

Research on the application of big data analysis in music enterprises

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Abstract: *The use of big data and analytics in the music industry has brought about a significant transformation, revolutionizing profit models, production methods, and marketing strategies. This essay explores the impact of big data analysis on the music industry and its future implications. Initially, traditional methods employed intuition and human judgment, but now music companies rely on big data technology and algorithms to process and analyze vast amounts of complex data. This essay examines how big data analysis has reshaped the industry's profit model by analyzing user behavior to identify new artists, predict trends, and create targeted marketing campaigns. It also explores how data analysis has revolutionized production methods, such as the creation of personalized playlists on music streaming platforms and the identification of emerging trends. However, the essay also acknowledges potential drawbacks, including biases favoring commercially successful artists and concerns regarding data privacy and ethical implications. It concludes that while big data analysis has undeniably transformed the music industry, a balance must be struck between utilizing data for commercial purposes and preserving artistic creativity and diversity. The essay emphasizes that embracing big data analysis enables music companies to gain valuable insights into user behavior and preferences, leading to better products, services, and success in the digital age. Examples of big data applications in the music industry, including personalized playlists and trend prediction, are provided to illustrate the practical implications of data analysis. The essay also acknowledges differing opinions on the role of data in the industry, recognizing that it can complement but not replace the expertise of industry insiders in discovering and nurturing talent.*

Keywords: *Big data analysis, Music industry, Digital technologies*

1. Introduction

The music industry has undergone significant transformation with the advent of digital technologies and big data analysis ^[16]. While traditional methods relied on intuition and human judgment to decide which works to promote, music companies are now using big data technology and algorithms to process, analyze, and extract valuable information and knowledge from large and complex datasets. In this essay, we will explore how big data analysis has revolutionized the music industry's profit model, production methods, and marketing strategies.

The essay will first provide some background information on the traditional methods that were used in the music industry to gather information and make decisions. Then, it will explore the ways in which big data analysis has transformed the industry's profit model, with companies analyzing user behavior to identify new artists, predict trends, and create targeted marketing campaigns. It will also examine how data analysis has revolutionized the industry's production methods, with the creation of personalized playlists on music streaming platforms such as Spotify and the identification of emerging trends in the industry ^[12]. However, the essay will also examine potential drawbacks to the increasing use of big data in the music industry, such as the potential for bias towards promoting commercially successful artists and concerns around data privacy and the ethical implications of collecting and analyzing large amounts of user data. The essay will conclude that while big data analysis has undoubtedly transformed the music industry, it is important to strike a balance between utilizing data for commercial purposes and preserving artistic creativity and diversity.

The application of big data analysis in the music industry is growing rapidly, and it is essential to understand its impact on the industry's future. By embracing big data analysis, music companies can gain valuable insights into user behavior and preferences, create better products and services, and ultimately thrive in the digital age.

2. Digital technologies are being applied to the music industry

Over the past decade, the music industry relied heavily on intuition for its development, with music companies relying on the gut instincts of their executives to decide which works to promote and striving to bring those deemed promising to the market and to the masses. However, in recent years, an increasing number of music companies have embraced the analytical methods of the big data era to better promote the music industry ^[11].

While data analysis is often associated with the current era, its use in the music industry is not a recent development. As an example, in the early 1990s, Atlantic Records established a dedicated research team to investigate the sales of local artists by contacting major independent retailers ^[8]. During this time, an assistant named Scott Schiff discovered that a relatively unknown band's record sales were performing better than some popular artists. Despite opposition from his subordinates, Schiff decided to sign the band, which was Hootie & The Blowfish. Ultimately, his decision was vindicated, as Hootie & The Blowfish became one of the most successful bands of the 1990s ^[13].

Over time, more music companies are using big data analysis to modernize their sales strategies. This involves using big data technology and algorithms to process, analyze, and extract valuable information and knowledge from large and complex datasets, which includes processes such as data collection, cleaning, storage, mining, analysis, and visualization ^[3]. The core of this approach is data mining and analysis, which uncovers patterns and trends that are difficult for humans to discern. It's possible that big data analysis will soon revolutionize the music industry, ushering in a new era of popularity by disrupting traditional models ^[6].

3. The use of big data in the music industry is growing rapidly

In an article in Billboard magazine, Alex White, CEO and co-founder of music data company Next Big Sound, stated in an interview, "We will no longer use the traditional forms of the music industry." Next Big Sound currently provides services to major record companies and agents by analyzing data from Spotify and other social media.

In the past, music companies relied on traditional methods to gather information and make decisions, such as contacting retailers to investigate record sales or relying on the intuition of artists and music executives ^[15]. However, in today's world, these methods are becoming outdated. We are now in the "big data era," with a massive amount of data generated every day on digital platforms such as Spotify and Twitter, as well as through various data analysis tools ^[14].

As a result, big data analysis has not only transformed the production methods of the music industry over the past few decades but has also revolutionized the profit model of music companies through the use of vast databases. This change is significant for an industry that is in dire need of transformation.

With the availability of big data, music companies can now analyze user behavior, such as what they listen to, what they search for, and what they share on social media. These data points can help companies better understand user preferences and tailor their products and services accordingly.

For example, music companies can use big data to identify new artists, predict trends, and create targeted marketing campaigns. They can also use data to determine which artists or songs to promote, where to hold concerts, and which merchandise to sell ^[9]. In conclusion, the music industry needs to embrace big data analysis to remain competitive in today's market ^[4]. By doing so, music companies can gain valuable insights into user behavior and preferences, which can help them create better products and services, increase their revenue, and ultimately, thrive in the digital age.

4. Music companies are using big data analytics at this stage

One example of the music industry's use of big data analysis is the creation of personalized playlists on music streaming platforms such as Spotify ^[12]. By analyzing users' listening habits and preferences, the platform can generate custom playlists for individual users, which not only enhances the user experience but also increases the platform's retention rate and subscription revenue.

Another example is the analysis of social media data to understand public opinion and sentiment towards certain musicians or genres. This information can help music companies and artists better target their marketing efforts and create more relevant content for their audience.

In addition, data analysis can also help identify emerging trends in the music industry, such as new music genres or emerging artists ^[10]. This information can be used by music companies to stay ahead of the curve and capitalize on new opportunities.

However, there are also potential drawbacks to the increasing use of big data in the music industry. For example, data analysis may result in a bias towards promoting commercially successful artists, which could stifle creativity and diversity in the industry. Additionally, there are concerns around data privacy and the ethical implications of collecting and analyzing large amounts of user data.

Overall, while big data analysis has undoubtedly transformed the music industry, it is important to strike a balance between utilizing data for commercial purposes and preserving artistic creativity and diversity.

4.1 Big data analysis changes the profit model

According to Ben Weeden, the COO of House of Blues, “the company utilizes data mining and analysis to assist bands in selling more tickets and increasing their visibility. “House of Blues”, a Live Nation subsidiary specializing in small-scale concerts, has been highly successful with its "Platter Tour" initiative, which has gained widespread popularity across the US. Unlike many record labels, House of Blues has been able to achieve this success due to its expertise in data analysis.

House of Blues uses a distinct algorithm to choose "affable" artists who are the best suited for the "Ones to Watch" tour. For example, when Blackberry Smoke performed, House of Blues selected several other artists to join the concert. Once the artists are selected, House of Blues quickly identifies fans who have previously purchased tickets to their shows and sends them email promotions for the upcoming "Platter Tour," along with enticing discounts to encourage attendance. By leveraging big data analysis to innovate the music sales model and align with the preferences of fans, this represents a critical advancement for music companies ^[11].

Moreover, Echo Nest, which is based in Somerville, Massachusetts, manages a vast music data analysis platform that utilizes a range of big data standards. Their database contains over 36 million songs, which are categorized based on various data points such as pitch, rhythm, song mood, and danceability. According to CEO Jim Lucchese, "We can identify a set of data that shows you're listening to the same type of music at different times of the week, and we can find what's common in that data" ^[5]. In other words, when combined with Spotify, Echo Nest has the ability to determine your recent mood and preferences and make recommendations for music playlists that you may enjoy based on this information.

4.2 Big data analysis predicts the next stage of popularity

Big data analysis has the ability to not only transform the traditional music industry operations but also predict future trends in the music industry, and provide short-term and long-term forecasts based on different regions. For example, in the United States, the song identification app Shazam can recognize a song in seconds using a smartphone. By analyzing up to 2 million search queries daily, Shazam can identify which songs are popular and where, providing music companies with valuable insights for future business planning and trend forecasting ^[1].

The behavior of users on music platforms, such as listening to, sharing, and collecting music, as well as their actions on social networks, video websites, and online forums, such as following, commenting, sharing, and liking, all reflect their preferences.” For instance, data scientists use word2vector algorithm to cluster keywords based on users' actions and analyze them to predict the next ‘Super Star ’ using distributed gbdt algorithm.” ^[2].

However, there are differing opinions on this matter. For example, former Warner Music CEO Lyor Cohen (2018) believes that: “industry insiders are still the gatekeepers for new artists entering the industry.” Many leaders in the music industry agree with this viewpoint. The creation of music remains a prerequisite for the development of music, and the pursuit of good works and professional musical standards is the goal of all music artists. On the other hand, data cannot fully explain and define the relationship between music works and fans. Nevertheless, he also acknowledges that combining data with other factors can be more useful in discovering and cultivating new talents.

5. Challenge and future

5.1 Current advantages

Big data in music not only has the ability to predict the future, but also serves as a guide for deep analysis and exploration of relevant music resources ^[11]. There are several advantages to using big data analytics in music:

1) Accurate music recommendations: With the vast amount of data generated from user behavior on music platforms and social media, big data analytics can help music platforms provide accurate and personalized music recommendations to users based on their preferences and behavior.

2) Improved music production: By analyzing the success factors of popular songs and artists, music producers can create better music that aligns with market trends and audience preferences.

3) Targeted marketing: Music companies can use big data analytics to target specific audiences with tailored marketing campaigns. By analyzing user demographics and behavior, they can identify the most effective channels and methods for promoting their music.

4) Artist discovery: Big data analytics can help music companies discover new talent and identify promising artists. By analyzing user behavior and market trends, they can predict which artists are likely to be successful and invest in them accordingly.

However, it is important to note that big data analytics cannot completely explain or define the relationship between music works and fans. The creative process of music production still remains crucial, and good quality music is the pursuit of all music artists. Nevertheless, incorporating data into the process of discovering and nurturing artists can provide valuable insights and references for the industry.

5.2 Challenge

The speed of development in digital technology is exhilarating for everyone, but at the same time, there are still many shortcomings and risks.

Data may have bias:

1) Due to limitations in data sources and collection methods, the analysis results may be inaccurate, affecting decision-making effectiveness.

2) May lead to homogenization: Over-reliance on data analysis results may lead music companies to only promote artists and music works that have been proven to have commercial value, ignoring more innovative and diverse artists and works.

3) Data privacy issues: It will attract public and regulatory scrutiny and investigation, leading to social commentary and unnecessary troubles.

With the rapid advancement of digital technology, various industries are embracing the opportunities that come with it. From improved communication to enhanced productivity, the benefits are undeniable. However, with every innovation, there are also potential drawbacks and risks. The increasing reliance on technology for critical tasks can lead to vulnerabilities and security threats. Additionally, there is a growing concern about the potential social, ethical, and economic implications of digital technology. As such, while the pace of technological progress is exciting, it is important to remain mindful of its limitations and potential dangers.

5.3 The future of music industry

According to Judy Woodruff, a senior journalist at PBS NewsHour, after interviewing many famous musicians, A favorable prospect, rather than a hurdle, is presented by the digital revolution's influence on the conventional music industry^[7]. She summarized that "all the data generated from music streaming purchases and sharing is influencing the creation of music."

in the past, the preferences of audiences were controlled by record companies, but today they have more say and decision-making power. The penetration of big data into the music industry will become increasingly profound, and according to Badril Raghavan, "a data scientist at Frist Fuel Software, more people will use data analysis tools to provide the music industry with personalized and engaging experiences in the future."

In the future, the music industry may require new terminology, such as "Bayesian probability", which is a concept in logic and has nothing to do with avant-garde rock behavior.

The trend towards globalization and cross-culture also presents the music industry with more complex market competition and cultural exchange issues. The music industry needs to better understand and adapt to the needs and preferences of different regions and cultures while also promoting the globalization of the industry through cross-cultural communication and collaboration.

6. Conclusion

In a word, the music industry has undergone significant changes with the adoption of big data analysis. While music companies traditionally relied on intuition and traditional methods to make decisions, big data analytics is transforming the music industry, ushering in a new era of popularity and disrupting traditional models. The availability of big data has allowed music companies to analyze user behavior and preferences, identify emerging trends, predict future success, and create targeted marketing campaigns, among other things. However, the increasing use of big data in the industry raises concerns about data privacy and the ethical implications of collecting and analyzing large amounts of user data. It is important to strike a balance between utilizing data for commercial purposes and preserving artistic creativity and diversity.

The overall message of this article is that the music industry must embrace big data analysis to remain competitive in today's market. Big data analytics can provide valuable insights into user behavior and preferences, which can help music companies create better products and services, increase revenue, and ultimately thrive in the digital age. The article provides examples of how music companies are currently using big data analysis to personalize playlists, understand public opinion and sentiment, and identify emerging trends.

In the future, The music industry will still rely heavily on big data analytics for its operations, enabling music companies to make data-driven decisions and adapt to changing consumer preferences. In order to keep their edge in the industry, music companies must keep pace with the newest trends and advancements as technology progresses. However, it is important to ensure that the use of big data analysis does not stifle creativity and diversity in the industry, and that data privacy and ethical concerns are addressed. The music industry must strike a balance between utilizing data for commercial purposes and preserving artistic expression and cultural diversity.

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