The Diffusion of New Music through Online Social Networks

THESIS

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By

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Abstract

Recent advancements in digital communication technologies have spurred a restructuring of the music industry, affording independent music firms and artists the opportunity to compete more evenly with major firms for market share. With an increased proliferation of music available to consumers, how does information about new music spread through online social networks? Using the diffusion and two step flow theories, this study examines the diffusion of new music through online social networks. As there is a lack of theoretical research involving diffusion theory as applied to online social networks, an exploratory research survey was designed to measure the concepts involved in an effort to understand the process more fully. Questions were designed to explore concepts involved in the hypotheses, including discovery, electronic recommendations, opinion leaders, diffusion and acquisition. A 32-question survey was administered to 460 undergraduate students enrolled in Communication courses at The Ohio State University. Results from data analysis provided evidence that individuals scoring higher on a new music opinion leadership scale will be more likely to listen to new music, discover new music, use electronic recommendation agents, acquire new music that is evaluated positively after sampling and give recommendations about new music. Additionally, results from data analysis provided evidence that individuals who
routinely acquire new music will be more likely to acquire new music without sampling, based upon a recommendation from a trusted source.
Dedication

This is dedicated to my daughter, Olivia McKee Monk.
Acknowledgments

Special thanks to my advisor, Dr. John W. Dimmick, for his knowledge and guidance throughout this study. I would also like to thank my friends and family, especially my wife, Claire, for their love and support.
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Chapter 1: Introduction

New communication technologies have led to a wealth of information at the touch of a button. Music, in particular, has found a new distribution outlet that is allowing individuals the opportunity to customize and choose their consumption diet. New technologies have allowed music to be consumed “on-demand.” That is, among the millions of available songs, individuals choose what music they will consume and when they will consume it. Given the nature of the proliferation of music content and the instantaneous nature of consumption, individuals are now, more than ever, faced with a unique problem: choice. With the advent of digital music technologies, the Internet is quickly becoming a major source for music distribution. With this proliferation comes a problem of finding new music that suits individual tastes among an increasing number of niche genres available. According to Nielsen SoundScan, in 2007 there were 80,000 new albums released, not including unsigned releases made available through sites like MySpace and ReverbNation. Add to this the cumulative amount of music already available, and it becomes clear that individuals have millions of songs available to choose from. The question then becomes, how can new music be diffused in an already overcrowded market?

New communication technologies have not only changed the scope of media distribution and consumption, but have also changed the way in which we communicate
with one another. Specifically, the popularity of online social networking sites has not only increased the number of people with whom individuals communicate with, but has also enabled the speed and ease of communication with one another. With new music diffusion, members within these online social networks are able to discuss and recommend new music. Sites like Facebook, MySpace, etc., have millions of members who subscribe to their services. These sites also provide software applications that allow users to ‘share’ what music they are currently listening to with other members within their network. While information diffusion through social networks via word-of-mouth and recommendations is not a new phenomenon, what is new is how this process is occurring in the context of electronic communication exchanges. That is, it is important to investigate how online social networking facilitates the discovery and diffusion of new music utilizing online recommendations. Specifically, this study seeks to investigate the role that discovery and electronic recommendations has through online social networks in the diffusion of new music. As discussed above, the importance of this research can be seen by the proliferation of digital media, and the need for individuals to find new, relevant, and interesting music that aligns with their specific tastes; a daunting task in a crowded market.

In order to investigate this research question, I will begin by discussing the state of the music industry, both past and present. I will examine the reaction of the industry to new digital technologies, and how this has brought about an industry wide restructuring. Next, I will discuss theoretical literature relevant to new product and information diffusion. Both historical and current literature will be reviewed in an effort to apply a
theoretical lens to the process of new music diffusion within online social networks.

Finally, I will propose a study that will measure these processes, and should contribute to a deeper understanding of this relatively new diffusion process.
Chapter 2: Industry Overview

The music industry has undergone significant transformations with the integration of digital technologies. To understand the impact of this change, one must begin by understanding how the music industry has operated in the past. The music industry has seen several transformations of the distribution of market share between the major and independent recording firms. Until recently, market shares between major and independent music firms has fluctuated between periods of high and low concentration, resembling a “W” shape (Alexander, 1994).

In its infancy (1890-1900), the recording industry was composed of 3 major firms manufacturing most of the audio related products on the market. In the ten year period that followed, the recording industry saw a shift away from high concentration, spurred by the entry and growth of new firms afforded by advances in technological innovation. From 1914 until 1923, the industry continued this trend of growth and market share dispersion as new phonograph manufacturing and recording firms grew at a rate of 20% annually (Alexander, 1994). Following this period of growth, the industry saw a period of steady decline (1923-1933), spurred in part by The Great Depression and WWI. Many new firms exited the market, leading to another period of high concentration, in which the industry was dominated by only a few firms. In the late 1940’s, technological innovation again led to a shift and growth in the recording industry. The innovation was the ability to
record music on tape. Due to the low cost of tape compared with phonograph recording, this lead to many new firms flooding the market, creating a trend of low market share concentration (Alexander, 1994). The emergence of rock and roll during the late-fifties into the early sixties contributed to the trend of low industry concentration (Peterson & Berger, 1975). Major firms during this period thought of rock and roll as a fad, and as such, made no effort to integrate rock and roll artists into their roster (Peterson & Berger, 1975). However, rock and roll proved to be widely popular, especially among the youth. As such, independent firms with rock and roll artists on their rosters were successful due to the surging popularity of rock and roll with little competition from the major firms.

Starting with the most recent shift towards high concentration in the 1960’s and continuing through the 1990’s, major firms began to acquire and take over smaller, independent firms in a trend of horizontal integration. Major firms took over means of production, as well as promotion and distribution of records. The recent shift in the industry to one of high concentration, or that of an oligopoly, saw the industry being dominated by only a handful of major firms. With the mergers, acquisitions, and horizontal integration at all levels of production, promotion, and distribution, major music firms had control over the music that could reach audiences on a widespread level. These major firms were gatekeepers of the music industry, controlling the music made available to the population.

Recording technologies during this time were still expensive. Production costs for music recording could easily soar to hundreds of thousands of dollars, if not more. Major music labels were the only firms in a position to finance these kinds of endeavors, and as
such, tightly controlled which artists were selected to have their music recorded. This represented common practice as a means of control over the production level.

Once the music is moved into production, promotion is needed to encourage sales of the product. Audio recordings are a unique product for consumer evaluation. Unlike other consumer products, pre-recorded audio products can only be evaluated by listening to them. The most common way for consumers to evaluate audio recordings to encourage sales was through radio airplay. Radio airplay was the main source for music promotion. During the 1950’s, some music firms and radio disc jockeys were prosecuted for engaging in payola, a practice where music firms paid disc jockeys to play their records over the air (“Payola Rock”, 1973). Payola not only insured that radio stations promoted the music produced by major firms, but also precluded music to be played produced by independent firms, either due to lack of air time left after music by major firms, or the expense of payola practices driven up by some major firms with large financial backings. Independent firms were often prohibited from successful marketing campaigns due to soaring costs and economies of scale (Peterson & Berger, 1975). Some estimated marketing and promotion to account for up to 44% of the total cost of the product (Bream, 1971). Again, major firms exerted their control at the promotion stage of the music industry.

Once demand is created through radio airplay promotion, physical products are then dispersed through distribution. Due to horizontal integration practices, major firms have acquired distribution firms as part of their operation. In efforts to control distribution, some firms acquired chains of retail record stores (“Retail Wing Formed by
CBS/Columbia”, 1974). Due to the cost of transporting large amounts of recorded audio products, physical distribution was and still is an expensive process of the industry chain. Unlike major firms, small independent firms could not afford distribution integration into their operation. The cost of this has been estimated to reach $100 million dollars or higher (Greer, 1984). Thus, independent firms often had little choice but to turn to major label firms for national distribution of their music. This is where major firms once again had opportunity for control, as they could choose which products to distribute, and often will force independent firms to sign over contractual control of the artist, depending on selling success.

As is evident, major firms have dominated the industry by exerting control over all stages of industry operation. This trend of oligopolistic practice resulting from a highly concentrated industry has been increasing since the mid 1960’s. However, with each new technological innovation comes a shift in industry trends favoring the introduction and proliferation of new, independent firms resulting in lower industry concentration. Recent technological innovations in digital productions, as well as new digital communication technologies changing methods of promotion and distribution, are breaking down the barriers of control once held by the oligopolistic recording industry of the remaining three major recording firms, Sony Music Entertainment, Warner Music Group, and Universal Music Group (Pfanner, 2011).

Digital technologies have revolutionized the music industry, from production through promotion, distribution and even consumption of music (Molteni & Ordanini, 2003). The digitization of music has transformed the industry and how consumers acquire
and listen to music. The birth of the mp3 made it possible for entire personal music collections to be stored on computer hard drives, efficiently maximizing the use of space due to their compressed format and small file sizes. This allowed consumers to trade music files between each other through online platforms such as Napster. This process was known as peer-to-peer (P2P) file sharing. File sharing quickly became part of a global cultural shift in the music industry, as well as consumer acquisition (Cohn & Vaccaro, 2002; Ewing & Green, 2003; Freedman, 2003; Hughes & Lang, 2003). File sharing was attributed to an estimated $2 billion loss of music sales between 1999 and 2002 (Vaccaro & Cohn, 2004).

New technologies have also revolutionized the recording industry as well. As the cost of digital recording equipment falls, more and more artists are finding it easier than ever before to produce quality recordings at affordable costs (Alexander, 1994). Financial backing from a major music firm is no longer required to produce quality recordings, and many independent artists are able to realize their creative vision within the comfort of their homes, with the popularity of home digital recording equipment and software. Major label production costs ranging anywhere from $100,000 to $500,000 or more are now in competition with independent recordings of similar quality, with production costs at a fraction, ranging from $4,000 to $25,000 (Vaccaro & Cohn, 2004). The quality of these independent recordings is implicitly acknowledged by major firms through pressing and distribution deals, where smaller firms will contractually deal with a major firm’s distribution arm, using the master recording produced by the smaller firm to press discs for widespread production and distribution (Vaccaro & Cohn, 2004).
The ease and speed of online information sharing is unprecedented. Individuals have the ability to be globally connected to one another through online social networking sites such as MySpace and Facebook. These consumers are connected to one another and directly with the artists and producers of music themselves. The communication barriers that once existed are quickly fading, and a new era of communication infrastructure is emerging. Individuals are able to consume music “on-demand” with the increasing popularity of music downloading sites such as iTunes and Amazon, as well as streaming media sites such as YouTube, Pandora, or Internet radio.

With these new digital technologies, the barriers that once existed for independent firms are quickly breaking down. Some research has even pointed to a change in power away from major firms, toward smaller, more independent firms and artists (Hughes & Lang, 2003). Major firms have traditionally focused on producing music that will appeal to the broadest possible audience range, maximizing their selling potential. This often results in a range of music that is very similar. Major recording firms have been more preoccupied with these ‘hits’ and have not focused on niche music. The recent industry shift has spurred some analysts to predict that more creative talent will be provided through independent firms, or even directly from the artists, to fulfill the ever increasing diversified music demands of online consumers (e.g., Lefsetz, 2003a, 2003b). Research has shown an inverse relationship between industry concentration and musical diversity (Peterson & Berger, 1975). The breakdown of traditional barriers of control of major firms (e.g., Hughes & Lang, 2003) and growth of online communications has also left individuals with an ever increasing array of musical diversity and choice (e.g., Freedman,
This proliferation of choice now creates new problems for consumers: how does one navigate through that choice? The traditional business model used by major firms in the music industry includes expensive promotional budgets used to promote new music through radio, music television, and advertising campaigns (Vaccaro & Cohn, 2004), as well as costly manufacturing and distribution of physical products. Increased online communication technologies have given way to the rise of a new business model, one which utilizes inexpensive word-of-mouth and recommendations through online social networks.

The transformation of the music industry caused by new digital and online communication technologies has shifted the industry away from major firms as gatekeepers, and has empowered independent firms and artists. Increased communication between individuals online via social networking communities has provided more efficient and less costly methods of promotion via word-of-mouth and recommendations of new music. With the increase in choice, the problem becomes one of discovery of new music. How do individuals utilize recommendations to discover new music? To answer this question, one must look to theoretical diffusion research literature.
Chapter 3: Literature Review

There is very little published theoretical research on the diffusion of new music through online social networks, due in large part to the newness of this phenomenon. Therefore, it is appropriate to apply traditional theoretical research in the diffusion literature to that of new music diffusion within the context of online social networks. Given the recent advances in digital music technologies, proliferation of peer-to-peer file sharing, digital music distribution, recommendations and personal influence play an important role in the diffusion of new music. Personal influence occurs by means of interpersonal communication, and therefore “interpersonal communications helps influence most decisions” (King & Summers, 1970, p.44). Due to the recent industry shift away from the traditional and centralized methods of promotion and distribution, new music promotions are most successful when channels of influence and recommendations are used via social networks. Interpersonal influence is not a new phenomenon, however, as was researched over 70 years ago by theories such as Diffusion of Information and Two-Step Flow.

Diffusion

Results of a study of voting intentions during a presidential election in 1940, published in The People’s Choice, found that information did not flow directly from the media to individuals, but rather that most people obtained their information from other
people (Lazarsfeld, Berelson, & Gaudet, 1968). People talking to other people was how information was widely diffused. Lazarsfeld et. al. proposed that there are certain individuals who pay more attention to the media, and in turn, spread this information to other, less-informed individuals within their communities. They deemed these individuals “opinion-leaders” (Lazarsfeld et. al., 1968). Opinion leaders will share their knowledge and information with others, including those who turn to them for their ‘interpretations’ about the topic (DeFleur, 2010). Here, these mass communication messages are transported through groups of people in two steps. Step one involves the message traveling from media outlets to those attending (opinion leaders). The second step involves the opinion leaders communicating this message, along with their influence, to those who are less informed. The two-step flow is a process of personal influence. This model describes how information travels through social networks of people, and how influence can spread along with the message. The flow of information resulted from opinion leaders gaining information from the media and subsequently diffusing this to others within their community. Other variations of the Two-Step Flow, including the N-Step Flow and the Multi-Step Flow, suggest information flow takes place at more than two points, with many different individuals participate in the flow of information diffusion (Nwosu, 1986).

Opinion Leaders

The historical roots of the diffusion literature (Katz & Lazarsfeld, 1955; Ryan & Gross, 1943) have showed opinion leaders act as information diffusers within an individual’s social network. Several studies have examined and provided support for the
existence of opinion leaders, and their importance for the diffusion of information through their social networks (Merton, 1949; Katz & Lazarsfeld, 1955; Katz, 1957; Troldahl, 1966; Coleman, Katz, & Menzol, 1966; Rogers, 1963; Bo-Anderson & Melen, 1959). These studies elaborated on conditions and characteristics of opinion leadership. Opinion leadership is topic bound; meaning an opinion leader in one topic area is not an opinion leader in others. Individuals may often be members of more than one social network. Different groups of people may be bound together by different commonalities, each group defining a social network of people. Often, these different social networks, while not knowing or interacting with each other may be linked together by an individual who is a member of both. Opinion leaders in one social network were often opinion followers themselves in another social network (Troldahl, 1966). Opinion leadership is a multidimensional characteristic that needs to be considered in the context of sex, age, social status, topic of influence, and group structure and values (Katz, 1957). The flow of interpersonal influence tends to be among similar individuals. That is, opinion leaders and their followers tend to be similar in demographics including age, occupation, socioeconomic status, etc. (Katz, 1957).

Opinion leaders tend to have more knowledge and expertise in a topic than their followers. This establishes leadership in their social network, as well as trust and credibility, which adds to greater influence. Opinion leaders tend to be social extraverts (Katz & Lazarsfeld, 1955), with many contacts outside of their social network. These contacts aid the opinion leaders in amassing greater information, and increase their perceived competence by members of their social network (Katz & Lazarsfeld, 1955).
Characteristics of opinion leaders serve to shape the role they play in the diffusion of information. It can be argued that opinion leaders of music are interested in the topic, knowledgeable about new artists and current industry events, as well as display a high degree of extraversion. These characteristics help to establish and maintain the credibility and validity of their recommendations within their social network. Recommendations within a social network do not always flow one-way. That is, music seekers often turn to the opinion leaders of their social network for advice and recommendations. These ‘opinion-seekers’ initiate and elicit recommendations proactively, and play an important role in the diffusion of new music.

There has been little research into the concept of opinion seekers. These individuals turn to others for advice and information (Vishwanath, 2006). The importance of the role that opinion seekers play is that individuals only become opinion leaders when there is someone to follow their advice (Vishwanath, 2006). It is important to utilize theory in order to identify opinion leaders. Once identified, effective communication campaigns can be designed to utilize these valuable communication outlets (Nisbet & Kother, 2009).

Identifying Opinion Leaders

Personal influence studies have examined how opinion leaders and opinion seekers interact together, showing the importance of interpersonal influence to the flow of information through social networks. Merton (1957) states that influence can shape future behaviors. Relevant to classifying opinion leadership, an important consideration that Rogers (1963) makes is that opinion leadership is not a dichotomous variable, but
rather can be thought of as a continuous variable. But what makes a good opinion leader? What characteristics do opinion leaders share? In the realm of music diffusion and the current shape of the decentralized industry, it is important to be able to identify and utilize opinion leaders. There have been several studies that have investigated and utilized opinion measurement techniques.

Previous research has identified four methods of measuring opinion leadership: Sociometric techniques, interviews with key informants, observation, and self-designation techniques (Jacoby, 1974; Rogers & Cartano, 1962; Weimann, 1994). King and Summers (1970) created a self-identifying opinion leadership scale. This was created to measure the direction of influence on specific products. Childers (1986) revised this scale by dropping a question, and increasing the internal consistency and reliability, providing a more accurate measure of opinion leadership indicators.

Personal characteristics of opinion leaders as defined by Childers (1986) are that they tend to be highly creative, risk takers, and have high categorical knowledge/expertise. Influence of opinion leaders may not be uni-directional, but rather may be a two-way flow. Results from a survey by Myers & Robertson (1972) indicated that opinion leaders are not only relatively more influential than the average person, but are also recipients of influence themselves.

**Digital Opinion Leaders**

If communication theory can serve to identify those who are likely to be agents of effective personal influence, then communication campaigns can be designed to incorporate these opinion leaders (Nisbet & Kotcher, 2009). Considering the digital
revolution of the communication industry, opinion leaders can exist in the modern digital domain.

Termed as “digital opinion leaders”, Nisbet and Kotcher (2009) concluded that there are trade-offs between face-to-face interpersonal influence, and digital social influence. Data from a study by Nisbet and Kotcher (2009) found that online opinion leadership can enhance face-to-face influence, but should not replace it. Moderating factors such as trust and likeability were found to suggest that face-to-face recommendations are preferred and perhaps are more effective.

Implications of digital opinion leadership can be found in online social networking sites, such as Facebook. Data from a study by Zube, Lampe, and Lin (2009) suggests that because of the interpersonal nature of Facebook, and the variety of communication methods such as newsfeeds, chat, and messaging, among others, there is a strong influence exerted by opinion leaders in this digital network. The news feed function of Facebook plays a pivotal role in the two-step flow within both opinion leaders and opinion seekers social network.

Word-of-Mouth vs Marketing

When discussing issues of interpersonal recommendations and online word-of-mouth communications, it is necessary to define these communication behaviors in terms of intentionality. Some researchers offer no differentiation between word-of-mouth and recommendations (Chatterjee, 2011). Early research in the diffusion literature proclaimed word-of-mouth communication to be a driving force behind product awareness and adoption (Ryan & Gross, 1943). Some define word-of-mouth communications as an
“organic interconsumer influence” due to the fact that individuals are communicating without marketing interference (Kozinets, Wojnicki, & Wilner, 2010, p. 72). However, as research advanced within the diffusion literature, marketers began to see the value in intentionally influencing people to talk with one another about their product. Hence, word-of-mouth marketing began to develop. Recently, word-of-mouth marketing has grown to encompass social media marketing, and marketing researchers are investing heavily into developing and understanding this communication behavior (Kozinets, Wojnicki, & Wilner, 2010).

Word-of-mouth may be considered a broad category of communication phenomenon in which information is passed from person to person. This can include recommendations, gossip and storytelling, among others. The differentiating component between word-of-mouth and word-of-mouth marketing is intentionality. Recommendations should occur naturally, without direct influence from the marketer. If the marketer releases communications disguised as recommendations, then that may be considered marketing.

When applying the concepts of opinion leaders to the diffusion of new music in online environments, the nature of the social network needs to be considered. That is, traditional research into diffusion theory has taken place in face-to-face, interpersonal contexts. Due to the recent surge of popularity of online social networks, there is no research, known to the author, of applying traditional diffusion theory, including opinion leadership, to the diffusion of new music throughout these networks. Because of this lack of research into the diffusion of new music through online social networks, the design of
this study is primarily exploratory in nature. Based on the literature review of current industry shifts, as well as the literature of the diffusion theories, I will propose a mini-theory to answer the following questions, as well as advance testable hypotheses. First, what is the role of electronic recommendations through online social networks in the diffusion of new music? Second, what is the role of discovery through online social networks in the diffusion of new music?
Chapter 4: Theory and Hypotheses

It is important to understand how the diffusion of new media, including music, occurs within online social networks. As social networking increases in popularity, it is important to understand the communication principles taking place, allowing one to maximize the communication efficiency of these channels. Recommendations have long played an important role in the diffusion of information. It is important to understand how this process is taking place in the new digital realm in which we communicate with one another. The aim of this study is to explore these questions, and help to contribute to the understanding of the online diffusion process.

Now that I have defined the concepts involved, I would like to discuss the relationships I believe exist between these concepts. I will apply traditional diffusion theory, including opinion-leadership and opinion-seeking behaviors, to the recent phenomenon of new music diffusion through online social networks. Finally, I will discuss a mini-conceptual model that attempts to explain how these relationships fit into the process of new music diffusion through online social networks.

It is important to understand that the roles of opinion seeking and leadership can change. Not only can opinion leadership vary by topic, but also within topic (e.g., music genre). An opinion leader of new rock music may not be knowledgeable about new classical music, for instance. As discussed earlier, individuals may be members of
multiple social networks, acting as links between these various networks. Roles can change depending on the social network an individual is participating in at the time. An individual may perform opinion seeking behaviors, seeking information from others in a social network in which members are more knowledgeable about new music. Thus, in this social network, the individual assumes the role of an opinion seeker. Then, that individual may take this newly acquired information and communicate it to another social network to which he is a member of, where those members are less knowledgeable about new music, thus assuming the role of opinion leader and facilitating the diffusion of new music. Opinion seekers can become opinion leaders. Individuals who routinely seek out new music and are active participants in the diffusion and discovery of new music through this seeking behavior may be ultimately viewed as opinion leaders.

Childers (1986) described opinion leaders as risk-takers, in that they will be more “venturesome than other consumers” (p. 185). Consumer risk taking may involve being the first to purchase new products, also called early adoption. New music opinion leaders (early-adopters) will be risk takers, willing to try out new music. They would prefer to listen to something new to them than to listen to something they already know. The following hypothesis is advanced:

\[ H1: \text{Individuals who score higher on a new music opinion leadership scale will also score higher on a measure of their likelihood to listen to new music.} \]
New music opinion leaders will be more likely to use discovery and electronic recommendation agent sites such as Pandora, Amazon, and iTunes among others, and in turn share these discoveries with their online social network. Electronic recommendation agents may play an important role in discovery. The following hypotheses are advanced:

H2: Individuals who score higher on a new music opinion leadership scale will also score higher on a discovery index scale.

H3: Individuals who score higher on a new music opinion leadership scale will also score higher on a measure of their likelihood to use electronic recommendation agents to discover new music.

Music sampling occurs as part of this process as well. Music sampling refers to the listener evaluating the music by listening to small sections available through online digital music sites such as Amazon or iTunes. If the listener evaluates the music positively, he/she may be encouraged to acquire it, either through purchasing, P2P file sharing, or other acquisition methods. Given that new music opinion leaders will be more likely to sample new music, and sampling leads to a greater likelihood of acquisition (given that they positively evaluate the music), then the following hypothesis is advanced:
H4: Individuals who score higher on a new music opinion leadership scale will also score higher on a scale measuring their likelihood of acquiring new music that is evaluated positively after sampling.

As new music opinion seekers discover more new music, they may be more likely to discuss and share their discoveries through online communications on social networking sites via ‘posts’ or ‘updates.’ Also, certain social networking sites may have integrated application software programs that allow these users to share what they are listening to with other members of their network via their news feed. As the frequency that individuals communicate and share information about new music increases, others may be more likely to perceive them as knowledgeable and credible about new music, and more likely to turn to them for advice or suggestions relevant to new music. That is, the more a person communicates about new music to their online social network, the more likely others will perceive them as an opinion leader. The more that these individuals communicate about new music, recommend and share what they are listening to, not only are they more likely to be perceived as opinion leaders, but the more other people within their online social network will be exposed to this new music. This is an important part of the diffusion process. That is, opinion leaders are key agents of diffusion of new music within their online social network. Thus, the following hypothesis is advanced:
**H5:** Individuals who score higher on a new music opinion leadership scale will also score higher on a scale measuring their likelihood of giving new music recommendations.

Often, individuals making lots of decisions will rely on heuristics, or mental shortcuts, to aid in their decision making (Simon, 1990; Gigerenzer & Goldstein, 1996; Gigerenzer, Todd, & the ABC Research Group, 1999). Using recommendations of others can be considered a heuristic in the decision making process. Opinion leaders are thought of as trustworthy, knowledgeable, and credible. If these opinion leaders give a recommendation about new music, this should be credible enough to be trusted and used as a shortcut in the new music acquisition decision process. The more individuals are active in new music discussions and the more decisions they make to acquire new music, the more they will use recommendations.

**H6:** Individuals who score higher on a measure of music acquisition will also score higher on a measure of their likelihood to acquire new music without sampling based on recommendations from a trusted source.

Often, people are exposed to new music through their online social network. This occurs by members of social networks commenting on new music, providing links to new music, posting music videos, embedding playable audio tracks within their posts, using applications which shares what songs they are listening to, etc. Communication about
new music by certain individuals of an online social network leads to discovery of new music by other individuals within another social network linked by those individuals.

Online social networks can be thought of as an interwoven web of social connections. Individuals may be members of more than one network, and therefore act as links, bridging these networks together. These individuals can perform new music seeking behavior within one social network, gaining information about new music from opinion leaders. In turn, they may communicate and share this information, exposing members of these linked social networks to new music. These individuals who communicate and share information about new music within their online social network will be links of discovery for members of other networks.

It appears that this process may be dynamic. Opinion seeking can lead to discovery. Discovery can prompt an individual to communicate about new music more actively, which leads to perceived opinion leadership. Recommendations about this new music can lead to diffusion of new music within the individual’s online social network. Diffusion leads to acquisition and discovery by other opinion seekers within that social network, who in turn communicates more actively to their own online social network involving different actors. This, in turn, can lead to diffusion of new music to other online social networks via linking members.
Chapter 5: Method

As there is a lack of theoretical research involving diffusion theory as applied to online social networks, an exploratory research survey was designed to attempt to outline and measure the concepts involved in an effort to understand the process more fully. Questions were designed to explore concepts involved in the research questions, including discovery, electronic recommendation, opinion leaders, diffusion, and acquisition.

This survey was administered to undergraduate college students at The Ohio State University in exchange for extra credit. The survey was made available through an online survey administration site so that participants may complete the survey by following a link. The ease of participation may have contributed to the number of respondents.

Survey questions were designed to measure the concepts involved with each hypothesis. An opinion leadership scale has been incorporated into the survey (questions 13 through 19). The original opinion leadership scale was created by King and Summers (1970) in an effort to identify opinion leaders within social networks, and was later modified by Childers (1986), resulting in increased validity and internal reliability measures. The Childers scale has been adapted and incorporated in this survey in an effort to explore opinion leadership of new music within online social networks. The entire survey can be found in appendix A
Hypothesis 1 predicts that there will be a positive relationship between higher scores on the opinion leadership scale and likelihood of listening to new music. To test this hypothesis, the opinion leadership scale was used to identify the degree of opinion leadership of an individual. In addition, question 11 measures the likelihood of listening to new music. Often, people are exposed to new music by members of their social network. Participants who score higher on the opinion leadership scale should be more likely to listen to something new.

Hypothesis 2 predicts that those who score higher on the opinion leadership scale will score higher on a discovery scale index. To test this hypothesis, the opinion leadership scale was used to identify the degree of opinion leadership of an individual. Questions 1 through 10 measure the number of songs discovered within the last 7 days. Question 1 measures discovery via peers within an online social network. Questions 2 through 9 measure discovery via various online music websites and question 10 measures discovery via face-to-face social interactions. The aggregate of discovery was calculated by combining the answers to these 10 questions.

Hypothesis 3 predicts that those who score higher on the opinion leadership scale will be more likely to use electronic recommendation agents to discover new music. To test this hypothesis, the opinion leadership scale was used to identify the degree of opinion leadership of an individual. Questions 20 through 27 were used to measure the likelihood of discovering new music through various websites that recommend new music to users.
Hypothesis 4 predicts that those who score higher on the opinion leadership scale will be more likely to acquire new music that is evaluated positively after sampling. To test this hypothesis, the opinion leadership scale was used to identify the degree of opinion leadership of an individual. Question 30 was used to measure the likelihood of acquiring new music that is evaluated positively after sampling. Participants who score higher on the opinion leadership scale be more likely to acquire new music, after positive evaluation of the new music following sampling.

Hypothesis 5 predicts that those who score higher on the opinion leadership scale will be more likely to give recommendations about new music. To test this hypothesis, the opinion leadership scale was used to identify the degree of opinion leadership of an individual. Question 12 measures the likelihood of the participant to recommend new music to their online social network. Those who score higher on the opinion leadership scale should show a greater likelihood to recommend new music.

Hypothesis 6 predicts that individuals who routinely acquire music will be more likely to acquire new music without sampling based upon a recommendation from a trusted source. Routine music acquisition involves decision making, and is likely to be cognitively taxing to systematically weigh pros and cons of each decision. Individuals who make lots of decisions will be more likely to use heuristics, or shortcuts, relevant to their new music decision making. These recommendations should be relevant and credible, however, meaning that they should come from a trusted source. Using recommendations from trusted sources should act as a heuristic, thereby freeing cognitive resources for other tasks. Question 29 measures the frequency of new music acquisition.
Individuals who acquire a large amount of new music should be identifiable from this question. Question 28 measures the likelihood of new music acquisition based on recommendations from trusted sources.

Independent Variables

Opinion Leadership

Hypotheses 1 through 5 make predictions utilizing opinion leadership as the independent variable. In this study, opinion leadership was assessed by 7 items. The new music opinion leadership measure created for this study was adapted from Childers’ (1986) modified opinion leadership scale, which was based on the original opinion leadership scale developed by King and Summers (1970). Researchers have produced internal consistency reliability measures for the King and Summers opinion leadership scale, with alpha coefficient measures ranging from .50 to .87 (Riecken and Yavas, 1983; Yavas and Riecken, 1982). The alpha score for the 7-item Childers (1986) scale yielded an internal consistency reliability measure of .66. By dropping one item from the King and Summers opinion leadership scale, Childers increased the alpha to .68.

As discussed above, both the King and Summers scale and the Childers scale has shown to have consistently moderate internal reliability scores. Both scales have also presumed uni-dimensionality, due to their consistent alpha coefficients (Flynn, Goldsmith, & Eastman, 1994). However, little research has been conducted relevant to the dimensionality of these scales. A study by Flynn et. al. performed exploratory factor analysis, using principle axis factoring, on the King and Summers opinion leadership scale incorporated into their three independent studies. Data showed that the 7-item King
and Summers opinion leadership scale is not uni-dimensional, but consisted of 2 separate but correlated dimensions (Flynn et. al., 1994). Flynn et. al. were able to achieve uni-dimensionality by revising the scale (i.e., question rewording, question re-ordering, and the dropping of one item).

<table>
<thead>
<tr>
<th>Question</th>
<th>Options</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. In general, do you communicate with your friends about music on your online social network:</td>
<td>Never</td>
</tr>
<tr>
<td>Give no information</td>
<td>Give very little information</td>
</tr>
<tr>
<td>2. When you communicate with your friends about music on your online social network, do you:</td>
<td></td>
</tr>
<tr>
<td>Give no information</td>
<td>Give very little information</td>
</tr>
<tr>
<td>3. During the past month, how often have you communicated about a specific new music (song/artist) on your online social network?</td>
<td>Never</td>
</tr>
<tr>
<td>Give no information</td>
<td>Give very little information</td>
</tr>
<tr>
<td>4. Compared with the friends within your online social network, how likely are you to be asked about new music (songs/artists)?</td>
<td>Very unlikely</td>
</tr>
<tr>
<td>Give no information</td>
<td>Give very little information</td>
</tr>
<tr>
<td>5. In discussions of new music within your online social network, how often do you tell your friends about new music?</td>
<td>Never</td>
</tr>
<tr>
<td>Give no information</td>
<td>Give very little information</td>
</tr>
<tr>
<td>6. In discussions of new music within your online social network, how often do your friends tell you about new music?</td>
<td>Never</td>
</tr>
<tr>
<td>Give no information</td>
<td>Give very little information</td>
</tr>
<tr>
<td>7. <strong>Overall</strong>, in your discussions with friends on your online social network, how likely are you to be used as a source of advice:</td>
<td>Very unlikely</td>
</tr>
<tr>
<td>Give no information</td>
<td>Give very little information</td>
</tr>
</tbody>
</table>

Figure 1. New music opinion leadership measurement.
Figure 1 shows the opinion leadership measure used in this study, consisting of 7 items intended to measure communication and influence behaviors through online social networks, specifically relevant to new music. The opinion leadership measure used in the present study was based on the original King and Summers opinion leadership scale (1970) as well as the modified Childers (1986) opinion leadership scale, but revised to be specific to new music. Due to the changes made to the parent scale, a factor analysis was performed on the new music opinion leadership measure created for this study. Given this, the question remains, do the 7 opinion leadership measurement items used in this study form a reliable, uni-dimensional scale?

**New music acquisition**

The second and final independent variable used in this study is a measure of the frequency of new music acquisition. Hypothesis 6 predicts that individuals who engage in a large number of music acquisition behaviors will be more likely to acquire new music based upon a recommendation from a trusted source, without sampling first. The frequency of new music acquisition was assessed via a single-item question, “how often do you acquire new music?” Five response options include 1=never, 2=once a month, 3=a few times a month, 4=a few times a week, and 5=daily. Individuals scoring higher on this measurement can be considered engaging in a large number of music acquisition behaviors, and should be more likely to use peer recommendations about new music as heuristics, or shortcuts.

**Dependent Variables**
**Likelihood of new music listening (new music consumption)**

Hypothesis 1 predicts that there will be a positive relationship between higher scores on the opinion leadership scale and likelihood of listening to new music. The likelihood of listening to new music was assessed via a single-item question “how likely are you to listen to new music?” Six response options range from 1=very unlikely to 6=very likely. Individuals scoring higher on the opinion leadership scale should also score higher on this measure.

**Discovery Measure Index**

Hypothesis 2 predicts that those who score higher on the opinion leadership scale will discover more new music. The discovery measure index is a 10-item measure created to determine the amount of new music that individuals discovered within the last 7 days. Question 1 measures the amount of new music discovered through peers via online social networking. Questions 2 through 9 measures the amount of new music discovered through various online music websites (including Amazon, Pandora, Last.Fm, iTunes, YouTube, ReverbNation, Spotify, and “other sites”). Question 10 measures the amount of new music discovered through offline, face-to-face social interactions. The five option responses to each question include 1=(0-1), 2=(2-5), 3=(6-10), 4=(11-15), and 5=(15 or more). The aggregate of discovery was calculated by summing the responses to these 10 questions.

**Likelihood of music discovery via electronic recommendation agents**

Hypothesis 3 predicts that those who score higher on the opinion leadership scale will be more likely to use electronic recommendation agents to discover new music. This
8-item index was created to determine the likelihood of individuals to discover new music via online recommendation websites (including Amazon, Pandora, Last.Fm, iTunes, YouTube, ReverbNation, Spotify, and “other sites”). Six response options for each question range from 1=very unlikely through 6=very likely. These measures were summed to determine the likelihood for an individual to use online recommendation agents for new music discovery.

**Likelihood of music acquisition**

Hypothesis 4 predicts that those who score higher on the opinion leadership scale will be more likely to acquire new music that is evaluated positively after sampling. The likelihood of acquiring music that is evaluated positively after sampling is assessed via a single-item question, “how likely are you to acquire new music you evaluate positively after sampling?” Six response options range from 1=very unlikely through 6=very likely.

**Likelihood of giving new music recommendations**

Hypothesis 5 predicts that those who score higher on the opinion leadership scale will be more likely to give recommendations about new music. The likelihood of an individual recommending new music to their online social network was assessed by a single-item question, “how likely are you to recommend new music to your online social network?” Six response options range from 1=very unlikely through 6=very likely.

**Likelihood of music acquisition based on trusted recommendation**

Hypothesis 6 predicts that individuals who engage in a large number of music acquisition behaviors will be more likely to acquire new music, based upon a recommendation from a trusted source, without sampling first. The likelihood of an
individual to acquire new music without sampling first, based on a recommendation from a trusted source, was assessed via a single-item question, “how likely are you to acquire new music based upon a recommendation from a trusted source without sampling first?” Six response options range from 1=very unlikely through 6=very likely.
Chapter 6: Results

The data collected in this study was used to test the hypothesis formulated earlier. The results section discusses the outcomes of the hypotheses testing. First, factor analysis was performed on the opinion leadership scale to determine if this was indeed a one-factor, uni-dimensional scale. If the scale proves to be one-dimensional, this will be regressed against the dependent variables to test the hypotheses.

Participants and Design

460 undergraduate students enrolled in Communication courses at The Ohio State University participated in this study in exchange for partial course credit. Participants were given the link to complete the online survey, hosted through Qualtrics.com. The study consisted of 32 questions designed to measure variables in order to test the hypotheses formulated earlier. Participant name and course information was collected for credit distribution purposes, and was deleted from the system once credit was distributed. Of the 460 participants who completed the survey, 187 participants were male, 272 were female with 1 participant not reporting their sex. Ages ranged from 18 through 56, with a median age of 21.

Factor Analysis

A factor analysis was performed on the new music opinion leadership measurement, using Principle Axis Factoring, to determine if the scale was one-
dimensional. Eigenvalues showed that this scale is indeed a single-factor scale, as the eigenvalue on the first factor is above 1 (4.196). By contrast, the next highest eigenvalue was reported at .708. The single factor in this scale explains about 60% (59.949) of the variance.

<table>
<thead>
<tr>
<th>Factor 1</th>
<th>Factor Loadings</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. In general, do you communicate with your friends about music on your online social network:</td>
<td>.773</td>
</tr>
<tr>
<td>2. When you communicate with your friends about music on your online social network, do you:</td>
<td>.598</td>
</tr>
<tr>
<td>3. During the past month, how often have you communicated about a specific new music (song/artist) on your online social network?</td>
<td>.775</td>
</tr>
<tr>
<td>4. Compared with the friends within your online social network, how likely are you to be asked about new music (songs/artists)?</td>
<td>.720</td>
</tr>
<tr>
<td>5. In discussions of new music within your online social network, how often do you tell your friends about new music?</td>
<td>.831</td>
</tr>
<tr>
<td>6. In discussions of new music within your online social network, how often do your friends tell you about new music?</td>
<td>.637</td>
</tr>
<tr>
<td>7. Overall, in your discussions with friends on your online social network, how likely are you to be used as a source of advice:</td>
<td>.762</td>
</tr>
</tbody>
</table>

Table 1. Factor loadings of items on new music opinion leadership scale (Principle Axis Factoring).

Table 1 shows the factor loading for each of the items in the new music opinion leadership scale. The minimum loading for an item to be included in the factor is between .35 and .40. All of the items used in this scale report above the minimum loading. Item 5 had the highest factor loading (.831). This item is the most strongly related to the factor. While still above the minimum loading threshold, item 2 had the lowest factor loading score (.598).
As the scale was modified to fit the context of new music consumption and communication behaviors, internal consistency reliability measures were also assessed for the new music opinion leadership scale, yielding an alpha score of .88 (n=458). The alpha score reported here is higher than the score reported by Childers (1986). This can be attributed to the question wording being highly specific and focused on new music rather than on general products, as found in the original King and Summers opinion leadership scale. Factor analysis data showed the new music opinion leadership measurement was a one-dimensional scale, with a high internal consistency reliability score. Evidence for construct validity of new music opinion leadership can be established by finding positive relationships between the variables in the hypotheses, which relate to the opinion leader construct.

Data Analysis Results

Hypothesis 1 predicted that there would be a positive relationship between higher scores on the opinion leadership scale and the likelihood of listening to new music. Regression analysis showed that opinion leadership significantly predicted the measure of the likelihood to listen to new music, standardized $\beta = .441$, $t(455) = 10.500$, $R^2 = .193$, $p < .001$.

Hypothesis 2 predicted that those who score higher on the opinion leadership scale will discover more new music. Regression analysis showed that opinion leadership significantly predicted the measure of their discovery of new music, standardized $\beta = .485$, $t(448) = 11.757$, $R^2 = .234$, $p < .001$. 
Hypothesis 3 predicted that those who score higher on the opinion leadership scale will be more likely to use electronic recommendation agents to discover new music. Regression analysis showed that opinion leadership significantly predicted the measure of using electronic recommendation agents to discover new music, standardized $\beta = .418$, $t(448) = 9.743$, $R^2 = .173$, $p < .001$.

Hypothesis 4 predicted that those who score higher on the opinion leadership scale will be more likely to acquire new music. Regression analysis showed that opinion leadership significantly predicted the measure of the likelihood of acquiring new music, standardized $\beta = .290$, $t(453) = 6.466$, $R^2 = .082$, $p < .001$. Data analysis shows support for this hypothesis, though the relationship is weak.

Hypothesis 5 predicted that those who score higher on the opinion leadership scale will also score high on a measure of their likelihood to give a recommendation about new music. Regression analysis showed that opinion leadership significantly predicted the measure of the likelihood to give new music recommendations, standardized $\beta = .662$, $t(455) = 18.879$, $R^2 = .437$, $p < .001$.

Hypothesis 6 predicted that individuals who routinely acquire new music will be more likely to acquire new music based upon a recommendation from a trusted source without sampling first. Regression analysis showed that new music acquisition accounted for a small portion the variance in the likelihood of using new music recommendation as heuristics, $R^2 = .081$, $p < .001$. Data analysis shows support for this hypothesis, though the relationship is weak.
In summary, support was found for all six hypotheses presented in this study. Overall, opinion leadership accounted for 19.3% of the variance in likelihood of new music listening scores, 23.4% of the variance in likelihood of new music discovery scores, 17.3% of the variance in the discovery of new music through electronic recommendation agents scores, 8.2% of the variance in new music acquisition likelihood scores and 43.7% of the variance in the likelihood of giving new music recommendation scores. New music acquisition accounted for 8.1% of the variance in the likelihood of using new music recommendation as heuristics. Hypothesis 5 was found to be the most socially significant, with opinion leadership explaining almost half of the variance in the likelihood of giving new music recommendations. Hypotheses 4 and 6 were supported, but low $R^2$’s indicate weak relationships between the variables.
Chapter 7: Discussion

This section will discuss the results and implications of this study in order to build upon past diffusion research by applying the theoretical principles of face-to-face diffusion to understand the diffusion of new music through online social networks. This section will begin by discussing the results of the current study, including a discussion of both the strongest and weakest supported hypotheses. Next, the structure of online social networks will be discussed in order to understand how new music diffuses through these networks. Relationships will be examined in terms of how relationship strength can facilitate the diversity of new music diffusion. Following this, characteristics of online diffusion will be compared to face-to-face diffusion in an effort to explore the impact of new communication technologies on the diffusion of new music. Finally, a model of new music diffusion through online social networking will be introduced.

The present study sought to better understand the diffusion of new music through online social networks. There is no research, known to this author, which applies the theoretical principles of the diffusion of information to how people share information about new music via online social networks. While traditional diffusion research has roots in face-to-face social interactions, it is important to understand how communication through online social networks facilitates new music diffusion utilizing online recommendations. By investigating the role that discovery and electronic
recommendations has through online social networks in the diffusion of new music, one can better understand new music diffusion through online social networking.

Discussion of Results

In their original conceptualization, Katz and Lazarsfeld (1955) identified certain individuals within social networks who were essential in the diffusion process. They were named opinion leaders. Opinion leaders were early adopters, and tended to be topically well-informed. Hypothesis 1 predicted that individuals who scored higher on a new music opinion leadership scale will also score higher on a measure of their likelihood to listen to new music. Data analysis provided support for this hypothesis. Those who score higher on a new music opinion leadership scale are indeed more likely to listen to new music. They are more willing to take risks on listening to new music. This is in line with Childers’ (1986) description of opinion leaders/early adopters as more “venturesome than other consumers” (p. 185). Due to the fact that opinion leaders take risks on new music, they are early adopters of new music, and are able to recommend this to other individuals within their social network.

Hypothesis 2 predicted that new music opinion leaders will score higher on a new music discovery index. Data analysis provided support for this hypothesis. New music opinion leaders take risks by listening to new music. New music opinion leaders seek out and listen to more new music, and subsequently discover more new music than others within their social networks.

Where do these opinion leaders receive information about new music? Support for hypothesis 3 provides evidence that new music opinion leaders utilize websites that
act as electronic recommendation agents. Websites such as iTunes, Amazon, Pandora, among others, suggest to the user other artists that are similar to the current artist being viewed. These occurrences are opportunities of discovery for the user. New music opinion leaders will be more likely to engage in these discovery opportunities, and take a risk by listening to these suggested artists.

Musical taste varies between individuals. What may be pleasing to one individual may not be to another. Individuals can evaluate music online by sampling. Sampling refers to listening to all or parts of a piece of music, and determining whether one evaluates the music positively or negatively. Once new music is sampled and evaluated positively, conditions are optimal for individuals to proceed with acquisition of that new music. Sampling involves listening to new music, and listening to new music is more likely to be engaged in by new music opinion leaders. Given this, if new music is evaluated positively after sampling, new music opinion leaders will be more likely to proceed with acquiring the new music. Data analysis provided support for hypothesis 4, which stated that new music opinion leaders will be more likely to acquire new music that is evaluated positively after sampling.

An important part of the new music diffusion process involves the communication to others about the new music. Individuals who discover new music are more likely to discuss or share this discovery with others within their online social network. Some social networking sites have integrated applications that allow users to share what they are listening to, so that others may choose to listen, or sample, the new music as well. The more that individuals share information about new music within their online social
network, the more that others may perceive them to be knowledgeable about new music, and will be more likely to turn to them for advice or recommendations about new music. Thus, the more an individual recommends, or shares, information about new music within their online social network, the more that they may be perceived as a new music opinion leader. But perhaps more importantly, the more that these new music opinion leaders recommend and share information about new music, the more others within their social network may be exposed to this new music, thus facilitating the diffusion of new music within online social networks. Data analysis provided support for hypothesis 5, which predicted that new music opinion leaders will be more likely to give new music recommendations to others within their social network, thus providing evidence for this important step in the new music diffusion process.

Individuals are faced with many decisions on a daily basis, so much so that it would be cognitively taxing to “rationally and objectively” evaluate each decision (Simon, 1982). That is, it was once thought that individuals systematically evaluated that risks and benefits of every decision faced. However, this was not the case (Simon, 1982). Fiske and Taylor (1984) coined the term “cognitive miser” to mean that individuals have a finite amount of cognitive resources to operate, process information, and make decisions. Given this limitation, individuals often make use of heuristics, or mental shortcuts, in lieu of evaluating every decision. Individuals who acquire a large amount of new music have made a large number of decisions. That is, each acquisition instance would require the individual to sample, evaluate, and decide whether or not to acquire the new music. However, recommendations about new music can act as a heuristic, or
shortcut, when faced with these decisions. An individual who acquires a large amount of new music will rely on these recommendations, provided they come from a trusted source. Often, these trusted sources will be individuals whom the receiver perceives to be credible and knowledgeable about new music of similar tastes, i.e. opinion leaders. Support for hypothesis 6 provides evidence that individuals who acquire large amounts of music do rely on recommendations that come from trusted sources.

**Strongest relationship**

The strongest support was found for hypothesis 5, which predicted that new music opinion leaders will be more likely to give recommendations about new music. This is in line with traditional diffusion research. Hypothesis 5 is the crucial point of the diffusion process, which involves the communication from opinion leaders to others members of their social network about the new music. Without this communication, information about new music may not spread as quickly or as widely. People talking to other people is perhaps the defining characteristic relevant to diffusion of information. When individuals turn to opinion leaders for advice or recommendations about new music, diffusion is facilitated.

**Weakest relationships**

Hypotheses 4 and 6, while supported, showed the weakest relationship between variables. Hypothesis 4 predicts that opinion leaders will be more likely to acquire new music. The weak relationship could imply that music acquisition isn’t a defining characteristic of opinion leadership, unlike giving recommendations about new music. Perhaps digital technologies have reduced some of the barriers of music acquisition, so
that all individuals have greater access and opportunity to acquire new music.

Additionally, hypothesis 4 does not distinguish adoption time and rate. Rogers (1963) categorized adopters as early adopters, early majority, late majority, and laggards, with early adopters being the first to purchase and use new products with laggards being the last. Rogers proposed that adoption (acquisition) rate follows an s-curve, and called the point at which acquisition within a social network peaks and becomes self-sustaining as **critical mass**. Hypothesis 4 does not offer clarification of time point of adoption. The data could be a reflection of the critical mass adoption, which would show little difference between adoption by opinion leaders and others within a social network.

Hypothesis 6 predicted that individuals who acquire a large amount of new music will be more likely to acquire new music based upon a recommendation from a trusted source without sampling first. Data analysis showed that although this hypothesis was supported, the relationship was weak. This could be due to the ease of sampling new music. As discussed earlier, digital technologies have revolutionized the music industry. Artists can create their own websites and social networking sites, and upload their own music for fans to listen and sample. Similarly, music vending sites such as iTunes and Amazon allow users to preview small sections of songs before purchasing. Buying music online has never been easier, and consumers will often find means of sampling new music with just as much, if not greater, ease. So, given the ease of sampling new music, individuals may sample new music that is recommended to them, even if the recommendation comes from a trusted source.
Musical tastes vary between individuals, and even vary between individuals with known similar tastes. A recommendation from a trusted source (i.e., from an individual who may share a similar taste, or has made credible recommendations in the past) may serve to act as a means of discovery or awareness. Given the ease of online sampling, individuals may often choose to listen to the new music first, before acquisition. Greater support may be found for hypothesis 6 if the condition of “acquisition without sampling first” is removed from the dependent variable.

**Online Social Networks**

Given that support was found for all six hypotheses in this study, it is important to understand the context of new music diffusion discussed in this study; online social networks. The structure of online social networks will be discussed, how they differ from face-to-face social networks, and the role that relationships have in the diffusion of new music.

**Strength of weak ties**

As the size of an individual’s online social network increases, they may be exposed to greater amounts of new music. The classification of the relationships an individual has to members of their social network can qualify the diversity of information and recommendations received about new music, based on Granovetter’s (1973) Strength of Weak Ties theory. Granovetter theorized that relationships play a vital role in how information is diffused within an individual’s social network. He proposed that within a social network there exists a classification of relationships, namely strong and weak ties. Strong ties may be close friends and family whereas weak ties are merely acquaintances.
The original conceptualization of tie strength, as outlined by Granovetter, included the “combination of the amount of time, the emotional intensity, the intimacy (mutual confiding), and the reciprocal services which characterize the tie” (Granovetter, 1973, p. 1361). In other words, casual relationships are characterized by less frequent contact with less intimate informational exchanges. Stronger relationships are characterized by more frequent contact with more intimate exchanges of information and self-disclosure (Haythornwaite, 2002).

*Diversity of new music recommendations*

The diversity of new music recommendations may vary by tie strength. Individuals involved in close relationships may be more willing to share information and resources relevant to new music, and have access to that information, at-will, within their circle of strong-tied relationships (Granovetter, 1982; Krackhardt, 1992; Lin & Bian, 1991). However, this information about new music can often be homogenous, as the same pool of closely related individuals is drawing from the same resource of information (Brown & Reingen, 1987; Haythornwaite, 2002). Conversely, new music information and recommendations gathered from individuals who are less strongly associated often draws from resources of other, more diverse social network clusters. A *social network cluster* is a subgroup of individuals with strong-tied relationships (Hoppe & Reinelt, 2012). Weak ties are more heterogeneous, compared to the individual’s social network cluster, and serve as social bridges, connecting different network clusters together. These social bridges are important for the diffusion of new music.
Figure 2. Social network clusters and bridging.

Figure 2 shows several social network clusters, and provides an example as to how social network bridging through weak ties may allow for the flow of information and recommendations about new music. This heterogeneity facilitated by weak ties allows the diffusion of more diverse music from different network clusters. Though new music recommendations may be deemed as more credible coming from a strong tie, more diverse and heterogeneous new music information and recommendations may be obtained from those who individuals have a less close relationship with. With an increase in the size of an individual’s online social network comes a potential for greater exposure to more heterogeneous new music from weak ties, thus facilitating the diffusion of new music between different social network clusters.

Face-to-Face vs. Online Diffusion
Not only can individuals communicate further, faster, and with greater ease with members of their online social network, as opposed to traditional, face-to-face social networks, but features of online communications, such as message recall and website linking, facilitates greater information diffusion. Online communications are digitally stored and easily recalled for future reference. Often, information from face-to-face communications may be forgotten by an individual over time, whereas the archival nature of online communications allow users the opportunity to reference information stored from online communications, such as recommendations about a new music artist. Individuals can also embed links to artist’s or music vendor’s website directly within their communications, thus further facilitating ease and speed of new music diffusion by way of sampling and eventually acquisition.

Electronic recommendation agents are also unique to the online diffusion process. These online sites are sources of discovery, connecting users to music that may be unfamiliar to them. These electronic recommendation agents suggest music that the user may like based on previous purchases or sampling history of the user. Individuals may turn to these sites specifically for new music recommendations, similarly to how others turn to opinion leaders during the diffusion process.

Model of New Music Diffusion through Online Social Networking
The model presented in figure 3 explains how new music diffuses through online social networks. An individual who discovers new music may share this discovery by recommending the new music to others within their online social network. Other individuals within the social network may be prompted to sample the recommended new music. Bridging members (weak ties) who have sampled the recommended new music may, in turn, recommend it to others within their own social network cluster, exposing members of other online social network clusters to the new music, facilitating discovery by other social network members.

The diffusion of new music through online social networks is a dynamic process, and can be represented by a model of new music online diffusion (see figure 3).
Individuals may discover new music in a variety of ways, including discovery through the use of electronic recommendation websites (i.e., Pandora, iTunes), through face-to-face communications with others, or through online social networks, among others. Individuals discovering new music that is evaluated positively can lead to individuals communicating information about this new music to others within their online social network, via status updates, ‘sharing’ what they are listening to through applications, or providing links to artists website or third party music vending sites. Certain individuals may share information about new music more than others. These individuals may be perceived as new music opinion leaders, and their recommendations and information about new music may be perceived as credible, as others may turn to these individuals for advice or recommendations. As individuals discover new music from opinion leaders within their social network, these individuals may also communicate and share what they are listening to via social network status updates. Weak ties who communicate new music discovery facilitate information diffusion to other social network clusters. This leads to diffusion of new music through online social networks through linking members.
Chapter 8: Limitations and Directions for Future Research

There are a few limitations to this study that should be acknowledged. First, this study relied on self-assessments of opinion leadership. Individuals may view their own behavior and role within their social network differently than others view them. Early diffusion research utilized key informant and sociometric methods, involving field interviews with individuals within a social network to trace the origins of information back to its source, i.e., opinion leaders (Lazarsfeld, Berelson, & Gaudet, 1968). However, this approach is both labor and time intensive. Further, online communications within social networks are vast and occur so frequently that it would not only be difficult to trace information origins, but obtaining access to individuals within these social networks may prove to be difficult as well, as distance barriers are faced, unlike conditions of early diffusion research. That is, an individual may obtain information about new music from a member of their online social network who lives in another country. Early diffusion researchers interviewed members of traditional, face-to-face social networks who resided in the same town, so distance was not a barrier to access. However, new technologies may provide opportunities to understand opinion leadership in the digital age.

Researchers may wish to consider an individual’s online “friend count” or “followers”, i.e., the number of members in an individual’s online social network such as Facebook or Twitter. This could give researchers insight into the scope of influence of
self-assessed opinion leaders. That is, out of those individual’s scoring higher on the new music opinion leadership scale, those who have relatively few members in their online social network may have less influential impact in the diffusion process than those who have a relatively large number of members with whom they could potentially influence. Research into online opinion leadership may need to be considered in the context of the size of an individual’s social network membership. Future studies may wish to investigate this and devise new ways to validate opinion leadership identification via online social networks.

Additionally, future studies may examine issues of validity relevant to the opinion leadership construct. Convergent validity measures require a correlation between different measures of the same construct, discriminant validity requires that unrelated concepts have no significant correlation to each other, and nomological validity requires some degree of correlation between similar concepts (Jacoby & Hoyer, 1981). Research by Katz and Lazarsfeld (1955) has established convergent validity by showing a high correlation between the self-designating and sociometric methods. This gave rise to the incorporation of the self-designating opinion leadership scale devised by King and Summers (1970) that has been widely used in opinion leadership studies. Some research has suggested nomological validity can be established by examining the relationship between opinion leadership and product knowledge or topic expertise (Jacoby & Hoyer, 1981). Future research may address nomological validity in terms of new music opinion leadership. For example, are individuals who score higher on a new music opinion leadership scale actually more knowledgeable than others about music?
Diffusion research asserts that opinion leaders are early adopters (Rogers, 1963). That is, opinion leaders should acquire new music before others within their social network. Future research could also investigate the adoption rate of new music by opinion leaders as compared to others within their social network clusters.

This study drew upon a sample consisting of mostly young adults enrolled in undergraduate communication courses. The sample population was rather homogenous, and may have impacted the results. Further, this sample population tends to be the heaviest users of digital media, including music and online social networking. While this trait may have been a strength of this study, given that heavy use allows for exemplified study, their behaviors may not be reflective of the general population as a whole. Future research could utilize a more heterogeneous sample population from which to collect data, so that the results could be more generalizable. Future research could also apply the current studies proposed model of new music diffusion through online social networking to a more heterogeneous population.

Additionally, the concept of “new” music may vary for different audiences. “New music”, as conceptualized in this study, refers to any new artist, album, or song that an individual has previously not been made aware of. A song released decades ago could be quite familiar to an older individual, but be considered “new” by an individual of a younger generation due to the fact that they have previously not been made aware of it. Given this, older populations could have less exposure to “new” music, as conceptualized in this study, due to larger amount of experience and exposure to music than compared to younger populations. Considering the sample population in this study consisted of mostly
young adults, “new music”, as conceptualized in this study, was appropriate. However, this issue may call for closer examination when drawing a sample from a more heterogeneous population.

The changing role of radio should also be considered when discussing the diffusion of new music. Historically, radio has been the main outlet for the discovery of new music, as well as a gatekeeping method used by major recording industries. That is, people evaluated new music mainly by listening to songs played on the radio. Due to oligopolistic practices and industry control by major music firms, music played on the radio was largely produced by these major firms with large marketing budgets. However, as discussed, technology has changed the way people listen to and acquire music. Internet radio, streaming music, and digital distribution have all enabled greater ease and access of music to individuals. Given this, how will the role of radio still be relevant in this modern era of digital communications?

Similarly, the same technologies that are changing the role of radio have also ushered in what may be a new period of low industry concentration. More independent music firms are able to operate successfully given that new technologies have reduced barriers to access. Considering the historical ebb and flow between periods of high and low concentration of music firms, will technologies enable the music industry concentration to stay low?

Finally, future research could draw upon the research by Granovetter (1973) to incorporate the Strength of Weak Ties theory into diffusion research. As the size of an individual’s social network increases, relationships become more difficult to manage.
Therefore, one can assume that an individual’s social network may consist largely of weak ties. According to this theory, weak ties should yield more heterogeneous information, but comes at a cost of credibility. It would be interesting to apply the current studies proposed model of new music diffusion to determine how people sort these issues out and manage relationships and information within large online social networks.
Chapter 9: Summary

This study represents an initial attempt to understand how new music is diffused through online social networks. As digital technologies continue to become more widespread and integrated into everyday communications, there exists a growing need to understand how information spreads by these means. Studies like these are not only important for scholars, but are equally important for industry as well. By understanding how information about new music spreads through online social networks, both artists and companies in the music industry could take full advantage of information diffusion using modern digital communications.
References


Ryan, B. & Gross, N., (1943) “The Diffusion of Hybrid Seed Corn in Two Iowa Communities,” *Rural Sociology, 8*(1).


Appendix A – New Music Recommendation Survey

“New music” refers to any new artist, album, or song that you previously have not been made aware of.

“Online Social Network” refers to your membership in an online community such as Facebook, MySpace, for example, which involves electronic communications between members of your chosen social network which you have accepted as “friends.”

“Sampling” refers to previewing music by seeking out audio clips on sites such as YouTube, iTunes, Amazon, among others.

“Recommendation” refers to an online communication within your social network in which someone communicates positively about a new music, i.e. stating how much they like it, how good it is, etc., or when an individual suggests a new music directly, i.e., they state that you need to “check this out”, or they “highly recommend” a new music, etc. Likewise, someone can make a “negative recommendation” that would include negative communications about a new music (i.e., how bad it is, or how much they dislike something) or an individual can make a more direct suggestion to not acquire a new music.
Think back to the most recent incident within the last week or two in which you bought or otherwise acquired new music, either a single track or an entire album:

1. How much new music did you discover in the last 7 days from your friends through your online social network?
   1) 0-1
   2) 2-5
   3) 6-10
   4) 11-15
   5) 15 or more

2. How much new music did you discover in the last 7 days from the online site Amazon?
   1) 0-1
   2) 2-5
   3) 6-10
   4) 11-15
   5) 15 or more

3. How much new music did you discover in the last 7 days from the online site Pandora?
   1) 0-1
   2) 2-5
   3) 6-10
   4) 11-15
   5) 15 or more

4. How much new music did you discover in the last 7 days from the online site Last.Fm?
   1) 0-1
   2) 2-5
   3) 6-10
   4) 11-15
   5) 15 or more
5. How much new music did you discover in the last 7 days from the online site iTunes?
   1) 0-1
   2) 2-5
   3) 6-10
   4) 11-15
   5) 15 or more

6. How much new music did you discover in the last 7 days from online the site YouTube?
   1) 0-1
   2) 2-5
   3) 6-10
   4) 11-15
   5) 15 or more

7. How much new music did you discover in the last 7 days from the online site ReverbNation?
   1) 0-1
   2) 2-5
   3) 6-10
   4) 11-15
   5) 15 or more

8. How much new music did you discover in the last 7 days from the online site Spotify?
   1) 0-1
   2) 2-5
   3) 6-10
   4) 11-15
   5) 15 or more

9. 2. How much new music did you discover in the last 7 days from other online sites?
   1) 0-1
   2) 2-5
   3) 6-10
   4) 11-15
   5) 15 or more
10. Offline social interactions are defined as face-to-face communication that does not take place via the Internet. How much new music did you discover in the last 7 days from offline social interactions?
   1) 0-1
   2) 2-5
   3) 6-10
   4) 11-15
   5) 15 or more

11. How likely are you to listen to new music?
   1) Very unlikely
   2) Unlikely
   3) Somewhat Unlikely
   4) Somewhat Likely
   5) Likely
   6) Very Likely

12. How likely are you to recommend new music to your online social network?
   1) Very unlikely
   2) Unlikely
   3) Somewhat Unlikely
   4) Somewhat Likely
   5) Likely
   6) Very Likely

13. In general, do you communicate with your friends about music on your online social network:
   1) Never
   2) Once a month or less
   3) A few times a month
   4) A few times a week
   5) Daily

14. When you communicate with your friends about music on your online social network, do you:
   1) Give no information
   2) Give very little information
   3) Give some information
   4) Give a lot of information
   5) Give a great deal of information
15. During the past month, how often have you communicated about a specific new music (song/artist) on your online social network?
   1) Never
   2) Once a month or less
   3) A few times a month
   4) A few times a week
   5) Daily

16. Compared with the friends within your online social network, how likely are you to be asked about new music (songs/artists)?
   1) Very unlikely
   2) Unlikely
   3) Somewhat Unlikely
   4) Somewhat Likely
   5) Likely
   6) Very Likely

17. In discussions of new music within your online social network, how often do you tell your friends about new music?
   1) Never
   2) Once a month or less
   3) A few times a month
   4) A few times a week
   5) Daily

18. In discussions of new music within your online social network, how often do your friends tell you about new music?
   1) Never
   2) Once a month or less
   3) A few times a month
   4) A few times a week
   5) Daily
19. *Overall*, in your discussions with friends on your online social network, how likely are you to be used as a source of advice:
1) Very unlikely
2) Unlikely
3) Somewhat Unlikely
4) Somewhat Likely
5) Likely
6) Very Likely

20. How likely are you to discover new music through the online site, Pandora?
1) Very unlikely
2) Unlikely
3) Somewhat Unlikely
4) Somewhat Likely
5) Likely
6) Very Likely

21. How likely are you to discover new music through the online site, iTunes?
1) Very unlikely
2) Unlikely
3) Somewhat Unlikely
4) Somewhat Likely
5) Likely
6) Very Likely

22. How likely are you to discover new music through the online site, Amazon?
1) Very unlikely
2) Unlikely
3) Somewhat Unlikely
4) Somewhat Likely
5) Likely
6) Very Likely

23. How likely are you to discover new music through the online site, Spotify?
1) Very unlikely
2) Unlikely
3) Somewhat Unlikely
4) Somewhat Likely
5) Likely
6) Very Likely
24. How likely are you to discover new music through the online site, Reverbnation?
   1) Very unlikely
   2) Unlikely
   3) Somewhat Unlikely
   4) Somewhat Likely
   5) Likely
   6) Very Likely

25. How likely are you to discover new music through the online site, Last.fm?
   1) Very unlikely
   2) Unlikely
   3) Somewhat Unlikely
   4) Somewhat Likely
   5) Likely
   6) Very Likely

26. How likely are you to discover new music through the online site, YouTube?
   1) Very unlikely
   2) Unlikely
   3) Somewhat Unlikely
   4) Somewhat Likely
   5) Likely
   6) Very Likely

27. How likely are you to discover new music through other online sites?
   1) Very unlikely
   2) Unlikely
   3) Somewhat Unlikely
   4) Somewhat Likely
   5) Likely
   6) Very Likely
28. How likely are you to acquire new music based upon a recommendation from a trusted source without sampling first?
   1) Very unlikely
   2) Unlikely
   3) Somewhat Unlikely
   4) Somewhat Likely
   5) Likely
   6) Very Likely

29. How often do you acquire new music?
   1) Never
   2) Once a month or less
   3) A few times a month
   4) A few times a week
   5) Daily

30. How likely are you to acquire new music you evaluate positively after sampling?
   1) Very unlikely
   2) Unlikely
   3) Somewhat Unlikely
   4) Somewhat Likely
   5) Likely
   6) Very Likely

31. What is your age?

32. What is your sex?
   1) Male
   2) Female