity, and the Potential of Artificial Intelligence. *Arts*, *8*(1), 1–9. https://doi.org/10.3390/arts8010026

McGarry, G., Chamberlain, A., Crabtree, A., & Greenhalgh, C. (2021). Placing AI in the Creative Industries: The Case for Intelligent Music Production. *HCI International 2021 - Posters*, 562–572. https://doi.org/10.1007/978-3-030-78635-9_72

Menell, P. S., & Scotchmer, S. (2007). Chapter 19 Intellectual Property Law. *Handbook of Law and Economics*, *2*, 1473–1570. https://doi.org/10.1016/s1574-0730(07)02019-1

Meuser, M., & Nagel, U. (2009). The Expert Interview and Changes in Knowledge Production. *Interviewing Experts*, 17–42. https://doi.org/10.1057/9780230244276_2

Moffat, D., & Sandler, M. B. (2019). Approaches in Intelligent Music Production. *Arts*, *8*(4), 125. https://doi.org/10.3390/arts8040125

Mou, X. (2019). Artificial Intelligence: Investment Trends and Selected Industry Uses. *Openknowledge.worldbank.org*. https://doi.org/10.1596/32652

Müller, V. C. (2020). Ethics of Artificial Intelligence and Robotics. *Plato.stanford.edu*. https://plato.stanford.edu/entries/ethics-ai/?utm_source=summari

N. Ferreira, L., Mou, L., Whitehead, J., & Lelis, L. H. S. (2022). Controlling Perceived Emotion in Symbolic Music Generation with Monte Carlo Tree Search. *Proceedings of the AAAI Conference on Artificial Intelligence and Interactive Digital Entertainment*, *18*(1), 163–170. https://doi.org/10.1609/aiide.v18i1.21960

Naveed, K., Watanabe, C., & Neittaanmäki, P. (2017). Co-evolution between Streaming and Live Music Leads a Way to the Sustainable Growth of Music Industry – Lessons from the US Experiences. *Technology in Society*, *50*(50), 1–19. https://doi.org/10.1016/j.techsoc.2017.03.005

Nicholls, S., Cunningham, S., & Picking, R. (2018). Collaborative Artificial Intelligence in Music Production. *Proceedings of the Audio Mostly 2018 on Sound in Immersion and Emotion - AM'18*. https://doi.org/10.1145/3243274.3243311

Novelli, N., & Proksch, S. (2022). Am I (Deep) Blue? Music-Making AI and Emotional Awareness. *ProQuest*. https://doi.org/10.3389/fnbot.2022.897110

PLLC, L. O. of A. C. F. (2023, July 5). *Maximizing Your Earnings: A Guide to Collecting All Your Royalties as an Artist or Producer*. Medium. https://acfreedmanlaw.medium.com/maximizing-your-earnings-a-guide-to-collecting-all-your-royalties-as-an-artist-or-producer-7c11d6e0872f

Porter, M. E. (1985). Technology and Competitive Advantage. *Journal of Business Strategy*, *5*(3), 60–78. https://doi.org/10.1108/eb039075

PwC. (2023, June 21). *Global Entertainment and Media Outlook 2023–2027*. PwC; PwC. https://www.pwc.com/gx/en/industries/tmt/media/outlook/insights-and-perspectives.html

Reitzig, M. (2004). *Strategic Management of Intellectual Property*. MIT Sloan Management Review. https://sloanreview.mit.edu/article/strategic-management-of-intellectual-property/

Roads, C. (1985). Research in music and artificial intelligence. *ACM Computing Surveys*, *17*(2), 163–190. https://doi.org/10.1145/4468.4469

Rys, D. (2024, April 2). *Artist Rights Alliance | Billboard Canada*. Ca.billboard.com. https://ca.billboard.com/tag/artist-rights-alliance

Schedl, M., Knees, P., McFee, B., & Bogdanov, D. (2021). Music Recommendation Systems: Techniques, Use Cases, and Challenges. *Springer EBooks*, 927–971. https://doi.org/10.1007/978-1-0716-2197-4_24

Sinclair, G., & Green, T. (2015). Download or stream? Steal or buy? Developing a typology of today's music consumer. *Journal of Consumer Behaviour*, *15*(1), 3–14. https://doi.org/10.1002/cb.1526

Song, Y., Dixon, S., & Pearce, M. (2012). A survey of music recommendation systems and future perspectives. *In 9th International Symposium on Computer Music Modeling and Retrieval*, *4*, 395–410.

Sterne, J., & Razlogova, E. (2021). Tuning sound for infrastructures: artificial intelligence, automation, and the cultural politics of audio mastering. *Cultural Studies*, 1–21. https://doi.org/10.1080/09502386.2021.1895247

Sturm, B. L. T., Iglesias, M., Ben-Tal, O., Miron, M., & Gómez, E. (2019). Artificial Intelligence and Music: Open Questions of Copyright Law and Engineering Praxis. *Arts*, *8*(3), 115. https://doi.org/10.3390/arts8030115

Tako, F., & Marashi, J. (2021). Artificial intelligence and copyright. *Publisher House WSGE Alcide de Gasperi University of Euroregional Economy Ul. Sienkiewicza 4 05-410 Józefów EBooks*, 124–134. https://doi.org/10.13166/wsge//bvlf4208

Tan, X., & Li, X. (2021). A Tutorial on AI Music Composition. *Proceedings of the 29th ACM International Conference on Multimedia*, 5678–5680. https://doi.org/10.1145/3474085.3478875

Taylor, T. D. (2020). *Music and Capitalism: A History of the Present*. University of Chicago Press.

Teece, D. J., Pisano, G., & Shuen, A. (1997). Dynamic capabilities and strategic management. *Strategic Management Journal*, *18*(7), 509–533.

Thomson, K. (2013). Roles, Revenue, and Responsibilities: The Changing Nature of Being a Working Musician. *Work and Occupations*, *40*(4), 514–525. https://doi.org/10.1177/0730888413504208

Voss, T., Paranjpe, A. S., Cook, T. G., & Garrison, N. D. W. (2017). A Short Introduction to Intellectual Property Rights. *Techniques in Vascular and Interventional Radiology*, *20*(2), 116–120. https://doi.org/10.1053/j.tvir.2017.04.007

Warburton, C. E. S. (2020). *Economic Analysis and Law*. Routledge. https://doi.org/10.4324/9780429343964

Weng, S.-S., & Chen, H.-C. (2020). Exploring the Role of Deep Learning Technology in the Sustainable Development of the Music Production Industry. *Sustainability*, *12*(2), 625. https://doi.org/10.3390/su12020625

Wlömert, N., & Papies, D. (2016). On-demand streaming services and music industry revenues — Insights from Spotify's market entry. *International Journal of Research in Marketing*, *33*(2), 314–327.

Wu, Y. N., Gao, R., Han, T., & Zhu, S.-C. (2018). A tale of three probabilistic families: Discriminative, descriptive, and generative models. *Quarterly of Applied Mathematics*, *77*(2), 423–465. https://doi.org/10.1090/qam/1528

Yu, X., Ma, N., Zheng, L., Wang, L., & Wang, K. (2023). Developments and Applications of Artificial Intelligence in Music Education. *Technologies (Basel)*, *11*(2), 42–42. https://doi.org/10.3390/technologies11020042

Zhou, X. (2023). Analysis of Evaluation in Artificial Intelligence Music. *Journal of Artificial Intelligence Practice*, *6*(8). https://doi.org/10.23977/jaip.2023.060802

Zulić, H. (2019). How AI can change/improve/influence music composition, performance and education: three case studies. *INSAM Journal of Contemporary Music, Art and Technology*, *2*, 100–114.

Appendices

Appendix A: Survey

AI's Impact on the Music Industry

Start of Block: Block 5

Intro 1 Thank you for considering participation in this important survey. I appreciate your interest in my survey about the impact of aritficial intelligence in the music industry.

I am conducting this study for my master's thesis at the Católica Lisbon School of Economics. The survey is expected to take around 5 minutes to complete. Your participation is entirely voluntary.

Your honest answers are crucial, and please be assured that the data collected will be treated confidentially and anonymously. The information will be used exclusively for research purposes as part of this thesis. Only aggregated results will be used to present the results.

Please answer the survey in one take without any interruptions.

If you have any questions or comments, please get in touch with me at s-jalem@ucp.pt.

End of Block: Block 5

Start of Block: General Attitude towards AI

Intro 2 This next section is designed to delve deeper into your views on AI. As AI technologies evolve and become more embedded in our everyday activities, it is essential to explore both the opportunities and challenges they present. In this part of the survey, we will explore your perceptions of AI's impact on society, its potential benefits, and the concerns you might have about its integration into various sectors.

Your insights are invaluable as they help shape a more comprehensive understanding of public sentiment towards AI advancements.

Q1 AI has the potential to improve my life.

- ○ Strongly agree (1)
- ○ Somewhat agree (2)
- ○ Neither agree nor disagree (3)
- ○ Disagree (4)
- ○ Strongly Disagree (5)

Q2 AI is capable to perform tasks that normally require human intelligence.

- ○ Strongly agree (1)
- ○ Somewhat agree (2)
- ○ Neither agree nor disagree (3)
- ○ Disagree (4)
- ○ Strongly Disagree (5)

Q3 AI can learn and adapt.

- ○ Strongly agree (1)
- ○ Somewhat agree (2)
- ○ Neither agree nor disagree (3)
- ○ Somewhat disagree (4)
- ○ Strongly disagree (5)

Q4 The use of AI can lead to significant improvements in efficiency and productivity.

- ○ Strongly agree (1)
- ○ Somewhat agree (2)
- ○ Neither agree nor disagree (3)
- ○ Somewhat disagree (4)
- ○ Strongly disagree (5)

Q5 AI technology has the potential to be a threat to humanity.

- ○ Strongly agree (1)
- ○ Somewhat agree (2)
- ○ Neither agree nor disagree (3)
- ○ Somewhat disagree (4)
- ○ Strongly disagree (5)

End of Block: General Attitude towards AI

Start of Block: AI in Music

Intro 3 Artificial intelligence is increasingly playing a role in how music is created, produced, distributed, and consumed. From composing songs to personalizing playlists, AI's integration into this sector is transforming the landscape of music.

We are interested in your perceptions of AI's influence in music production and its broader implications for artists, producers, and consumers alike.

Q6 Are you aware of AI-generated music?

- ○ Yes (1)
- ○ No (2)

Q7 Have you ever knowingly listened to AI-generated music?

- ○ Yes (1)
- ○ No (2)

Q8 AI enhances the creative process in music production.

- ○ Strongly agree (1)
- ○ Somewhat agree (2)
- ○ Neither agree nor disagree (3)
- ○ Somewhat disagree (4)
- ○ Strongly disagree (5)

Q9 I think that the creative aspects of the music industry such as songwriting, perfoming, etc. are positively impacted by the application of AI.

- ○ Strongly agree (1)
- ○ Somewhat agree (2)
- ○ Neither agree nor disagree (3)
- ○ Somewhat disagree (4)
- ○ Strongly disagree (5)

Page Break

Q10 AI makes music production more accessible to people without formal musical backgrounds.

- ○ Strongly agree (1)
- ○ Somewhat agree (2)
- ○ Neither agree nor disagree (3)
- ○ Somewhat disagree (4)
- ○ Strongly disagree (5)

Q11 AI enhances the recording, editing, mixing, and mastering of music production process.

- ○ Strongly agree (1)
- ○ Somewhat agree (2)
- ○ Neither agree nor disagree (3)
- ○ Somewhat disagree (4)
- ○ Strongly disagree (5)

Q12 AI aids as a supporting tool in aspects of the music industry like distribution, social media, artwork, marketing, and promotion.

- ○ Strongly agree (1)
- ○ Somewhat agree (2)
- ○ Neither agree nor disagree (3)
- ○ Somewhat disagree (4)
- ○ Strongly Disagree (5)

End of Block: AI in Music

Start of Block: Copyright

Q13 How much do you agree with the following statements?

	Stongly agree (1)	Somewhat agree (2)	Neither agree nor disagree (3)	Somewhat disagree (4)	Strongly disagree (5)
Music composed with the help of AI should be considered a genuine artistic creation. (1)	○	○	○	○	○
The programmer or developer of the AI should be credited for any music compositions created by their AI systems. (2)	○	○	○	○	○
AI-generated compositions should be protected under copyright laws similar to those for human-created music. (3)	○	○	○	○	○
Please select "Somewhat disagree" (6)	○	○	○	○	○
Copyright for music created by a human artist should be assigned to the artist themselves. (4)	○	○	○	○	○
Copyright for music generated by artificial intelligence should be assigned to the AI itself. (5)	○	○	○	○	○

End of Block: Copyright

Start of Block: Willingness to pay

Intro 4 As we continue our exploration into the impact of Artificial Intelligence on the music industry, this section of the survey specifically examines your willingness to pay for music created by AI compared to that created by human artists.

Q18 How much would you be knowingly pay for a song generated by artificial intelligence, given that a typical song on iTunes costs €0.99?

Enter a price ()	

Q19 How much would you knowingly pay for an album generated by artificial intelligence, given that a typical album on iTunes costs €9.99?

Enter a price ()	

End of Block: Willingness to pay

Start of Block: Music Preference

Q20 What are your top three music genres?

- ☐ Pop (1)
- ☐ Rock (2)
- ☐ Jazz (3)
- ☐ Classical (4)
- ☐ Hip Hop/Rap (5)
- ☐ Electronic (6)
- ☐ Country (7)
- ☐ R&B/Soul (8)
- ☐ Other (9) _____

Q21 How do you primarily listen to music?

- ○ Streaming services (Spotify, Apple Music, etc.) (1)
- ○ CDs (2)
- ○ Radio (3)
- ○ Vinly records (4)
- ○ Digital download (5)
- ○ Youtube (6)
- ○ Other (7) _____

Q22 Which factor most influences your choice of music?

- ○ Artist (1)
- ○ Music genre (2)
- ○ Mood/emotional state (3)
- ○ Recommendations (algorithm, friends, family,etc) (4)
- ○ Other (5) _____

Q23 Do you prefer live music or recorded music?

- ○ Live music (1)
- ○ Recorded music (2)
- ○ No preference (3)

Q24 How many live concerts do you attend per year?

- None (1)
- 1-3 concerts (2)
- 4-6 concerts (3)
- 7-9 concerts (4)
- 10 or more concerts (5)

End of Block: Music Preference

Start of Block: Demographics

Q25 What is your gender?

- Male (1)
- Female (2)
- Non-binary / third gender (3)
- Prefer not to say (4)

Q26 How old are you?

_____

Q27 Where are you from?

▼ Germany (1) ... Others (12)

Q28 What is your highest level of education?

- ○ Less than secondary education (1)
- ○ Secondary education (2)
- ○ Bachelor's degree (3)
- ○ Master's degree (4)
- ○ Doctoral degree (5)
- ○ Other (6)

Q29 What is your current employment status?

- ○ Employed (1)
- ○ Freelancer (2)
- ○ Worker and student (3)
- ○ Student (4)
- ○ Unemployed (5)
- ○ Retired (6)
- ○ Other (7)

Q30 What is your approximate monthly income?

- ○ Less than 1000€ (1)
- ○ 1000€ - 2499€ (2)
- ○ 2500€ - 3999€ (3)
- ○ 4000€ - 5499€ (4)
- ○ More than 5500€ (5)
- ○ Prefer not to answer (6)

End of Block: Demographics

Appendix C: Expert Interviews

Expert 1

Professional background and familiarity with AI

1. Background and AI Knowledge

- Please describe your current role and career in the music industry. How familiar are you with the use of AI in music production and its impact?

- My current role is that of Product Manager and Artist Manager at an independent music label. I now have 4 years experience in this role and have been working in the music industry since graduating with a degree in Business Studies.
- My knowledge of AI in music production is limited, as it is not yet a constant part of my daily life. Nevertheless, I would say that AI is very relevant in the distribution of music. It is a top priority to position our artists so that they are listed in the playlists of the DSPs. Furthermore, more and more people are using AI-generated playlists, which also needs to be taken into consideration.

AI in the music industry and economic impact

2. Role and impact of AI

What is your experience with AI in music production? How do you think AI influences the creative process and the economic aspects of the industry?

- AI influences me above all in the marketing of the music industry. AI helps me enormously, especially in the creation of press articles, covers, etc., as it shortens the time it takes to create these marketing tools. In this case, it increases my efficiency as I can now devote my time to other things that are more important.
- AI has also helped me to better visualize what kind of beat or similar I want from the session to producers in the actual music production. It has helped me to get closer to the desired product

Legal and ethical considerations

3. Legal and ethical considerations

What legal adaptations are necessary for AI-generated music? What ethical concerns do you see regarding the impact of AI on artistic integrity and cultural diversity in music?

- There must be very clear limits on the publication of AI-generated music products. Especially if they are posted online without authorization or the like and some of the voices etc. are used by existing artists, this is a huge attack on the integrity of the artists.

Future prospects and guidelines for the industry

4. Future and outlook

What are your predictions for AI in the music industry over the next ten years? What advice would you give to emerging artists regarding the use of AI and what strategies should the industry consider to guide the integration of AI?

- If the players in the music industry cannot agree on a legal basis for the use of AI, opportunities to utilize it in a positive way will be missed. Artists should also not see AI as an enemy, but rather find a healthy way of using AI to simplify the creative process and make it more productive.

Expert 2

Professional background and familiarity with AI

1. Background and AI Knowledge

- Please describe your current role and career in the music industry. How familiar are you with the use of AI in music production and its impact?

- I have been self-employed as an Artist Manager since 2021 and permanently employed at the largest independent record label and management company in Germany since 2023. I am familiar with AI in music production/industry, but not an expert. My application of AI and role in the music industry comes into play more after the production process, for example in the creation of advertising copy.

AI in the music industry and economic impact

2. Role and impact of AI

What is your experience with AI in music production? How do you think AI influences the creative process and the economic aspects of the industry?

- So far, AI has had less of a creative impact on music. The simplification of the processes surrounding the creation process is more decisive. FOR EXAMPLE: Editing samples or extracting them from songs, recording choirs, recording harmonies, etc.

Legal and ethical considerations

3. Legal and ethical considerations

What legal adaptations are necessary for AI-generated music? What ethical concerns do you see regarding the impact of AI on artistic integrity and cultural diversity in music?

- Artists must remain one hundred per cent owners and rights holders of their own voice and works. The decision to work with AI must remain voluntary and AI music should remain labelled as such. Abuse should be prosecuted by law.

Future prospects and guidelines for the industry

4. Future and outlook

What are your predictions for AI in the music industry over the next ten years? What advice would you give to emerging artists regarding the use of AI and what strategies should the industry consider to guide the integration of AI?

- AI should be particularly interesting in terms of forecasting trends in the music industry and music production itself. Mixing and mastering can be replaced by an AI. Engineering in the studio can also be replaced by an AI. However, the creative work, the actual art itself and all artists will not be replaced. I am sure of that.

Expert 3

Professional background and familiarity with AI

1. Background and AI Knowledge

- Please describe your current role and career in the music industry. How familiar are you with the use of AI in music production and its impact?

- Starting with the first releases of a singer, I have now been working in the music industry for 8 years as part of the producer duo.
  Of course, the topic of AI is unavoidable as a producer these days. However, I personally see more advantages than disadvantages in the technological development. In my opinion, AI lowers the barriers to entry for young aspiring artists enormously. Above all, it allows creatives to realise their visions in real time, independently of others, without having to have a huge network in the industry.

AI in the music industry and economic impact

2. Role and impact of AI

What is your experience with AI in music production? How do you think AI influences the creative process and the economic aspects of the industry?

- By now, I have also been able to gather some points of contact with AI technologies in the course of vocal and beat productions. As I said, I am very positive about this.
  Just to name one example, AI plugins have simplified the isolation of individual audio tracks from existing songs to such an extent that we have discovered completely new possibilities for ourselves in the course of sampling.
  From an economic point of view, I personally can't see any advantages or disadvantages.

Legal and ethical considerations

3. Legal and ethical considerations

What legal adaptations are necessary for AI-generated music? What ethical concerns do you see regarding the impact of AI on artistic integrity and cultural diversity in music?

- It is self-evident when I say that the use of other parties' creative property must be carefully clarified. For me, this also includes the use of other people's voice algorithms. Without appropriate consent, the use of other people's voices should be absolutely prohibited. Especially in times of social media, misuse of AI can lead to devastating consequences. To summarize, I can say that a middle ground must be found between the creators of the creative output and third parties such as music labels or music lawyers before the benefits of AI can be fully exploited from a creative perspective.

Future prospects and guidelines for the industry

4. Future and outlook

What are your predictions for AI in the music industry over the next ten years? What advice would you give to emerging artists regarding the use of AI and what strategies should the industry consider to guide the integration of AI?

- As in all other economic sectors, AI will also play a leading role in the music industry. Young artists should be aware of their responsibility and only use AI with careful consideration of all copyright aspects. In my opinion, any kind of AI use should be subject to mandatory labelling. However, this must also apply to absolutely everyone, from huge companies to self-made producers in the basement. This is the only way we can continue to adapt new technologies in the future and utilize them for the benefit of creative work.

Expert 4

Professional background and familiarity with AI

1. Background and AI Knowledge

- Please describe your current role and career in the music industry. How familiar are you with the use of AI in music production and its impact?

- I have been working as an entertainment lawyer in a medium-sized law firm for several years now, specializing in the legal fields of music law, copyright law, trademark and competition law, media law and contract law. The integration of AI in the music industry is still a relatively new and at the same time very recent phenomenon and an issue that we have to deal with more and more frequently in our law firm. Our clients include music publishers, media distribution companies and agencies whose own customer bases and artists often branch out abroad. In recent years, we have already given many seminars to clarify and explain the current legal situation with regard to the use of AI, even though there are still major gaps in the case law and legal texts, be it with regard to the requirements for lawful use or the legal risks and consequences that the use of AI can entail.

AI in the music industry and economic impact

2. Role and impact of AI

What is your experience with AI in music production? How do you think AI influences the creative process and the economic aspects of the industry?

- Above all, of course, the artists and affected parties themselves ask themselves what legal implications the use of AI entails. In these cases, our law firm is the best point of contact to provide our clients with comprehensive legal advice and support them every step of the way. Initially, we were not interested in the extent to which the music industry itself would benefit or suffer damage. However, AI initially seemed to us to be a helpful tool in many respects, which can simplify some aspects of music production (e.g. mixing and mastering). From a legal point of view, AI faces the problem that there is still no uniform legislation for this and there are many grey areas. One of our clients was sued by the sender due to the use of a private voice message in a song; this problem could be remedied by using AI as the reinvented voice of the same voice message and did not constitute a legal violation of data protection law when sued again. However, the future seems questionable if entire songs or even

albums are generated by AI. It is true that this could be an easy source of income for highly developed programs (albums could also be produced en masse). At the same time, however, the creativity and culture of music itself is dying out, which cannot be so easily denied. The work and personality behind the music, the effort involved in the entire music production process would have to give way entirely to the economic goals of the big companies. This harbors the danger that the artists may end up serving merely as mascots and brands for the AI-generated music.

Legal and ethical considerations

3. Legal and ethical considerations

What legal adaptations are necessary for AI-generated music? What ethical concerns do you see regarding the impact of AI on artistic integrity and cultural diversity in music?

- Another problem is the practical lack of legislation for AI and its use. Lawyers and artists continue to lack a coherent system in the law and currently have to cope with the current standards of other laws, which at the same time creates the aforementioned grey areas and, as a result, different case law and pronounced judgements. A major step would therefore be taken if a catalogue of laws were to be adopted in which the use of AI in all its forms is defined and regulated and the important questions on this topic are answered at the same time: What is to be defined as AI in the music industry? What percentage of music may be AI-generated? To what extent will trade mark law, copyright law, data protection law, etc. be affected?
  A very important aspect, at least in Europe, would be to try to find a standardized regulation for such an international issue as music, without those affected having to deal with the legal conformity of their music individually in each country.
  Honestly, ethics is not too important to the law in this regard, but all parties involved must be able to accept that both the unregulated and regulated use of AI in the music industry can lead to the destruction of any creativity and integrity on the part of the artists, and probably even beyond their death.

Future prospects and guidelines for the industry

4. Future and outlook

What are your predictions for AI in the music industry over the next ten years? What advice would you give to emerging artists regarding the use of AI and what strategies should the industry consider to guide the integration of AI?

- The prognosis can only be made depending on the legal development regarding the use of AI and the perception of the generations concerned. If this methodology finds favor with the public in the music industry and the 'personality of the music' becomes less and less important, a breakthrough of AI music is quite conceivable. In my opinion, however, there is no such trend at the moment. Nevertheless, artists and therefore the entire music industry must move with the times and cannot completely neglect the use of AI at the moment. The dominance of AI in this industry seems unrealistic at the moment; rather, AI will only be able to assert itself as a tool for creating 'real' music.

Expert 5

Professional background and familiarity with AI

1. Background and AI Knowledge

- Please describe your current role and career in the music industry. How familiar are you with the use of AI in music production and its impact?

- My current role in the music industry is split between 2 different roles:
  Sound/Recording Engineer & Music Producer.
  After successfully graduating from the Abbey Road Institute Frankfurt, I started my own business as a sound engineer (after being employed there as a technician for 1 year). To date, I have worked with a large number of well-known German rappers and musicians. However, I only use AI in the 'mixing' process, i.e. after the actual music production and recording. I use the LANDR application for this.

AI in the music industry and economic impact

2. Role and impact of AI

What is your experience with AI in music production? How do you think AI influences the creative process and the economic aspects of the industry?

- Personally, I have only ever used AI for the technical aspect of mixing.
  Mixing describes the process after the entire work has been musically worked out and recorded. The aim here is to make the 'mix' as attractive as possible to the ear by, for example, removing interfering frequencies, adjusting volume ratios and editing errors. And I sometimes use AI to filter out interfering frequencies more quickly, for example, or to perfectly harmonize the timing of two different recordings. I would definitely say that AI is a competitive advantage in production. It allows me to be much more productive. Especially when mixing. I have to say that I've already seen what's possible, namely that you can use AI to have so-called 'samples' that fit together 'perfectly' picked out by an AI and then just put them together bluntly. In my opinion, this no longer has anything to do with a creative process but is more like a Lego building set principle. It is no longer necessary to engage creatively with music. From an economic point of view, I wonder whether AI-generated music has the same value as human-generated music. If the AI generates instrumental, vocal and the mixing process in a short amount of time from a fed pool of data, the value cannot be equal to humans who have put together time, creativity, technical knowledge and talent to generate a work. However, the market will (is already) be flooded with new music that is likely to be at a high level even if the 'creator' may not know anything about music. Also, some jobs may become obsolete due to the mass of AI music.

Legal and ethical considerations

3. Legal and ethical considerations

What legal adaptations are necessary for AI-generated music? What ethical concerns do you see regarding the impact of AI on artistic integrity and cultural diversity in music?

- There must be a clear copyright regulation. Because the AI generates music based on a collection of data that it has been fed. I suspect that this data is mostly the work of real artists and musicians, so I don't think AI music can really claim copyright unless the human operating it specifies a detailed composition (key and chord progressions, tempo, arrangement, instrumentation, etc.).

In addition, when publishing their music, artists would have to grant permission for their works to be used as a data set for AI music.
Artificial imitation of real voices is also problematic.
My concern is that the creative spirit will become increasingly flattened as we rely on the incredible and rapid creative power of AI. What is still ‘authentic’ and who are the real artists behind the music?
In addition, I suspect that at some point there will be no more innovation, as new music is always created when HUMANS break the ‘rules and norms’ of music as we know it. In my opinion, a fed-in data set is not capable of doing this. Not to the extent that it needs to create something new.

Future prospects and guidelines for the industry

4. Future and outlook

What are your predictions for AI in the music industry over the next ten years? What advice would you give to emerging artists regarding the use of AI and what strategies should the industry consider to guide the integration of AI?

- I think AI will replace technology-based jobs in the music industry (recording engineer, mastering engineer).
  Jobs with interpersonal tasks such as A&R will also be much less necessary if you don't look for talent, character and image but for people with the technical knowledge to optimally operate the AI. Even though I am absolutely not a fan of AI in production, I would urge aspiring artists to take a close look at it so as not to be left behind by the huge masses. Also from the point of view that AI can cover a wide range of tasks and you can therefore act more independently without having to rely on others or even pay them.
  I think it would be important to introduce a technical analysis device into the music market that can determine whether a work has been artificially generated. A kind of control instance. This guarantees the ‘real’ artists a special status as they produce their works without the help of AI.
  AI should also be treated as a prestige and not be made available to every hobby musician as a mockery to keep the flood of new music in check (it's already getting out of control anyway).

Expert 6

Professional background and familiarity with AI

1. Background and AI Knowledge

- Please describe your current role and career in the music industry. How familiar are you with the use of AI in music production and its impact?

- I am a DJ and started almost 4 years ago. I've been working full-time as a DJ for 3 years and I'm active at various events. I have been working with AI in music production and therefore know a lot about it. AI has helped me the most when sampling and mixing tracks. I'm still relatively new to using AI but I use Fadr.

AI in the music industry and economic impact

2. Role and impact of AI

What is your experience with AI in music production? How do you think AI influences the creative process and the economic aspects of the industry?

- I use AI myself. I see it as a good tool. I use it when creating sets. In my opinion, it doesn't interfere with the creative process because I don't let the AI create the entire set. I believe that I leave my personal print on all my sets, with or without AI. I use the AI for inspiration and can create sets faster than before using the AI. The increased productivity is a great benefit but cannot replace my creative input.

Legal and ethical considerations

3. Legal and ethical considerations

What legal adaptations are necessary for AI-generated music? What ethical concerns do you see regarding the impact of AI on artistic integrity and cultural diversity in music?

- Laws need to be introduced that cover everything to do with AI-generated music before it’s too late. I've seen examples myself on social media where AI-generated voices have been used by artists without their consent. I've even been asked to play an AI-generated song by Drake and The Weeknd at a gig that had previously attracted attention on social media. If nothing is done about this, it will have a huge impact on artistic freedom and integrity. Controlling the daily output of all AIs will be impossible, but the spread through social media should be stopped. At the end of the day, there needs to be a reform that protects the more artificial freedom, but the use of AI is just another technological advancement in human history. Similar to what you described with creative destruction.

Future prospects and guidelines for the industry

4. Future and outlook

What are your predictions for AI in the music industry over the next ten years? What advice would you give to emerging artists regarding the use of AI and what strategies should the industry consider to guide the integration of AI?

- As already mentioned, I use AI in my production myself. As long as AI is used as a tool, I see a great benefit here, as it can help with productivity, among other things. If it is used to provide completely generated songs, I see a problem here. To prevent this, laws must be introduced in the near future to support us artists.

Expert 7

Professional background and familiarity with AI

1. Background and AI Knowledge

- Please describe your current role and career in the music industry. How familiar are you with the use of AI in music production and its impact?

- I am a music producer. I produced music independently for friends and acquaintances for several years. I have been working for a music label for almost 2 years. I have been intensively involved with the topic of AI in the music industry since the beginning of the year and therefore know my way around. In particular, I have been working with AIs such as Amper and AIVA.

AI in the music industry and economic impact

2. Role and impact of AI

What is your experience with AI in music production? How do you think AI influences the creative process and the economic aspects of the industry?

- I don't use AI in my production myself, but I have seen several songs created by AI that have gone viral. Songs were put together with an AI-generated beat and AI-generated voices from international artists. This completely takes away the creativity of the music. Beats are created at the touch of a button. This also jeopardises my job. I suspect that in order to save money, we will be listening to much more AI-generated music in the future. My strong opinion has been formed through my own research. I am firmly convinced that AI cannot take on the role of human creativity. I don't know if it's my trained ear, but I recognise a subtle difference in what turns me off to AI music.

Legal and ethical considerations

3. Legal and ethical considerations

What legal adaptations are necessary for AI-generated music? What ethical concerns do you see regarding the impact of AI on artistic integrity and cultural diversity in music?

- Laws must be introduced to prevent AI-generated voices from being used by musicians for songs without their consent. Otherwise, all artists will have economic problems in the future. The current legal situation is not ideal. Many artists do not feel protected by the law. AI adds a broad dimension to the dilemma and complicates the situation.

Future prospects and guidelines for the industry

4. Future and outlook

What are your predictions for AI in the music industry over the next ten years? What advice would you give to emerging artists regarding the use of AI and what strategies should the industry consider to guide the integration of AI?

- I am not completely against AI. I can see ways in which it can support us artists in the future, but, as already mentioned, laws need to be introduced to protect us artists and our artistic freedom. Otherwise, I see big problems in the future. If the industry is AI-driven in the future, then it can be completely controlled by the big players. This means that artists can be created by AI, designed by analyzing algorithms.

Expert 8

Professional background and familiarity with AI

1. Background and AI Knowledge

- Please describe your current role and career in the music industry. How familiar are you with the use of AI in music production and its impact?

- As a music teacher and composer with decades of experience in the music industry, I am deeply rooted in traditional, analogue music production. My knowledge of AI in music production is limited, as I personally prefer the manual aspects of music making and composing. The direct interaction with instruments and the human element in the creative process are essential for me to create authentic and emotional works.

AI in the music industry and economic impact

2. Role and impact of AI

What is your experience with AI in music production? How do you think AI influences the creative process and the economic aspects of the industry?

- My few touches with AI in music production have made me skeptical. I feel that AI can depersonalize the creative process by replacing direct human interaction with the music. From an economic perspective, AI may lower production costs and reduce barriers to entry, but I also fear that it will lead to a flooding of the market with low-quality music that overshadows the true artistic talent.

Legal and ethical considerations

3. Legal and ethical considerations

What legal adaptations are necessary for AI-generated music? What ethical concerns do you see regarding the impact of AI on artistic integrity and cultural diversity in music?

- From a legal point of view, there is an urgent need to create clear regulations and definitions for authorship and rights to AI-generated music. From an ethical point of view, I have major concerns about the authenticity and originality of the music. AI could lead to a loss of cultural diversity and the personal touch that makes music so special.

Future prospects and guidelines for the industry

4. Future and outlook

What are your predictions for AI in the music industry over the next ten years? What advice would you give to emerging artists regarding the use of AI and what strategies should the industry consider to guide the integration of AI?

- I am concerned about the increasing role of AI in the music industry. My prediction is that if we are not careful, AI could undermine the art of music making and diminish cultural and creative diversity. I would advise young artists to learn the basics of music making thoroughly and not to neglect traditional methods in favor of quick and easy solutions through AI. The industry should ensure that the introduction of AI does not compromise musical integrity, but supports and complements it.

Expert 9

Professional background and familiarity with AI

1. Background and AI Knowledge

- Please describe your current role and career in the music industry. How familiar are you with the use of AI in music production and its impact?

- After four decades as a musician, composer and producer, I have experienced the development of the music industry at close quarters. The technological advances, especially AI in music production, have made a deep impression on me. Although I originally started with analogue methods, I have continued to learn over time and am now familiar with digital production methods and AI tools. These technologies make it possible to open up new creative processes and design more efficient workflows.

AI in the music industry and economic impact

2. Role and impact of AI

What is your experience with AI in music production? How do you think AI influences the creative process and the economic aspects of the industry?

- My experience with AI in music production has been predominantly positive. I see AI as a powerful tool that helps artists to expand their creative vision, for example by assisting with composing or generating innovative soundscapes. Economically, AI has the potential to reduce production costs and democratize access to music production by helping less experienced musicians to create high-quality works. This can make the music landscape more diverse and inclusive.

Legal and ethical considerations

3. Legal and ethical considerations

What legal adaptations are necessary for AI-generated music? What ethical concerns do you see regarding the impact of AI on artistic integrity and cultural diversity in music?

- Legally, we need to establish clear guidelines for the authorship of AI-generated music. It is important that copyright law is adapted to adequately protect both the rights of human artists and the use of AI. Ethically, we must ensure that AI is not used to homogenize cultural expressions or undermine artistic integrity. Instead, it should serve as a tool that promotes cultural diversity and supports artists in their uniqueness.

Future prospects and guidelines for the industry

4. Future and outlook

What are your predictions for AI in the music industry over the next ten years? What advice would you give to emerging artists regarding the use of AI and what strategies should the industry consider to guide the integration of AI?

- I am optimistic that AI will continue to play a transformative role in the music industry. In the next ten years, I expect to see even more sophisticated AI applications that will provide music creators with even more in-depth and personalized tools. My advice to aspiring artists would be to familiarize themselves with AI technologies and use them creatively to develop their own musical language. The industry should provide guidelines that encourage innovation while maintaining ethical standards and cultural integrity.

Expert 10

Professional background and familiarity with AI

1. Background and AI Knowledge

- Please describe your current role and career in the music industry. How familiar are you with the use of AI in music production and its impact?

- I started in 2019 with the artists P. and S. management and had my first step in the music industry. So far I only know AI from the context of improving some press releases or simply formulating emails better and faster and otherwise in music production I've only had to use ki when we just downloaded a song to remix it and then just needed the stems and then you drag it into the tool i.e. FADR and this tool then gives you the systems back. The individual tracks, the bird track, guitar sample keyboards. Everything is automatically separated and provided directly as downloadable teams.

AI in the music industry and economic impact

2. Role and impact of AI

What is your experience with AI in music production? How do you think AI influences the creative process and the economic aspects of the industry?

- In itself, AI has been used so far to build out the individual tracks of songs before you get the official tracks from the creators, to make my first sketch, and then to go back to Aris with the sketch and get the approval there, because it would just be exhausting to contact Aris every time just to realize an idea and then get the tracks. You just lose time when you're in the studio and that's why we make the first sketches for remixers with a pen and save a lot of time. The creative process is not necessarily influenced in any way. So far, I think the AI is still very early and many artists don't like working with AI. No artist wants to be known as an ai artist. I think for many artists it's just something so negative that they don't want to feed it. Because people are naturally afraid that the machine will replace the human at some point.

Legal and ethical considerations

3. Legal and ethical considerations

What legal adaptations are necessary for AI-generated music? What ethical concerns do you see regarding the impact of AI on artistic integrity and cultural diversity in music?

- In any case, you have to be careful not to steal anyone's identity. Somehow it's through generated music videos, where then AI generated artist look like real artists. So how real is identity theft really? It definitely needs to be better regulated legally somehow. Otherwise, ethical concerns. Of course, because art is still somehow what is free, what has somehow always existed and has always been important to somehow address political issues or social issues and to express feelings and if we start to replace our feelings that we express with machines then I think people will just become numb with time and the music that you consume will eventually just be one genre and not as diverse. It would be important to me that all AI-generated contributions have a watermark in the video, for example, that is very noticeable so that you can clearly distinguish between them because the fakes and things like that that are in circulation are already too dangerous. Every AI should have an automatic watermark, which is automatically visible in every AI-generated post or video or song and clearly distinguishes it from human art.

Future prospects and guidelines for the industry

4. Future and outlook

What are your predictions for AI in the music industry over the next ten years? What advice would you give to emerging artists regarding the use of AI and what strategies should the industry consider to guide the integration of AI?

- I definitely hope that in the next year or two we will have firm regulations on how and where AI can be used and that identities simply cannot be stolen by humans. In the end, every artist has to know for themselves how they want to use AI and whether they want to use it or not. I think that's where the artists will stand out from each other in the end. Who will still manage to be creative in ten years' time or will new social media technologies simply take away our concentration to such an extent that our creativity may ultimately suffer and, as I said, we will become numb?