

October 2005

The Rise and Fall of Digital Music Distribution Services: a Cross-Case Comparison of MP3.com, Napster and Kazaa

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Recommended Citation

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<https://ro.uow.edu.au/infopapers/379>

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Keywords

Digital Music Distribution, Online Music, Kazaa, Napster, MP3.com, supply chain

Disciplines

Physical Sciences and Mathematics

Publication Details

This conference paper was originally published as Alves, K and Michael, K, The rise and fall of digital music distribution services: a Cross-Case Comparison of MP3.com, Napster and Kazaa, in Proceedings of the Collaborative Electronic Commerce Technology and Research Conference LatAm, University of Talca, Chile, 3-5 October 2005, 1-22.

The Rise and Fall of Digital Music Distribution Services: a Cross-Case Comparison of MP3.com, Napster and Kazaa

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1. INTRODUCTION

The Internet has changed the traditional supply chain of the music industry. The formatting of music into the Moving Picture Experts Group Audio layer 3 (MPEG-3) de-facto standard has resulted in the global sharing of digital music online. This type of sharing potentially causes the disintermediation of record companies and retailers from the traditional supply chain and allows artists and consumers to be directly connected through websites and peer-to-peer (P2P) technology. As a result, stakeholders are currently uncertain of their role in the emerging music-on-demand model of purchase. The aim of this paper is to investigate the dynamics between stakeholders in the music industry supply chain and to retrace the cumulative changes that took place as a direct consequence of

technological innovation. The cases of MP3.com, Napster and Kazaa will be used to provide evidence for the hypothesis that new technologies were the catalysts for the demise of the traditional music industry. In effect, this paper is retelling the story of not only the impact of the Internet on the music industry but of the potential for the Internet to displace traditional members of the supply chain across vertical industries.

2. MULTIPLE CASE STUDIES

Although all three cases share the common characteristic of having been a market leader, each differed in structure and operation. Moreover, each of the three cases represented an alternate method of downloading music from the Internet. Napster, a P2P program designed predominantly for MP3 downloads, began as a free service providing a central server that indexed the songs contained on its users hard drives. After legal proceedings Napster was shutdown and relaunched as a legal PPD service where users paid for the rights to download music. MP3.com represented a different type of distribution service being a website where artists could post their music for download, offering both free and PPD services to its users. The final case of Kazaa, a newer brand of P2P, is a decentralized file sharing program that allows its users to share a variety of different file formats for free across millions of anonymous super nodes.

The main unit of analysis is the online music distribution company. The sub-unit of analysis is the stakeholders that interact with the online music company. There are three major stakeholders in the supply chain- the artist, the record company and the consumer/user. At the first level the technology is considered independently; at the second level the different perspectives of the individual stakeholders are considered and then related back to the main unit of analysis (diagram 1).

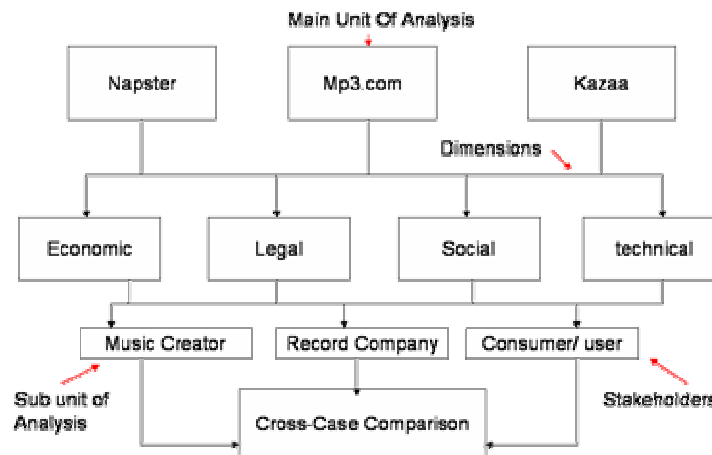


Diagram 1. Multiple Case Study Design

3. BACKGROUND

3.1 MP3.com

During 1998, the trading of MP3 files was growing exponentially over the Internet (Burke & Montgomery 2002, p. 5). Internet users were beginning to download and share music converted into the MP3 format with friends and colleagues. Many websites began to appear facilitating the download of music files. According to Burke and Montgomery (2002, p. 5) the music industry's distribution chain was vulnerable at the time of MP3.com's creation as the Internet and the radio industry had begun to change the marketing landscape. Michael Robertson, working for filez.com, began to notice that MP3 music files were being increasingly shared over the Internet. After working with a number of dotcom start-ups, Michael Robertson founded MP3.com in 1998 (Wagner 2004, p. 4). The idea put forward by Robertson, was that of an online repository that facilitates access to previously owned music on the Internet (Lechner & Schmid 2001, p. 8). The service allowed members, who could prove ownership of a particular CD, to get a copy of that CD in MP3 format. A member could prove ownership in one of two ways: by either ordering the CD online through MP3.com, or secondly, by placing the CD in the CD-Drive. MP3.com also provided its own library of CDs, which it converted into MP3 recordings. According to Hines and Borland (2004), MP3.com was created with the vision of creating a new distribution channel that would enable members to get access to more varied music. MP3.com offered free storage space and access to any band, that is, both those signed and unsigned. The website flourished, and by 2000, MP3.com had over 10 million registered members, which it gave access to a library of over 40,000 CDs in MP3 format (Wagner 2004, p. 4).

3.2 Napster

MP3.com, being the first major digital music distribution service, enjoyed a large majority of the online music market at the time of its creation. MP3.com's first online competitor came through the creation of Napster, a P2P technology that allowed consumers to share music in new ways. According to Hines and Borland (2004) the rise of Napster and file swapping eclipsed MP3.com, with free access to major labels and other music through its networks. As people flocked to Napster, more and more users moved away from the subscription services offered by MP3.com. Soon, the record companies shifted their attention away from MP3.com as a major threat to its survival, and concentrated on the infringements of Napster users. At the same time, it became apparent to MP3.com that a new business strategy was needed for them to gain a larger share of the online music market, or risk failure. Seeing an opportunity, record companies quickly moved in to form mergers with MP3.com with the hope of future revenue generation (Pellegrini & Taylor 2001).

3.3 Kazaa

Kazaa was established in 2001 by Niklas Zennstrom from Sweden, and Janus Friis from Denmark. Kazaa is referred to as a "second-generation" P2P service that allows users to share files of various media formats including; music, video,

software and image files (Bellis 2004). Unlike prior P2P technologies, Kazaa does not use a centralized directory but rather allows users to be linked with one another directly on a P2P basis (Wagner 2004, p. 5). In January 2004, Amsterdam-based Kazaa.com was shutdown, purchased by Sharman Networks, and reopened (Kazaa 2004). The relaunch incorporated a decentralized business model whereby operations were split among a variety of different companies. Control of the software code was transferred to Blastoise, located off the coast of Britain on a remote island renowned as a tax haven, and also in Estonia, known as a safe harbour for intellectual property pirates (Woody 2003). The Kazaa.com domain, on the other hand, was registered to an Australian firm called LEF interactive, which contracted its workers to Sharman Networks located in the South Pacific Island of Vanuatu. In 2003 Kazaa recorded that it contained 60 million users (Woody 2003).

4. LITERATURE REVIEW

4.1 The Economics of Digital Music Distribution

The economics of digital music distribution are critical to understanding a shift in power in the music industry. According to qualitative research conducted by Lam and Tan (2001, p. 64) the traditional distribution channel of music involved the following steps:

1. artists sign contract with record label;
2. artists record the album, record company produces the album on some type of media, e.g. CDs;
3. retailers purchase the CDs and other media from the record label; and
4. consumers buy the CDs and other media from retailers.

As a result of the arrival of the Internet and P2P technology to support file sharing, this model of distribution was no longer the only way consumers could acquire music. Lam and Tan (2001, p. 63) argue that “the threat to the music industry is not MP3s, but the arrival of a consumer distribution channel that is not controlled by the music industry”. Quantitative data presented by Easely, Michel and Deveraj (2003, p. 95) further supports this notion identifying that a shift in power to the consumers poses both challenges and great opportunities for those setting strategy in this domain.

4.1.1 The Disintermediation Phenomenon

As suggested by Lam and Tan (2001, p. 64) a new channel dictated by consumers threatens to remove intermediaries in the traditional distribution channel. Fulton (2002) describes the removal of the need for a middleman through the use of MP3.com. MP3.com offers various services that pay musicians for every download of their music including a “payback for playback” scheme. In addition to websites, P2P technologies are connecting consumers directly to music makers. Dong et al. (2002, p. 143) describe P2P technologies as a powerful new paradigm for network use that bypasses servers and connects individual users in new ways. Scott (2001, p. 192) elaborates on this point explaining the success of Napster and how it has shown traditional record companies that if they do not adapt to the

online model, consumers will simply bypass them. This makes for an uneasy marketplace where each of the stakeholders is unsure of their position in the new model of distribution.

4.1.2 P2P Popularity Rise Blamed for Decreasing Online Music Sales

Quantitative data presented by Mudd (2002) suggests that these new distribution services are decreasing online music sales. A survey by comScore networks found that despite growth in most sectors of consumer e-commerce, online sales of recorded music have continued to decline sharply for three consecutive quarters. This data is compared to user activity across of Napster, Kazaa, Audiogalaxy and Morpheus, most of which have experienced peaks in user numbers through this period. In opposition to this, Scott (2002) raises the point that instead of reducing the availability of music, as some record executives have prophesized, the use of services such as Napster will greatly enhance the distribution of all types of music and artists, even those who now cannot get a recording contract and are marginalized. This point is further supported by Wiess (2000) who, through personal observation, found that the use of Napster enabled him access to more music encouraging a genuine interest to support artists' work through an increase in purchasing. One such technique used for capturing a greater proportion of consumers is digital bundling. According to Zhu and Macquarrie (2003, p. 266), through the combination of a variety of songs across different artists, bundling allows companies to achieve increased revenue, minimise cost and reduce entry barriers. Furthermore, despite the disrupting forces of new technologies such as Napster and MP3.com, the economics of bundling, the control of content, and the existing industry structure suggest that big labels will retain their power and the industry will continue to be concentrated, maybe even more so through the use of bundling. Through the use of surveys Landergren and Liu (2003) raise the point that annual estimated spending by customers on downloading, in the form of feeds to telecom firms and Internet service providers (ISPs), far exceeds the estimates of the record industry's net annual revenue. This provides evidence that consumers are willing to spend money on downloading music of interest and that a potential market exists.

4.2 Legal Uncertainties

4.2.1 Digital Rights Management

Various legal implications surface through the use of digital music distribution services in sharing music online. The legal liability of distribution services is disputed. On one side there is Napster a PPD service, considered legal having been regulated by government. On the other side lie services such as Kazaa that continue to facilitate, for free, the global sharing of music online. The difference is that unlike Napster, files shared on Kazaa are considered illegal as permission for distribution has not been granted by artists or record companies.

The Digital Millennium Copyright Act (DMCA) of 1998 was enacted with the aim of protecting copyright in the digital environment, while simultaneously allowing Internet technologies and businesses the flexibility required to progress by making copyright content available (Brick 2001, p. 4). The DMCA makes it an offense to circumvent protection on copyright material (Chan, Coronel & Ong 2003, p. 30). Both the Motion Picture Association of America (MPAA) and the Recording Industry Association of America (RIAA) tested the DMCA in order to

challenge the copying and distribution of movies and unauthorised downloading of MP3s over the Internet. According to Brick (2001, p. 4) “the ease with which Internet users can copy and download digital files has resulted in both the MPAA and the RIAA losing the potential to earn significant amounts money from Internet users”.

This had lead to concerns over the protection of content. Technology that protects digital material, such as books and music, is known as Digital Rights Management (DRM). DRM is used to oversee media purchases and control the rights to move content from device to device (Cherry 2001, p. 41). All major services use some type of DRM but different companies develop different technologies which are incompatible. DRM files are encrypted for protection and registered in a database, independent of location. When used, DRM performs a license check through the online database query. If authorised, the file will work, otherwise it is rendered useless. As stated by Landergren and Liu (2003, p. 14) “DRM also enables tracking of file source, owner, contents and more”.

Regarding protection of content, qualitative research conducted by Landergren and Liu (2003, p. 14) describes the DRM system as having several limitations including:

1. a time limit on every piece of music (i.e. licence only valid for duration of subscription)
2. limitation in media (sound carriers)
3. preventing movement to other portable players/ burnt to CD without payment of additional fee
4. encryption can be hacked.

Unfortunately because of digital rights issues every device maker, and content or service provider, will have to design a DRM of its own, as no DRM standards exist (Cherry 2001, p. 42). This has lead to large delays in development of such technology.

4.2.2 Intellectual Property Protection

Cherry (2002, p. 48) breaks down intellectual property protection to further describe the need for two types of copyright on music: the music composition and the sound recording. The music composition is the words and music owned by publishers, whereas the sound recording is a particular recording of a composition owned by record companies. In order to protect themselves from being liable for intellectual property theft online distribution services such as MP3.com offer artists royalties for their music enabling artists to actively earn an income every time their music is played on a payback for playback system (Burnett 2003). Conversely, P2P services such as Kazaa allow for free distribution of music online with no protection of intellectual property applied to either the music composition or the sound recording. This claimed violation of copyright is where the debate between distribution services and the music industry begins.

4.2.3 Consumers Oppose the Law

The legal action taken against MP3.com, Napster and Kazaa has done little to deter consumers from downloading. The problem according to Hunter (2002) is the freedom that consumers have traditionally enjoyed online against the interest of intellectual property protection for the creators of music. Upon its closure Napster was relaunched as a subscription service. As part of the new business model users pay monthly fees to download songs made available in agreement

with various record companies and music makers. However, according to quantitative research conducted by Mudd (2002), the PPD system proved to be less popular than the original free service offered by Napster highlighted by a 39% downturn in users from 2001 to 2002.

The RIAA viewed the closure of Napster as a victory, but through the eyes of consumers and users, alternate file sharing applications and methods of sharing music had already sprung to replace the likes of Napster. Proof of this is given by data presented by Lam and Tan (2001, p. 64) who found that in April 2001 the swapping of MP3 files had fallen by 36% on Napster, with the average number of songs available to registered users falling from 220 to 37 by the end of April 2001. With this drop, however, came a rise in the number of users choosing alternate digital music distribution services; users continued to share music. Data provided by Mudd (2002) tracks the movement of users between different file sharing applications. The findings of research conducted by comScore networks state that the average number of unique users of Napster fell from 11,962,000 in the 1st quarter of 2001 to just 750,000 users by the 3rd quarter of 2002. More importantly this fall in Napster users can be directly linked to a rise in user numbers of Kazaa, which recorded 519,000 users in the 2nd quarter of 2001 rising to 9,431,000 users by the 3rd quarter of 2002. This indicates that users were not willing to accept the legal PPD system offered by Napster, and that the control of copyright was much more complex than the closure of the most popular music sharing application. According to Cherry (2001, p. 45), “[m]usic lovers don’t care... about distributors, codecs, or DRM software. They want to play the music they like on appliances they own”.

4.3 Social Implications- Stakeholder Perspectives

Social perspectives on the use of online distribution services vary depending on the stakeholder position. Legal proceedings against companies like Napster serve to influence social perspectives through the development of laws regulating the use of online distribution services. Despite this, users continue to choose free P2P services, which are considered illegal by music makers and record companies, over DRM services which are legal and are now offered by companies like Napster. These varying opinions add fuel to the debate between digital music sharing software and the music industry trying to regulate and control the sharing of music online.

4.3.1 The Consumer- Claiming a Right to Download

Consumers are the individual entities that listen to or purchase the music distributed by music creators and record companies. Through personal observation Weiss (2000) found that the use of Napster enabled him access to more music, which in turn increased his consumption and purchasing of music. Dvorak (2001, p. 142) agrees with this observation raising the point that the use of distribution services such as Napster and MP3.com has enabled users to listen to more music than ever before which the author argues cannot be bad for musicians or recording companies. Analysis by Lee (2003, p. 49) found that users gave priority to services that offered no fee, a large file selection, a large user base and support for legal files. This evidence suggests that users have a genuine interest in supporting artist’s work, that in fact the use of distribution services is increasing access to music and encouraging support for artists. One also has to ask themselves what the difference between a Kazaa offering is in contrast to

traditional radio. Both radio and MP3 distribution services serve to sample music to consumers in an attempt to entice users into purchasing the music from a physical retail store. What is to stop consumers listening to a radio from taping their favorite songs for playback at a later time on their stereo? Just like radio, users wanting to sample music before purchase use distribution services as a means of trialing music before its purchase.

4.3.2 The Record Industry- Protecting their Territory

At the middle of the chain stands the record company. These are the people generally responsible for the recording and selling of the music. Hill (2003, p. 62) identifies the five major players that make up the bulk of the recording industry, they include:

1. Sony Music Entertainment
2. BMG
3. Warner Bros. Records
4. Universal Music Group
5. EMI Records

As stated by Lam and Tan (2001, p. 66) artists are traditionally dependent on record labels for music creation and especially music distribution. However “now the net makes it possible for artists to handle parts of music creation and distribution process”. Furthermore, qualitative research conducted by Easely, Michel and Devaraj (2003, p. 92) suggests that the marginal cost of e-distribution of music is negligible, challenging the prices and the position of established distribution channels. The use of the Internet and music sharing applications threatens to remove the need for the traditional intermediary role played by record companies. This threat has resulted in many record companies and contracted music creators joining together with the aim of crippling services such as Napster, arguing that distribution services will destroy the music industry. This argument is fuelled by the need of each of the music industry’s stakeholders to guarantee their position in the supply chain.

4.3.3 Music Creators and Artists- Mixed Viewpoints

The use of distribution services such as websites and P2P software is also benefiting some artists. Through personal observation Burnett (2003), a music composer, found that MP3.com actively enabled the promotion and marketing of his music to half a million people on a payback for playback system. Through this system Burnett earned income every time his music was downloaded or streamed by users across the world. Large entry barriers typically limiting music creators have been removed by music sharing services such as MP3.com, playing the role of the intermediary often at little or no cost compared to the large percentage claimed by record companies. One definite problem that arises is that musicians are divided on the issue of online distribution. Some high-profile artists and bands have expressed interest and praise in Napster, including Limp Bizkit, who accepted sponsorship from Napster for its “back to basics” tour in 2000, and Courtney Love (Hill 2003, p. 233). On the contrary other outspoken artists such as Dr. Dre and Metallica have taken out law suits against Napster working to shut down the service (Hill 2003, p. 233). Some artists have gone as far as withholding permission from their record label to participate in authorised music subscription plans such as Pressplay and MusicNet to further slow the acceptance of these subscriptions.

4.4 Technical Drivers

The process of distributing music involves a variety of different technical enablers. Technology is the driving force behind the creation and transfer of digital music.

4.4.1 Increasing Bandwidth

The first step in transferring music online is to download a file. According to Hill (2003, p. 254) the process of downloading refers to the: “transfer of a song from a server to a personal computer (PC). Likewise, the transfer of a song from a PC to a portable device such as an MP3 player. P2P downloads proceed from one PC to another, without the file residing on a server”. Downloading digital music files using a traditional dial-up connection is often slow and time consuming. However, developments in technology have enabled users immediate access to large databases of music and high download speeds.

Observation and sampling by Stevens (2003, p. 99) provides evidence of an increase in downloads indicating that Kazaa was the most popular file sharing application because of high download speed capabilities and the ability to simultaneously download multiple copies of the same song. Macedonia (2000) also attributes developments in technology to the growing popularity of downloads. One example provided by Macedonia (2000, p. 99) describes an increase in downloading as a result of the move toward broadband communication in the home giving users high speed connection and quicker downloads. The design of PCs with faster processors and larger storage capabilities have provided facilities to handle a greater number of downloads. What emerges is the idea that technology is not only facilitating but encouraging the use of distribution services. Developments in technology are making it quicker and easier for users to download music from the Internet. With current technological capabilities it would be quicker for consumers to download a single from the Internet rather than to purchase the same single from a physical retail outlet.

4.4.2 New Media Devices Proliferate

If consumers are not downloading music from the Internet alternate technologies allow users to rip and burn music on their PCs. Ripping is defined by Hill (2003, p. 21) as encoding “those files off the CD and turning them into more flexible, portable files”. Burning refers to recording files onto a blank CD in your choice of format. Using these technologies consumers can copy and distribute music just as they would through the use of services provided by Napster and Kazaa. Personal CD players and car stereos now also support the MP3 format along with the traditional CD format for playback. Although considered illegal, companies are enticing users into working with and listening to MP3 files through the evolutionary development of such technologies.

Large corporations are also investing in the MP3 market through the development of MP3 players and devices that only play MP3 formatted music. Hill (2003, p. 259) defines a portable player as a “hand-held music player that plays MP3 files, and possibly other music file types”. Players can typically hold from anywhere between thirty and on hundred minutes of music depending if they are ram-based or disk-based. Similar to the findings of Macedonia (2000), Lam and Tan (2001) found that current developments in technology encourage the distribution and sharing of MP3 files over the Internet. If the technology is available consumers are going to use it. On the issue of piracy Lam and Tan

(2001, p. 67) also found that “the prevalence of technologies supporting specific industry standards also facilitates development of the new music distribution paradigm”. Unfortunately the development of free and trial technology often outpaces the development of legal protected services.

5. CROSS-CASE COMPARISON

5.1 A Historical Snapshot- Similarities and Differences in the Cases

To gather an understanding of the current state of the music industry it is important to identify the events which have impacted upon it over time. Table 1 provides a brief historical overview of MP3.com, Napster and Kazaa. Tracking innovation over time is imperative as it demonstrates how the three different digital music distribution services have impacted on the music industry over time. MP3.com was the first digital music distribution service to launch. Its success can be linked to the growth in awareness of the MP3 standard and lack of large-scale distribution method for the technology at the time of its introduction. With Napster came the development of a new P2P technology innovation, which allowed users to connect to each other directly rather than relying on websites that proved to be slow and often contained dead links. As legal action was taken out against MP3.com, users quickly moved to Napster as news of the application spread through word-of-mouth over the Internet. This was a reoccurring trend, as the inventors of Kazaa introduced the technology in the wake of the threat of shutdown faced by Napster for copyright breach. As Napster switched to a legal PPD subscription service, Kazaa appeared offering for free, large-scale music distribution with further developments in technology allowing the sharing of multiple file types on the back of a new decentralised infrastructure.

A common characteristic of the three digital music distribution services was that each was a market leader during its peak. However, each did as much as each other to eclipse its predecessor by taking the successful characteristics of the service that came before it and building on those with new enhancements in technology. An example of this is the development from website to P2P technology, and then from centralized to decentralized structure, each offering certain advantages over the technology which it replaced. Users were content to move to the “in” technology, as shown by the majority adopting the same digital music distribution service. Just as one technology was ruled illegal and shut down by record companies, users shifted to another. The record companies saw each of the new developments in technology as a threat to its survival as an intermediary and as a result sued for copyright as no royalties were received by them or the artists. The new distribution methods allowed for non-established artists to distribute their music in ways previously not possible. But established artists, such as Metallica and Dr. Dre, backed the record companies and moved to try and close digital music distribution services.

Table 1. A Historical Snapshot of Significant Events in Each Case Study

	1996	1999	2000	2001	2002	2003	2004
MP3.com	Launched free Canadian government imposes levy on blank CDs	Fewer physical music releases \$6.6 million in revenues	Fewer physical music releases \$32.1 million in revenues Sued for copyright breach Shares fell to \$6 Deal for rights to music	Physical music sales drop 4.1% Fewer physical music releases Sold to Vivendi Universal Net USA Change in business models to paid		CNET purchased the MP3.com brand and its online database Shutdown	Relaunched as online music forum Independent artists move to download.com Joseph Tebo purchases Tonic and partners with GarageBand
Napster		Launched Free Physical music sales increase	24 million registered users Physical music sales drop Increase in concert revenues Sued for copyright Shutdown	70 million registered users Physical music sales dropped by up to 10% Increase in concert revenues Relaunched as paid downloads	Bertelsmann acquires assets	Purchased by Roxio and relaunched	Subscription packages for \$9.95 a month or 99c a track
Kazaa				Launched free Global sales of recorded music fall by 5%	Online music sales dropped 25% Ruled legal in Dutch courts Purchased by Sharman	Emerging artist network launched Music sales fall 7.6% Individuals sued for copyright Provide paid downloads	Record music sales increase 9.1% Groster and Morphew ruled legal Australian offices raided Currently in Australian Federal Court

5.2 Technological Diversity- “Catch Me If You Can”

Each of the three case studies represents a different type of digital music distribution service (see table 2). MP3.com was the first technology to emerge structured as a website built on client-server architecture. Using MP3.com users and artists could post and download music from a large online registry shared across the world. However, the website required extensive maintenance and while the user base and collection of music grew, so did problems of reliability. The invention of Napster provided a solution to this problem whereby individual computers could be connected using P2P technology to play the roles of a traditional server, client and router. Napster utilized a centralized file server to avoid bottlenecks and windows protocols for the transfer of music. The technology achieved unprecedented success with millions of users flocking to Napster to share music online. Unfortunately, its popularity inevitably led to its demise as it caught the attention of record companies and was sued for copyright infringement. Watching closely the proceedings of the Napster case, software developers soon began to modify P2P technology to avoid such future court proceedings. Kazaa moved in as Napster went down, built around a decentralized server that distributed both the search and download capabilities and allowed for the transfer of multiple media formats. This adaptation in P2P technology allowed the software creators to assert that they had no control over how consumers used

the technology while showing that it served legitimate purposes such as the distribution of public works. Despite several attempts, representatives of both the US and Dutch record industries are yet to successfully shut down Kazaa and other decentralized P2P digital music distribution services. In Australia however, a court ruling went against Kazaa, ordering the closure of its local operations.

Table 2. Technology Comparison of Online Music Distribution Set-Ups

Technology Attributes	MP3.com	Napster	Kazaa
Year Created	1998	1999	2001
Created by	Michael Robertson	Shawn Fanning	Niklas Lennstrom & Janis Friis
Type of distribution service	Website	Peer-to-peer	Peer-to-peer
Properties	Client-server based	Centralized	Decentralized
Media formats	MP3, Real Audio	Originally only MP3	All file types
Current state of affairs	Online music forum	Legal pay-per-download service	Legal in some countries illegal in others

5.3 Stakeholder Positions in the Supply Chain- Exerting their Authority

Digital music distribution services have impacted on all the stakeholders of the music industry. Perhaps most importantly, MP3.com, Napster and Kazaa have empowered consumers with choice. Consumers once confined to purchasing from physical brick-and-mortar retailers now have a variety of different options for obtaining music. The original introduction of MP3.com and Napster conveyed the misconception to consumers that it was “okay” to have music for free. This segment of consumers are sometimes referred to “free riders” or “leeches” in reference to the action of logging on and taking as much as one can without giving anything back (i.e. purchasing music). Conversely heavy downloaders were often found to increase their purchasing of music. The record companies reacted by suing Napster in an effort to sway consumers away from the service. However, the closure of Napster did little to deter downloading as consumers moved to new technologies and continued to grow in numbers. With court rulings in the Kazaa case going against the record companies, they soon turned their attention to the individual users of Kazaa. Hundreds of users were sued for copyright breach in a move to discourage users from continuing to download. This tactic proved successful in moving consumers away from Kazaa but other technologies such as eDonkey/Overnet have benefited given rapid consumer adoption rates. From the MP3.com, Napster and Kazaa cases it is clear that consumers want access to as much music as possible at the least cost, and digital music distribution services provide an answer to this want.

Artists have developed varied perspectives on digital music distribution services. MP3.com, Napster and Kazaa have enabled artists to produce more music and distribute it to a global audience at relatively little cost. This has proved successful for those unsigned artists looking to establish a record contract or consumer following online. MP3s and digital music distribution services have allowed artists to give something back to consumers by making some of their recordings available for free download. Through the process of sharing, artists are empowered while the need for intermediaries is removed thus allowing for direct

links between artists and consumers. Furthermore, through the use of digital music distribution services, artists can achieve greater reach through advertising to a market not physically accessible. However, artists place the greatest significance on the protection of intellectual property. All artists collectively share the desire to make a living from their profession while being recognized and remunerated for their work. MP3.com, Napster and Kazaa were flawed in the eyes of an artist as they did not compensate artists for the distribution of their works.

Record companies were primarily against the use of MP3.com, Napster and Kazaa as they were originally launched. Through the use of these services artists and record companies did not receive royalties for the music they owned. This loss of revenue was linked to a downturn in physical music sales, proving the record industry's claims that digital music distribution services had impacted negatively on the music industry. The record companies took action against each of MP3.com, Napster and Kazaa as they allowed for the downloading and distribution of works that had been copied without the author's permission. After success in the MP3.com and Napster cases the record companies moved to establish themselves online in the form of mergers with these companies to take advantage of an already established brand name among consumers. These agreements seemed more about corporate tactics and a display of power as users soon flocked away from both MP3.com and Napster. Kazaa has reportedly tried to make several deals with record companies all of which have been rejected. The apparent message that the record companies are sending is that first they believe free digital music distribution to be illegal, and second a strong message to online distributors to either do things their way or no way at all. Services such as iTunes and Pressplay have proven successful as the record companies move to establish a presence in the online music industry.

5.4 New Strategic Business Models

MP3.com, Napster and Kazaa have changed the availability of music. The introduction of new players into the music market has forced record companies to rethink old practices and adapt to meet the changing needs of consumers (see diagram 2). Each of MP3.com, Napster and Kazaa started as a free service. Revenue is generated from this type of model by the selling of advertising space. The success of free online networks is hard to evaluate, while both MP3.com and Kazaa have generated large revenues from advertising, in the case of MP3.com much of those funds have been eaten up in court and by copyright settlements. Income is only certain while the service is open and experiencing a large number of page hits. Napster was shutdown and relaunched several times. Currently it supports a new type of business model where users pay a subscription fee per term for restricted access to music based on the plan they choose. This type of system allows for restrictions to be placed on the copying of music downloaded from these services. The most recent and most successful business model to be established online is the PPD system. Apple iTunes is one example currently enjoying a large share of the online music market. As part of this model members pay a once off fee of \$0.99 US for each individual song downloaded. One downfall of both the subscription and PPD models is that neither contains the large selection of music available on free online networks as a result of licensing restrictions. Finally, the traditional business models of the record companies and retailers still exist despite the changes that have occurred in the music market.

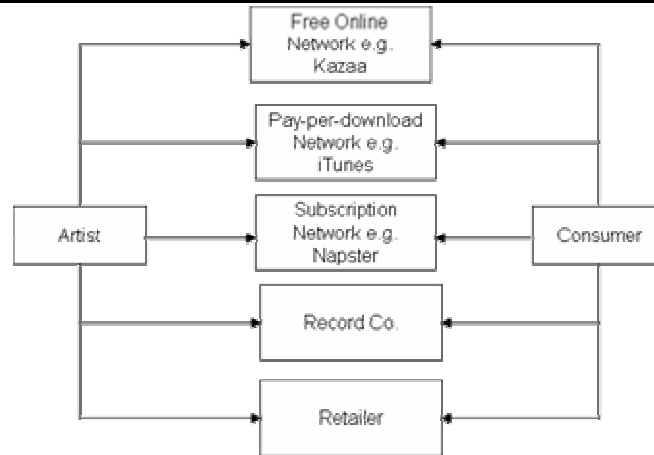


Diagram 2. Digital Music Distribution Billing Models

5.5 Court Rulings- “One Size Does Not Fit All”

The results of the MP3.com, Napster and Kazaa court cases demonstrate that copyright is by no means an unchallenged set of rights. MP3.com was the first digital music distribution service to be sued for copyright infringement. In this case the courts ruled in favour of the record companies as MP3.com had copied in excess of 45,000 CDs onto their servers without the permission of the rights holders. This decision was straightforward as MP3.com itself did the copying and it resulted in the service being shutdown and relaunched after large settlements and rights deals. Napster launched as MP3.com went down and soon also found itself in a court battle. Napster lost the case as it breached the DMCA by not taking reasonable steps to keep copyrighted material off its servers. The fact that the servers were centralized meant that Napster was responsible to exercise a certain degree of control over the material that passed through them. However, what is not common knowledge is that Napster appealed the court decision arguing that they were not liable for what their users did with their software. Unfortunately, Napster ran out of money before the case went to trial. An Amsterdam appeal court ruled that Kazaa could not be held liable for the infringing actions of its users as the software also served a legitimate purpose. A similar result was reached in the Grokster and Morpheus cases in the US courts.

The problem is that copyright laws do not explicitly define what should be done in cases involving new technology, and while the record companies are fighting to close one digital music distribution service, technology is evolving and providing with it enhanced anonymity and functions to allow for greater claims of legitimacy such as the distribution of public works. Upon review of the Audio Home Recording Act 1992, the DMCA 1998, and the Cybercrime Act 2001 it is clear that each of the laws are outdated in dealing with the large scale piracy now possible in the advent of the Internet and new technological development. Although the DMCA 1998 stipulates that it is against the law not to protect copyrighted material, neither of the laws define how to deal with copyright and piracy on the Internet. And while MP3.com, Napster and Kazaa have faced court hearings, there is still no standard answer for every jurisdiction and every specific case. Yet what court battles do show is the power of the mighty record companies that are spending millions of dollars in legal costs to protect their interests. Table 3 presents a list of all the drivers and inhibitors of online music distribution services discussed in the case studies.

Table 3. Drivers and Inhibitors of Online Music Distribution

Dimension	Case	For the Operation of Digital Music Distribution Services	Against the Operation of Digital Music Distribution Services
Technical	MP3.com	<ul style="list-style-type: none"> Storage of music online Artists distribute music across world Cheap storage and distribution 	<ul style="list-style-type: none"> MP3 insecure format Reduced quality from CD Rise of Napster
	Napster	<ul style="list-style-type: none"> Direct connection between users Chat features Consumers distribute music CD Burners Rise in unlimited Internet access Rise in broadband 	<ul style="list-style-type: none"> Centralized file server
	Kazaa	<ul style="list-style-type: none"> Decentralised file server Multiple file formats Rise in MP3 devices Evolution of personal computers – larger hard drives etc. 	<ul style="list-style-type: none"> Spoofing of music files
Social	MP3.com	<ul style="list-style-type: none"> Access to more music Build community Broaden music tastes Artist empowerment Consumer empowerment Establish unsigned artists 	<ul style="list-style-type: none"> Bad music not filtered Teaches consumers that it is ok to have music for free
	Napster	<ul style="list-style-type: none"> Allow for the sampling of music 	<ul style="list-style-type: none"> “free riders”
	Kazaa	<ul style="list-style-type: none"> Emerging artists channel 	
Economic	MP3.com	<ul style="list-style-type: none"> Higher % of royalties to artists Removed intermediaries Offered for free with proof of ownership Artists produced more music at less cost Proof of increased physical purchasing 	<ul style="list-style-type: none"> Artists did not receive royalties Record companies did not receive royalties Proof of less physical purchasing Record company purchased and formed mergers Change in business model to subscription payments
	Napster	<ul style="list-style-type: none"> Originally free Inexpensive exposure and advertising Increased music sales in 1999 Increased concert revenues in 2000 & 2001 Proof that heavy downloaders purchase more music Growing online music sales 	<ul style="list-style-type: none"> Artists did not receive royalties Record companies did not receive royalties Economic downturn in music industry from 2000 - Record company purchased and formed mergers Change in business model to subscription payments

Dimension	Case	For the Operation of Digital Music Distribution Services	Against the Operation of Digital Music Distribution Services
	Kazaa	<ul style="list-style-type: none"> • Free & paid downloads • CDs overpriced • Effect of file-swapping on music sales found to be “statistically indistinguishable from zero” • Growth in some music markets 	<ul style="list-style-type: none"> • Imposed levy on blank CDs in Canada • Record industry established online
Legal	MP3.com	<ul style="list-style-type: none"> • Legal to download and store MP3s for 24 hours 	<ul style="list-style-type: none"> • Artists want to protect Intellectual Property • Breached copyright by copying CDs onto its servers
	Napster	<ul style="list-style-type: none"> • Appealed decision but ran out of money 	<ul style="list-style-type: none"> • Breached copyright by allowing distribution of MP3s without consent
	Kazaa	<ul style="list-style-type: none"> • Ruled legal in Dutch courts • Grokster and Morpheus ruled legal in US 	<ul style="list-style-type: none"> • Individual users found guilty of copyright in US • Raids of its Australian offices • Currently in Australian Federal Court fighting copyright accusations

6. THE INTERPLAY OF DIMENSIONS IN THE INNOVATION PROCESS

6.1 Does Technology Shape Society or Society Shape Technology?

The MP3.com, Napster and Kazaa cases provide evidence showing that when a technology is released into the market it first impacts on social attitudes and behaviours. In the music industry, technology gave consumers availability to more music, and artists the means to distribute their music worldwide. The technology was unleashed without too much thought about the consequences of its widespread use. The technologies were then attributed to a devaluation of music as they taught users that it was okay to get their music for free. This had economic implications as the users who were once purchasing music from physical retail stores began to rely on online offerings. The changes in spending by consumers drained revenue from the traditional supply chain. It is at this point, that large record companies took notice, using the law to protect their business interests. The record companies moved to try and reshape consumer attitudes and behaviour by showing that the MP3.com and Napster technologies were illegal. When this failed the law was used against individuals to try and deter others from downloading. Unfortunately by this time it was too late, word of the technology had spread worldwide, and as one technology was shutdown new variations were born. This has resulted in a display of force where record companies who have the economical power are moving to buy and takeover new online music distributors. However, social behaviours and attitudes were altered so much since the inception of free music download capabilities, that warnings from the record corporations and law courts have done little to abate consumer practices.

The historical evidence confirms that technology does shape society. In the digital music domain, a pattern emerges- a technology is released, it changes social behaviour, which has an economic impact, law moves in to try and control or even reverse the economic effect by attempting to change social attitudes, but just as law seems to appear the victor, technology evolves and society follows the technology (see diagram 3). It is at this stage that we find that society begins to shape technology by demanding the services that they have always been accustomed. In the online file-sharing community the technology implementation that allows the greatest diversity for file sharing and which offers advanced anonymity will survive as the market leader, despite the call that illegal activities may be taking place in the use of those operations.

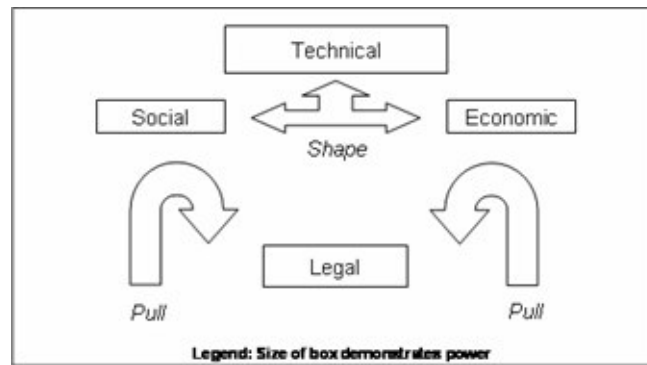


Diagram 3. *Technology Shapes Society versus Society Shapes Technology*

6.2 Typical Product Life Cycle in Online Distribution Services

MP3.com, Napster and Kazaa reveal a distinct pattern of innovation in the creation of digital music distribution services represented in diagram 4. The diagram shows two conjoining adoption curves on their sides. At the top of the diagram technological development is increasing the rate of adoption of digital music distribution services among consumers. This is referred to as the technology-push effect. Technology identified to impact on the rate of adoption includes the rise in the awareness of the MP3 standard, the increase in unlimited Internet access and broadband and the growth in MP3 devices. Even those record companies fighting to close MP3.com, Napster and Kazaa have invested into the MP3 market through the creation of MP3 players and related devices. However, the mere release of such technology raises ethical questions. For instance, is it wrong to use a paid download service together with the free services offered by Kazaa? Why release the device if it can be used for illegal downloads when claiming that free downloads will lead to the music industry's demise? By creating MP3 technology record companies are effectively encouraging the adoption of all MP3 technologies, not just those that are legal. The MP3.com, Napster and Kazaa life cycles demonstrate that free digital music distribution services will always exist. Kazaa has been able to maintain a large user base even with the legal action brought against it. However, in accordance with the product life cycle trend and with court proceedings still underway in the Kazaa case, consumers have already turned to another technology called eDonkey/Overnet, making it currently the largest file-sharing network on the Internet. The

technology is out and has emerged beyond the control of law and consumers are sending an obvious message that they want to use it.

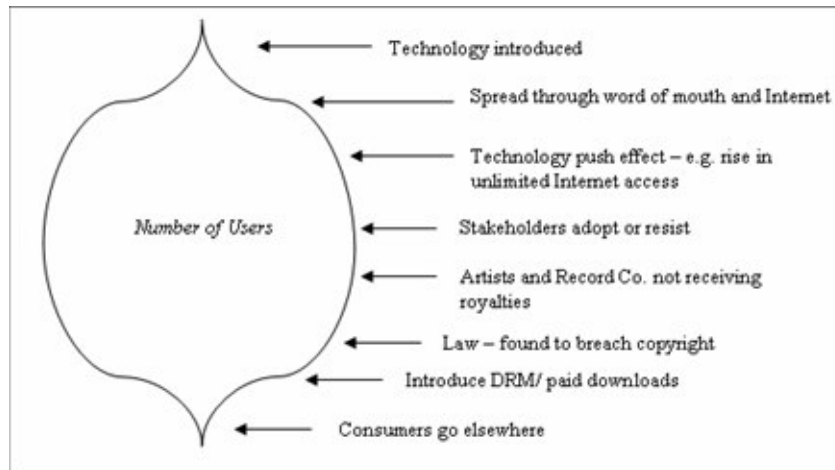


Diagram 4. The Product Life Cycle of Digital Music Distribution Services

7. PATTERNS OF DISINTERMEDIATION AND REINTERMEDIATION

The creation of digital music distribution services has changed the music industry supply chain. Traditionally (diagram 5) the supply chain was sequential in nature whereby artists sold the rights to their music to record companies who then distributed the music through physical retail stores. In this type of model the five major record companies enjoyed control and managed not only the dissemination but also the pricing of music. This allowed the record companies to exercise power over the other stakeholders of the music industry. The Internet changed this by allowing other players to establish themselves in the supply chain as key members. A variety of different digital music distribution service technologies soon began to appear giving consumers an alternative means of acquiring music. Digital music distribution services removed intermediaries, namely the record companies and retailers, and allowed artists and consumers to be connected directly (diagram 6). In this type of supply chain consumers and artists become the distributors, though maybe not aware of it, by sharing each others music collections (diagram 7). The P2P technology sits at the middle only facilitating the transfer, at no point is music stored on the servers (diagram 8).

The record companies reacted to this transformation by moving to close MP3.com, Napster, Kazaa and other digital music distribution services in an attempt to preserve the traditional supply chain. This move was driven by the concern that new technology would replace the record companies or take some of the market which they previously owned. The move to close MP3.com and Napster was successful; both services were shutdown and eventually purchased by different record companies. This allowed for the reintermediation of record companies online (diagram 9). The MP3.com and Napster mergers with the record companies proved unsuccessful and both companies were later sold off. However, other free digital music distribution services like Kazaa soon appeared making it clear that the technology is here to stay. Online legal music retailers choose to

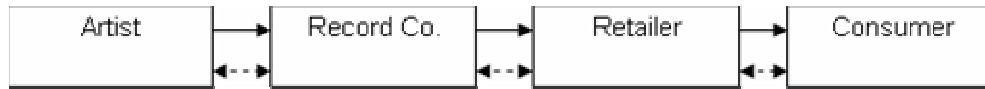
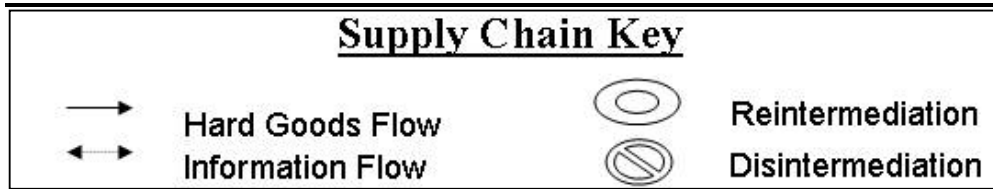


Diagram 5. Traditional Music Industry Supply Chain

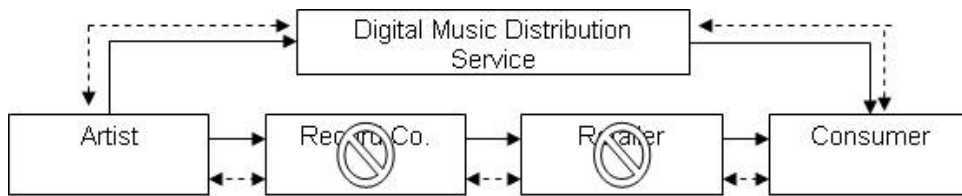


Diagram 6. Disintermediation of Record Company and Retailer

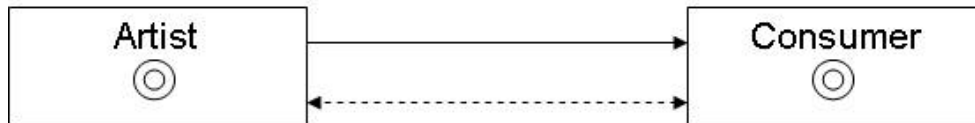


Diagram 7. Both Artists and Consumers Become Distributors of Music Online

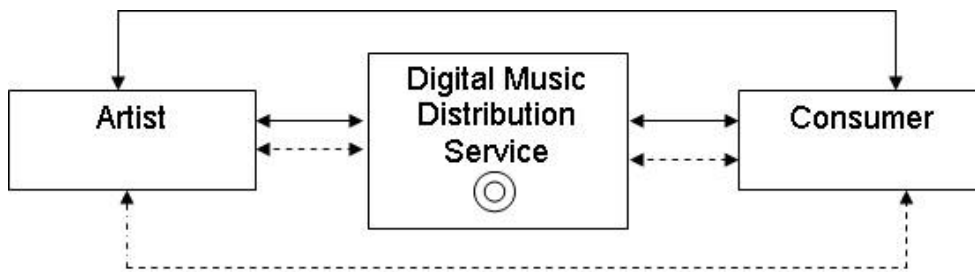


Diagram 8. Reintermediation of Digital Music Distribution Service

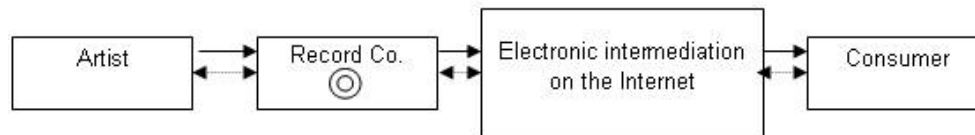


Diagram 9. Reintermediation of Record Company Online

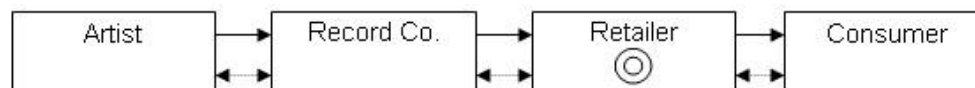


Diagram 10. Reintermediation of Retailer to Become Online Retailer (e-tailer)

take advantage of downloading, rather than fight it, by trying to capture a share of the online music market. One such example is Apple's iTunes which achieved instant success and allowed for the reintermediation of retailers (diagram 8). These companies are often referred to as e-tailers. Others are now following the business model developed by Apple to challenge for a position in the new supply chain. After trying to close Kazaa in multiple jurisdictions and only with limited success, the record companies have adapted to establish themselves online. Some smaller labels go as far as to offer their music for free for consumers to download and manipulate in an attempt to develop a fan base. Now that the record companies have once again cemented their position in the supply chain, and with legal downloads growing, the music market seems set to experience future growth utilizing a supply chain that allows for multiple players to distribute music. While the record companies still enjoy the majority share of the music industry in this new supply chain, developments in technology have shown them that they must be content to allow other players to exist in order to meet consumer needs.

The restructuring of the supply chain in the music industry demonstrates how technology facilitates reverse markets in which the definition of stakeholder roles change. The Internet and digital music distribution technologies are allowing consumers to take over the packaging and marketing of music where online communities partake in the duplication, broadcasting and distribution of digital music once facilitated by artists and record companies. In this emerging market, consumers could potentially have more information and power than artists and intermediaries as technology available enables the creation of music sharing services free from those restrictions of the offline music industry. Furthermore, the cost of entry and investment into an online market is relatively low compared to the investment made by record companies and retailers in the offline music industry, thus further enabling the formation of such large-scale communities online.

8. CONCLUSION

The principal conclusion of this paper is that digital music distribution services will not lead to the demise of the music industry. Evidence from the three cases shows that the online music industry is growing and that consumers have simply shifted their spending rather than stopped purchasing music altogether. Furthermore, the three cases of MP3.com, Napster and Kazaa reveal how technology can shape society's behaviours. The paper also showed that powerful members of the traditional supply chain seek to maintain their power in newer supply chain models in a bid to protect their own interests. These stakeholders will assert their position in the supply chain by either attacking new members by force (e.g. legal court battles which smaller members cannot afford), or by mimicking their opposition (e.g. in the case of the music industry, becoming a legitimate e-tailer). In any case, conflicts of interest will always be present as members of supply chain seek to continue their operations.

9. REFERENCES

- Bellis, M., (2004). Inventors: kaza peer-to-peer networking. [Online]. <URL: http://inventors.about.com/library/inventors/bl_KaZaA.htm>. Last accessed: September 20th, 2004.
- Brick, J., (2001). From mp3.com to napster: navigating a safe harbour. *New Jersey Law Journal* 165(4) 4-5.
- Burke, A. & Montgomery, C., (2002). You say you want a revolution? A case study of MP3.com. *International Journal of Entrepreneurship Education*, 1(1), 1-26.
- Burnett, C., (2003). MP3.com- we made history!. [Online]. <URL: <http://www.allaboutjazz.com/php/article.php?id=853>>. Last accessed: March 19th, 2004.
- Chan, N., Coronel, S. & Ong, Y.C. (2003). The Threat of the Cybercrime Act 2001 to Australian IT professionals. *The University of Melbourne*, 25-33.
- Cherry, S.M., (2001). Making music pay. *IEEE Spectrum*, 41-46.
- Cherry, S. M., (2002a). Getting copyright right. *IEEE Spectrum*, 47-51.
- Dong, Y., et al. (2002). Research on intellectual property right problems of peer-to-peer networks. *The Electronic Library*. Oxford 20(2) 143.
- Dvorak, J.C., (2001). Whither napster. *Boardwatch Magazine* 15(2) 142.
- Easley, R.F., Michel, J.G. & Devaraj, S., (2003). The MP3 open standard and the music industry's response to internet piracy. *Communications of the ACM* 46(11) 90-96.
- Fulton, C.L., (2002). Who needs the record labels? [Online]. <URL: http://80-web7.infotrac.galegroup.com.ezproxy.uow.edu.au:2048/itw/infomark/430/604/45146653w7/purl=rc1_CDB_0_A83146304&dyn=6!xrn_1_0_A83146304?sw_aep=uow>. Last accessed: March 25th, 2004.
- Hill, B., (2003). *The Digital Songstream Mastering the World of Digital Music*. Routledge New York.
- Hines, M. & Borland, J., (2003). CNET to buy, retune MP3.com. [Online]. <URL: <http://news.com.com/2100-1027-5107696.html>>. Last accessed: October 12th, 2004.
- Hunter, P., (2002). DRM: whose rights are they anyway? [Online]. <URL: http://80-www.sciencedirect.com.ezproxy.uow.edu.au:2048/science?_ob=ArticleURL&_aset=B-WA-A-A-AU-MsSAYZA-UUW-AUY BU ZZYDA-AUYUZVDZDA-BWDWVACDU-AU-U&_rdoc=5&_fmt=full&_udi=B6VNT-4537RST-Y&_coverDate=02%2F01%2F2002&_cdi=6187&_orig=search&_st=13&_sort=d&view=c&_acct=C000014118&_version=1&_urlVersion=0&_userid=202616&md5=d7a92902efaa72ec8169c4fd50d16cae>. Last accessed: March 26th, 2004.
- Lam, C.K.M. & Tan, B.C.Y., (2001). The internet is changing the music industry. *Communications of the ACM* 44(8) 62-68.
- Landergren, J. & Liu, P., (2003). *Usability Factors in Digital Music Distribution Services and Their Relationships with Established and New Value Chains in the Music Industry*. Master's Thesis, Royal Institute of Technology.
- Lechner, U. & Schmid, B.F., (2001). Communities- business models and system architectures: the blueprint of MP3.com, napster and gnutella revisited. *IEEE*, 1-10.
- Lee, J., (2003). An end-user perspective on file-sharing systems. *Communications of the ACM* 46(2) 49-53.

- Macedonia, M., (2000). Distributed file sharing: barbarians at the gates? *Entertainment Computing* 33(8) 99-101.
- Mudd, G., (2002). Online music sales declining three times faster than overall music shipments, as file sharing applications continue to thrive. *comScore Networks*.
- Pellegrini, F. & Taylor, C., (2001). Another free-music outlaw bites the dust. [Online]. <URL: <http://www.time.com/time/business/article/0,8599,127465,00.html>>. Last accessed: October 8th, 2004.
- Scott, M.D., (2001). Music copyright on the internet. *Computer Law & Security Report* 17(3) 34-36.
- Stevens, C., (2003). File sharing apps: searching for MP3s? *Internet Magazine* 107, 99.
- Wagner, D., (2004). Music Industry. University of Prince Edward Island, 1-11.
- Weiss, A. (2000). Napster? Yes, thank you. [Online]. <URL: <http://portal.acm.org/citation.cfm?id=355503&jmp=cit&dl=GUIDE&dl=ACM>>. Last accessed: March 10th, 2004.
- Woody, T., (2002). The race to kill kazaa. *Wired Magazine*, 11. [Online]. <URL: <http://www.wired.com/wired/archive/11.02/kazaa.html>>. Last accessed: February 28th, 2004.
- Zhu, K. & Macquarrie B., (2003). The economics of digital bundling: the impact of digitization and bundling on the music industry. *Communications of the ACM* 46(9) 264-270.