

BIG DATA AND ANALYTICS:  
THE FUTURE OF MUSIC MARKETING

by

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This thesis was prepared under the direction of the candidate's thesis advisor, Dr. Ira Abrams, Department of Music, and has been approved by the members of her supervisory committee. It was submitted to the faculty of the College of Business and was accepted in partial fulfillment of the requirements for the degree of Master of Science.

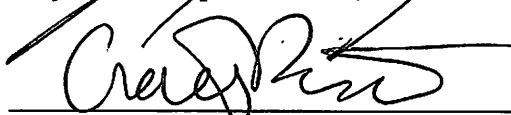
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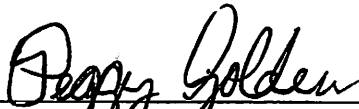
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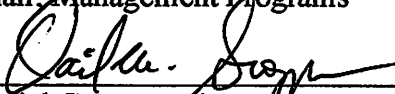
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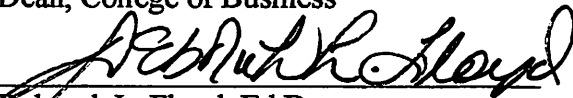
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## ABSTRACT

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This is a comprehensive study of how Big Data and analytics will be the future of music marketing. There has been a recent trend of being able to turn metrics into quantifiable, real-world predictions. With an increase in online music consumption along with the use of social media there is now a clearer view than ever before about how this will happen. Instead of solely relying on big record companies for an artist to make it to the big time, there is now a plethora of data and analytics available not just to a small number of big companies, but to anyone.

In order to understand how Big Data and analytics work and are used to strategically market an artist or band, we must first understand how this type of process works. Exploring how other industries have successfully excavated and used data and analytics to target consumers will show parallels that can also be used in the music industry.

The main areas covered are how Big Data will propel music marketing by giving hard facts and numbers to determine what consumers like to hear, what consumers are

willing to spend money on, and the types of media consumers prefer to use to hear music. This thesis will also cover the negative consequences that may arise with the increase of music being distributed through digital channels that affect both the creators and users of music. Though discovering new music has always been a challenge, music data will definitely aid all players in the industry in the technological future. As long as human interactions are happening online, Big Data and analytics will be available for those to use and manipulate to make their marketing efforts more targeted to very specific demographics.

## DEDICATION

This is dedicated to the music business enthusiasts and to everyone that believes technology will continue to change the world we live in.

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## INTRODUCTION

Exponential growth of technology has brought about a new industry called “Database Marketing.” Simply put, this type of industry collects, aggregates, and brokers personal data and information. The digital activities of many millions of people around the world can be tracked through a variety of new techniques ranging from a store’s loyalty/credit cards, to targeted advertisements found on social media platforms such as Facebook, Twitter, Instagram, and others alike. Personal data, including both online and offline behavior are combined, analyzed, and then are sold to different types of business and corporations.<sup>1</sup> Companies that collect, combine, and analyze this type of data are known as data brokers.

Data brokers represent this wave of change that deals with personal information and how it’s handled both online and offline. This dramatic shift has created a new movement towards what is known as “Big Data.” For illustrative purposes, Big Data is simply made up of raw “little data.” In most cases, these little data give deep personal insight into a consumer’s individual and purchasing profile, and the consumer’s habits. Doug Laney, a tech analyst, first defined Big Data in 2001 as being “high-volume, -velocity and –variety information assets that demand cost-effective, innovative forms of information processing for enhanced insight and decision making.”<sup>ii</sup> Businesses, across any industry, value these types of insights that were once unavailable before this growth in technology, and have become interested in how these analytics are collected and can be used.

It goes without saying that Big Data and data analytics play a huge role in a company's decision-making process. Though they might be a little late to the party, the music industry is shifting their business practices towards Big Data. Big Data is demanding the music industry to change its business model from what it traditionally was. Online streaming services such as Spotify, Pandora, iHeartRadio, and many others have changed the way music is distributed and how it is discovered. These services are being able to customize user experience based on the customer's personal "on-platform" behavior and music preferences.<sup>iii</sup>

This evolution of music intelligence combines both online and offline user behavior to determine what consumers are listening to, what they're willing to spend money on, who they want to see perform "live," and how and why to keep them coming back. South by Southwest (SXSW) is an example of a company that has used Big Data to not only target their community and audience but also to give its audience exactly what they want, and customize the audience experience in a way that is relevant to their interests.<sup>iv</sup> Customization is allowing the music industry to find new ways to drive consumer loyalty and with the assistance of Big Data, companies are able to easily match up audience-relevant artists/brands with targeted audience profiles, and with data-backed decisions. Instead of decisions being based on a mere guess or feeling, the facts and numbers are now available.

The Big Data potential in music marketing and distribution is colossal and with data being generated and collected in real-time, around the clock, seven days a week, the music industry is now able to see what people are buying, downloading, and communicating about music. Being able to overlay numerous amounts of data sets such

as concert dates, television appearances, social media posts, money spent on artist promotion, etc, the music industry business can now see which efforts were effective, which were not effective, and quickly adjust their marketing plans accordingly. The purpose of this study is to understand how Big Data will ultimately change the landscape of how business is transacted within the music industry, and more specifically, how the future of marketing artists and their brands to consumers will be grounded in data and analytics.

The main question discussed is how Big Data is changing the music industry's historical business model. To answer this question it is necessary to explore and compare how Big Data has already affected other industries. It is essential to explore the opportunities and challenges presented by this topic, because as technology continues to grow at an ever-increasing exponential pace, in order to find new outlets and ways to survive and flourish as a business, the music industry, including everything from live performance, recorded music, merchandise, and licensing, must be able to adapt.

## BACKGROUND

To explore and fully understand the shift and change happening currently in the music industry we need to explore several areas: the first area involves how Big Data analytics enables companies to make high probability predictions about trends while also allowing them to hone in on strategic targeted marketing. Before this can happen, the data first must be collected. It is important to understand how that data is being deeply mined on a daily basis. What has been described as “The Internet of Things” will connect everyone to everything in an integrated worldwide network, and this will happen through collecting and linking every aspect of economic and social life.<sup>v</sup> Imagine a world where people, natural resources, machines, logistic networks, consumption habits, production, recycling flows, and virtually every other facet of life are linked and interconnected through software and sensors that feed the “Internet of Things” platform. To truly understand the magnitude of data that can be generated, Gartner, Inc. estimates that by 2020 over twenty-six billion Internet devices will be interconnected.<sup>vi</sup> In turn, this collecting and linking of data will generate what we know as Big Data in real-time. There are many companies such as Google, Target, the automotive industry and even political campaigns such as the Obama presidential campaign that have relied on data and analytics techniques to market themselves favorably to the public.

Other industries have already mastered the art of scraping and aggregating information from multiple websites, and with the rise of music consumption online, there is a clearer picture of music consumption than there ever was before. Record Labels

were always known for crunching numbers but Big Data has opened the floodgates, providing a lot more numbers to look at. One of the prominent data points that is being analyzed, as will be further explored, is what music consumers and users “like.” What a consumer likes, shares, and talks about on his or her various social media outlets gives insight and determines which types of artists and acts are worth watching in that person’s opinion. Given a sufficient number of “Likes,” trends can be discerned. Instead of the traditional model where the music industry was focused on sales, new technology and analytics systems are shifting that focus to listening habits. Digital downloads, streaming services, and social media are aiding this change by creating new data points about consumers. This new insight can be used to predict how much potential for success a new artist may have, based on other similar artists’ success.

With the focus on listening habits, some may fear that the quality of music will suffer due to our focus on what is “popular” at the time, and generating music based on what the majority of users want to hear. However, analytics and Big Data will still allow artists to find those niche markets to whom they appeal without having to put the quality of their music at risk. For example, take an American artist that finds success first in another country before making it big in the United States. What if an artist had a better predictor of where to find audiences that would classify as being receptive to their music? This could help aid a musician’s success without changing their music to fit mainstream radio, for instance.

Understanding what consumers like helps drive and tailor artists’, record labels’, and executives’ marketing efforts. But without knowing what consumers are willing to buy and spend money on limits the potential of those in the music industry to make

money. After all, the music industry is still a business that relies on cash flow in order to continue to create new works and get their products out to the consumers. There are many companies now investing time and money into figuring out how to get the most out of analyzing consumer behavior relating to music. There is a recent trend for entertainment companies such as Universal, Next Big Sound, and Sony to become the largest music dataset ever, which will improve the quality of business practices and help artists understand consumers better. Not only will learning consumer behavior improve the quality of the overall business, it will also give us a glimpse of and better predictions about which artists, bands, and acts to be on the lookout for.

The public has moved from an ownership/purchase model of acquiring music to “music as a service” based on the easy access to it on demand. Analyzing the preferred format consumers use to hear actual music, based on data, will give a clearer window into how to truly satisfy musicians’ fans. With more people turning to online streaming services, the path to improving music discovery is full of possibilities. This is already happening with “curated” services such as Beats Music, Spotify, Pandora, etc. that are using music intelligence that takes into account trillions of data points to offer new music discovery to its users. New outlets of getting the music to the consumer are creating sophisticated music applications that make it easy for listeners to hear what they want, when they want. Analyzing consumer preference will also aid artists in prioritizing where to market themselves and choosing platforms on which they will have a higher probability of being successful.

While there are many positive outcomes to happen from this change in music marketing, it is important to anticipate the possible push back from both sides of the

spectrum, music users and creators. Many Internet users are blind to how their personal information is excavated, manipulated, and controlled. Maintaining privacy in the digital world is nearly impossible as a practical matter and consumers routinely agree to privacy policies and “terms of use” every day without realizing what it is they’re agreeing to. Though there may be a time when we will see users resisting giving up personal information, a recent study has showed that presently people are not concerned about sharing their shopping habits, who they’re friends with, what their personal views are, the identity of their favored media, and other lifestyle habits. At the same time, paradoxically, they are concerned about sharing other sensitive information such as Social Security numbers, bank account information, health care information, and personal email or phone conversations.<sup>vii</sup> Luckily for the music industry, the sensitive information that consumers fear sharing the most is not relevant to marketing music.

For the creators of music, Big Data and analytics mean an increase in use of streaming services and the potential of new competitors to enter the landscape, which means more outlets for getting music to the customers by digital, online means. The biggest argument that creators of music, (artists, songwriters, record labels, music publishers, etc.), have towards digital streaming services are the extremely low royalty rates paid. Cory Doctorow, however, explains that the problem with streaming isn’t because it doesn’t pay copyright holders adequately. In fact, he says, these streaming services pay more per song than terrestrial (non-internet) radio stations have ever paid.<sup>viii</sup> In reality, streaming services offer a much better deal than terrestrial radio because unlike terrestrial radio stations, online- streaming services pay both the composers and performers. Furthermore, while radio only reaches a region or city,



streaming services have the potential to reach a multi-million listener worldwide audience.

## HOW YOUR DATA IS BEING EXCAVATED AND WHAT COMPANIES DO WITH IT

The views and definitions revolving around Big Data vary, depending on the company and the industry involved, what they use the data for, what the value of the data is to them, and the results they can gain and generate from the data. More or less, Big Data can be looked at as a collection of data from both digital and traditional sources, outside and inside your company that represents a hub for ongoing analysis and innovation. Using the data collected efficiently helps a company to better sell products or services, target marketing efforts, and improve services and products overall.

Big Data analytics are becoming essential for industry and enterprise growth. In a recent Forbes' article, it is said that 87% of enterprises believe that Big Data will be what redefines the competitive landscape of many different industries, within as little as three years.<sup>ix</sup> Eighty-nine percent also believe that companies who do not adopt Big Data strategies will risk losing their momentum and market share.<sup>x</sup> The Industrial Internet Insights Report for 2015 has emphasized that investments in Big Data analytics are becoming stronger than ever and found that not only do companies presently invest more than 20% of their overall technology budget in Big Data analytics, but also they expect this to increase over the next year.<sup>xi</sup> Many industries are using these analytics to differentiate their competitive strengths and are doing so successfully. Therefore, the primary real risk to not implementing the use of Big Data is missing out on opportunities

and overall growth in a market and allowing competitors who adopt an analytic strategy to have an upper hand.

Technology has increased the use of Internet-connected devices and has created a new position that the more information you put out about yourself, the more the world can tailor itself to your needs and give you exactly what you want. In short, the more technology collects information about you through your daily activities and interactions the more particular industries can manipulate that data to “benefit” you. Acxiom Corporation is the second-largest company in the database marketing industry that excavates, aggregates, and brokers personal data. This giant data collector is said to have records of hundreds of millions of people that includes: 1.1 billion browser cookies (data that gets sent to a website and tracks a user’s activity), 200 million profiles of mobile users, and an estimated 1,500 pieces of data per consumer, according to the *New York Times*.<sup>xii</sup>

#### FIRST-PARTY AND THIRD-PARTY COOKIES

Data collected not only includes public records, but also cookies placed on websites that are providing information about online behavior. For example, when you use a computer a “first party” cookie is placed by sites such as Google that can save passwords and other information to avoid having users log in every visit. “First-party data is your personal information, this ranges from behaviors, interest, and actions taken on websites visited, also including cross-platform data from when you access apps and the mobile web.”<sup>xiii</sup> In addition “Third party cookies” travel across all sites tracking, in order, what sites are visited. “Third party” data generates on these visited platforms and often collects information from other websites as well.<sup>xiv</sup>

## THE APPLE ECOSYSTEM

Apple is one company that has made collecting data easier by building a world that involves a computer for every single interaction. It is now possible for users to sync browsing histories across multiple devices, combining your behaviors on your laptop with your iPad and your iPhone. The result has been better marketing efforts and new ways to deliver advertising to consumers through with the help of these behavioral insights. The Apple brand has created a product that can pay for all your purchases, open your hotel room door, monitor your movements, control your devices in your home, track your sleep patterns, tell you where you parked, how many calories you burned, recommend movies for you to watch, etc., etc. The list goes on and on. All the while, this Apple ecosystem is collecting data about your behavior every step of the way, creating more software and products that the Apple user wants. Intelligence collected by these devices is only a small part of the interconnected world in which we are now living. Take for instance arriving at your hotel room, where the temperature, lights, stereo, mini bar, and even window shades are not only controlled by a single device but can adjust to your preferences before you even arrive to your room. This is just one of the many ways data collected on consumers is being put to use to give people exactly what they want. The more data put out there and collected, the easier it will be to create different types of consumer profiles about any number of people that can include information such as: your education level, your health profile, the type of car you drive, how many children you have, your race and age, your recent purchases, and even your stock portfolio.

## THE IMPORTANT ROLE OF ALGORITHMS

Apple isn't the only one that has caught onto the wave of collecting personal information and digital activities of people across the world. The creation and use of algorithms have made it possible for companies to collect and analyze Big Data through different data points. Algorithms consist of mathematical equations that create step-by-step instructions that calculate different data points, provide automated reasoning, and process data.<sup>xv</sup> Klint Finley states in his article on Wired.com how the Internet today is ruled by algorithms. We witness these mathematical creations every day from what movies Netflix recommends to you, what ads pop up in your email, what users Twitter recommends you to follow, and what shows up on your Facebook feed.<sup>xvi</sup> Algorithms produce quantifiable results and answers.

The real value of algorithms, as explained in *The Formula*, comes from being able to examine as many data points as possible about someone and creating equations that solely are meant to build an accurate representation of a consumer.<sup>xvii</sup> For example, Google created an algorithm that knew if a user was more or less likely to purchase a specific product online and could change the prices of items like videos, e-books, computers games, etc. By tracking your search history and website activity, Google was able to use that data to produce an "automated response" based on the calculations.<sup>xviii</sup> In other words, Google can sell you a product at a price you are willing to pay.

Pandora Radio's success can be accredited to an algorithm. The online radio users send data to Pandora about their preferences through signals such as liking and disliking songs, "skip this song" requests, and inexplicit signals such as if the program is still running or if users aren't listening. Pandora included an equation in their algorithm to

track if a user has or hasn't interacted with the program for a period of time and displays simple message staying "are you still listening?" prompting a response.<sup>xix</sup> Pandora uses approximately 450 data points related to "distinct musical characteristics" that algorithms calculate to pick the next song to play.<sup>xx</sup>

## PRESIDENT OBAMA AND THE 2012 ELECTION

Algorithms and the importance of Big Data were also seen used during the Obama campaign prior to the 2012 election. A 100-strong analytics staff was brought on board to study and sort through tons and tons of terabytes of data to help Obama gain the competitive edge they were looking for in the upcoming election. Campaign manager Jim Messina, who was known formerly for mining data to improve supermarket promotions, can be credited for this approach. Jim Messina knew that in order to achieve the results for their campaign they needed to be smart about what direction the campaign should take and that only could happen from demanding data on everything. These brilliant analysts used Big Data to provide micro targeted demographics that predicted precisely how much money the campaign would get back from fundraising e-mails that were sent out. Another thing they discovered was that women between thirty and forty living on the East Coast did not donate as much as expected so they came up with a way to build incentive by offering a chance to have dinner with Sarah Jessica Parker.<sup>xxi</sup>

Tactics used in Obama's campaign also included lots of data mining and purchasing data from data brokers. In one scenario, they purchased television-watching habits of people in Ohio that allowed them to televise campaign ads at the exact times specific voters were watching television. What they found using Big Data was that the airtime being bought was during unconventional programming such as *The Walking*

*Dead*, and *Sons of Anarchy*, instead of during news programming, which would have been conventionally advised.<sup>xxii</sup> The Obama campaign illuminated the important impact Big Data has in competitive and strategic marketing success.

## DATA COLLECTION CREATING A NEW WAY OF LIFE

Companies and organizations are not just using Big Data for their own benefit but the use of Big Data is now allowing them to treat customers on more of an individual basis, building long-term loyal relationships. Big Data allows for companies to predict exactly what customers want and in most cases before they even ask for it. Consciously, and in some cases subconsciously, the technological world in which we live has gotten us excited to want to see and use data. For instance, the craze over Jawbone's UP and the Nike+ FuelBand, a product that tracks your daily steps and activity, and the food diary app MyFitness Pal, has provided users with more data about their health and eating activities than ever before possible. Big Data is now becoming meaningful to consumers the more they become interested in their own personal data, which in turn leads them to continue logging in and using these types of data collecting products. Luke Dormehl describes this new wave of individuals who enthusiastically take part in some form of self-tracking, called the Quantified Self movement.<sup>xxiii</sup> Simply put, these Quantified Self devotees seek self-knowledge through numbers (different data points). The same can be done within the music industry. For example, there can be incentives offered to get music users interested in tracking their music consumption habits. Take for instance, a personalized tracker of all the shows you've been to, or a program that can track your favorite/most listened to song of the week/month. What if someone could even track the music that they perform best at during a workout or run? This is all measurable data that

music consumers can generate on their own that can then be used to gear music marketing efforts more strategically.

Companies are also using Big Data to improve their interactions with consumers and for that reason makes Big Data analysis key to effective marketing and development. With numerous brands being able to connect through more channels to consumers, improving and maintain relationships are essential. Across many industries, the presence of Big Data and use of analytics is successfully helping companies understand their consumers and target markets, giving them a competitive marketing advantage.



## USING BIG DATA TO DETERMINE WHAT CONSUMERS LIKE

For decades, the gatekeepers to help make you a star in the music industry were the record labels. The goal was to make an act a success and the key factor to a record's success was getting radio airplay, which is why most of the record label's efforts occurred in the radio promotion department. After making a record a hit on the radio, record labels had to then ensure the content was readily available for consumers to buy through various outlets. During this time there was limited interaction and communication between the artist and the consumer. Even though it wasn't needed much at the time, it didn't allow the artist to hone in on what their fans liked and wanted to hear more or less of.

## WALL STREET'S IMPACT ON THE MUSIC INDUSTRY

When CDs were released during the early 1980s, the music industry saw a boost in profits, which drew the attention of Wall Street. Multinational conglomerates stepped in and bought what was left of the six independently controlled major labels: Columbia Records, Warner Bros., Universal Music, EMI, Polygram, and BMG.<sup>xxiv</sup> As the business "suits" began controlling the new music industry, quick bottom-line results became the common goal. With Wall Street in control, labels began looking to Madison Avenue to bring in the big advertising dollars in order to make money for their stockholders. The catch soon became that ad dollars only came in under certain content conditions, i.e. the music programming, whether it was heard on radio, television, had to be in line with the

target demographic of the advertiser.<sup>xxv</sup> Instead of really finding out what different music consumers like and are listening to, Wall Street and Madison Avenue have redefined music to be a mass-market product.

A large amount of consumers feel like newer recordings are not worth purchasing as much as recordings released years ago, causing a dilemma for the music industry because product must be sold in order to survive. The music industry's corporate entities are only looking at what is going to make the most money and with the biggest market, rather than taking the time to analyze and study data that is out there to help tackle and find smaller but more markets. In addition they're missing out on ways to discover what multiple audiences like and want to hear. Cory Doctorow makes a strong claim that consumers are going to support and pay for artists' music they actually like, without labels having to force them. Music is personal both to the artist and the consumer, so being able to determine what it is they like to hear would not only make them happy, but also turns them into paying customers, which after all is the end goal for any business. Taking it one step further, analyzing Big Data is allowing us to make better predictions, similar to how Google is able to predict flu outbreaks faster in specific US regions based on public hospital admission records and pin-pointing certain "search terms" to analyze.<sup>xxvi</sup>

## SOCIAL MEDIA PROVIDES INSIGHT TO LISTENING HABITS

Luckily for the music industry, record companies have recently begun to realize that they need to rely on more information than advertising dollars, gut instinct, and intuition for finding the next big "hit" or star. Within the last few years, the music industry has started to take an active interest in big data and more importantly how to use

it to determine what consumers like. Big Data has the ability to help the music industry better identify new waves of music trends, discover new artists, and market those artists more strategically.

Social media outlets have played a tremendous role in continually creating and gathering numerous data points about consumers and their interests and listening habits, that can be used for analysis. Every time we “like,” share something, use a hash tag, like/share a page, stream music, buy a concert ticket, or comment on a music blog on various social media outlets such as Facebook, Twitter, Instagram, Youtube, SoundCloud, Tumblr, etc. we’re creating data points for those in the music industry to make better predictions. Whenever you post a video to YouTube, use an app to share, invite friends to a concert you bought tickets for, and share an album you bought, you’re creating a profile for what types of acts you think are worth watching. One of the more powerful sources that collect big data information is YouTube, being the most popular online music discovery tool, number one search engine for music fans, and the preferred platform for listening to music, especially among the younger under-18 demographic.

#### THE NEXT BIG SOUND

The Next Big Sound was launched in 2009 and became one of the first providers of online music analytics and insights. The visionary company saw the power and influence Big Data had in fields such as sports, supermarkets, finance, and politics and saw comparisons that could also transform the music industry.<sup>xxvii</sup> Next Big Sound tracks fan interaction on every artist across the world. These insights include: social, sales, purchases, and plays. The Internet has reinvented the way music is consumed and

marketed and the music industry moving completely online has allowed awareness and engagement to be measured, which ultimately will lead to revenue that can be realized.

Next Big Sound provides free metrics to any member and allows you to view the metrics to other artists and bands. Anyone is welcomed to become a member by signing up and creating a free account through their website. Analytics measured and collected are the current music trends that compare the changes in metrics across an artist's page likes, page views, and performance. Every member also has access to a comprehensive overview and tally of any music artist's page views, mentions, followers, and likes on their official social accounts. They also provide detailed graph comparisons for similar artists that allow someone to see how one artist's performance is "more popular" (or not) than the other. All of these data points provided by Next Big Sound are allowing the artists, labels, and anyone else invested in the music industry to determine what fans like and want to hear more of, all while helping them make smarter marketing decisions, and getting more bang for their buck. Billboard even noticed the importance of social interaction, with the increase in Internet consumption, and partnered with Next Big Sound to create the Social 50 and Next Big Sound Chart. A weekly chart, the Social 50 lists the most popular artists online across all music sites, while the Next Big Sound Chart provides a view of the fastest accelerating artists predicted to achieve success.<sup>xxviii</sup> New Charts like the ones found in Billboard never had to exist prior to the boom in use of the Internet. This is just one example of how these online social rankings and interactions are now something labels and business executives look at in order to make strategic marketing decisions when it comes to finding new talent, or dropping unproductive artists from the labels' roster.

Big Data is providing results that are exciting and able to predict more or less tomorrow's big music star. It is safe to say if the local not-so-famous band's Facebook page "likes" are steadily increasing to the millions, and the indie artist has hundreds of thousands of Twitter, Instagram, and SoundCloud followers, then label execs, managers, publications and other fans will start to take notice. This shows the importance of researching new artists at early stages of their music career, and studying the different data that is out there.

The Next Big Sound credits the power of data with being able to predict the next breakout artists through an algorithm that lists emerging artists with a high probability of accuracy. With the collection and studying of data, Next Big Sound contends they can pinpoint a breakout artist 500 times better than random chance.<sup>xxix</sup> Some of the well-known circumstances in which the Next Big Sound has analyzed to predict new breakout stars based on social media data were Kendrick Lamer and A\$AP Rocky, both of whom had released acclaimed mixtapes but at the same time did not have any studio albums or Billboard hit songs. Another indicator of success has been Billboard's Hot 100 chart. The Hot 100 chart ranks the most popular songs in the United States based on radio, sales, and online streaming. To search for the next star, Next Big Sound identified artists who made the Hot 100 chart the prior year and examined what their breakout pattern consisted of and generated a predictive model. Metrics included in the study were an artist's total, daily change, and rate of growth for views, plays, and fans across different outlets such as Twitter, Facebook, YouTube, and SoundCloud. Combining this Big Data and analytics with the Next Big Sound's algorithm predicted 44 top artists, of which six went on to being on the Billboard Hot 100 list.<sup>xxx</sup> Data collection and analyzing also

proved to be 16 times better of an indicator for an artist's success versus basing it off an artist's YouTube views.<sup>xxxii</sup>

Universal Music Group is another big player who has taken heed of the importance of mining and collecting data provided by consumer behavior and social interactions. Two Universal technology experts created an Artist Portal about five years ago. They were motivated by the ability of software to aggregate information from multiple websites. The goal was to create and organize chunks of raw data and present it in a user-friendly way that would allow users to compare and track artists' sales, social-media buzz, airplay, and streaming globally and in real-time, similar to what Next Big Sound had created.<sup>xxxiii</sup> The Artist Portal also gives insight into factors behind spikes and dips within each metric. The system created allows data sets to be overlaid. For example, it allows overlaying of concert dates, television appearances, social media posts, and money spent on promotion, making it easier for Universal Music Group's executives to see quickly if efforts need to be moved or if marketing plans need to be adjusted.

Even though Universal is a leading force among record labels catching on to the Big Data wave, Sony Music and Warner Music have recently launched and created dashboards similar in functionality. Mining, examining, and studying Big Data, is shifting the music industry's focus to taking a closer look at consumers' listening habits and by doing so they are able to determine what consumers like and want to hear.

An article by Hannah Karp in the *Wall Street Journal* mentions how Universal has used analytics to encourage promoters to bring Hip-Hop artists to Finland. Prior to the use of Universal's Artist Portal, persuading concert promoters would have been

difficult due to a lack of Hip-Hop records sold in Finland in the past. This time Universal had data to show that hits from acts such as Kanye West were being streamed at a steady rate by fans in Finland. The data was used to back up their reasoning. The use of data now opens the gates and helps encourage promoters to bring and market hip-hop acts to Finland. Finding niche audiences and audiences that like similar music to another artist are helping the music industry make better strategic decisions, this time based on hard facts.

## USING BIG DATA TO DETERMINE WHAT CONSUMERS BUY

Studying consumer's purchasing habits provides important data points that can lead to endless marketing possibilities. After all, music itself is a product and the listeners of music are its consumers, which allows us to analyze behaviors and music-related purchase patterns.

## ANALYTICS USED TO BOOST CONCERT/TICKET SALES

Social Media analytics have opened the door for record labels, musicians, and others in the music industry to collect different information to determine what consumers will most likely spend their money on. Facebook and Twitter have allowed fans to like, follow, and talk and comment freely with their peers about their favorite, or least favorite, artists and bands. Take for example a new band wanting to find better ways to promote their next show or performance. Initially you would assume the band has some following and "hype" about them to stir up social media conversations or page likes. An algorithm can be created to sort through all conversations across Facebook and Twitter that mention the band along with data points of consumers either talking positive or negative about a specific song they've recorded. Similar to Facebook's 'Daily Story Feedback' feature that displays responses from fans to a band's posts and status updates, however this feature doesn't actively sort through all conversation just based on responses. After the data is collected, songs can be ranked based on what the fan's favorite songs are to hear versus the ones they would least like to hear, from there the band can determine which



songs they definitely want to perform at their next show and which songs they should do without. Using this data to track what the consumers want to hear before they get to hear it live, is one simple way of finding better ways to market a band or artist's upcoming show, resulting in more ticket sales.

## PAY ATTENTION TO THE MUSIC CHARTS

Researching consumer behavior through Big Data and analytics can also help record labels find new ways to market the same product, but in different ways. For instance, Jam Kotenko talks about record labels paying attention to data as simple as what the top selling album is on iTunes as an indicator that the label should gear their marketing efforts towards more singles from that album.<sup>xxxiii</sup> In some cases, paying attention to real-time data, such as the hottest selling album of the week or month, can also lead to releasing live or acoustic spinoff versions. Understanding that we're now living in a world where algorithms can input data and spit out highly predicative results is essential if labels want to save misspent promotional dollars.

## BIG DATA PROMOTES PERSONALIZATION

Big Data is allowing us to have a better understanding of the world we live in and a deeper understanding of consumers, and not just of a few people but billions. As we continue to use data collected to determine what consumers like, there will be other ways to manipulate the same data to figure out how to get them to buy what they like.

Similarly to how online shoppers leave a trail of their movements through their IP address, which opens them up to being targeted with personalized offers through ads or emails that later pop up regarding either a page you visited or a purchase you made, music consumers enable this personalized advertisement based not on only their

purchases but their social interactions, both online and offline. Luke Dormehl gives an example, in his book *The Formula*, how something as small as mentioning the words “Cape Town” in an email will trigger airlines to send email promotions for “Cheap flights to Africa” emails to your inbox.<sup>xxxiv</sup> Airlines and other travel companies have algorithms in place that sort through data that can indicate which users have a higher probability of being interested in traveling to South Africa in the future. Even though the context of the email could have been irrelevant to traveling, Big Data allows more efficient marketing promotions based on better predictions.

#### QUANTCAST ELIMINATES SHOTGUN MARKETING APPROACH

The music industry now has the opportunity to use similar tactics to ensure they are making improved decisions when it comes to directing their marketing efforts or creating new ones. Quantcast is one of the largest companies in the world that measure consumer audiences through the use of data and algorithms. Co-Founder Konrad Feldman came up with notion of using data to measure a business’ campaign, looking at what actually worked. He then analyzed the massive amount of data to determine the characteristics of a consumer rather than determining what the ideal consumer is for a product and then hoping to figure out where to find those consumers.<sup>xxxv</sup> This would do away with the traditional shotgun approach to marketing. Amazon’s user recommendations are similar to the vision Quantcast had in creating insights for online retailers to tailor their promotions on their websites to each user and ultimately generate a formula that can depict and describe specific users, then being able to use that to influence their purchasing behavior.

Being able to split up audiences based on granular categories such as lifestyle, interests, demographics, geographic location, and psychographics has made it easier to interpret and read behavior patterns found in data. Understanding the music consumer's behavior and studying data to see where different types of consumer profiles are going, and how they are getting there can aid in influencing their decisions. Pandora is an example of a company who has studied consumer's listening habits to determine what they most likely will want to hear played next and have also found a way to use the same data to target advertisements. But what if this could be taken one step further and integrate "likes" users have expressed on Facebook to generate other personalized offers? This could lead to more music discovery of specific artists or bands based on interests already conveyed online, along with promoting offers for items such as albums, concert tickets, or merchandise depending on that consumer's profile and characteristics. The more personalized the promotion, the higher probability that the said advertisement will work. Big Data is allowing for this huge aggregation of all your personal information that you've ever put out there to build a precise representation of who you are, now more than ever before. Moving forward it will only continue to be if not more important, to use data to determine what consumers want to buy.

## USING BIG DATA TO DETERMINE WHAT MEDIUM CONSUMERS PREFER

One of the more popular arguments among music industry “insiders” is that the Internet killed record music sales. As a result of the decline of sales since 2001, there have been many new ideas brought about to try and determine if there are still enough paying customers (and ways) to reward the creators of music to keep the industry intact. The great thing Big Data has given to the music world is the massive amount of music data generated straight from the source, the music listeners, that can aid us to come up with new strategies to satisfy all music fans. Big Data is providing a new inside look on how consumers would prefer to listen to and acquire music and through which medium.

## THE TRADITIONAL OUTLETS

Record stores used to be everywhere across the nation prior to the early 2000s. While many would initially guess the decline in record stores was due to the decline in record sales, the main reason was because consumers couldn't find the product they were looking for. In *Music 4.0* it states that since 2003, 3,500 music retailers have closed their doors, now leaving fewer than 2,500 devoted music retail outlets left.<sup>xxxvi</sup> Music retail chains like Tower, Sam Goody, and Virgin Records all took a hit when consumers realized they could get the same product at a cheaper price from a chain store such as Wal-Mart, Target, and Best Buy. In addition to these megaretailers, the rise of digital music files (MP3s) gave the public the option of buying the same product at a lower price since there wasn't a requirement for a physical format any longer.

Broadcast radio is also not a factor as much as it once was. Establishing moderate airplay could almost always guarantee the long-term success of an artist, but the rise of new music discovery platforms such as YouTube has altered the impact broadcast radio had. Music broadcasted on the radio during the '50 through '70s local in nature, keyed to the particular area or region it to which it was being broadcasted, and DJs had more freedom to play tunes they liked. As soon as FM radio started to bring in big advertising dollars the local stations lost their control and were bought by station groups, who in turn were purchased by conglomerates.<sup>xxxvii</sup> For the avid listener, broadcast radio went from having your own personal music guide that offered endless discovery, to a stale and homogenized experience, causing market share loss to Internet and satellite radio.

Television has also been a factor that in the past helped increase album sales and turned artists into superstars, but this isn't so much the case anymore. Being featured on late-night shows such as *Saturday Night Live* used to be a guarantee that the artist records would sell at least 100,000 units in as little as a week after an appearance.<sup>xxxviii</sup> Daytime TV helps music sales because it is viewed by a narrow demographic. Although Daytime TV can't be utilized for every artist, if an artist finds a show that matches the artist's targeted audience, Daytime TV beats out late-night television for stimulating music sales. Research has shown people are more than likely not interested in buying music during the times late-night television airs. While Disney and Nickelodeon can arguably say they are the only star-making venues on TV today, the acts featured on these platforms must adhere to the network's specific demographic, which focuses more on being "cute" than appealing to a broad cross-section musical tastes.

## DIGITAL MUSIC DOWNLOADS

Unfortunately, digital music downloads that sell for \$0.99 per single will never be enough to offset an industry that once made their revenue from selling physical albums for \$10.00 to \$18.00. Soundscan reported in 2013 that digital download sales dropped 5.7 percent and total album sales fell 8.4 percent from the previous year.<sup>xxxix</sup> During 2013 digital album and track downloads saw a decline for the first time ever since 2001. There has been a shift in consumers' purchasing habits from a focus on albums to a focus on singles only and the increase in use of Internet streaming services. However, even though there has been a decrease in the reported numbers of digital downloads, billions of digital single streams have still been generated.

## YOUTUBE

YouTube has become one of the biggest platforms for music distribution and music discovery, making it one of the most used formats for consumers to listen to music. Here are some astounding facts from YouTube's press section:<sup>xl</sup>

- More than 1 billion unique users visit YouTube each month
- Over 6 billion hours of video are watched each month on YouTube—that's almost an hour for every person on Earth
- 100 hours of video are uploaded to YouTube every minute
- 80% of YouTube traffic comes from outside the US
- YouTube is localized in 61 countries and across 61 languages
- According to Nielsen, YouTube reaches more US adults ages 18-34 than any cable network

- Millions of subscriptions happen each day. The number of people subscribing daily is up more than 3x since last year, and the number of daily subscriptions is up more than 4x since last year

YouTube has become the preferred way for teens to listen to music, with 64% of teens using the service more than any other source such as radio, iTunes, or CDs.<sup>xli</sup> The valuable data collected through YouTube has illustrated the potential an artist has to reach more people than ever before, which has made it necessary for creators of music to have a YouTube presence, by creating their own YouTube channels. For instance, when a consumer hears a song by an artist for the first time, their “go-to” to find more information or music from said artist is to search for the artist’s YouTube page.

Big Data and analytics accessible through YouTube allow for artists to use the platform as an effective and free marketing tool. Being a part of Google, it’s no surprise that YouTube made Search Engine Optimization (SEO) techniques available to their users. SEO is an Internet marketing strategy that looks at different data points and keywords searched by a user or audience. For example if you Googled “concerts this weekend in South Florida” a search results list would contain a list of websites that includes specific keywords contained in your search. YouTube allows artists to customize the name of their video, add descriptions, add keywords, and add tags in order to get videos viewed more frequently. Data-backed statistics prove that YouTube is one of the preferred methods for listening to and discovering new music, making it an indispensable part of music marketing.

## SOUNDCLOUD AND THE DIY MUSICIAN

SoundCloud is no stranger to the Big Data world and is a must have for any do-it-yourself (DIY) musician. Standing out from other popular streaming services, SoundCloud allows anyone to share and upload music to their site. The platform available for musicians has led to SoundCloud becoming the largest community of music creators on the web, uploading an impressive 12 hours of content every minute.<sup>xlii</sup> SoundCloud has created an environment where fans can make meaningful connections with the artists, similar to social platforms like Twitter and Facebook. Not only can users like, share, and download music from SoundCloud, but they can also comment directly on an artist's song, introducing a two-way interaction between the audience and musician and rest assured, SoundCloud has a mobile app available on all Apple and Android devices.

Being one of the biggest used platforms for creators and places users go to listen to music, SoundCloud has been able to capture all interactions providing analytics and insights for artists. Making it an essential tool for any DIY musician. SoundCloud offers users insights into each song uploaded such as an artist's recent plays, likes, comments, downloads, and reposts.<sup>xliii</sup> You can also adjust the time range to compare data on a monthly, weekly, daily, etc. basis. SoundCloud most recently included a new feature that allows users with a "Pro Unlimited account" to see exactly which cities their listeners are located in.<sup>xliiv</sup> While SoundCloud's "Freemium" service comes with the useful basic stats, their "Pro" and "Pro Unlimited" accounts are well worth the \$6 - \$15 monthly fee, which include the country and city location of their audiences, respectively.<sup>xliv</sup> It's every artist's goal to find where their fans are. Knowing the location of an artist's audience can help



save time, money, and energy when it comes to strategizing marketing and promotional efforts. SoundCloud's data is helping make that easier.

## THE RISE OF STREAMING SERVICES

Most people these days are growing more accustomed to using new formats to listen to music like streaming services Pandora, Spotify, Apple Radio, and Beats Music. With consumers wanting access to everything in the palm of their hand, industries have had to incorporate new platforms to offer their services and products. These commonly come in the form of “apps” that allow users to listen, stream, purchase, etc. all from a mobile device or tablet. The main reason for growing popularity of streaming services has been the ease of accessing vast music catalogs online at no charge at all or through a subscription that costs as low as \$3 a month, along with eliminating the requirement that the user have computer memory space to store songs. The Internet is making it possible to collect and study data that now reveals the changing buying habits of music lovers. Streaming services can be thought of in a new light that has the potential to transform the music industry's financial model. We are witnessing an important shift in consumers' preference from ownership to accessibility.

Pandora has reportedly delivered 1.5 billion hours of music each month to over 70 million of its users, of which only roughly three million are paid subscribers.<sup>xlvi</sup> The streaming market is proving to be a competitive landscape that will continue to have new major players enter the playing field, forcing these companies to constantly find ways to set themselves apart. For example, Spotify wanted to gear their marketing efforts to attract new users who spend more time on their phones and tablets versus a desktop computer or laptop. Spotify offered a promotion that allowed limited free access on

mobile devices. The data collected during this promotion showed that 50% of Spotify's new users were signing up through mobile devices.<sup>xlvii</sup> Impressively Spotify is reported to currently have 15 million paying customers.

This new consumer preferred medium of listening to music is causing for big names such as Jay-Z to enter the growing streaming music industry. During late January 2015, Jay-Z's Shawn Carter Enterprises subsidiary Project Panther Bidco made a \$56.2 million dollar bid for Aspiro, a Swedish streaming company.<sup>xlviii</sup> The interest in streaming is growing exponentially as it offers increased entertainment consumption and opportunity for musicians to promote their music.

In recent years and more to come in the future, the popularity and easy accessibility that streaming services offer have landed providers such as Spotify, Pandora, and Rdio deals with auto manufacturers for in-car integration. Pandora is currently the most recognized for this new type of partnership, already being featured in different automative brands such as BMW, Volvo, Nissan, Mercedes-Benz, and much more.<sup>xlix</sup> A lot of user's listening time is spent in the car during their commute, so it's no surprise that these steaming services are racing to dominate the in-car integration market moving forward.

Spotify decided to take an unexplored angle and negotiated a deal with Uber, the taxi car app service, to allow passengers to play the DJ role when they use their service.<sup>1</sup> Uber has updated their driver's mobile app settings to allow them to indicate whether or not they have an AUX input in their vehicles. Once a passenger is picked up they can control the music during their ride. This new integration will allow for a new personalized experience for every user that uses the taxi service.

As streaming services continue to become the preferred way to consume music, however, the method of distributing and calculating royalties will also need to be addressed. As the financial structure of the music industry changes with the growth in technology and services, the way money flows to those on the creative side must change with it. It is apparent that the traditional method of calculating royalties needs to be readjusted to fit the times we live in.

## CONSEQUENCES MUSIC CREATORS AND USERS FACE

Generating new consumer insights wouldn't be possible without the important role of Big Data and the linking of different datasets. With data streaming from and through all parts of our daily lives the quantity of data generated is enormous but it comes with its disadvantages as well as advantages.

### USER'S PRIVACY ISSUE

The biggest issue consumers face with the increase in Internet consumption and Internet-connected devices is the loss of privacy. In an increasingly digital world where sensitive information is being shared at an enormous rate, most people are oblivious to how much information they are willfully putting out there and the types of terms and conditions they are agreeing to. Up until the world became as digitized as it now is, people associated the word "privacy" with personal tangible objects, their actual space. In Mary Madden's article, *Public Perceptions of Privacy and Security in the Post-Snowden Era*, she notes that in one study 9 out of 10 consumers believe they have no control over how their personal information is gathered and used by companies.<sup>li</sup> The study also found that among the various communication channels consumer's use, there hasn't been a specific platform or medium they feel is safest. For companies that seek to collect information this means that all media are viewed as equal when it comes to finding ways to excavated user data.

Interestingly, the study mentioned in Mary Madden's article found that most consumers are not as worried about privacy when it comes to their lifestyle habits, such

as consumer behavior, shopping habits, who their friends are, favored media (movies, music, and the like), political views, etc. Consumers are found to be more concerned about keeping information private regarding their Social Security numbers, health care, bank statements, and the content of personal email and phone conversations.<sup>lii</sup> The music industry isn't interested in that kind of consumers' personal data as much as they are interested in their consumer spending behavior and lifestyle habits, but what many people fail to realize is that these data points are the very ones used to create intimate "portraits" of individuals.

There are companies in business specifically designed to mine users' data from different sources, create users' profiles, and sell the users' data to someone else who can utilize the type of "customer" you are to market other products or services. It is surprising how often users agree to companies' privacy policies or "terms and conditions" without even reading them when submitting information to a website, mobile device, or mobile app. This is the main reason your information is being shared. Most people do not take the time to sit and read through every provision of the "terms and conditions" they run across, but taking a second to open up that window and searching through the content, one would find that a majority of these data collectors explicitly state they are allowed to sell and share your information with third-party "partners" or companies.

It is hard to determine if anyone is able or will be able to remain anonymous in the digital world. We continue to leave our digital "fingerprint" every time we use an Internet-connected device whether it through using your real identity (first and last name, social security number, email, etc.) or an IP address that picks up every time you use the Internet from your computer. The accessibility the Internet has given us will not be one

that backtracks, which means moving forward the conflict surrounding consumer's privacy will continuously need to be evaluated and updated to ensure people not only feel safe but that their information is as well. The digital world needs to be regulated and there will come a time for stricter privacy control as more people share information via the Internet.

## USER'S PERSONALIZATION

Big Data has allowed businesses to personalize marketing efforts more now than ever before. Tracking and analyzing consumer's online and offline habits have created the opportunity for building deeper connections that target consumers individually. Customers like this because data can personalize advertisements and marketing materials based on what a consumer's "profile" looks like. On the other hand, it has the ability to predict or show what wouldn't work or apply to a certain consumer. For instance, Big Data can cut out all the junk email a certain individual wouldn't want to see or, consider buying, while making sure the person only receives emails containing relevant content they would be interested in and have a higher probability of clicking through to make a purchase or use a service.

There is, however, some negative consequences that come along with Big Data allowing for so much personalization, and that is "data discrimination." In order to segment consumers companies have to organize users into different demographic categories based on the data points they are interested in that apply to their service or product. Companies like Acxiom organize consumers into different "value segments," which basically ranks and determines the value of a consumer based on their online or offline activity. The main issue here is that consumers never know where they fall on the

ranking scale and depending on where a consumer is placed they may unknowingly suffer price discrimination, deprivation of special offers, or poor service. This type of discrimination is underhanded because it is entirely invisible. Take for example a time your friend asks to borrow your computer or asks you to sign up for a certain website on his behalf, enter his personal information or search for new products or services. In such a case you might be profiled into a certain demographic that doesn't apply to you at all based on your friend's online activity.

We are all witness to technology developing at a more rapid pace than our consumer protection laws, and in most cases those laws lag behind the technology and can't be applied to operate in our networked world. Moving forward, consumers owe it to themselves about be proactive regarding privacy and the insidious violations of personal privacy by educating themselves on different ad-blockers, opt-out tools, and other plug-ins available on most Internet-based platforms. The more consumers understand how their data is collected and used, the more knowledgeable they will be when it comes to putting out personal information.

## THE DIGITAL ROYALTY DILEMMA

For the music creators, the biggest issue with the rise in Internet use has revolved around royalty payments payable to those on the creative side. The laws currently in place make it difficult to fairly balance the needs of the main stakeholders. Creators have argued, and rightfully so, that streaming services are not paying fair market royalties for the licensed use of their works. Musicians for the first time ever currently receive percentage points of pennies, and sometimes less, per stream of their song(s). With the streaming service industry booming, one would think companies such as Pandora,

Spotify, Beats Music, etc. would be interested in creating and sustaining mutual profits that will motivate creators of the content to create more and better music. Without the actual music, these digital streaming companies wouldn't be in the business of making music accessible to consumers in the first place. As the music industry continues to morph into this mixed economy composed of different consumer channels and revenue streams, new royalty regulations will have to be implemented.

While there is a rift, currently, concerning streaming service royalties, it cannot be denied that these streaming services have changed the music industry from being one that is focused on ownership to one that revolves around accessibility. Subscription services are turning more pirated users into “buying” consumers, who are in turn looking at paying for music as they would a monthly utility bill.

Streaming services in reality are offering copyright holders a better deal than radio ever did, mainly by paying performance royalties to not only the composers and publishers of a song, but also the performers.<sup>liii</sup> The other advantage music creators are offered through streaming services is the ability to reach millions of potential listeners and to create repeat royalty payment more than once. For example, creators of content earn a royalty payment through streaming services every time one of their songs is streamed, which means you could play the same song 10 times and each time a royalty payment would be calculated versus the sale of an album or digital download that would only generates a royalty payment once at the time of purchase. With streaming services allowing for the generation of ongoing royalties, accessibility has the potential to lead to higher payouts for creators and the performers of music. However, only if the abysmally low royalty rates are increased. Big Data and analytics can effectively aid and provide



more insight for artists, record labels, and publishers when it comes to tracking these royalties. Even though digital royalties still needs to be addressed and fine-tuned, data can better track how often songs are being played, where they're being played, how much of the song is being played, and in what capacity (a highly viewed rated publication or TV show vs. a local minimum reach advertisement that airs once a week), ultimately making it possible to ensure correct payment to copyright holders in the future. Regardless of its pitfalls, the role of Big Data and analytics offers the music industry many opportunities to be profitable and succeed in our technology driven world.

## CONCLUSION

Without a doubt, Big Data and analytics are changing the landscape of many industries. Technology has created a new digital world that allows businesses to track digital activities of millions of people through a variety of different techniques that allow companies a personal look at consumer behavior and listening habits. Data collection has propelled other industries forward keeping them abreast with the current times. Music data can offer the same benefits by aiding those in the music business to make better marketing decisions.

Generating and collecting Big Data in real-time, 24/7 will give insight into what people are buying, downloading, and communicating about music. Data collected both online and offline can be combined to better determine what consumers like and want to hear, what consumers are more inclined to buy, and on what media consumers prefer to hear music. With consumer social interactions happening frequently online, the music industry can now see which marketing efforts were a success, which were not, and adjust their plans accordingly.

Newer artists entering the music scene now have a better probability of finding ways to distinguish themselves, thanks to Big Data. Up and coming artists have always had a difficult job finding their target audience. But now, with the use of data and analytics it will be much easier to pin-point how to reach those audiences, which ones to avoid entirely, and the most effective route to get there. Big Data provides similar advantages to established artists but more importantly it helps these well-known

musicians stay relevant to their demographic and, possibly, build new audiences they would have never been aware of before.

The rise in Big Data and analytics put a magnify glass on the consequences that come from use of the Internet in this digital age. Moving forward, the users, creators, and legislators in the music industry will need to act in a cooperative way in order to generate a fair equilibrium that protects user privacy and establishes a fair market value for digital royalties, one that can also adapt to technological advancements. However, when it comes to it the advantage and potential data provides, it would be a serious error not to incorporate Big Data and analytics into your music business tool box. Big Data has created a world that allows any and everyone to view different statistics and data points, not just the big record companies. Now that we know music data is out there and accessible, we should realize that the opportunities are limitless. It is up to those in the music industry to take heed.

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