Economics

Understanding the Market for Digital Music

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By 2008, digital music sales either as a-la-carte downloads or subscriptions are expected to reach $1.8 billion, up from $187 million in 2004—a ten-fold increase. Despite illegal file sharing activity, these figures indicate that the market for online music is rapidly growing. The success of the Apple iTunes Music Store suggests that consumers are willing to pay for online music that they can listen to anywhere and anytime. This paper begins by combining a discussion of the current market players and technologies with an analysis of relevant industry forecast data to understand what opportunities exist for current and future online music providers. Through pricing data research and consumer survey results, this paper argues that the present 99-cent per song strategy is optimal.

In 2002, digital music sales, which includes both paid downloads and online orders for hard copy music media, accounted for just over $1 billion. Informa Media forecast that by 2008 online music sales will amount to almost $3.9 billion. Purely online music distribution comprised of a-la-carte downloads and subscription services will make up $1.8 billion of all online sales in 2008, with the remaining consisting of online orders for physical CDs.

Though these future figures seem promising, the music industry remains concerned about piracy, pointing to the decline in retail music sales as evidence. Since peaking in 1999 with music sales of $14.5 billion, retail revenues have declined annually on average by 9 percent. In 2003, the Recording Industry Association of America (RIAA), an organized body representing several dozen record labels including the "Big 5" (Universal, Sony, EMI, Warner and BMG), reported a gross value of $11.9 billion shipments, a loss of 6 percent from 2002. Meanwhile, unit shipments of record media (CD, LP/EP, vinyl, DVD, music videos) have followed a similar decline from a high of almost 1.2 billion units in 1999 to just under 800 million in 2003.

Worldwide, the International Federation of Phonographic Industry (IFPI) estimated piracy reached $4.6 billion in 2002, an increase of 7 percent over 2001. However, because this figure neglects to include unauthorized sharing of music by private households, actual industry losses are even higher. Informa Media estimated losses of an additional $2.4 billion to the recording industry due to file sharing in 2004.

To curb the rise in file sharing practices by private consumers, the recording industry announced in 2003 that it would begin subpoenaing Internet Service Providers (ISPs) for consumer information in cases which the RIAA had reason to believe illegal file sharing had taken place. Given the individual's contact information, the RIAA would bring a lawsuit against the individual but would also be open to negotiations outside of court. As of July 2004, the RIAA has already subpoenaed information on nearly 3,000 individuals, and many private settlements have already been made on the average of $3,000. The effect of this unprecedented legal initiative is unclear as traffic on file sharing declined rapidly in the days and weeks following the announcement. But as of late, it has resumed the levels prior to the announcement.

In the face of these lawsuits, much industry attention is now focused on paid music services which offer users access to a wealth of songs for download at a reasonable price. The most prominent of these services

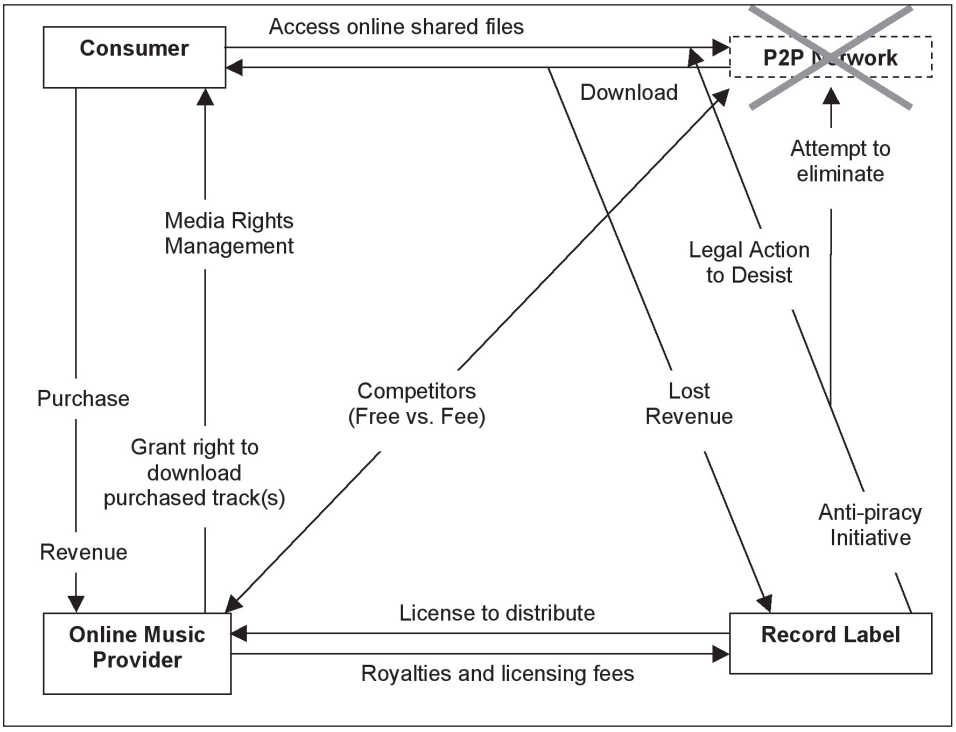

Figure 1

is the Apple iTunes Music Store (iTMS). With over one million songs to choose from and backed by the five major record labels, iTunes presents a tremendous opportunity to understand the digital music landscape. Unlike traditional markets, the key form of competition to paid online music services is not cost undercutting but reducing the incentive and opportunity for consumers to illegally obtain the same product for free through online file sharing networks. The same versatility that allows songs to be played through a consumer's home computer potentially allows the same song to be shared and obtained by millions of users worldwide.

The objective of this paper is to understand and capture the market opportunities that exist for digital music sales. I begin by exploring the key market players and their interactions. I also examine the problem of unauthorized file-swapping over peer-to-peer (P2P) networks and suggest that despite this activity, there still exists a market for online music. Next, the paper follows with forecast data on digital music sales growth over the next few years. Having identified the present and upcoming prospects in digital music, I move to the core topic of analyzing a-la-carte download and subscription services to see how to most effectively price online music.

The Market Players

Like the typical market, goods flow from firms to consumers. For simplicity, I represent the supplying firms in the music industry as the record label. This is a good approximation because it is the record label which controls the licensing and distribution rights of an artist's work; the record label owns the copyright for the musical piece.

As indicated in Figure 1, goods flow from the record label to the consumer via an online music provider (OMP). Unlike traditional markets, no physical products are transferred; electronic payment and download is the means of payment and distribution.

The process begins with the consumer who visits the web site of an OMP to browse and sample songs online. Payment is submitted electronically to the online music store and the user is allowed access to download the purchased songs. Using media rights management technologies, the music provider can allow and disallow permission to various end-user actions such as burning the songs to CD, creating duplicates, playing on different computers, and so forth.

The specific media management rights are determined by the record label which grants the OMP a license to distribute the songs. In return, the record label receives licensing fees from the OMP.

Also in the market presently is the recording industry's most targeted entity: P2P file sharing networks. A multitude of file sharing networks exist following the demise of Napster in 2001 which had an active user base of over four million users per day. In terms of music offerings on these networks, file sharing research firm BigChampagne reported that approximately 1 billion songs were available in June 2004 compared to the 820 million available a year ago. These networks allow users to acquire music digitally but without paying for the download.

The P2P Challenge

Competition in the digital music market is not so much cost under-cutting as it is determining how to limit free file trading networks. The ability for a consumer to acquire a paid product for free undermines the market for OMP and record labels

Table 1 U.S. Music Sales (In Millions)

	1997	1998	1999	2000	2001	2002	2003
Total Units	1,063.4	1,123.9	1,160.6	1,079.2	968.5	859.7	798.4
Total Value*	12,236.8	13,711.2	14,584.7	14,323.7	13,740.9	12,614.2	11,854.4

* Dollar value reflects the total suggested retail list prices of shipments.

Source: Recording Industry Association of America 2003 Year-end Report

alike. From the OMP standpoint, price competition is restricted given the existence of free versus fee; OMPs cannot offer the music for free because they must recoup the costs of licensing.

For record labels, it is not clear whether file sharing actually hurts music sales. The RIAA has long claimed that illegal file swapping has been a primary cause of the decline in music sales over the past five years (Table 1); they suggest that users who download music for free have little incentive to then purchase the CD.

However, contrary to the record industry's stance that P2P networks hurt sales, an empirical study by Oberholzer of Harvard Business School and Strumpf of UNC Chapel Hill in March 2004 found no statistically significant evidence that downloads lower music sales. Oberholzer and Strumpf examined data on actual file sharing activity over seventeen weeks in the last third of 2002. Focusing on U.S.-based users, they matched downloads to albums and then combined this with weekly music sales data to measure the effect of file sharing on sales.

The analysis by Oberholzer and Strumpf suggest that file sharing has a negligible effect on album sales. In fact, more successful albums actually benefit from file sharing—150 downloads leads to another album sale.[1]

If we accept the analysis done by Oberholzer and Strumpf, then the recording industry need not be too worried about file sharing. Moreover, for their most successful groups, file sharing should be more welcome than not. File sharing, despite ongoing legal efforts by the RIAA, has continued to thrive and evolve. The legal battle that brought the original Napster service to a close in 2001 saw countless new networks take its place, and as current services are shutdown, the file sharing underground will no doubt change and create more anonymous and decentralized distribution networks. The key for legitimate online music services is to differentiate themselves by providing exclusive quality content that users cannot readily find on P2P networks coupled with copyright policies that do not overly restrict music listening, burning, and portability.

Forecast

The online music market, despite file sharing concerns, is expected to grow to $3.9 billion by 2008, according to research firm Informa Media (Table 2). This figure includes both online sales of hard format media such as CD and vinyl, in addition to pure digital sales of music tracks and subscription-based services. Online sales as a proportion of overall music sales are forecast to reach almost 12 percent of the $32.5 billion music market in 2008, doubling the 5.3 percent figure in 2004. Pure digital sales of pay-per-download tracks and subscriptions are estimated to reach $1.8 billion, or equivalently 47 percent of total online sales in 2008.

Total online sales are expected to grow faster in the future as music providers improve features and usability, users become more accustomed to online music sales, and file usage policies adapt to consumer and industry compromise. Over 2002-2008, overall online music sales are forecast to grow annually at 22 percent. Pure digital sales from a-la-carte downloads and subscriptions are projected to increase 91 percent on average per year. A-la-carte download sales are expected overtake subscriptions in 2004 and account for over half of all pure digital sales in 2008.

By 2008, pure digital sales are expected to overtake hard format sales in North America with slightly over half (54 percent) of all online music sales consisting of a-la-carte downloads or subscriptions.

Globally, hard format sales will continue to dominate and hold a slight edge over pure digital sales at 52.6 percent. Nonetheless, by 2008,

Table 2 Online Music Sales by Distribution Method ($ million)

	2002	2003	2004	2005	2006	2007	2008
Hard Format	1,111.2	1,192.7	1,288.0	1,418.5	1,609.0	1,813.1	2,037.8
A-la-carte Download	2.0	34.3	99.0	219.0	398.7	656.1	1,087.9
Subscription	35.2	55.5	88.1	161.8	298.1	479.0	745.8
Total Online	1,148.4	1,282.5	1,475.1	1,799.3	2,305.8	2,948.2	3,871.5
Global Online and Offline	30,980.9	28,502.2	27,895.3	28,399.1	29,362.7	30,770.2	32,549.6
% Total Online	3.7%	4.5%	5.3%	6.3%	7.9%	9.6%	11.9%
% Growth of Total Online Sales		11.7%	15.0%	22.0%	28.1%	27.9%	31.3%
% Growth of Pure Digital Sales		141.4%	108.4%	103.5%	83.0%	62.9%	61.5%

Total online sales is the sum of hard format, a-la-carte download, and subscriptions. Pure digital sales are only a-la-carte download and subscriptions.

Source: Informa Media Group (9/03)

Table 3 Online Music Sales in Top 10 Markets ($ million)

	2002	2003	2004	2005	2006	2007	2008
U.S.	419.1	470.4	553.9	712.6	964.5	1,265.5	1,696.5
Japan	203.5	233.0	257.8	295.5	385.6	478.8	602.7
U.K.	179.6	200.2	222.4	248.6	281.0	328.9	411.0
France	57.7	64.1	76.7	93.0	117.9	159.1	223.2
Germany	136.6	141.2	152.9	174.2	200.8	244.7	305.2
Canada	17.3	18.2	24.5	36.6	49.2	63.9	86.2
Italy	13.7	13.9	16.4	22.2	29.0	40.8	55.8
Spain	14.2	15.6	18.6	26.3	34.5	45.2	59.9
Australia	24.5	26.1	30.5	36.5	45.0	57.3	76.5
Mexico	5.2	8.0	10.2	13.0	15.9	20.7	27.0

Source: Informa Media Group (9/03)

Table 4 Top A-la-carte Download Music Providers

	Catalog	Track Price	File Format	Services				Usage Rights		
				D	S	FR	PR	L	B	P
Apple iTunes Music Store	1,000,000	$0.99	AAC, 128 kbps	✓		✓		5	7	✓[a]
Napster	700,000	$0.99	WMA, 128 kbps	✓	✓		✓	5	10	✓
Musicmatch Music Store	700,000	$0.99	WMA, 160 kbps	✓	✓	✓	✓	5[b]	7	✓
RealPlayer Music Store	600,000	$0.99; top ten tracks at $0.49	AAC, 192 kbps	✓		✓	✓	5	5	✓[c]
MSN Music	500,000	$0.99	WMA, 160 kbps	✓		✓	✓	5[b]	7	✓
			WMA							

digital downloads and subscriptions are forecast to represent a significant share of the market and likely to overtake hard format recordings in the years beyond.

In the top 10 markets for online music (Table 3), the United States is set to continue its lead as the largest market, accounting for 44% of all online sales globally in 2008.

Pricing Online Music

The record industry's fear of widespread piracy as a result of online distribution has resulted in restrictions on the use of paid online downloads. The fight against piracy, however, must seek a careful balance with consumer interest to freely use their purchased track just as if it had been purchased through a retail outlet.

This section first discusses the a-la-carte download and subscription-based pricing models and then analyzes various price levels against consumer willingness to pay. The objective here is to understand what fee structure is most profitable.

A-la-carte Downloads

A-la-carte download services like the iTMS charge users a set fee for each track or album downloaded. The flexibility for consumer choice in purchasing music makes a-la-carte download services appealing: users are free from the traditional "bundled" goods offered by the record labels.

As shown in Table 4, most a-la-carte download music providers offer individual songs at 99 cents per download; hence, much differentiation in this market centers on usage rights, catalog size, and exclusive content such as pre-releases or promotion tracks. Many of these OMPs also offer streaming content from radio stations and audio books for purchase.

Apple iTunes Music Store

The premier pay-per-download music provider is currently the iTMS. With the largest catalog size of any OMP, the iTMS has become nearly synonymous with paid online music: it commands a 70 percent market share in legitimately downloaded singles and albums, and in July 2004, it surpassed 100 million downloads.

Songs in the iTMS are offered using the AAC file format at 128 kbps, which is of higher quality than the MP3 format at the same bit rate. Moreover, unlike MP3s, they can be digitally protected from unauthorized re-distribution and re-play.

Apple's decision to adopt the AAC/FairPlay specification pushes users towards its iPod portable MP3 player, the only portable media device that can play the files purchased from the iTMS. Nonetheless, the iPod has become wildly popular in the United States capturing 58 percent of the market for portable MP3 players as of June 2004. According to Apple, the iTMS now sells over 16 million songs per month, or an equivalent 200 million per year, making it the most widely used paid music service.

Beyond its massive song catalog and easy-to-use interface, Apple differentiates itself with exclusive content, community tools, and one of the largest audiobook

collections. The iTMS features exclusive releases from many independent labels and also offers a free new single every week on Tuesday for download. Discovering new music is simple with Apple's extensive playlist browsing, sharing, and recommendation features. Lastly, the iTMS boasts one of the largest audiobook collections among its peers with over 5,000 titles available starting at $2.95 per item. Users can transfer these audiobooks—be it bestsellers, magazines, language books, and even public radio shows—for conveniently on-the-go listening using the Apple iPod.

Subscriptions

Just as consumers pay a monthly fee to access the Web through their Internet Service Provider (ISP), OMPs offering subscription-based services charge a monthly fee to access and download music. A listing of the top subscription services is shown in Table 5.

Napster

Napster's core product is the monthly subscription service which allows users to stream its 700,000+ song catalog and download songs for playback on up to three computers. Burning the songs to CD requires actually purchasing the tracks, of which subscribers can save up to 20% by buying multiple tracks at once. Napster subscribers also get access to over 50 commercial-free stations and the ability to build custom stations. Users can save songs to their music library for later playback.

In the beginning of September 2004, Napster launched a beta of its Napster-To-Go service, which in addition to the regular subscription service also allows unlimited transfers to a portable media device—so long as the subscription remains active. Previously, Napster's subscription service did not allow transfers to portable players. Preliminary pricing has been set at $14.95 per month.

Despite all of Napster's new features and shift towards becoming a legitimate paid service, it still retains the same tight community focus as before. While it no longer offers easy file sharing access, Napster does allow users with similar music tastes to browse and copy playlists and even see what all of Napster is listening to in real time. Users can send track and playlist recommendations to other Napster and non-Napster users using the provided Napster Inbox, a feature unique to this service.

Table 5 Top Subscription Music Providers

	Catalog	Monthly Subscription	Format	Features				Usage Rights		
				D	S	FR	PR	L	B	P
Napster	700,000	$9.95	WMA, 128 kbps	✓	✓		✓	3	✓[a]	✓[b]
Musicmatch On Demand	700,000	$9.95	WMA, 128 kbps		✓	✓	✓	1		
RealRhapsody	600,000	$9.95	WMA, 128 kbps		✓	✓	✓	1	✓[a]	

Services: D = downloads; S = on-demand streaming; FR = free radio; PR = premium radio.
Usage Rights: L = number of simultaneously authorized computers for listening; B = tracks can be burned to CD; P = tracks can be transferred to portable devices

(a) Tracks to be b urned to CD must be purchased for an additional fee. (b) Requires a Napster-To-Go subscription.

Source: Company web sites as of 24-Sept-2004.

Pricing Analysis

The popularity of Apple's iTMS suggests that its pricing structure must have at least some appeal to consumers, who can now find many credible alternatives such as Napster, Musicmatch and MSN Music. While OMPs such as RealNetworks and Wal-Mart have tried to undercut the digital music industry's predominant "99 cents per track" standard, they have found it difficult to maintain consistent profit margins in an already razor thin margin sector. This section analyzes various pricing levels by relating them to both consumer willingness to pay and revenues.

In 2003, a survey from Jupiter and Ipsos-Insight revealed that the standard 99-cent price being offered by OMPs was the most preferred, assuming that the songs purchased could be freely copied and burned to CD. These results are reflected in Table 6. Young adults, or those ages 18 to 24, preferred a lower per-track price of $0.50. Although young adults spend more in terms of dollars, this market segment only comprises 15% of total music sales.

Putting prices with market reach and revenue (Table 7), pricing singles at $0.99 confirms an optimal situation for OMPs. Though OMPs could price songs for less at say $0.50 and reach more consumers, revenue falls from $1,772.89 to $992.20. In terms of revenue from singles, the $0.99 price is optimal.

Traditionally, the record industry has made most sales from albums rather than singles. In 2003, for instance, CD album sales in the U.S. accounted for $11.2 billion compared to $35.9 million for CD singles. With most retail outlet offering albums from $12+, OMPs must price their

Table 6 Consumer Willingness to Pay for a Music Download

	<$0.25	$0.26 to $0.50	$0.51 to $1.00	$1.01 to $2.00	>$2.00
Ages 18 to 24	17%	30%	34%	11%	7%
Total online adults	8%	19%	48%	12%	14%

Data from response to the survey question: Think about a song by your favorite band or artist. How much would you be willing to pay to download that song, which you could use as you wish? (Type in exact dollars and cents.)

Source: Jupiter Research/Ipsos-Insight Music Survey (7/03), n = 298 (users ages 18 to 24 willing to pay for song downloads), n = 1,870 (overall online adults) (US only)

Table 7 Price Expectations

Single Track

	$0.01	$0.50	$0.99	$1.49	$1.99
Percentage of market reached	89%	82%	74%	42%	39%
Potential revenue*	N/A	$992.20	$1,772.89	$1,514.44	$1,878.16

Album

	$0.01	$5.00	$9.00	$12.00	$16.00
Percentage of market reached	87%	72%	36%	12%	2%
Potential revenue*	N/A	$9,129.60	$8,216.64	$3,651.84	$811.52

* Potential revenue is used to illustrate how pricing impacts market size and affects profits, and is calculated by multiplying the percentage of market reached by the survey sample, and, in turn, by the unit price.
Base: 2,400+

Source: Jupiter Research (8/02)

albums competitively. Most OMPs, including the iTMS, price albums starting at $9.95. According to the survey data results, should OMPs lower album prices to $5.00, they would double the market reached and raise revenues. Reducing prices below this point captures a larger market share but at the expense of revenues.

At present, OMPs enjoy a 40 percent cut for every dollar earned on a download sale, or approximately double the traditional retail margin. This can partially explain why OMPs can provide steeper discounts—such as for multiple purchases—than their retail counterparts. Record companies also earn a larger share of revenues from downloads at 30 percent versus 12 percent from traditional retail. Surprisingly in both cases, the artist earns 12 percent of the revenues regardless of whether the sale was conducted online or at a retail outlet (Informa Media, 2003).

While record labels have been largely reluctant to embrace online music, digital sales are actually more beneficial for revenues and copyright management.

First, online music sales eliminate, or otherwise drastically reduce distribution costs since the purchased music is transferred electronically; this eliminates the need to actually produce a physical CD and ship the CD from the manufacturing plant to the retail outlet.

Second, OMPs allow better advertising through personalization. OMPs maintain a past record of songs purchased or streamed and can therefore provide better recommendations on other songs, artists, and genres that a user might like.

Lastly, selling music online permits better copyright monitoring. Contrary to the common notion that songs purchased from OMPs will lead to higher piracy rates, music purchased online is actually more secure since the songs have embedded Digital Rights Management (DRM) policies. These policies, though not completely piracy-proof, do offer greater than security than a CD acquired from a retail store, which can be easily ripped to a hard disk as unprotected MP3 files. Most of the songs offered by the leading OMPs are encoded using Microsoft's WMA file format which features DRM restrictions on burning, duplication, and dissemination. Other services like the iTMS use a proprietary DRM technology which restricts where and how the music can be played.

Conclusions

The continued popularity of Apple's iTMS suggests that so long as OMPs can continue to provide competitive pricing and relatively free DRM policies, there is a market for digital music.

A-la-carte downloading services will outpace subscriptions nearly 3-to-2 in 2008, most likely because users favor the ability to pick the tracks they want to purchase rather than be subject to a bundled good. Nearly all of the leading OMPs provide the same standard set of features and pricing: $0.99 singles, a dedicated software client, and an extensive catalog of music from the five major labels plus many independents. Differentiation and success in the digital market will depend on content exclusivity, community-oriented tools, file compatibility, and less restrictive usage rights.

Despite file sharing concerns, consumers have indicated that they would be willing to pay for music insofar as they can enjoy the same usage rights as with a purchase. An additional layer of differentiation for OMPs is thus universal playback compatibility and transfer to a portable media device.

Apple's iTMS has prospered

where its predecessors have failed largely due to its across-the-board 99-cent price and relatively free DRM policies. Having been able to secure uniform licenses with the major labels, Apple is able to provide a catalog-wide price as opposed to prices which may vary depending on the licensor. Moreover, Apple's usage policies give consumers many of the same freedoms they had enjoyed before with retail music.

As the music industry begins to better understand the market opportunities for pure digital sales, new entrants will emerge and competition for users and dollars will intensify.

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Footnote

[1] See Oberholzer & Strumpf (2004) table 13. The effect of downloads grows more positive for more successful albums (higher quartile).

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Albert Lin is a junior majoring in Economics and co-terming in Management Science and Engineering. As a DJ and music producer, he is interested in understanding how technology will affect music creation, distribution, and live performance. He first worked with Professor Timothy Bresnahan on research involving web browser versioning and search engine technologies in the fall of 2003. Albert is grateful to Professor Bresnahan for his sponsorship, encouragement and professional review, to the URO for the Chappell-Lougee research grant, and to Jupiter Research and Informa Media for their invaluable research assistance.