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The Death of Music Videos?: An Analysis on the Effectiveness of Music Videos as a Promotional Tool

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Introduction

This research explored whether or not music videos remained an effective marketing tool for the music industry after the diffusion of the Internet in American culture. As a result of the transitions in media through which music videos were distributed, this project asked the following research question(s): 1) What impact has the airing of music videos on MTV had on music sales? 2) What was the impact of music videos on sales when music videos moved from airing on television to being distributed over the Internet?

This study encompassed two research perspectives and approaches: diffusion of innovations and utility maximization. In the communication field, diffusion of innovations postulates that innovations would supersede the practices and ideas that came before them as the innovation is diffused through a society. In the economic field, the utility maximization theory suggests that since music videos served as a sampling tool, the availability of music videos on the Internet would decrease the cost of music, thereby increasing consumer consumption of music (e,g,, cds, etc). A multiple, embedded case study method was used for this project. In case one, a historical approach was taken to provide pre-Internet, MTV analysis while in case two, a two stage least squares model was used to determine the effects of music videos on music sales after the transition of music videos from television to the Internet. The significance of the study is that diffusions designed to increase profits for music companies may actually hurt their profits—which means that attention should be placed on where these promotional tools are distributed.

Background

Music Videos As Promotional Tools

Music videos are marketing tools used by record labels to promote songs. They are typically three to five minute clips of visual content accompanied by the song the record label is advertising to consumers. Record labels did not really begin to distribute music videos until MTV was established in 1981. Prior to MTV, music videos did not have a platform through which record labels could distribute them. Radio had been the dominant promotional tool used by record labels prior to MTV. According to S. Witt, MTV producer, the business model for air plays on the radio or music videos on MTV as a promotional tool is very similar—the music video or song would be provided to MTV or the radio respectively, for a very nominal rate in exchange for rotations or airplay in order to promote the song (personal communication, August 10, 2010).

Since music videos are viewed as a promotional tool for the music industry, they are not revenue for the record labels, but expenses. Record labels spend money creating music videos just as they would spend money on advertising campaigns to promote an artist. The purpose of advertising campaigns is to promote certain products in the market in order to lead to increased sales—which is how music videos work. The airing of music videos on MTV is meant to help promote the artists by increasing exposure of the artists and allowing viewers to sample the song, which would then lead to the purchasing of the record by the viewer.

Record labels' distribution of music videos as free as promotional tools can be traced back to 1981 when MTV aired on cable television—meaning it was very limited in terms of reach, but cable television slowly became popular as more people obtained access to it. However, according to McGrath (1996), by 1986, MTV began transitioning from a 24 hour, nonstop music channel to a channel that mixed music videos with variety shows. Record labels also began distributing music videos through other media, such as the Internet, which became more popular in the late 1990s. YouTube emerged in 2005 and served as an organized website through which music videos could be distributed through. YouTube was a huge success, within one year, there were more than 65,000 videos uploaded onto YouTube (Reuters Limited, 2007). The most recent trends are iPhone and iPod videos, which allow for access to the Internet through portable, handheld devices.

Music Videos and Technological Diffusion

Music unlike tangible goods, is an experience good—meaning that individuals have to hear the music first in order to decide whether they like it or not, so in order to increase sales, record labels often had to find ways to increase the exposure of the product via third party endorsements. It was first introduced commercially through live entertainment shows, which allowed consumers to hear the song before deciding whether they liked it or not. As technology improved, other methods were used to promote music in addition to live entertainment. The experience of listening to music changed for consumers as music was now offered through other media as well and not just live. The radio became a dominant source of music for consumers. When MTV was introduced in 1981, consumers began turning to MTV for music because

radio became very conservative with the music it played. In fact, according to Knopper (2009), between the fall of 1998 to the summer of 2007, the average number of individuals who listened to the radio dropped by more than 18%. Consumers were often not able to watch their favorite singers perform in front of them, and certainly not at the proximity that MTV enabled consumers to—this allowed MTV to gain popularity (Temporal, 2008). MTV changed the way consumers listened to music because one could not talk about a particular song on the Top 40 list without mentioning the video. As a result, solely listening to the song on the radio was not sufficient enough when discussing music (Gray, 2010).

In fact, with all the technological advancements that were made during the twentieth century such as cd's, and mp3s, consumers began to focus their attention on the new technology and away from radio. (See Appendix A for a timeline of innovations). At the end of 2008, despite the increase in audience for radio music, from 232 million per week in 2007 to 235 million per week in 2008, the amount of time the audience spent listening to the radio had decreased, from 20.4 hours per week in 2005 to less than 19 hours per week in 2008. In other words, the increase in audience size still resulted with an overall decrease in listening time by audiences as a whole, revealing the declining popularity of radios (Clifford, 2008).

Similar to evolving audio technologies, video technological advancements also emerged during the twentieth century. With the advent of video sharing websites on the Internet, such as YouTube, many record labels have even created their own accounts and YouTube channels to stream the music videos of their artists online, to enable more exposure for their artists. YouTube was founded in February of 2005 and

is the “leader in online videos” (YouTube, 2010). YouTube gained its popularity through allowing individuals to easily upload and share original clips. In addition, YouTube has formed partnership deals with many major record labels, such as Universal Music Group and Sony Music Group (YouTube, 2010). More recently, music videos have moved from computers to handheld devices, such as the iPhone and mp4 players, which allow access to music videos anywhere. Instead of being confined to the playlists and program schedules of MTV and instead of being restricted to using large computers in order to watch a music video, consumers can now view music videos via their handheld devices anywhere and anytime they desire, just as conveniently as consumers can listen to music.

Literature Review

For recorded music, radio air play was traditionally the method through which new songs were promoted. When MTV first launched in 1981, record labels were reluctant to add music videos to their bucket of promotional tools. However, once they began to see the impact that MTV made on record sales for artists and record labels who were willing to adopt music videos, more and more record labels began to utilize music videos. In fact, Oberholzer and Strumpf (2004) found that having rotations on MTV increased music sales by 6,000 units.

The introduction of new technologies also impacted music sales. Peer-to-peer sharing (P2P) technology was introduced in 2000 through the form of Napster. P2P technology allowed users to exchanged information and files with one another, and in the case of Napster, music files were the files that were exchanged. Since music is an

experience good, consumers often have no knowledge of the quality of music. P2P technology, in this case, served as a sampling mechanism that would allow consumers to sample the product (music) before they purchased it. Gopal, Bhattacharjee, and Sanders (2006) used a multinomial logit model to determine the effects of P2P technology on artists' song sales, and found that when sampling costs were lowered, consumers became more aware of new albums that they liked, which led to more artists and albums being ranked on the charts. Decreasing sampling costs also led more potential consumers to sample unknown music items potentially leading more consumers to buy the music items that they had sampled.

Gopal, Bhattacharjee, and Sanders (2006) disclosed that a trade off of this sampling effect of P2P technology was the erosion of the super star effect. A super star is a known entity whose music is listened to and enjoyed by many. Prior to P2P technology, consumers would often avoid purchasing music from artists they never heard of in case the music did not suit their taste, so they would generally purchase music from an artist who has had a history of good music, resulting in the super star effect. Using a linear regression analysis, Gopal, Bhattacharjee, and Sanders (2006) found that the super star phenomenon in the music industry was helped by the high sampling costs prior to P2P technology. The advent of P2P technology reduced the super star effect on sales because it allowed consumers to sample unknown artists prior to purchasing music. This may imply that by providing more legal and efficient sampling techniques for consumers, the music industry may be able to reverse the effects of online piracy.

In addition to the impact of P2P technology, it is also important to highlight some of the main factors that cause consumers to turn to P2P technology. Gopal, Bhattacharjee, and Sanders (2006) found that income had little to no significant impact on an individual's use of P2P technology, which suggested that consumers were not turning to music piracy as a result of financial constraints. However, sampling costs and market price of music items both had a significant negative correlation with a consumer's decision to buy. An increase in the price of music by one dollar would decrease the chance of an individual buying a song after sampling and deleting it by 0 .7153 chance. The cost of sampling was measured by the internet speed of the respondents, by category, so an increase in sampling price would mean the respondent chose a slower connection speed from the categories of internet speeds the researchers provided. Therefore, for each incremental increase in internet speed for an individual, the chances that the person would sample, delete, and then purchase the music will increase by 2.0968 of a chance. If sampling costs were high, then consumers were more inclined to directly buy the album to avoid high sampling costs, which would lead to the super star effect. However, if the market price of the music item was high, then consumers were more inclined to utilize P2P technology to sample the music before purchasing, to ensure that they would be pleased with the product (Gopal, Bhattacharjee, and Sanders, 2006).

Since the introduction of P2P technology in 2000, there have been debates over whether such file-sharing technologies were detrimental to music sales. While the RIAA argues that P2P technology decreases sales and encourages piracy, research results from other scholars claim otherwise. Oberholzer and Strumpf (2004) utilized

both an OLS model and a two stage least squares (2SLS) model to determine the effect of file sharing on record sales. When using an OLS model, the researchers found that their estimates had a positive bias, which was then adjusted for through a 2SLS model. They found that downloading had no statistically significant effect on sales. In fact, even if the insignificance of the variable was disregarded, it would take 5,000 downloads to reduce the sales of an album by one copy. When annualized, this figure meant that yearly sales loss from downloading would be around 2 million, which, when compared to the annualized total of 803 million, could be disregarded as a rounding error. They also found that in their pooled sample models, downloading actually increased sales, which was contrary to what was expected (Oberholzer and Strumpf, 2004) Gopal, Bhattacharjee, and Sanders (2006), who found similar results, attributed this phenomenon of P2P technology to be the effect of sampling.

Other factors in addition to experience factors can affect music sales. According to Liebowitz (2003), some factors that should be examined in today's market includes the price of records, changes in income, changes in population size, changes in media portability, and changes in the prices of complements and supplements. Liebowitz (2003) found income, age of population, and media portability to all be significant factors in the change in music sales. For each per capita change in income, per capita album sales increased by .00064. After adding portability (measured by penetration rate of portable players in households) to the model, Liebowitz (2003) found that for each percentage point increase of the portable penetration of CD and cassettes, per capital album sales increased by 0.031. However, there were only 29 observations for this model. For the age of the population,

Liebowitz (2003) provided a data chart that listed the relative purchasing intensity of various age groups, and noted how those who fall between the ages of 19 and 30 tended to purchase records at a higher intensity. This variable was not included in his regression model. However, he concluded that largest factor in the change in music sales over the past couple of years was the downloading and sharing of mp3 files—P2P technology.

Communication Theory: Diffusion of Innovations

According to Gopal, Bhattacharjee, and Sanders (2006), the spread of P2P technology came from the introduction of Internet browsers and mp3 format files. The introduction of Internet browsers increased Internet surfing efficiency, allowing for the rise of fan clubs, which lowered sampling costs for fans because they were able to share music with one another. The introduction of the mp3 format file further facilitated the P2P technology which expedited the transferring process between individuals online. Both the Internet browser and the mp3 format helped to expedite the spread of P2P technology amongst individuals on the Internet. This process of spreading and adopting by Internet users can be referred to as the diffusion of an innovation (which in this case, was the P2P technology).

According to Rogers (1983), diffusion of innovations is "the process by which an innovation is communicated through certain channels overtime among members of a social system" (p.5). Diffusion is the process of communication where messages regarding innovations are exchanged—an effective diffusion is typically when the innovation discussed leads to a high adoption rate. Firms, both media and other

businesses, tend to favor a faster adoption rate because a faster adoption rate would most likely result with a faster return on investments that were incurred while developing the new product. In addition, Kamakura, Kossar, and Wedel (2004) found that many firms tend to operate under resource constraints, so by being able to speed up adoption rates, firms would be able to gain higher sales at lower costs.

An example of such communication is how the cable channel, MTV became popular in America. When MTV first aired, it was only available in certain areas of America and only accessible to consumers who subscribed to cable. However, MTV was able to gain popularity through two methods. According to McGrath (1996), MTV was very attractive to the younger generation at the time, so even when MTV was not accessible to young people because of their lack of access to cable, they would go over to their friend's house to watch. The second method was via MTV's "I Want My MTV" campaign, where MTV, with the help of celebrities, was able to persuade young people to call their cable providers and request for them to add MTV. The campaign was released in New York during the summer of 1982 because MTV was still not airing in New York at the time, despite how the headquarters of MTV was located in Manhattan. By September, Manhattan Cable finally began airing MTV (McGrath, 1996).

There are four main elements of diffusion that are vital in order for diffusion to occur: innovation, communication channels, time, and social systems. Innovation, as defined before, is an idea, practice, or object that is considered new by the potential adopter (Rogers, 1983). For example, if an individual has never heard of an iPhone,

then the iPhone is considered to be an innovation for the individual, despite the fact that the iPhone came out in 2007 (Menta, 2007).

Rogers (1983) also found that in order for the diffusion of an innovation to even occur, there must be effective communication channels through which information regarding the innovation is dispersed. Communication is usually most effective and most likely to occur between two individuals who were similar, whether it is education level, interests, hobbies, or social status. However, though this is usually the case, there may be times when communication between two unlike individuals can result in very effective communication in terms of spreading news of the innovation because they are most likely from two different social networks, or network of people that the individuals talk to on a regular basis, and thus can come into contact with different ideas (Rogers, 1983). However, the current study focused primarily on the innovations more so than the other elements of this theory.

Information can also be spread to potential adopters through individuals called change agents, who try to educate and persuade potential adopters to adopt. These change agents are usually hired by the company or organization who wished to speed up the adoption rate in a society for a particular innovation. Though innovators might be able to come across innovations through their many communication channels, not everyone in a social system have the same amount of communication channels. For those who did not have as much access to information regarding innovations, change agents were very important because change agents were the ones who educated them about the innovation (Rogers, 1983).

However, the amount of time it takes for each innovation to get adopted into a society varies. There are five characteristics of innovations that can affect the rate of adoption—relative advantage, compatibility, complexity, trialability, and observability. The only two characteristics that this study focused on are relative advantage and compatibility.

According to Rogers (1983), relative advantage is the degree to which an idea is seen to be better than the idea it supersedes. This means that if the new idea is a better alternative than the current ideas used, individuals are more likely to adopt the new idea—especially if it is more economically profitable. An example of this would be how cassette tapes superseded the microgroove long player. In 1952 when the microgroove long player (LP) was introduced, it was the leading form of recorded music with over 273 million LP's sold. However, cassette tapes began becoming popular in 1970 because it was the more preferred format (Graham & Hardaker , 2003). According to the Audio Engineering Society (2010), the relative advantage of using a cassette tape was the format of the entity, which allowed it to become popular just seven years after it was introduced in the United States in 1963.

Compatibility is how consistent the innovation is with current practices and with the needs of adopters, and thus, directly related to the rate of adoption (Rogers, 1983). An example of compatibility would be the diffusion of mp3 players. The mp3 format for songs was introduced in the early 1990's (Ewing, 2007). Mp3 are compressed music files that allows for easier transfers of songs over the Internet and elimination of sound quality impairment (Graham & Hardaker, 2003). The Audio Engineering Society (2010) disclosed that mp3 players were released in 1998

following the rising popularity of mp3 as the preferred audio format. Mp3 players were smaller than CD players and used no moving parts, which eliminated the skipping that CD players often faced. As a result of the compatibility of mp3 players with mp3 files, mp3 players became the more ideal audio player and gained popularity by the early 2000's (BBC, 2005 & Wakefield, 2004).

Most diffusion research are funded by agencies or companies who want to push out a new product, and hope to devise a method to allow for the adoption of their product to take as little time as possible (Rogers, 1983). An example of such a company would be MTV itself. McGrath (1996) disclosed that three weeks after MTV aired, MTV sent a marketing team to research whether or not MTV was impacting music sales at all, in order to provide the record industry with some data to support the channel—to show that exposure of music on MTV really did make a difference. As a result, time becomes an important element of diffusion as the process from when an idea is introduced to when it is finally adopted can span from days to years (McGrath, 1996). For example, the cassette tape was introduced in the United States in 1963, but by 1970, it became the most popular format for music, so the diffusion of cassette tapes only took about seven years (Audio Engineering Society, 2010). However, with the Internet, it was introduced in 1969, but it did not become popular until 1992 and it did not become widespread until 1995 (Howe, 2010)

According to Rogers (1983), time of adoption is measured on a relative basis, meaning the relative earliness or lateness the adoption occurs when compared to other individuals of the social system. The social system is defined as a group of people striving to accomplish a common goal. Individuals in a social system, much like

individuals in a society, are categorized into groups, except while a society is categorized into groups by income status; a social system is categorized based on the members' rate of adoption. There are five broad groups—the innovators, the early adopters, the early majority, the late majority, and the laggards. Though the chances that each person in the social system will adopt are the same, the timing of their adoption can range from person to person, and it is based on the time it takes for the individual to adopt an innovation that the individuals are grouped by (Rogers, 1983).

Innovators are the first to adopt—they are usually the ones in a social group who are very tech-savvy and very up to date with the latest trends. Innovators also tend to be the ones who fall into the higher income bracket because innovations during this early stage tend to have a high degree of uncertainty, so innovators have to have the financial backing to sustain any potential losses that may result from being the first to adopt. Early adopters are the next group to adopt and they are usually the individuals in society who others look up to and go to when they need consultation about innovations. Early adopters are usually the opinion leaders in a social system—the ones who can influence those around them to adopt an innovation because of they have a lot of communication with people of different social groups (Rogers, 1983).

The early majorities are the individuals who are willing to adopt, but more careful—they usually follow in adoption after seeing the early adopters do so. The late majority are usually skeptics when it comes to adopting and might only do so as a result of peer pressure or if it is no longer economically viable to continue with the old ways. Laggards are usually the last to adopt due to limited resources and reluctant to change because they are very focused on the past instead of the future. Laggards

are also usually the ones with the least education. Such generalizations are based off of researchers' observations of reality and formed in order to make comparisons easier and to create "ideal" groups in order to guide future studies (Rogers, 1983).

In terms of rate of adoption, the five adopter categories can be mapped out on a bell curve. Innovators would be the first 2.5% of all the individuals who ends up adopting the innovation in a social system, followed by early adopters who make up the next 13.5%. The early and late majority groups follow one behind the other, both making up 34% of the total number of adopters, with laggards finishing last with the last 16%. There are no exact markers between the five categories, but rather just generalizations made researchers based on past empirical studies in order help serve as a guide for future researches (Rogers, 1983).

An effective diffusion is one that leads to a high rate of adoption. As a result, diffusion researches tend to have a "pro-innovation" bias, which is when the researchers enter into a research with the preconceived belief that the innovation that they are researching is good and should be adopted, without taking into consideration the cultures and traditional practices and beliefs that the society being introduced the innovation originally had (Rogers, 1983). An example of this would be the innovation of the MTV channel. According to McGrath (1996), when MTV first aired, its producers and all the staff involved believed that MTV was going to be revolutionizing. However, they failed to consider the impact of MTV on the youth and on consumers as a whole. As a result, by 1985, groups such as the National Coalition on Television Violence began condemning many of the videos that MTV was playing as extremely violent (McGrath, 1996). Rogers (1983) believes that

because of the pro-innovation bias, successful diffusions are usually where attention is centered, while unsuccessful diffusions leave no trace. This is a problem because if successful diffusions are the only ones that are focused on, then not enough attention would be given to failed diffusions and why such diffusions failed. A method to counter such flaws in current diffusion studies would be to investigate the diffusion at different times, to be more cautious about what topics to study, and to include discontinued or rejected innovations in the study as well (Rogers, 1983).

Rogers (1983) revealed that other issues in current diffusion studies are the individual blame bias, system blame bias, and the recall problem. The individual blame and system blame bias refers to which is the tendency for researchers to hold individuals responsible for any obstacles that prevents successful diffusion of an innovation, as opposed to the system the individual is a part of, and vice versa. This may be result directly from the sponsors of the researches that impact the nature of the research—companies tend to have biases when sponsoring research, so they would often tell researchers in advance which angle to begin the research in. This is a problem because it causes researchers to enter into the research with bias. The recall problem occurs when asking for subjects to recall data from the past regarding the date of adoption of an innovation. This is a problem because individuals often cannot remember such dates accurately, and thus, would result in researchers basing their studies off of wrong data (Rogers, 1983).

Previous music diffusion studies have explored worker insurgency, rap music, and payola. Roscigno and Danaher (2001) looked at radio use by studying textile workers. Rogers (1983) cited a study by Greenberg in 1992 that studied the diffusion

of rap music into white society. Rossman, Chiu, and Mol (2008) utilized the diffusion of innovation theory to find factors that contributed to the rate at which new pop songs were incorporated into the playlists of radio stations. However, Rossman, Chiu, and Mol (2008) had studied the process of the diffusion of an innovation. Another way to view diffusion of innovations would be to study diffusion after it has occurred—specifically, the effects of diffusion. In this study, focus is given to the technology itself as opposed to the cultural communication that was used to move the technology around. If consumers were the adopters, then the implications of a successful diffusion would be that record labels would have a new medium through which they can promote their products through. As mentioned earlier, since music is an experience good, then in order to encourage consumers to purchase music, record labels would have to promote music in a way that could convince consumers to purchase music, such as through providing free and legal sampling mechanisms, which will be discussed more in depth a little later.

Economic Theory: Utility Maximization

A main focus of economics is how one can use limited resources to satisfy unlimited needs and wants. Using the economic concept of utility, which is a person's subjective measure of satisfaction, we posit a person desires to maximize utility subject to his or her constraints (income and time). An indifference curve represents equal satisfaction for different bundles of goods and services. Thus a person desires to reach the highest indifference curve possible given the constraint. The prices of goods and services help dictate how income is spent for goods and services, while search costs for goods and services affect how one's limited time is dispersed.

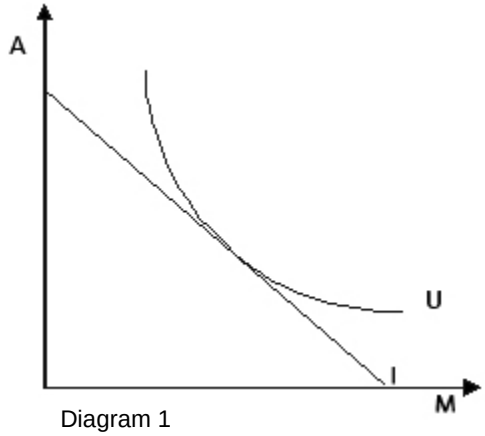

Diagram 1

In the diagram (1), axis A represents "all other goods and services" while axis M represents "music units" such as CDs and cassettes. Line I is the budget constraint while curve U is an indifference curve. The point at which the slope of the budget constraint equals the slope of the indifference curve is the bundle that the individual chooses in order to achieve the highest satisfaction the individual can reach given that specific budget constraint. The marginal rate of substitution equals the marginal utility of consuming music units relative to the marginal utility of consuming all other goods and services. As a result, the relationship between the marginal utility of consuming music units to the marginal utility of consuming all other goods also dictates the amount of money that the individual is willing to spend on music units relative to all other goods and services. For example, if the relative marginal utility of consuming music compared to consuming all other goods and services is twice as much, then the individual is also willing to pay twice as much for music compared to all other goods and services.

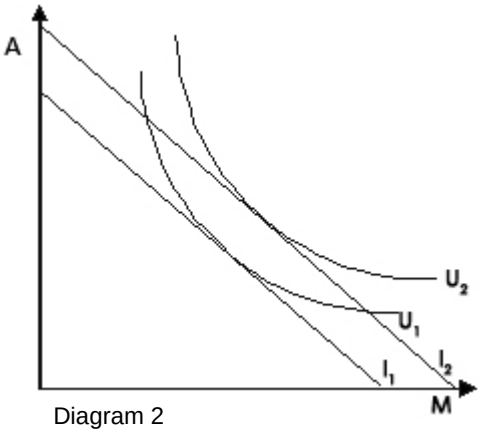

Diagram 2

Individuals desire to reach a higher indifference curve in order to become more satisfied, but are often unable to as a result of their budget constraint. Therefore, in order for an individual to reach a higher indifference curve, the individual would have to experience a

change in their income or time that will allow their budget constraint to move outwards toward the right. As illustrated in the diagram (2), if we assume that music is a normal good, when income increases, the budget constraint moves outward, parallel to the original budget constraint, allowing individuals to reach a higher indifference curve. The indifference curve for an individual can also change if the relative price between the price of music units and all other goods shift. If the price of music units decrease compared to the price of all other goods and services, then the budget constraint would change, shifting the indifference curve to the right because now the individual can consume more music units with the same budget constraint. As illustrated in the diagram (3), when the price of music decreases, the budget constraint changes, allowing consumers to purchase more music and thus, reach a higher indifference curve. Combined, these two concepts are known as the income and substitution effect.

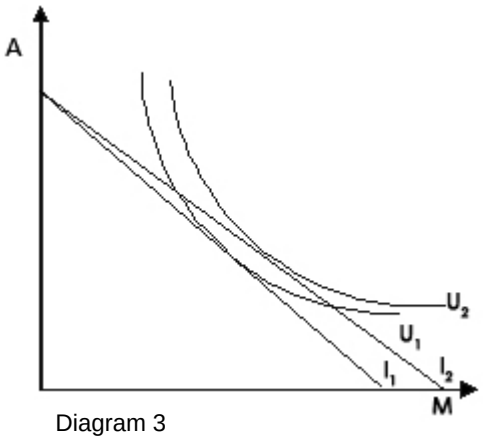

Diagram 3

If music is a normal good, music consumption increases when income increases or if the relative price of music units compared to all other goods and services decreases. As stated earlier, music is an experience good, so if an individual did not have the time to experience music, then he or she will most likely not consume music since time is a constraint for them. In addition, from prior research stated earlier, music is a good that individuals seem to prefer to be able to sample before purchasing. As a result, the budget constraint for individuals is a combination of income and time, and the time and cost of sampling music is also factored into the

price of music. In addition, sampling would allow consumers to experience music before purchasing, which can affect their preferences and tastes, and thus, can also affect the indifference map and how much music is actually consumed. If consumers sample music and decide that they do not like the songs, then they might spend more money consuming other goods and services instead of music and vice versa.

While purchasing costs of music would just be the price of music, sampling costs would be how much it might cost for individuals to research on the different songs and artists prior to purchasing. Music labels have aided in decreasing the cost of sampling by using various methods of advertising and promotions, such as radio airplays and music videos, which essentially serve as free sampling mechanisms. In addition, since the advent of the Internet, sampling costs and the amount of time spent to research music samples has decreased for consumers with peer to peer sharing technology and online video sharing websites. Since sampling costs and time has decreased overtime for consumers and such constraints are included in the price of music, then the price of music should have decreased over time as well. Therefore, one would expect that holding all else constant, music sales would have increased over time, since the decrease in price would allow consumers to increase their consumption of music units.

Methods

A multiple, embedded case study was used for this research. According to Yin (2009), the case study method of research is "an empirical inquiry that investigates a contemporary phenomenon in depth and within real-life context especially when the

boundaries between phenomenon and context are not clearly evident" (p.18). A multiple, embedded, case study is when more than one case examined, where each case not only focuses on the main unit of analysis, but also takes into consideration the subunits of the case. To determine which method of research is most suitable for each research requires the consideration of three conditions—the type of research question—whether they are "what?" or "how?" questions, the control the investigator has over behavioral events, and the focus on contemporary phenomenon. There are five important components of case studies: the study's questions, possible propositions, units of analysis, logic linking data to propositions, and criteria for interpreting the findings.

This method was selected for this study for several reasons. First, in this study, the research question was: "what is the impact of music videos on sales when music videos move from airing on television to being distributed on the Internet?" This was the overarching research question and it fell under the category of the first type "what" question—an exploratory question. Besides this first question, this research also asked about the effects of MTV on radio and about the impact of MTV on music sales, both of which were also "what" questions. Second, the purpose of the study was to explore whether or not music videos were still fulfilling its role as a promotional tool effectively. Control of behavioral events was not required in this particular study because this study relied on prior research that stated that consumer spending on music correlated with the use of music videos. Lastly, though historical data was gathered for this study, contemporary data was also evaluated. In addition, the focus of the research question was on a contemporary issue as opposed to a historical issue.

After evaluating the three conditions, the case study method was selected for this research.

As noted earlier, the research question for this study is: "what is the impact of music videos on sales when music videos move from airing on television to being distributed on the Internet." One proposition that may explain this phenomenon is offered by the diffusion of innovations theory. As stated earlier, innovations can be new technologies or new ideas. Since innovations will impact that use and effectiveness of the innovations that it supersedes, the move of music videos from television to the Internet may have a negative impact on music videos as a promotional tool. This supercedence of innovations, specifically, promotional method is witnessed through the sales effect of the airing of music videos on MTV compared to the sales effect of the airing of songs via radio—the technology that MTV (television) superseded.

Unit of Analysis

In this study, the main units of analysis were the mainstream music videos in the United States released between 1981 and 2008. Subunits included monthly music sales, number of music videos produced each month, median household income, and a dummy variable for special events dates. Since the proposition dealt with the decreased effectiveness of music videos as a promotional tool, music sales were used as the dependent variable to depict the effect of music videos—shown by the number of videos produced monthly. However, music videos would unlikely the sole factor affecting music sales, so other variables were included to try to avoid any biases that

might have overstated the impact of music videos on music sales. A two stage least square (2SLS) model was chosen for this study to try to depict any correlations that may arise from the data. The criteria for judging significance of the results was based on the p-value of the variable. Any results that had a p-value of .10 or less were considered significant.

For this particular study, a multiple case study was preferred because the study was focused on the effectiveness of music videos in two different media—television, specifically on MTV, and Internet, specifically on YouTube. There were also two types of multiple case study—holistic and embedded. Embedded case studies differed from holistic case studies because embedded case studies included subunits under the unit of analysis. For this research, though the main focus was on the effectiveness of music videos, other factors outside of music videos, such as technologies such as peer-to-peer sharing networks and iPhones, were also taken into consideration and accounted for in the model.

As stated previously, the two cases examined in this research were the effectiveness of music videos on music sales when music videos are played on television (1981-1993) and the effectiveness of music videos on music sales when music videos are distributed on the Internet (1993-2008). This study combined multiple research methods during the course of the research. For the first case, music videos on television, a historical research method was used. Historical data and scholarly studies reflecting the effects of music videos on music sales when shown on MTV was studied and analyzed. Historical research was the only type of data used for the first case because of insufficient music sales data for the years prior to the Internet

becoming popular. However, when looking at the effects of music videos on music sales once it transitioned over to the Internet (1993-2008), an econometric approach was taken. A 2SLS model was used to view the impact of music videos as a promotional tool after it moved onto the Internet. Music sales data, taken from weekly issues of Billboard magazines (whose weekly music sales data was collected from Nielsen Soundscan) acted as the dependent variable. Subunits such as number of music videos produced each month, monthly income, population, holiday, and innovations served as the independent variables of the regression study. A 2SLS model was used instead of an ordinary least squares (OLS) model because there were factors in the disturbance term that might affect both dependent and independent variables, leading to a bias in the variables used. The results of the regression were analyzed based on the standards for determining significance that were noted earlier.

Case One: Music Videos on MTV

In *MTV: The Making of a Revolution*, McGrath (1996) disclosed that when Michael Nesmith ventured off into his solo career after the television rock band, Monkees, disbanded, he found that he did not do too well as a solo artist—his records did not sell in Europe. As a result, his distributor suggested filming a "promotional clip" for Nesmith's song, "Rio." After "Rio" was played on the weekly music shows all over Europe and Australia, Nesmith's album became a hit. In 1979, shortly after Nesmith's album became a hit in Europe, Nesmith brought the idea of music videos, or "pop clips" and "promotional videos" as they were called at the time, to America, where he was turned down at the National Association of Television Program

Executives convention. Nesmith was then referred to John Lack of Warner (McGrath, 1996).

McGrath (1996) disclosed that as a huge fan of rock and roll, Lack became interested in the concept of a channel where there would be music videos, which would be provided to the channel for free by record companies, played twenty-four hours a day, and this triggered the birth of MTV. MTV first debuted via cable on August 1, 1981 with the Buggles' "Video Killed the Radio Star." Cable was a fairly new concept that was beginning to become stable in early 1977. However, cable providers who were in New York would not carry MTV because of its suspected popularity as a new channel that essentially only played music. As a result, MTV was not available in New York, where the MTV offices were held, so the staff in MTV was not able to observe the true effects of the station without leaving New York. Three weeks after MTV premiered in Oklahoma in August of 1981, all 15 of the Buggles albums that were collecting dust on the shelves of the local record store Peach Records sold out. This phenomenon did not only happen in that one record store, nor was it only in Oklahoma—this happened in every town when MTV was aired. Soon, all the albums of the songs that MTV played moved up the Billboard charts. Additionally, some bands like the Stray Cats only played in towns where MTV was provided to ensure success of their shows, which were sold out in every town they toured. In the summer of 1982, the group Duran Duran were huge stars all over the world except for America where they were unable to break into the market of. However, after the release of Duran Duran's music video for "Hungry like a Wolf" on MTV, their albums began selling out in all the towns that had access to cable. The

airing of artists' music videos on MTV helped promote many artists that were either unheard of or unsuccessful prior to MTV, which led to increased record sales for them (McGrath, 1996).

For the thirty years prior to the premiere of MTV in 1981, radio was the cheapest and most available source of music for the public. Record labels would provide records from their recording artists to the radio networks for free in order for their artists' songs to broadcast over the radio. Airplays of the artists' songs on the radio served as free promotion for the recording artists (McGrath, 1996). According to Straubhaar & LaRose (2006), radio networks first started in 1926, with disc jockeys entering the radio scene in 1949. Disc jockeys, DJs for short, served as the host of the show, the main voice that spoke out to the listeners. According to Rossman, Chiu, and Mol (2008), the DJ was also the one who would choose different songs to play for listeners, and the selection of songs that the DJ plays is what is commonly referred to as the playlist. This promotional model still continues today.

However, by the late 1970's, due to competition among radio stations, radio stations became more conservative and resistant to playing new songs—up to 75% of the songs played on radios at this time were old songs such as "Stairway to heaven" and "Freebird"—songs that were released during the beginning of the 1970's. When MTV was aired in 1981, it filled the void that the radio left by playing all the more contemporary and rock and roll songs that the radio refused to play. MTV was essentially a newer form of the radio, only it had a visual component in addition to the audio component, enabling viewers close-ups of artists (McGrath, 1983).

According to Temporal (2008), this resulted with radio listeners who were also fans of the more contemporary rock and roll songs, becoming captivated by MTV.

By 1982, radio even began to follow the playlists of MTV in order to help increase ratings. In 1983, MTV was finally carried by the cable services in New York, where most of the national media was housed, allowing record labels to finally see the impact of MTV personally. MTV was no longer the small, unknown network that big recording and advertising companies looked down upon because of the questionable popularity of the channel. In fact, MTV became so successful in promoting artists and influencing records sales that record companies that previously refused to provide MTV with music videos of their artists, such as PolyGram, began supplying the station with music videos a couple of months after the airing of MTV (McGrath, 1996).

According to McGrath (1996), during the beginning of 1982, many companies began expanding their budgets for music videos as well—in fact, the average budget for music videos during the early 1980's was about $26,000 per video. This music video wave heightened when Michael Jackson released his videos for "Billie Jean" and "Beat It." Even though Jackson's songs did not fit into the rock and roll category that MTV was originally built on, the visual graphics of the videos along with Jackson's performance caused MTV to begin breaking away from solely rock and roll songs. Prior to the release of the two videos, Jackson's *Thriller* album had already sold more than two million copies, but after the release of the videos for "Billie Jean," the album sold at a rate of 800,000 copies per week (McGrath, 1996).

One full year after *Thriller* was released, when most hit albums are forgotten, the music video for the title track was released, renewing sales of the album at a rate of 600,000 copies a week (McGrath, 1996). According to Billboard's Top 200 Album chart, when *Thriller*, the album was first released on November 30, 1982, it did not debut on the charts until December 25, 1982 with a rank of 14 (Billboard and Carlsson, 2002). It soon topped the charts, standing as the number one bestselling album by February 5, 1983. However, by September 24, 1983, the album started falling in its ranks, though still within the top ten positions. When "Thriller," the music video was released on December 2, 1983, *Thriller* was still within the top ten, at number 7. However, following the release of the video, by March 10, 1984, the album was able to climb back to the number one spot again (Billboard).

Today, music videos are rarely seen on MTV—instead, most of the shows and programs on MTV consist of reality shows. According to a recent interview with the Director of Music Programming Initiatives from MTV, MTV has not swayed from airing music videos, but instead, is more committed to music videos. There has been many sub-channels that MTV has that currently still have most of the original music properties that MTV first debuted with, such as mtvU, HITS, and JAMS. However, the original MTV channel has just changed over the years to adapt to the way the public has shifted in the way it consumes music (Y. Desalu, personal communication, September 29, 2010). According to another interview with an executive producer at MTV, another reason for the decline in music videos on MTV stems from the record labels and the economy itself. He disclosed that many record labels have been struggling in today's economy, and thus, revised all its old contracts to find ways to

decrease expenses. One of the contracts that surfaced was with MTV over the nominal rate MTV provided for the use of the label's music videos. At the moment, MTV is re-negotiating its nominal rates with various record labels, resulting in temporary halts in the airing of many different artists' music videos (S. Witt, personal communication, August 10, 2010).

When questioned about the transition of music videos on MTV, both interviewees replied that they believed that another reason for the shift of music video airing and consumption via MTV was the result of technology—specifically the Internet. They both believe that with the convenience of the Internet, as a fan or a consumer, why would they have to wait for the music video to come on television when it is easier and less time consuming to just search and view it online instantly—"it's merely the natural progression." (Y. Desalu, personal communication, September 29, 2010 & S. Witt, personal communication, August 10, 2010). In addition, music videos today are more than just a marketing tool—today it has become a "calling card" for some artists whose success is more from the making of spectacular videos and music as opposed to from performing live (Y. Desalu, personal communication, September 29, 2010). However, one of the insiders from MTV believed that music videos will always remain relevant as long as the director of the video can cater to the culture because people will remember different music videos for different points in their life—it happened with Michael Jackson's "Thriller," it happened with Madonna, and it is currently happening with Lady Gaga. He believes that as long as music videos hold on to this particular element, they will be

able to remain and MTV will always be there to support it (Y. Desalu, personal communication, September 29, 2010).

From the data and articles gathered in regards to music videos' effect on sale by rotating on MTV, the correlation between music videos and sales cannot be denied. MTV served a platform for record labels to distribute short clips through that ultimately helped them promote sales. Now that music videos' effects as a promotional tool, specifically, a promotional tool on MTV is validated, how would this effect change as music videos shift over to being distributed through the Internet?

Case Two: Music Videos on the Internet

In 1993, the Internet was available for consumer use, but was still very limited until 1995 when the National Science Foundation stopped funding the Internet backbone and all traffic began relying on commercial networks (Howe, 2010). In fact, according to McGrath (1996), in the summer of 1994, MTV actually began working with AOL to create an online presence to avoid online competition, and the first MTV page was not launched until the Summer of 1995. Temporal (2008) found that the Internet became very popular shortly after its launch because whereas television only provided consumers with a one way channel, the Internet offered consumers two way communications capabilities. The Internet offered consumers a medium through which they can both provide and receive entertainment. In fact, with the launching of the video sharing website, YouTube, in 2005, online media entertainment became even easier to obtain.

Population Regression Function

Two models were utilized for this study—a music sales model and a music videos model. As noted earlier, there might be some correlation between music sales and music videos that goes both ways, meaning, music sales may cause music videos to increase and vice versa. As a result, two different models (1a and 1b) were constructed.

Music sales model.

The utility maximization theory suggests that if the diffusion of the innovation of watching music videos online had been successful, then music videos should have a significant, positive effect on sales. In addition, according to the utility theory, since music videos are assumed to also be sampling tools, the presence of music videos online should further decrease the costs of sampling, lowering the price of music overall, which would then lead to increased consumption of music. As a result of the utility maximization theory and past literature, the proposed model utilizes both economic variables and noneconomic variables to gauge the effects of music videos on sales after the diffusion of the Internet. Model 1a represents the multiple regression equation for music sales per 100,000 individuals, MUSICPOP, after the diffusion of the Internet. Though this study will also attempt to project the effect of YouTube and iPhones on music videos' effect on sales as well, Model 1a only focuses on the impact that the Internet makes.

$$\underset{}{MUSICPOP_t} = \beta_0 + \underset{(+)}{\beta_1 MV_t} + \underset{(-)}{\beta_2 CPI_t} + \underset{(+)}{\beta_3 HOLIDAY_t} + \underset{(+)}{\beta_4 MP3_t} + \underset{(-)}{\beta_5 P2P_t} + \underset{(+)}{\beta_6 INCOME_t} + \underset{(+)}{\beta_7 INTERNET*MV_t} + \mu_{1t} \quad \text{Model 1a}$$

Where t = month and μ_{1t} = stochastic error.

The stochastic error, also referred to as a disturbance term, is an explanatory variable included in the model to represent all of the variation in the dependent variable that cannot be explained by the other variables. In other words, all the factors that this model was unable to account for is included in the error term.

MUSICPOP is the dependent variable, representing monthly music sales per 100,000 people between the years of 1993 and 2008. Music video, MV, is the independent variable that captures the number of music videos produced each month. Gopal, Bhattacharjee, and Sanders (2006) found that decreasing the sampling costs of music leads to the erosion of the superstar effects and possibly even an increase in sales. Since music video are assumed to be a sampling tool, each additional music video available in the market is expected to increase sales, therefore $\beta_1>0$. Since the Internet is also assumed to be a platform the decreases the cost of sampling by decreasing the time spent searching for sampling tools such as music videos, the availability of music videos on the Internet should further decrease the price of music even more, allowing for more consumption of music, $\beta_7>0$.

CPI is used to represent the relative price of music compared to all other goods. The utility theory suggests that the increase in the relative price of music compared to all other goods will decrease the consumption of music and increase the consumption of all other goods by consumers as they seek to achieve their highest level of utility given their constraints, $\beta_2 < 0$. HOLIDAY is a dummy variable used to illustrate seasonal changes that may affect sales, specifically, to highlight the presence of any holidays in any given month that would induce additional shopping and music sales, $\beta_3>0$. According to Liebowitz (2003), portability is a factor of

music that would increase its sales, so MP3, a dummy variable that represents the presence of MP3 players was included to represent the portable feature of music, $\beta_4 > 0$. Gopal, Bhattacharjee, and Sanders (2006) and Oberholzer and Strumpf (2004) found P2P technology to have a negative effect on sales, $\beta_5 < 0$. INCOME represents the median monthly household income in the United States between 1993 and 2008. As spendable income increases, the budget constraint shifts outward, allowing for an increased consumption of music, $\beta_6 > 0$.

Music video model.

Model 1b is the multiple regression model for the number of music videos produced each month. Music videos are promotional tools used by the music industry to promote sales, therefore, record labels may increase their production or use of music videos depending on whether or not music videos actually serve its promotional purposes.

$$MV_t = \gamma_0 + \gamma_1 \underset{(+)}{MUSICPOP_t} + \gamma_2 \underset{(+)}{INTERNET_t} + \mu_{2t} \qquad \text{Model 1b}$$

Where $_t$ = month and μ_{2t} is the stochastic error.

MV is the dependent variable that represents the number of music videos produced each month. Since the music videos are used to increase sales, if music sales increase, then record labels may increase the production of music videos in hopes of inducing more sales.[1] Therefore, as the monthly figure for music sales per

[1] As noted earlier, prior to the release of Michael Jackson's music video for "Billie Jean", the album *Thriller* was within the top ten R&B/Hip Hop albums on Billboards. After the video for "Billie Jean" was released, the album climbed to number 1 and remained there. Two months later, in March of 1983, the music video for "Beat It" was released. Jackson's album was still number 1 and remained there for 16 weeks total before dropping to number 2. According to

100,000 individuals increase, music videos is expected to increase as well, $\gamma_1 > 0$. One of the main questions of this research is the effect of the Internet on music videos' impact on music sales. The variable INTERNET is a dummy variable in this study, to represent the presence of the Internet and its effect on the number of videos produced each month. Since the Internet is another platform to watch music videos and music video is a type of promotional tool, the presence of the Internet is expected to increase the production of music videos since the increase in production would allow record labels to increase the exposure of the songs they wish to promote, $\gamma_2 > 0$.

Monthly music sales per 100,000 individuals and the number of music videos produced each month may be simultaneously determined. Music videos are used to promote music sales, but music sales may also drive the production of music videos because if music videos are not promoting sales, then record labels would see no reason to even produce them in the first place. As a result, both Model 1a and Model 1b are structural models that this study hopes to estimate. However, because of the relationship between music videos and music sales, if Model 1a and Model 1b were to be estimated via OLS, biased results would occur. For example, if an unobserved event caused the disturbance term in 1a to rise, it would increase MUSICPOP, which would in turn increase MV through 1b.The higher MV would then increase MUSICPOP according to Model 1a. This correlation between μ_{1t} and MV_t creates the biased results, indicated by improper values for β_2, etc. A 2SLS model should be used to correct for the bias and yield unbiased estimates. Since both models incorporate

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Ainslie, Cocks, Worrell, and Zagorin, (1983), Michael Jackson's *Thriller* sold more than 2 million copies after its initial release, but after "Billie Jean"'s video was released, the album sold more than 10 million additional copies. However, Jackson did not stop at "Billie Jean" and instead, went on to produce music videos for "Beat It" and then "Thriller."

different instruments, both structural models can be estimated via 2SLS. If the variables are not endogenous, however, then OLS results are more efficient.

Data

Table 1: Descriptive Statistics 1993 – 1998

Variables	# of Observations	Mean	Standard Deviation	Minimum	Maximum
MUSICPOP	183	56,554.65	27,488.97	25,580.16	162,905.59
MV	183	195.36	156.90	2	903
CPI	183	0.5760	0.0503	0.4646	0.6706
INCOME	183	42,622.20	6,609.09	31,752.50	67,013.00
HOLIDAY	183	0.2400	0.4285	0	1
OVER40	183	121,143,351	11,361,981	101,595,000	138,435,311
UNDER39	183	160,223,272	3,553,295	156,186,000	165,824,413
P2P	183	0.6230	0.4860	0	1
MP3	183	0.6885	0.4644	0	1
INTERNET	183	0.8907	0.3129	0	1
INTERNET*MV	183	180.16	167.99	0	1
YOUTUBE	183	0.2514	0.4350	0	1
YOUTUBE*MV	183	67.39	189.17	0	1
IPHONE	183	0.1257	0.3324	0	1
IPHONE*MV	183	0.7486	2.986	0	1

Table 1 lists the descriptive statistics of the data used in this study. MUSICPOP, the dependent variable, is a computed figure to represent the monthly

number of CDs, singles, cassettes, etc. sold per 100,000 individuals between the years of 1993 and 2008. The total number of monthly unit sales was divided by the total population in order to arrive at these values. The average monthly music unit sales figure per 100,000 people for the period between 1993 and 2008 is 56,554.65, with the lowest number of units sold during the period being 25,580.16 and the highest being 162,905.59 (see Appendix B for a complete graph of data trends). The average suggests about one music sale for every two people in the population. Monthly music sales were derived from the "Market Watch" section of weekly Billboard magazines. The data Billboard utilizes is from the accredited Nielsen Soundscan. The weekly figure was collected from the magazines and then divided by the number of days the weekly figure encompasses. This computed daily average figure was then added to the month that the days came from in order to arrive at the monthly figure. However, it is important to note that mistakes in the data itself were spotted in the Billboard magazines' figures. Blatant mistakes, such as accidentally duplicated data, were omitted from the model, but mistakes that are not easy to detect may still reside in the data itself. In addition, toward 2008, Billboard changed the way it recorded music sales, so the data could have been affected through that as well.

MV, music videos, is the number of music videos produced each month. This discrepancy may be accounted for the incomplete database—there were less data available on the database for videos released within the last three years and the first two years of my data base. The bulk of the data available on the website were for the years of 1995-2006. This data was collected from a website known as the music video database. Though the database is not complete, the Music Video Production

Association credits this database as the most complete music video database available. In addition to the incomplete data, most of the music videos listed only had the year the music video was produced listed and not the month. As a result, the videos with the month listed were tallied up, and the remaining videos that provided no month were then divided by the twelve month of the year and added to the tallied amount in order to arrive at a more accurate depiction of the monthly number of videos produced. However, because the data was derived in such a way, it could affect the results of the study. The monthly average number of music videos released during this period of time is 195.36 with a standard deviation of 156.90 videos (see Appendix B for a complete graph of data trends).

The CPI figure used in this study is actually the relative CPI of audio and video goods in the United States compared to the CPI of all consumer products. The CPI of audio and video goods is used as a proxy for the CPI of music. The average relative CPI figure is 0.57 (see Appendix B for a complete graph of data trends). The CPI figures used to calculate the relative CPI figure used in the study is taken from the Bureau of Labor Statistics. CPI captures the change in the price of music units compared to the change in price of all goods in general.

HOLIDAY is a dummy variable used to adjust for the seasonality of the data of the study. Since music sales is the dependant variable, it may be affected by different seasons, more specifically, certain months. In America, there are certain months with holidays that would induce more shopping, and therefore, possibly more music purchases. In this study, the holidays observed are Black Friday and Christmas. Therefore, the months of December and November are assigned values of 1 to

indicate the presence of the holiday. In addition, to December and November, January is also included because the sales from December are expected to carry into January since Christmas is toward the end of December and January starts with New Years. About 24% of the months observed in this study had a holiday.

The variable INCOME is the median monthly household income in the United States between 1993 and 2008. The income data is taken from the U.S. Census. Since income data is only recorded annually, the monthly figure was actually derived for this study by taking the difference in annual median household income from one year to the next, dividing the difference by the 12 months of the year, and adding the quotient back to each month in order to depict a gradual rise in median household income over the 12 months of the year to lead to the new annual average for the next year. The monthly median household income is $42,622.20 during this period of time (see Appendix B for a complete graph of data trends).

The age variables, OVER40 and UNDER39, are not included in the model as dependent variables. Instead, these two variables' data were combined to create the overall population figure, which was then used to compute the monthly music sales per 100,000 people. However, it is important to note that the average number of individuals under the age of 39, or the target age group for record labels, was 160,223,272 people. This data was taken from the census database for the years between 1993 and 2008. The average population size over the age of 40 was 121,143,351.

Peer to peer technology, P2P, is a dummy variable to indicate the presence of the P2P technology between 1993 and 2008. Since Napster was the first, widespread form of P2P technology, the day Napster was released is noted as the date when P2P became present in society (refer to Appendix A for timeline). Up until today, P2P technology is still available in society, just not through Napster. As a result, even though P2P, according to this data set, began with Napster in 2000, it did not end when Napster faded out. According to the data, P2P technology was available for 62% of the months during this time period.

MP3 is a dummy variable to denote the presence of mp3 portable players in society. Liebowitz (2003) claimed that portability increased music sales, so mp3 is used to capture the portable feature present in society (refer to Appendix A for timeline). For every month that mp3 players are available in society, there is a one to indicate it. Mp3 players were available in society 68.9% of the time from 1993 to 2008.

The dummy variable INTERNET, is one of the three innovation variables used in this study to indicate the presence of the innovation (refer to Appendix A for timeline). In this dataset, Internet is not given a 1 for its presence until May of 1995 because even though Internet was available prior to 1995, it did not become widespread for users until 1995, which most of the limitations placed on what individuals could do on the Internet was lifted. During the period between 1993 and 2009, the Internet was available for about 89% of this period of time.

The second innovation variable is YOUTUBE, which denotes the presence of the online video sharing website (refer to Appendix A for timeline). YouTube is believed to be an extension of the first innovation, INTERNET, as a platform for music videos. For every month that YouTube was available in society, a value of 1 was assigned to this variable. Therefore, YouTube only existed for about 25% of the period of time between 1993 and 2008.

IPHONE is the third innovation variable, and it is also a dummy variable. It represents the presence of iPhones in society, which allows for the use of the Internet, and therefore YouTube on handheld devices (refer to Appendix A for timeline). The iPhone embodies both the portable aspect that Liebowitz (2003) mentions and the music video platform aspect that this study is focusing on. A value of 1 is assigned to this variable for each month that the iPhone is available for sale. iPhones were only present for 12.5% of the time between 1993 and 2008.

There are also three interaction terms used in this study—INTERNET*MV, YOUTUBE*MV, and IPHONE*MV. These three interaction terms are used to evaluate the innovations' effect on music video's impact on music sales. The interaction terms are created directly in the regression program by multiplying the innovations' value by the value for music videos.

Empirical Results

Internet.

After creating a 2SLS model from Model 1a and 1b, the Haussman test was used to see whether endogeneity existed between music videos and music sales, and

thus, if a 2SLS was even appropriate. Endogeneity is when an independent variable of a model is also affected by some hidden variable in the error term. If endogeneity existed between MV and MUSICPOP, then the coefficient for music video would be too large and therefore, biased. The Haussman test returned with a p-value of 0.0577, indicating endogeneity and thus, the necessity of a 2SLS model. Heteroskedasticity and multicollinearity were also tested and adjusted for.

Another concern that arises is autocorrelation, which is usually present when utilizing a time-series data. Autocorrelation exists when the errors from one period impacts the errors of the next period. This equation: $Є_{1t+1} = \rho\, Є_{1t} + \mu_{1t+1}$, illustrates the concept of autocorrelation. There is reason to believe that autocorrelation exists in the data since music sales may be influenced by some factor not accounted for from previous months. For example, if an individual's taste in music changes and thus their music consumption pattern, i.e., $Є_{1t}$ changes this change will not only affect $MUSICPOP_t$, the month that the change took place, but also $MUSICPOP_{t+1}$, the following month by ρ . Serial correlation for one month suggests lingering impacts on MUSICPOP, thus an econometric technique must be used to focus on the immediate impact from the lingering one. In order to test for autocorrelation in a 2SLS model, the residuals (μ_{t-1}). for the 2SLS model was obtained and estimated with Model 1a. The significance of the coefficient of μ_{t-1} from the 2SLS model will then determine whether or not autocorrelation is present in the data. In this study, the test returned with a p-value of 0.1052, which is right on the borderline of significance. This suggests that whether or not autocorrelation exists in the data is uncertain. As a result,

two 2SLS results are disclosed, one that has been adjusted for autocorrelation and one that is not.

Table 2: Internet	Dependent Variable: MusicPop	
	Model A	Model B
	2SLS	2SLS – Difference
Intercept	368071.10 (<.0001)	331164.70 (<.0001)
MV	122.897 (0.0003)	106.511 (<.0001)
CPI	-551532.00 (<.0001)	-558675.00 (<.0001)
Income	0.1206 (0.8430)	0.0409 (0.9355)
Holiday	19448.48 (<.0001)	18102.52 (<.0001)
Internet*MV	-97.352 (0.0023)	-82.853 (0.0004)
P2P	-18033.70 (0.0016)	-17664.40 (0.0007)
MP3	1673.846 (0.7571)	1389.797 (0.7412)
R-Squared	0.6928	0.6385

Table 2 summarizes the results of the analysis on the impact of music videos on music sales after the prevalence of the Internet. The top values are the estimated coefficients while the bottom values in parenthesis are the p-values of the estimated coefficients. The estimates under both Model A and Model B are quite similar and consistent to which variables are significant (determined by a p-value of less than.1000). Since the test for autocorrelation was inconclusive, both sets of results are displayed.

In both models, Income and MP3 are not significant variables. This may suggest that neither income nor the presence of mp3 players affect sales, so record labels should not attempt to target just certain socioeconomic classes. However, this result is consistent with diffusion theory. Diffusion theory suggests that innovators are usually the wealthier individuals in a society, but they also only represent about 2.5% of the individuals in the social system. Therefore, if socioeconomic class was considered, then their influence on music sales would probably not be too significant since they represent a very small portion of the whole social system.

The variables that are significant are CPI, Holiday, P2P, MV and Internet*MV. According to Model A, each 1% increase in the relative price of music decreases monthly music sales per 100,000 by 5,515.32 units, ceteris paribus. This result is consistent with the theory of utility maximization since an increase in the relative price of music is expected to decrease the consumption of music . Holding all else constant, each month with a holiday that encourages shopping increases monthly music sales per 100,000 by 19,448.48 units. This result is also as expected because if consumption as a whole increases, then the consumption of music units should also increase. For each month that P2P technology is available, monthly music sales per 100,000 decreases by 18,033.70 units, ceteris paribus. This is contrary to prior research. Gopal, Bhattacharjee, and Sanders (2006) and Oberholzer and Strumpf (2004) both found P2P technology to be negative but insignificant factors of music sales. This contradiction in the current study may suggest that perhaps P2P technology had not been around long enough during past studies for it to even have significant impact on sales.

Holding all else constant, for each music video produced each month, music sales per 100,000 increases by 122.897 units. However, after the Internet, each additional music video produced each month only increases music sales per 100,000 by 25.545 units, ceteris paribus. This decrease in the impact of music videos on music sales after the advent of the Internet is inconsistent with expectations. Gopal, Bhattacharjee, and Sanders (2006) suggested that an increase in sampling tools would increase the consumption of music. Since music videos are sampling tools and the Internet serves as a more efficient way to access said sampling tools, the cost of music sampling and thus the cost of music should have decreased, leading to more sales. The current results, instead, suggests that music videos do increase sales, but after appearing on the Internet, the impact that music videos had on sales actually decreased. This may suggest that assuming that the Internet decreases sampling costs was wrong and that perhaps the ability to watch music videos online just became the new form of music consumption. Since consumers no longer had to pay to consume music legally, the portion of their income usually spent on music was now freed up, allowing them to purchase other goods instead of music.

Though Model B is very similar to Model A, the value of the coefficients are different. Model B suggests that each 1% increase in the price of music decreases music sales per 100,000 by 5,586.75 units, ceteris paribus. Holding all else constant, each month with a holiday that encourages shopping increases sales by 18,102.52 units. Each month with P2P technology available caused music sales per 100,000 to decrease by 17,664.40 units, ceteris paribus. In addition, prior to the Internet, each additional music video released increased music sales per 100,000 by 106.511 units,

ceteris paribus. Nonetheless, evaluating the impact of one additional music video on sales is not meaningful since there will probably never be a month where only one music video is released. As a result, plugging in the average number of music videos will provide a more meaningful value for record labels—the monthly average of 195.36 music videos will increase monthly music sales per 100,000 by 20,807.99 units. However, after the advent of the Internet, each additional music video released each month only increased sales by 23.658 units, ceteris paribus. The joint significance of music videos and Internet were tested for both Model A and Model B, and returned with a p-value of 0.0008 and 0.0051 respectively, indicating significance.

YouTube.

One of the main focuses of this study is on the impact of music videos on music sales after music videos' transition to the Internet. However, two additional models were included in the study in order to predict possible effects of music videos on sales as a result of YouTube and iPhones.

$$MUSICPOP_t = \beta_0 + \beta_1 MV_t + \beta_2 CPI_t + \beta_3 HOLIDAY_t + \beta_4 MP3_t + \beta_5 P2P_t + \beta_6 INCOME_t + \beta_7 YOUTUBE*MV_t + \mu_{1t}$$

(+) (-) (+) (+) (-) (+) (+)

Model 2a

Where t = month and μ_{1t} = stochastic error.

YouTube is a website that allows for an aggregation of available music videos on the Internet. Since YouTube cuts down on the time spent on searching for music videos, the sampling tool, sampling costs then decreases, which causes music costs to decrease. This decrease in the relative price of music should allow consumption of music to increase, $\beta_7 > 0$.

Since music sales and music videos are believed to be endogenous, a new structural model for music videos was also adjusted as the result of the inclusion of YouTube as a variable.

$$MV_t = \gamma_0 + \gamma_1 \underset{(+)}{MUSICPOP_t} + \gamma_2 \underset{(+)}{YOUTUBE_t} + \mu_{2t} \qquad \text{Model 2b}$$

Where $_t$ = month and μ_{2t} is the stochastic error.

YouTube is a new platform for music videos. Prior to the Internet, record labels relied on MTV in order to have a platform for their music videos to be rotated on. However, after the Internet, specifically, after the advent of YouTube, record labels now have a specific location in cyberspace where they can ensure immediate access to their music videos from potential consumers, $\gamma_2>0$.

A 2SLS model was constructed using Model 2a and 2b. The Haussman test was then performed to evaluate whether or not a 2SLS model was necessary, or if an OLS model would yield better estimates. The Haussman test returned with a p-value of 0.0261, indicating the presence of endogeneity and thus, the necessity of a 2SLS model. The autocorrelation test was then utilized to detect autocorrelation in the 2SLS model, which returned with a p-value of 0.0699, signifying the presence of autocorrelation. The 2SLS was then adjusted for autocorrelation, with the results presented in the table below:

Table 3: YouTube	Dependent Variable: MusicPop
	Model A
	2SLS - Difference
Intercept	257731.00 (<.0001)
MV	-56.215

	(<.0001)
CPI	-406276.00 (<.0001)
Income	0.0032 (0.9945)
Holiday	17645.27 (<.0001)
YouTube*MV	70.819 (0.0120)
P2P	-9268.66 (0.0816)
MP3	-625.778 (0.8800)
R-Squared	0.6330

Model A, the 2SLS difference model, has a R-Square value of 0.6330, meaning 63.30% of the variation in monthly music sales per 100,000 can be explained by the model. Similar to the results for Internet, the variables Internet and MP3 were not significant, while the variables, MV, CPI, Holiday, P2P, and YouTube*MV were significant.

According to the model, each 1% increase in the change in the relative price of music compared to all other goods decreases the change in monthly music sales per 100,000 from one period to the next by 4,062.76 units, ceteris paribus. Holding all else constant, each month with a holiday increases the change in music sales per 100,000 from one period to the next by 17,645.27 units. Both results are consistent with expectations. Similar to the findings from the Internet, P2P was also significant and negative. The introduction of P2P technology decreased music sales by 9,268.66 units, ceteris paribus.

While most of the results from this model mirrors that of the Internet model, the estimates for music video is slightly different. According to this model, prior to the advent of YouTube, one additional music video produced each month decreased the change in music sales from one month to the next per 100,000 by 56.215 units, ceteris paribus. Using the average music video figure for more meaningful results revealed that the monthly average number of music videos decreased sales by 10,982.16 units. However, the introduction of YouTube actually caused each additional music video to increase sales by 14.604 units, ceteris paribus. The joint significance of music videos and the interaction term, YouTube*MV, was tested and returned with a p-value of 0.1020, which is on the borderline of significance. This may be the result of the increasing magnitude of the value of the impact of music videos on music sales and the interaction term toward the significance range. This also implies that though the interaction and music videos are significant independently, the combined effect is currently still uncertain, and may be the result of how recent YouTube is relative to the rest of the data. YouTube did not appear until 2005, and the data used ends at 2008, so compared to the rest of the data, YouTube's appearance was still quite recent. However, if the impact of YouTube on music videos' effect on sales had been significant, then it may suggest two things—1) having music videos on YouTube decreases sampling costs and thus the cost of music, which leads to an increased consumption of music and 2) YouTube had been successfully diffused into society to the extent that music videos will only increase sales if shown on YouTube.

iPhones.

As stated earlier, additional models were included in the study to gauge the effects of new, potential music video platforms (newer innovations) on music videos' impact on sales. One of the additional models was one where iPhones were viewed as the new platform.

$$MUSICPOP_t = \beta_0 + \beta_1 MV_t + \beta_2 CPI_t + \beta_3 HOLIDAY_t + \beta_4 MP3_t + \beta_5 P2P_t + \beta_6 INCOME_t + \beta_7 IPHONE*MV_t + \mu_{1t}$$

(+) (-) (+) (+) (-) (+) (+)

Model 3a

Where t = month and μ_{1t} = stochastic error.

iPhones were released relatively recently and are one of the first types of handheld devices that allow for the use of the Internet without limitations. This meant that iPhone users could access the Internet and thus, YouTube anywhere and anytime they wanted. Liebowitz (2003) found that increased portability of music led to an increase in music sales. Therefore, if iPhones made music videos more portable, then it made lead to increased sampling, and eventually, increased music sales, $\beta_7 > 0$.

$$MV_t = \gamma_0 + \gamma_1 MUSICPOP_t + \gamma_2 IPHONE_t + \mu_{2t}$$

(+) (+)

Model 3b

Where $_t$ = month and μ_{2t} is the stochastic error.

iPhones offers consumers the capability to watch music videos, use the Internet, and also listen to music. Therefore, iPhones are potentially the newest platform for music videos. As a potential to be the new platform, it may be a factor that record labels would consider when producing music videos, $\gamma_2 > 0$.

Model 3a and 3b were used to create a 2SLS model, which a Haussman test was then performed. The test returned with a p-value of 0.2020, indicating

uncertainty as to whether or not endogeneity between music videos and music sales really existed in the model involving iPhones. As a result, OLS results cannot be disregarded. Autocorrelation in both models was then tested. The autocorrelation test for 2SLS models returned with a p-value of 0.0027, indicating the presence of autocorrelation, so the 2SLS model was then adjusted for it. For OLS models, autocorrelation is tested in a different way. The Durbin-Watson statistic is examined for OLS models in order to determine if autocorrelation existed or not. For this model, the Durbin-Watson statistic was 1.6768 with a ρ of 0.1616, indicating the presence of some autocorrelation. As a result, the OLS model was also corrected for by creating a lagged OLS model.

Table 4: iPhone	Dependent Variable: Musicpop	
	Model A	Model B
	Prais-Winsten	2SLS - Difference
Intercept	359872.00 (<.0001)	291013.20 (<.0001)
MV	22.373 (0.0165)	20.580 (0.0194)
CPI	-523500.00 (<.0001)	-542001.00 (<.0001)
Income	0.0194 (0.9782)	-0.0461 (0.9253)
Holiday	17235.00 (<.0001)	16266.50 (0.0002)
iPhone*MV	170.887 (0.7157)	40.192 (0.8360)
P2P	-15194.00 (0.0218)	-15609.20 (0.0068)
MP3	-2516.000 (0.6814)	-1805.490 (0.6961)
R-Squared		0.5679

Across the two models shown, the estimated results are quite similar in regards to which variables are significant and which ones are not. Consistent with the two other analyses (Internet and YouTube), income and mp3 are not significant factors. However, contrary to the two prior analyses, the interaction term, iPhone*MV is also insignificant in both Model A and Model B. However, the implications of this insignificance cannot be gauged solely based on the interaction term's significance, and instead, must be looked at in conjunction with music video, which will be explored shortly.

Results from the OLS model will be examined first. Holding all else constant, each 1% increase in the relative price of music decreases monthly music sales per 100,000 by 5,235.00 units. Each month with a holiday increases monthly music sales per 100,000 by 17,235 units, ceteris paribus. In addition, each month that P2P technology is available in decreases monthly music sales per 100,000 by 15,194 units, ceteris paribus. These results, aside from coefficient value are very similar to those from the Internet and YouTube models.

For music videos, prior to iPhones, each additional music video produced increase monthly music sales per 100,000 by 22.373 units, ceteris paribus. This result is consistent with expectations. Gopal, Bhattacharjee, and Sanders (2006) found that increasing sampling tools led to an increase in sales. For any given month, if the average number of music videos were produced, sales would increase by 4,370.79 units. After the advent of iPhones, each additional music video produced increased sales by 193.26 units, ceteris paribus. This result is also consistent with expectations

since iPhones not only make music videos more portable, but decrease the cost of sampling, and thus, decrease the price of music—leading to higher sales. However, when tested for joint significance, the test returned with a p-value of 0.6824, indicating that this post-iPhone result is actually not significant. This implies that though music videos had a significant effect on sales, iPhones do not have any effect on the impact of music videos on sales. Though this result is contrary to what was expected, it may be because iPhones were not available on the market until 2007, making their entrance into the data fairly recent. There may not be enough observations including iPhones in order to provide any meaningful results.

For the 2SLS model, the results were very similar to the OLS model, except for the coefficient sizes. Each 1% increase in the change in the relative price of music decreases the change in monthly music sales per 100,000 from one period to the next by 5,420.01 units, ceteris paribus. Holding all else constant, each month with a holiday increases the change in music sales from one month to the next by 16,266.50 units. The introduction of P2P technology into the market decreased the change in music sales by15, 609.20 units, ceteris paribus. As with the OLS model, the joint significance test for music video and the interaction term returned with a p-value of 0.896, indicating insignificance. However, prior to the advent of iPhones, each additional music video produced increased the change in music sales from one month to the next by 20.58 units, ceteris paribus.

Conclusion

This study utilized a case study method to examine the effects of music videos on two different platforms—MTV and the Internet. A historical approach was used

for Case One, which was when music videos were on MTV. Research showed that having music videos on rotation on MTV did indeed produce positive results on sales. Groups and singers benefitted quite a lot from having their music videos played on MTV. Notable examples include Duran Duran and Michael Jackson. Duran Duran, a British group, did not become popular in America until their music video "Hungry Like a Wolf" aired on MTV, which led to their albums selling out in every town where cable was carried. Michael Jackson's music videos for "Beat It" and "Billie Jean" allowed his *Thriller* album to top the charts. One year after his album was released, *Thriller* dropped from number one to number seven on the charts. However, after the release of the music video for his title track, sales for the album renewed and his album climbed back up to the number one spot. From this historical research, music videos' effects on sales as a result of broadcasting on MTV cannot be denied. However, today music videos are rarely ever seen on MTV, much less television, as a result of disputes between record labels and MTV itself, and also as a result of the diffusion of the Internet.

The introduction of the Internet leads this study into Case Two. Now that the Internet has become the dominant platform for music videos, the question asked now was: what effect does this transition have on music videos as a promotional tool? Utilizing an empirical approach, the effects of the Internet on the impact that music videos had on sales were examined. Findings indicate music videos have always had a positive effect on sales, which was expected because music videos were promotional tools; however, our findings indicate after the diffusion of the Internet, the impact of music videos on sales actually declined. The empirical model was then

altered to predict the effects of music videos on sales as a result of successful diffusion of YouTube and iPhones as platforms for music videos. The model involving YouTube suggests that though the significance of music videos' effect on sales after the diffusion of YouTube is uncertain, prior to the diffusion of YouTube, music videos actually decreased sales. Meanwhile, the model involving iPhones indicates that music videos increased sales and that iPhones had no effect on music video's impact.

The main theory utilized in this research was the diffusion of innovations theory. The theory suggested that as new innovations are introduced and adopted, they would supersede the previous innovation. While most diffusion research focuses on the process of diffusion, this research focused on the effects of diffusion—meaning that the focus of this study was more on the technology's effect on sales instead of how cultural communication moved the with technology . Since the innovation in this study was the platform that music videos are seen through, this study questioned whether transitioning from one platform to the next would erode the effects of music videos as promotional tools. This study labeled the Internet, YouTube, and iPhones as platforms for music videos—as the innovations—so do findings indicate that they are replacing one another as theory suggests?

As noted earlier, the only innovation to have significant impact on music videos was the Internet. This may suggest several things. First, Internet had successfully diffused through society as a platform for music videos. Going back to the diffusion theory, this successful diffusion may be attributed to the relative

advantage of having the Internet versus not having the Internet in a society like today, when many transactions and contacts are done over the Internet.

Second, findings from the YouTube model implied that prior to YouTube, music videos decreased sales. This may be attributed to the compatibility of utilizing YouTube. YouTube is an internet website and as seen from before, the Internet had been diffused successfully through society. As a result, YouTube becomes a very compatible innovation since most, if not all people have already adopted the Internet by now. Though contrary to expectations, this may also imply that YouTube has diffused into our society very well to the extent that the YouTube model would reveal a negative impact on sales from music videos if YouTube was not available.

Lastly, findings from the iPhone model indicated that iPhones have no effect on music videos' impact on sales, suggesting that iPhones are not platforms for music videos. It should be noted that these last two results may be the product of the lack of observations in the data for these two innovations because of how relatively recent they are; however, if proven true, then these results imply that while the Internet superseded MTV and YouTube superseded the Internet, iPhones have not replaced YouTube yet. Two reasons can explain this phenomenon—1) iPhones have not been fully diffused into society yet so not everyone have adopted this innovation and 2) iPhones were just wrongly assumed to be a possible platform and so, will never impact music videos.

Another way the diffusion theory may apply to these results deals with the adopter groups. As noted earlier, there are five adopter groups in every social

system—innovators, early adopters, early majority, later majority, and laggards. Since the Internet was the only model that returned with significant results, it may imply that all five groups have adopted the Internet and so, the Internet at a platform to view music videos was diffused successfully into society. YouTube returned with results that are extremely close to being significant, suggesting that perhaps most of the social system (innovators, early adopters, and early majority) had adopted YouTube as a platform to watch music videos, but the late majority and laggards have not. iPhones on the other hand, returned with insignificant results, suggesting that perhaps most of the social system (laggards, late majority, early majority) has not yet adopted iPhones as a platform to watch music videos. Though not significant, both the YouTube model and the iPhone model revealed that both innovations had positive effects on music videos' impact on sales. This may imply that record labels should devise ways to encourage more individuals in the social systems to adopt iPhones and YouTube as platforms to view music videos because it might allow their potential return from music videos to increase.

Another theory utilized in this research, specifically Case Two, was the theory of utility maximization. The theory of utility maximization states that if the relative price of one object decreases, then the consumption of that object would increase in order to allow consumers to reach the highest level of satisfaction that they can achieve given their constrictions. As a result, the Internet, YouTube, and iPhones were assumed to be platforms for music videos that would decrease the time spent searching for sampling tools, which would then decrease sampling costs, lowering the cost of music. Under this assumption, the Internet, YouTube, and iPhones were all

expected to increase music videos' effects on sales. However, the results from the empirical models indicated that the Internet was the only platform that affected sales, and in a way that was contrary to expectations. Though contradictory to what the utility theory suggests, this result may be the product of two causes—1) the Internet was inaccurately assumed to decrease sampling costs in this study and 2) watching music videos online became the new form of free, legalized music consumption, leading to consumers spending the money they normally did on music on other goods instead.

There were five main drawbacks in this study. First, the innovation in this study is the platform that music videos are distributed through and the three innovations observed were the Internet, YouTube, and iPhones. However, one aspect not considered in this study is that viewing music videos on these platforms is not the primary use of these technologies. The Internet was initially created by the government for military use and has now expanded to allow consumers to do a number of things from online shopping to reconnecting to old friends to online entertainment. YouTube, though a website for video sharing, has more than just music videos—i.e., movies, television dramas, video blogs, tutorials, and other user-generated content. iPhones on the other hand is first a cell phone and then an entertainment console. Since watching music videos on these technologies are not of primary use and is not accounted for in this study, there may be a slight bias in the results.

The second drawback of this study lies in its data. As noted earlier, some of the data in this study was neither readily available nor complete, so some adjustments

to the data were needed in order to make the data usable. As a result, the estimations from these models may not be true representations of the data. Aside from the data, another limitation is in the variables itself. In the YouTube and iPhone models, the results were not too conclusive because of the insignificance of the results after the diffusion of the two innovations. The third drawback lies in how recent these two innovations are relative to the data. The data used in this study ended in 2008, but YouTube did not appear until 2005 while iPhones did not appear until 2007. As a result, one reason why the estimates from the two models were not significant may be attributed to this timing issue. However, because YouTube and iPhones are still rather new in society, results utilizing these two innovations may not be conclusive until years from now.

Another caveat of this study is how the models used were unable to account for personal preferences in the study. A huge factor in music sales is personal preference since whether or not music sales are dependent on whether or not consumers are willing to buy. However, because of how subjective and obscure this piece of data is, this study was unable to find any method to control and account for it in the models. As a result of this missing variable in the model, some of the variation in music sales may not be accounted for it, and the variables that are present in the study may actually be too large or too positive because of this omitted factor.

The last limitation of this study is how the models used in this study were structured. Three different models were constructed in order to see music videos' effects on music sales as a result of the introduction and diffusion of the Internet, YouTube, and iPhones. Though all three platforms coexist in today's society, never in

this study were all three innovations compiled into one single model to illustrate that. Instead, each innovation was placed in separate models and examined as though each time one appeared the one before it disappeared. This decision was made in order to make the empirical analysis clearer and cleaner. If all three innovations were compiled into one model, not only would the model become overly complicated but there would also be large cases of multicollinearity due to the large number of dummy variables that would be involved. Future research should address this problem.

This study sought to analyze the effects of music videos on music sales given the transition in platforms from MTV to the Internet. The results from this study indicate that while music videos have a positive effect on sales before and after the diffusion of the Internet, after the diffusion of the Internet, the degree to which music videos impact sales actually declines. This may suggest that perhaps the Internet is not a suitable platform for music videos. This may also imply that perhaps the change in platform is not the problem, but just that music videos are losing their promotional characteristics as times change. As S. Witt had disclosed in the personal interview, music videos today are not like music videos back when MTV first started mainly due to the erosion of the superstar effect (personal communication, August 10, 2010). Music consumers now have the option to purchase singles instead of a full album, so even if music videos had influenced consumers to like a particular song, they might be more inclined to just buy a single as opposed to the whole album. This suggests that perhaps, record labels may need to begin thinking of alternative methods of music promotion outside music videos.

Though this study had significant results for the research involving the Internet, results regarding YouTube and iPhone are not as conclusive. For future studies, it may be worthwhile to wait about five to ten years before repeating any similar research that may involve these two innovations and music sales in order to make sure that there would be sufficient data to garner results from. Future studies may also want to devise a way to measure personal preference in order to factor it into the model—perhaps some sort of proxy variable such as genre of music. Investing in a more complete set of music sales and music video data would also be beneficial for future studies, as well as creating an empirical model that might be able to incorporate all three innovations into a single model to allow for better comparisons of the three. In addition, since this study was more focused on technology and not so much on the cultural communication aspects the moved the technology along, future studies may want to incorporate this aspect into their research. Embedded in this cultural communication aspect would also be incorporating observations of how change agents play a role in the diffusion process. More recently, social networking websites such as Twitter and Facebook has been centers of attention for masses of consumers, and as a result, everyone who uses these websites can serve as change agents for songs by simply posting the song on their site. Lastly, organizations should begin tracking the rate of adoption by the different and remaining adopter groups for YouTube and iPhones starting now in order to incorporate them into future studies. By incorporating these types of change agents into future studies, it may indicate a different direction that record labels can approach in order to promote sales.

The applicability of this study to the music industry lies in the methods of marketing and promotions that record labels utilize. Since the innovation in this study is the platform through which music videos are distributed if findings suggest that the diffusion of these innovations actually erode the intended marketing effect of music videos, then record labels may want to slow the diffusion process. Such findings may also imply that record labels should reconsider the platforms that they are distributing their music videos through because the platform they choose may actually be detrimental to music sales. In addition, if the diffusion of these innovations actually erodes music videos as marketing tools, then perhaps having music videos rotate on television would generate the most benefit that record labels can obtain from music videos. This may mean that record labels may have to renegotiate with MTV to bring music videos back onto television, or even bond together to create a new music channel to broadcast their music videos.

Appendix A: Timeline of Innovations from 1992 - 2008

1992	November 1992: Full Internet service available
1993	
1994	
1995	May 1995: Internet becomes widespread--National Science Foundation stops funding the Internet, commercial networks take over
1996	
1997	March 1997: DVD are released
1998	June 1998: mp3 players are now available
1999	June 1999: P2P technology is now available in the form of Napster
2000	
2001	
2002	
2003	
2004	
2005	February 2005: YouTube is launched
2006	
2007	January 2007: iPhones are now for sale
2008	

Appendix B: Data Trends

Chart 1. Monthly Music Sales Per 100,000 People

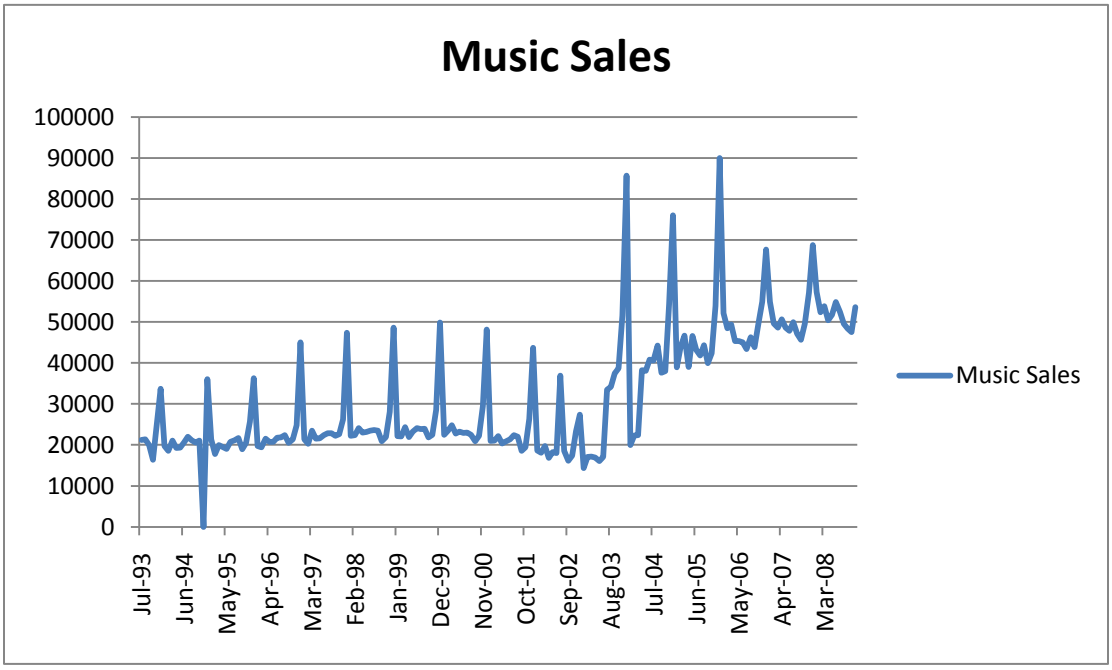


Chart 2. Monthly Music Videos Released

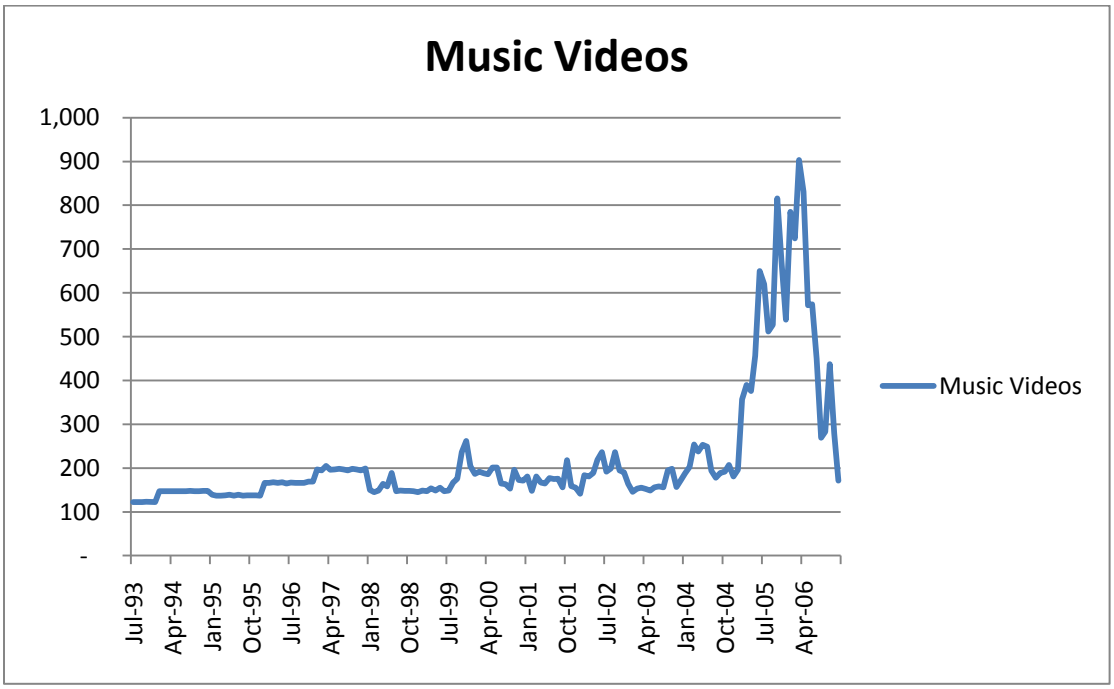


Chart 3. Median Household Income

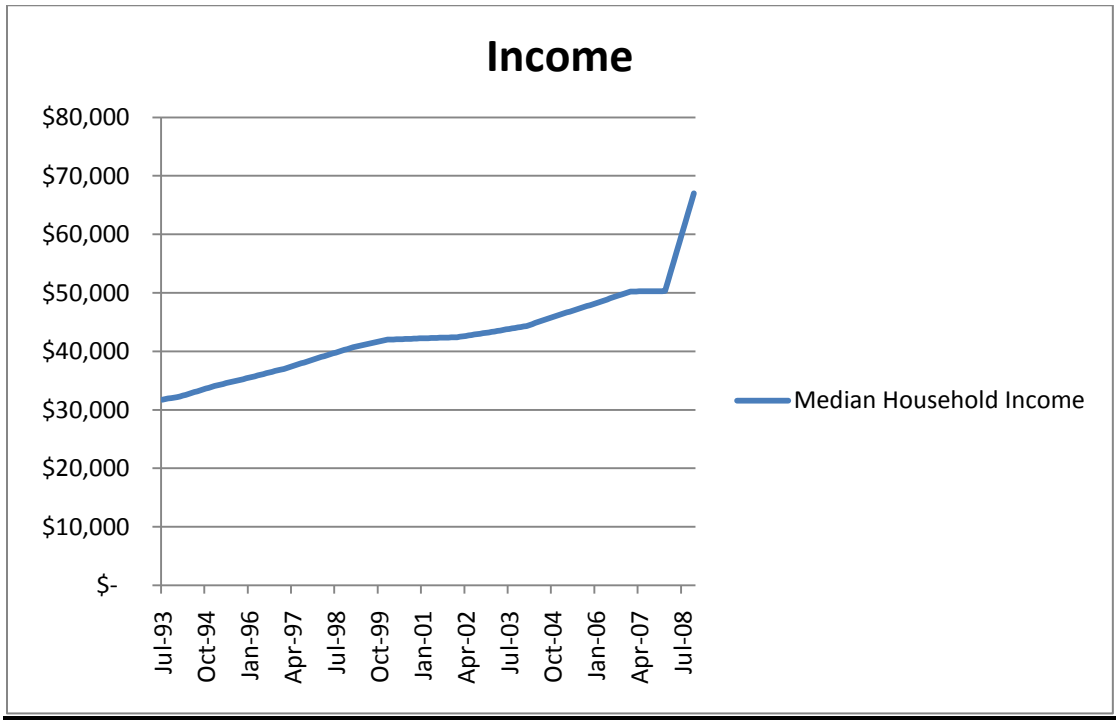
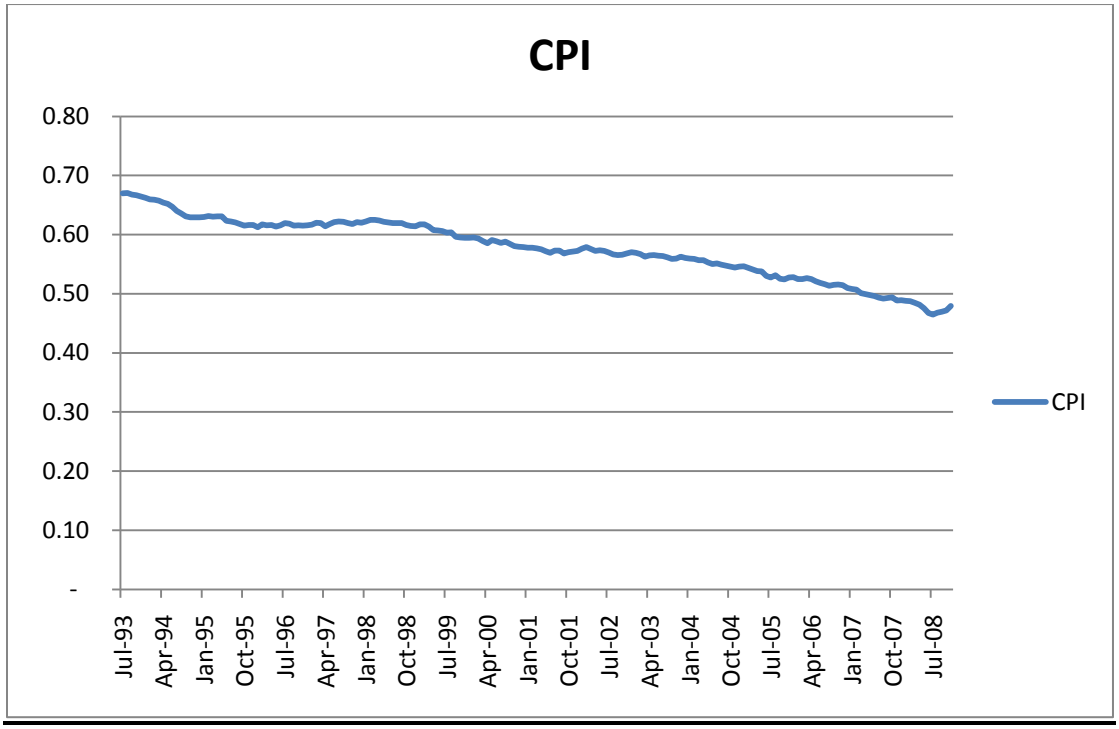


Chart 4. Relative CPI – Relative Price



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