

An ecosystem lens: Putting China's digital music industry into focus

Diming Tang and Robert Lyons

Northeastern University, USA

Abstract

The digital disruption of the global music industry hits the value chain for recorded music hard. In China, new digital service providers began to amass large user bases, offering a variety of services based on e-commerce and social messaging applications. In a low-intellectual property environment, these services have become the primary sources of digital music streaming via the Internet and increasingly through mobile telephony. This article reviews the literature on the value chains within the Chinese music industry, compares a classic business ecosystem model with a more recent model, and examines available user data on current Chinese music streaming services. We then suggest an ecosystem framework toward understanding the digital music industry in China and discuss how this framework maps to recent developments in China's digital music industry.

Keywords

Alibaba, Baidu, China, China music company, digital music, ecosystem, mobile, music industry, music services, streaming, Tencent

Introduction

In the late 1990s, the music industry, especially its distribution channel, was disrupted by a new set of technologies: digitalization, data compression, and the Internet (Dolata, 2011). These new innovations transformed the existing landscape over the past decade and attracted new players into the field. Digital music services, such as downloading (iTunes), subscription streaming (Spotify, Apple Music), and ad-based streaming/online radio services (Pandora), began to change consumer behavior and gain more market share than the traditional distribution channels, that is, physical CDs. This trend was particularly evident in Scandinavian countries, such as Sweden, where 75% of total revenues to Swedish copyright owners came from digital distribution (Johansson, 2013). This

Corresponding author:

Robert Lyons, Northeastern University, 360 Huntington Ave., Boston, MA 02115, USA.

Email: r.lyons@neu.edu



Creative Commons Non Commercial CC-BY-NC: This article is distributed under the terms of the Creative Commons Attribution-NonCommercial 3.0 License (<http://www.creativecommons.org/licenses/by-nc/3.0/>)

which permits non-commercial use, reproduction and distribution of the work without further permission provided the original work is attributed as specified on the SAGE and Open Access pages (<https://us.sagepub.com/en-us/nam/open-access-at-sage>).

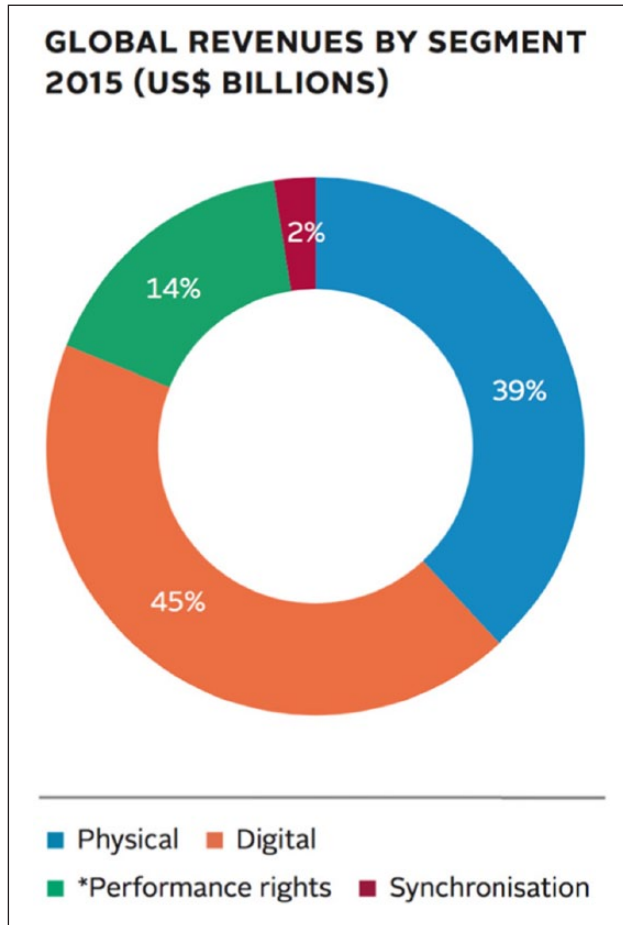


Figure 1. Global revenues by segment 2015 (US\$ billions).
IFPI (2016).

trend has continued, and finally in 2015, digital revenues surpassed physical revenues globally. Of the total global music revenue in 2015, the digital market accounted for 45%, overtaking the 39% share of the physical market (International Federation of the Phonographic Industry [IFPI], 2016) (Figure 1).

China also follows this global trend and has become a leading digital country in terms of music consumption. After increased piracy enforcement by the Chinese government, China has become a growing legitimate market, which shows great potential. According to the International Federation of the Phonographic Industry (IFPI) Global Music Report 2016, China's music sales grew by 63.8% to USD169.7 million, to make it the 14th largest recorded music market in the world (IFPI, 2016). Digital music in China has already become the most important segment within the industry. According to the 2015 Music Industry Development Report conducted by the Communication University of China, China's digital music industry is worth 49 billion RMB, up by 11.5% from

2014, to comprise 75.5% of the core music industry market in China, which includes digital music, recording, live music, intellectual property (IP) management, and publishing (Communication University of China (CUC), 2015). The fast development also caused a rapid increase in licensing revenue. The same report shows a 22% increase in income as reported by the National Copyright Administration of China (NCAC, major copyright collective in China) including a 204% increase in the new media sector, contributing 32% of the overall income (CUC, 2015).

Both the US and Chinese music industries have undergone a shift to digital, but important differences exist between the Chinese digital music industry and that of the United States; chief among these is a very different IP environment. China's historically lax IP laws and poor copyright enforcement led to a relatively weak position for music labels and rights holders, as well as a uniquely lucrative situation for state-owned telephone companies, with a resulting distortion of revenue distribution to rights holders (Priest, 2014). Another key difference is that music streaming emerged largely as a set of discrete services in the United States, while Chinese music streaming services have arisen as part of large online companies engaged in search, e-commerce, and social messaging platforms.

In the Chinese academic literature, the digital music industry is seen as a value chain, flowing among discrete actors in that chain. These models describe the flow of value among key players but do not capture the entire universe of important forces at work. They do not, for example, reflect the role of government, or investors, which, while not part of the industry value chain, still have a large impact: large and rapid revenue jumps (such as the 63.8% increase in music sales referenced earlier) could not have happened without government actions on IP and the efforts of technology companies.

What is needed is a way to identify and account for entities that lay outside the traditional value chain models but are nonetheless crucial to the digital music industry. We suggest that by integrating a value chain model within a classic business ecosystem model, we can capture all the important stakeholders in the Chinese digital music industry in a way that allows for both analysis of individual components and a high-level view of the overall interactions within the entire system.

We begin with a review of the recent literature on Chinese digital music value chains. We then introduce a classic Western business ecosystem model, look at a refinement of that concept, and identify some areas of difference between the US and Chinese digital music industries. Finally, we suggest an ecosystem model approach toward greater understanding of the Chinese digital music industry and discuss its application.

Chinese digital music industry history

Scholars in China have studied the rapid evolution of China's digital music development in the early 21st century chiefly through analyzing the value chain of China's digital music. Xu (2006) divides China's digital music into three divisions: Upstream, which includes content providers (CPs) such as artists and labels; Midstream, which includes IP management companies, service providers (SPs), and Internet service providers (ISPs); and Downstream, comprised of the users (Figure 2). Xu maps these to Michael Porter's Value Chain model (Figure 3).

Wang (2009) further refines the value chain into four levels: Level 1, which is comprised of CPs and other entities that own the copyright; Level 2, SPs; Level 3, device manufacturers; and Level 4, ISPs. Finally, the end user is in the destination of the value chain (Figure 4).

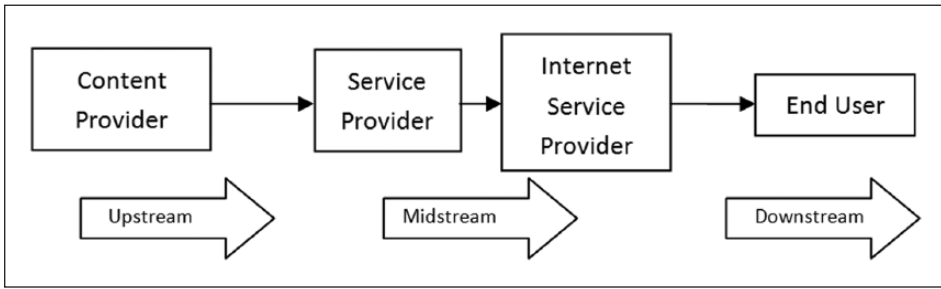


Figure 2. Xu's division of players in the digital music industry (Xu, 2006).

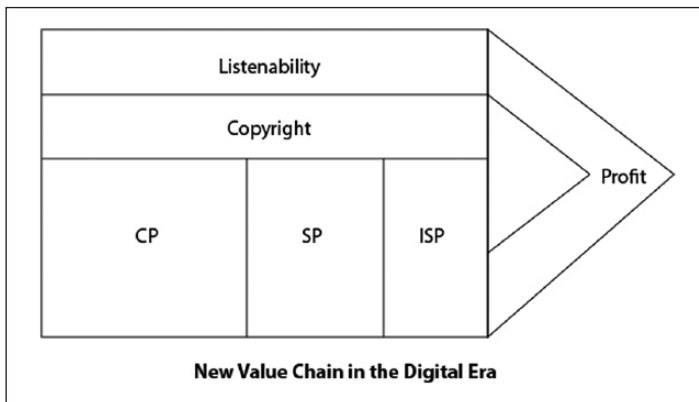


Figure 3. Xu's model of China's digital music value chain based on Porter's value chain model (Xu, 2006).

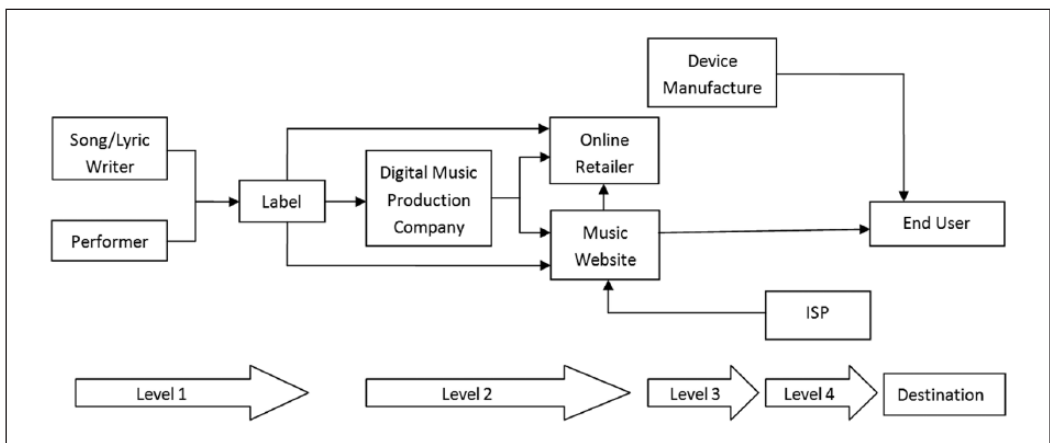


Figure 4. Wang's model of the digital music value chain (Wang, 2009).

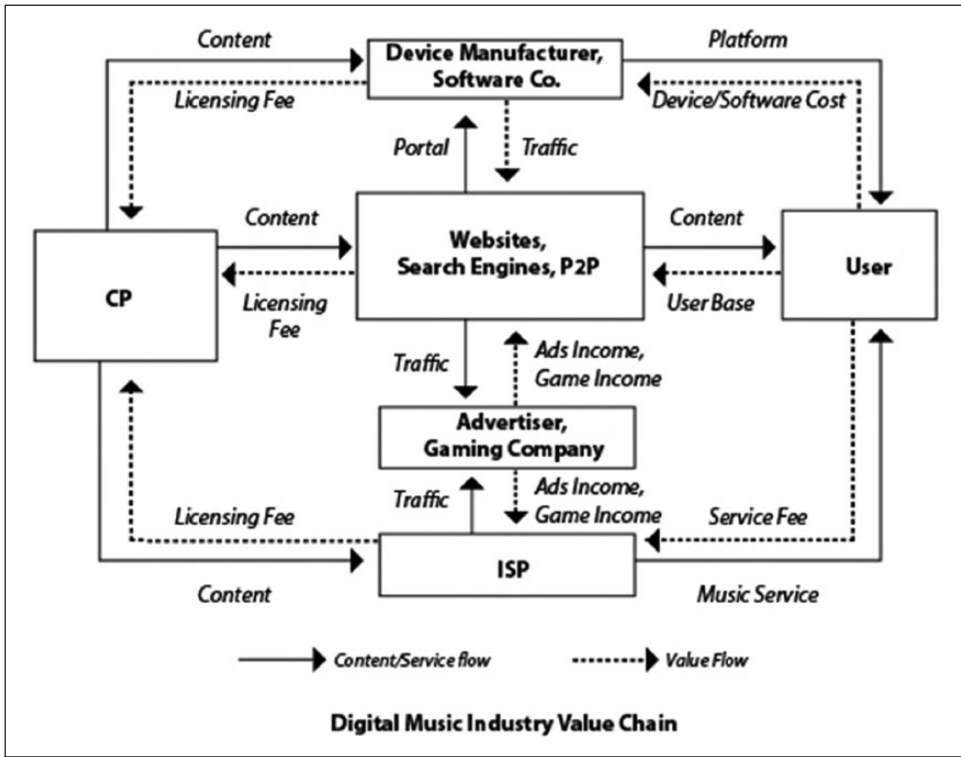


Figure 5. Tong's model of the digital music value chain (Tong, 2012).

Tong (2012) uses the categorization of Xu regarding China's digital music value chain (Figure 5). She further refines the relationship between players in the digital music segment by adding Content/Service Flow and Value Flow into the value chain, and also considers additional factors affecting the value chain, including social, economic, technology, and consumer behavior. This provides a somewhat broader view of China's digital music landscape.

While these researchers have identified a central value chain for China's digital music industry and examined relationships between players within the industry, research on China's digital music industry using an ecosystem model is not reflected. Such research efforts focus more on the value chain around the vigorous ringback tone market in years past, when other mainstream business models, such as streaming and online radio services, were less developed. In recent years, high revenue growth in these new business models has coincided with the decline of the ringback tone market (Zheng, 2016). New research is needed for this fast-evolving industry.

An updated digital music ecosystem

The concept of a business ecosystem was first proposed by James F. Moore (1993), who was a Senior Fellow at Harvard Law School's Berkman Center for Internet and Society. Moore defined an ecosystem as an economic community supported by a foundation of interacting organizations

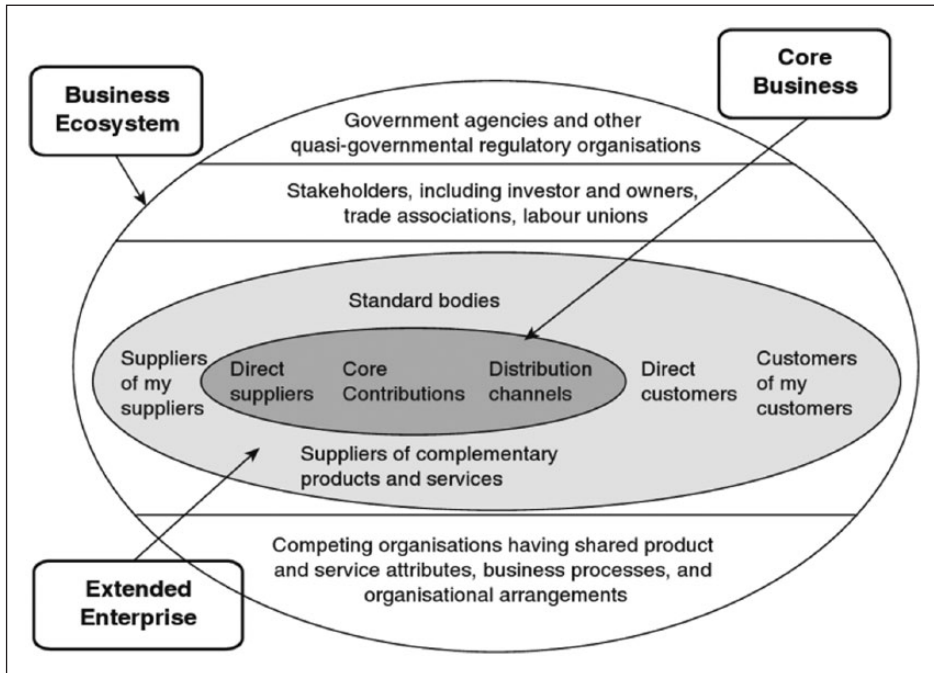


Figure 6. The Death of Competition-Leadership and Strategy in the Age of Business Ecosystems (Moore, 1996).

and individuals—the “organisms” of the business world. This economic community produces goods and services of value to customers, who are members of the ecosystem (Moore, 1993). In Moore’s view, the ecosystem encompasses not only the core value supply chain and extended enterprises but also other stakeholders such as industrial associations, government, and investors. In his theory, these organisms co-evolve their capabilities and roles, and tend to align themselves with the directions set by one or more central companies (Moore, 1993)(Figure 6).

Moore further defines four stages of a business ecosystem: birth, expansion, authority, and renewal. In the *birth* stage, firms in the ecosystem focus on defining and implementing the customer value proposition. In the *expansion* stage, the market grows with an increasing level of production and increased competition from limited suppliers. In the *authority* stage, the ecosystem shows strong growth and becomes stable after some consolidation, marked by fierce competition within the ecosystem. In the last stage of *renewal* or death, the existing ecosystem is threatened by the rise of new ecosystems and innovations or changes in government regulations, customer purchase patterns, or macroeconomic conditions. The death of the ecosystem may occur if businesses do not adapt to the new environment.

With intent on gaining a fresh perspective, we may map Moore’s four-stage ecosystem life-cycle onto the Chinese digital music industry: departing from the traditional music value chain, the product itself switched from physical goods to digital files, and new players such as digital service providers (DSPs), tech companies, and telecom companies disrupted the old distribution structure and entered the market with new value propositions (Bockstedt, Kauffman, & Riggins, 2006). New business models were created by these new entrants, for example, eMules, an early peer-to-peer

file-sharing platform; Top100, the largest Chinese legitimate digital music downloading service; Baidu's online music search engine; and A8 Digital Music, a ringback tone service. These innovators were often problematic in a business or legal context, and many did not survive. In the expansion stage, thanks to an improving legal and business environment (J. F. Li, 2012), and because of a shifting consumer behavior toward digital consumption (Tong, 2013), companies with sufficient market share and an effective business started to expand through horizontal and vertical integration in order to compete with their rivals (Xu, 2006). The competition increased the price of content upstream, thus raising the barriers to entry for other possible players.

Horizontal integration

The recent merger between QQ Music (a Chinese music streaming and download service owned by Tencent) and China Music Corporation (CMC) is a typical example of horizontal integration, that is, large players in the same industry segment consolidating to avoid competition, such that they can share the same resources (content, user base), maximize the market share, and create a dominant position. CMC is an interesting new company in the Chinese digital music industry. Originally named "Ocean," the company has roots as a publishing house. CMC added significant assets in recent years, greatly expanding through merging with the major streaming services Kugou and Kuwo ("Merger Between Kugou and Kuwo, Planning on IPO in the End of the Year," 2015), making it the top SP based on the combined monthly active users of Kugou and Kuwo ("Kugou and Kuwo Merge, QQ Music How Will It Go?" 2015). This puts CMC into direct competition for market share with Tencent. CMC was planning an IPO (Initial Public Offering) to attract more investment, but in July 2017, Tencent acquired a majority share of CMC and created a new company to integrate the digital music businesses. The three services, QQ Music, Kugou, and Kuwo, will all continue to operate separately but with possible collaboration (Macfarlane & Osawa, 2016). This merger consolidates the SP level in the value chain and makes the new entity a dominator over the market.

Vertical integration

There are also several notable examples of vertical integration, that is, when a company extends ownership along its supply chain, acquiring control of the steps of production and distribution.

One case is the consolidation of Baidu Music and the Taihe Music Group (TMG). Baidu Music, the largest Chinese music search platform, is a subsidiary of the search engine giant Baidu. It merged with TMG, a major Chinese CP that owns copyrights of 700,000 songs, an approximately 50% share of the Chinese music market (Taihe Music Group, 2015). The vertical integration between Baidu Music and TMG gives the new entity's large user base access to an enormous in-house catalog, allowing it to be better positioned against competitors, such as Kugou or QQ Music, and at a lower cost.

Another example is Douban Music's "D Force Records." Douban is a Chinese social networking service that creates and shares content related to film, books, music, and news events. Douban Music is a service that focuses on independent artists and their music, similar to Soundcloud.com but is more oriented toward niche markets. In 2015, Douban launched D Force Records, a record label under Douban Music, that signs artists and, in turn, encourages them to sign up with Douban's social networking service; the folk artist Huazhou is an excellent example. D Force Records paid to help Huazhou release an album and do a concert tour in 2015. The artists kept all the revenue

from record sales and touring, while D force retained the recording copyright. The digital album was first released through Xiami (an online music provider in China) with 1.14 million plays; in addition, Douban sublicensed the content to other music services. The company successfully recouped its investment and now retains the copyright for future licensing opportunities (S. Zhang, 2015). Alibaba's creation of Aliplanet and the "Seek Light Project" (Xiami) is another example of vertical integration of the path from artist to fan ("Aliplanet's Press Conference," 2016).

Continuing with the mapping of Moore's model, the expansion phase is currently moving into the authority stage, where the competition between music streaming companies becomes a broader competition between groups of inter-connected products and services owned by larger companies. As a result of vertical consolidation, key companies now own or have exclusive relations with many segments of the traditional value chain. For example, Taihe Rye was a major label in China. In order to expand in the industry, the company first collaborated with CPs, such as the music label Ocean Butterflies and the IP management company Touch Music, to establish the TMG, which itself merged later with Baidu Music to expand its activities into streaming (Cadell, 2015).

The struggle for dominance is still ongoing and has resulted in some complex interrelationships among competitors. For example, music streaming services like QQMusic and AliMusic are locking up artists and catalogs of music through exclusive licensing deals with labels (Yu, 2015). Yet they collaborate with each other through sublicensing and cross-licensing deals (Zhou, 2016). In these sublicensing deals, companies allow their competitors to use, for a fee, certain songs, artists, or catalogs of musical works. Recent examples include sublicensing deals between Tencent (owner of QQMusic) and the music streaming service NetEase (Lai, 2015).

Categories of players

Two researchers who have built on Moore's research on business ecosystems are Marco Iansiti of the Harvard Business School and Roy Levien, principal of Keystone Advantage, a Massachusetts-based consultancy. They have identified the following four categories of players in the business ecosystem: Keystone, Niche, Dominator, and Hub Landlord. In their model, the *Keystone* player works as a central hub within a business ecosystem and provides the platform for other players to participate and collaborate in order to create value. The *Niche* player controls the niche segment with specialized capabilities and creates value from the ecosystem. The *Dominator* directly controls and owns a large proportion of the network, and manipulates the network by vertical or horizontal integration. The *Hub Landlord* seeks to extract more value, with little new value to its network (Iansiti & Levien, 2004).

In Table 1, we have taken the Iansiti/Levien categorization of companies in a business ecosystem and provided examples within the Chinese digital music industry in the Iansiti/Levien ecosystem.

Big service providers (Alibaba, Tencent, Ocean Music/China Music Corp.) are the Keystone players since they are key elements of this ecosystem, and contribute the most value in the value chain. However, despite each having a large market share, most of the revenue is going back to other players in the ecosystem, such as the telecoms and labels.

The Dominators of the ecosystem are CPs such as music labels, since they control the copyright of the recorded content, normally a scarce resource. However, in a low IP/high piracy environment such as China during the previous decade, scarcity did not apply, as music was then freely available. By contrast, in the United States, the major labels (UMG, Sony, Warner) would fit well into the Dominator role of this model.

Table 1. The categorization of players in China's digital music ecosystem based on Iansiti and Levien's (2004) work.

	Keystone players	Dominator	Hub Landlord	Niche player
Description	Central hub within a business ecosystem, provides the platform for other players to participate and collaborate together to create value	Directly controls and owns a large proportion of the network and manipulates the network by vertical or horizontal integration	Seeks to extract more value, with little new value to its network	Controls the niche segment with specialized capabilities and creates value from the ecosystem
Digital Music Industry Company	Streaming Services (Alibaba, Tencent)	Record Labels (Taihe Rye); Rights Management Company (Ocean Music)	Internet Service Providers (China Mobile)	Independent SPs (Douban FM)

The Hub Landlords in China's digital music ecosystem are the ISPs. In terms of mobile music services, these are the Chinese telecoms. All three major telecoms: China Mobile, China Unicom, and China Telecom, control the distribution of mobile music to 1.28 billion subscriptions (Ministry of Industry and Information Technology of the People's Republic of China, 2016). The popularity of caller ringback tones has generated enormous income over the years, and the telecoms have been able to extract and retain the vast majority of the revenue generated from music provided by content creators. This is because the three state-owned telephone companies in China are essentially an oligopoly with enormous power (Priest, 2014). As a result, the telecoms use their market share power in ways that map more closely to the role of Dominator than of Hub Landlord.

The *Niche players* include some independent SPs, such as Douban Musician and Xiami Musician, services that promote independent musicians and deliver to a niche market.

We suggest that while the Iansiti/Levien ecosystem model maps somewhat to the Chinese music industry, there are two areas of poor fit: the Dominators and Hub Landlord sectors. The distortions created by China's historically low-IP environment and the state-owned telecoms make it difficult for this model to map exactly to China's digital music industry.

Four components and the supporting infrastructure in an ecosystem model

Setting aside the Iansiti/Levien model, we draw from the work of Xu, Wang, and Tong, and build upon Moore's business ecosystem concept to suggest a model for viewing the current digital music landscape in China. In this framework, we identify four components through which value flows: Supply, Interface, Pipe, and Demand. These components are upheld and maintained by a Support infrastructure comprised of government organizations, international organizations, and IP rights system; technical infrastructure providers; investors; and large information technology (IT) companies for social networks, e-commerce, and messaging services.

Supply component

The *supply* component includes content creators and CPs. The content creators are individuals and groups that create the content, such as artists, songwriters, and other copyright owners. Most

content creators sign deals with CPs, such as labels and publishers, to distribute and exploit their work.

We note that while most content creators sign deals with labels and publishing houses, many are increasingly making distribution deals directly with SPs. Xiami, one of the major streaming services under Alibaba, has launched an initiative called the “Seek Light Project,” which signed independent artists to release albums via Xiami Music. In 2015, 13 artists signed deals with Xiami and released new albums through this initiative. In addition to the Seeking Light Project, Xiami helped large numbers of artists to promote their music through Xiami Musician, a platform specially designed for independent musicians. Artists on Xiami Musician can upload their content, such as singles or albums, and decide upon their own pricing strategy (Y. Li, 2013).

Douban Musician is another platform for independent musicians to market and promote their music. In 2014, Douban Musician started to move toward an ad-supported service (Golden Fleece Project) (Xiang, 2014) for some of their top artists; more than 100 independent artists have joined the ad-supported project and started to make profits of 1RMB (USD0.15) per thousand plays (Du, 2014). This is roughly 1/40th of Spotify’s average per stream rate (Spotify, n.d.).

CPs include record labels, publishers, and other IP management companies. Record labels make deals with the content creators to produce, market, and distribute their work. Some labels in China are also involved with IP management and/or SPs. Taihe Rye, one of the biggest record companies in China, form a joint venture with Ocean Butterflies Music group in 2015, in order to control Ocean Butterflies Music’s catalog; its subsidiary company Touch Music manages over 500,000 songs. More recently, Taihe Rye created a joint venture with Baidu Music to further expand its business into music streaming. With record sales long under pressure from piracy, CPs are increasingly viewing licensing as an important source of revenue.

Publishers or IP management companies collect original music from different labels and artists, and make deals with SPs to earn license fees for their catalog. This trend has been supported in recent years by the Chinese government by putting more effort on IP enforcement and by increasing international pressure from the World Trade Organization (WTO) (Dong & Jayakar, 2013).

In July 2015, the National Copyright Administration of China (NCAC) established an operation called “Sword Net 2015” to eliminate unlicensed content on China’s streaming services. A total of 2.2 million unlicensed songs were removed before the deadline of 31 July 2015. This was a successful example of regulating the digital music market in China, and caused SPs to begin shifting toward paid models, increasing the value of content, and strengthening the power of organizations and individuals in the supply component (H. Zhang, 2016).

Interface component

Interface firms include DSPs, such as music downloading services, music streaming services, Internet radio, Internet video platforms, music websites, and music apps. SPs sign licensing deals with CP representatives or directly with content creators to distribute content directly to the end users. DSPs generate income by charging a fee per download or a monthly subscription fee from the end user, as well as earning revenue from advertisers. The interface component is a key element of the digital music ecosystem, since the SP is the “face” of the final product delivered to the user.

Digital music is among the most important services offered by DSPs, who also provide e-commerce, social messaging, and games. There are three types of music-related services: digital downloading services, ad-based streaming services, and subscription-based streaming services. Unlike countries such as the United States, where digital downloading is still one of the biggest revenue streams in the recording industry, China has no legal and successful large-scale digital

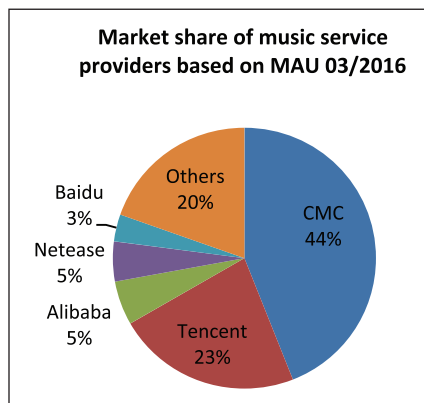


Figure 7. Market share of music service providers in China (Questmobile, 2016).

downloading services, such as iTunes. Rather the failed experiments of music services operated by Google (google.cn/music), and that of early Chinese online music retailer Top100.cn, exemplify the historical challenge to China-based digital downloading due to a legacy of widespread piracy (Priest, 2014). In the early era of digital music, legitimate domestic music services such as Top100.cn and 9Sky offered monthly subscription service for about USD3 per month. However, due to the IP environment at that time, it was impossible to compete with free unauthorized downloads. Top100 closed its doors, and 9Sky, while still operational, has become a marginal player in China's online music space (Priest, 2014).

The Ownership model (Lovelock & Gummesson, 2004) associated with music downloading services is being replaced by an Access model (Wikstrom, 2012) associated with music streaming services. China is at the forefront of this transition, with a high streaming-to-physical music ratio:

The progress of China's digital music industry was similar to that in Western countries in terms of the rapid spread, development and convergence of digital technologies related to computing, telecommunication, music, and the special preference and enthusiasm of Chinese people for new and popular technologies. (J. F. Li, 2012)

Currently, streaming is the dominant revenue source in China's recording industry. Unlike other countries with high streaming rates such as Sweden or Norway, where most streaming revenue comes from subscription-based streaming services like Spotify, revenues in China come from ad-supported services. The 2015 IFPI report (the annual digital music report) shows that almost 70% of Chinese digital music revenues come from ad-supported streaming services.

In China, the three biggest SPs are Alibaba (with music services Xiami, TTPod), Tencent (QQ music), and China Music Company (CMC; Kugou, Kuwo). Others include Wangyi, Baidu, Duomi, and Douban. Figure 7 shows the market share of major SPs based on monthly active users (MAUs). As mentioned earlier, in July of this year, CMC and Tencent announced a strategic merger of their digital music businesses (MacFarlane & Osawa, 2016). The merger makes Tencent the majority shareholder (60%) of CMC and positions Tencent, as of this writing, as the dominant SP in China's digital music scene.

Most music streaming services in China employ the "freemium" model, that is, users can listen to an ad supported service for free, with some constraints, or pay for a VIP account with more

Table 2. VIP prices and features of major SPs (Bin, 2016).

	Kugou	Kuwo	QQ Music	Netease	Xiami	Apple Music	Duomi
Monthly subscription (RMB)	10	10	10/15	8	10	10/15	8
Yearly subscription (RMB)	100	60	114/171	128	98	N/A	88
Download	Unlimited	Unlimited	Unlimited	300/month; 5100/year	100/month; 1500/year	Unlimited	300/month
Sound quality	High quality/ Lossless	320K APE	320K, APE FLAC	320K	320K	256K AAC	320K
Other features	No	VIP homepage features	QQ Green Diamond Service	No	No	Sharing with up to 6 family members	VIP homepage features

APE: The APE file format, also known as Monkey's Audio, is a lossless audio file. Lossless formats compress an audio file without losing sound quality; FLAC: Free Lossless Audio Codec; AAC: Advanced Audio Coding, a lossy audio format.

advanced services, such as higher sound quality, exclusive content, or free downloading services. An overview of these Very Important Person (VIP) subscription services can be seen in Table 2.

Currently, SPs are finding it difficult to monetize their content with an ad-supported free version. Major SPs are trying to increase market share by signing exclusive deals with CPs to incentivize users to switch to the paid subscription and choose their service over the competition. For example, Tencent has recently signed exclusive content agreements from a number of CPs, including Warner, Sony, YG Entertainment, LOEN Entertainment, CUBE, *The Voice* Season 4 (China), *I am a Singer* Season 3 (China), Linfair Records (a label in Taiwan), Emperor Entertainment Group (a major label in Hong Kong), and others (Han, 2015). Other SPs are also gathering exclusive content. Alibaba owns the exclusive distribution rights for BMG Rights Management, Rock Records (a major label in Taiwan), HIM (Taiwanese label), and B'in Music (Taiwanese label) (Han, 2015). CMC controls exclusive catalogs from EMI, Universal, and Sony/ATV (Xie, 2015).

Major SPs are competing for exclusive content with hopes of increasing market share. Another important factor fueling competition is that due to increased IP enforcement, IP is becoming a more valuable resource, which makes licensing a more attractive investment; increased capital investment from the large parent companies is intensifying this competition.

The use of exclusive content deals as a competitive strategy among SP rivals is becoming an interesting aspect of the current Chinese digital music industry. Ed Peto, the President of Beijing-based music industry consultancy Outdustry, calls this tactic "weaponizing music" and sees it as a near-term phenomenon unique to China (Ed Peto, personal communication, 9 June 2016). Also in this landscape, large SPs become the distributors of IP, and small services that are not involved in the bidding wars become the buyers by sub-licensing the exclusive content from larger entities. For example, in 2015, QQ Music sub-licensed their content from the catalog of YG Entertainment (including artists Psy and Bigbang) and others, to Duomi Music, a smaller streaming service.

Pipe component

The *pipe* component is comprised of firms that provide the platforms that link digital music services to the end user. This includes ISPs (landline and telecoms) and the device manufacturers.

Firms in these sectors, such as the makers of smartphones or speakers, are not considered music industry players, but the interplay between them and the firms in the digital music industry (e.g. SPs) creates new revenue opportunities and mutual benefits to both sides. They are the link between the user and the service.

The main business of ISPs is to provide Internet service to users (including mobile) and to make profits through broadband fees from CPs, SPs, and users (Wang, 2009). In China, ISPs are state-owned companies: China Mobile, China Unicom, and China Telecom. Not only are they the three major telecoms but they are also the three major landline Internet providers, providing the underlying infrastructure for the digital music business. These big three telecoms have been very active in the music industry, especially with respect to ringback tones.¹

During the past decade, ringtones and ringback tones became the most popular value-added service (VAS) for the music industry and Chinese telecoms became the *pipe* between SPs and users, offering ringtones and ringback tones on a transaction fee basis. This popular VAS started in 2003; there are now 610 million ringback tone users at China Mobile alone (Teng, 2013). Ringback tones are considered the only stable digital music income stream in China during the past decade. This is because ringback tones are streamed from the ISP instead of being downloaded, thus avoiding piracy. Also the price of a ringback tone subscription is inexpensive enough to reach a vast market of lower income consumers.² “A8 Music Group” was one of the first music companies involved in the mobile music business, beginning in 2001. A8 became the principal agent between the artist and the three major telecoms in China, providing ringtones and ringback tone content to the telecoms. In 2003, a major Chinese label, Taihe Rye, started to collaborate with China Mobile, the largest state-owned telecom, to develop the business of polyphonic ringtones (an early ring tone that was produced via Musical Instrument Digital Interface (MIDI), consisting of several notes at a time). In 2009, Shanghai Synergy Culture & Entertainment Group (SSCEG), a music entertainment and media company that owns several labels, signed agreements with China Unicom, the second largest telecom in China to cooperate on digital music (J. F. Li, 2012).

The three state-owned telecoms controlled the ringback tone distribution channels and access to huge numbers of users. They kept more than 98% of that revenue for themselves, allowing roughly two percent for the copyright owners (Priest, 2014). With the increase in popularity of such services, telecoms started to build their own SPs (e.g. Migu, WoMusic, iMusic). In 2009, China Mobile started moving all the ringback tone businesses to its “China Mobile Wireless Music Base,” a subsidiary music group created by China Mobile to increase the profit and directly control the value chain from SPs through the distribution channel (NetDragon Partners With China Mobile’s Wireless Music Base,” 2011). Beijing music industry expert Ed Peto notes that ringback tones are “often the first opportunity people in emerging markets have at a personalized music experience,” and when other options proliferate, especially as apps, he believes ringtones have less appeal, as consumers “find other ways to scratch that itch.” He also notes that as copyright structures and IP enforcement increases, CPs are more interested in pursuing better licensing deals than were typically possible with China’s telecoms (Ed Peto, personal communication, 9 June 2016).

Another group of companies in the pipe component are device manufacturers. Although this is not a segment within the music industry, electronic devices (personal computers (PCs), tablets, smartphones, etc.) are the physical link that connects users to music services. Some device manufacturers are neutral (or compatible) toward all music services, whereas others have made alliances with DSPs in the digital music value chain, seeking to create mutual benefit. Mobile phone manufacturer HTC (a Taiwanese consumer electronics company) and Digital Service Provider KKBOX (DSP KKBOX) (a music streaming service) are one example of the latter. Beginning in 2006, a KKBOX interface was developed for HTC Dopod’s M700 offering (a Dopod is a music-oriented

Personal Digital Assistant (PDA)-phone). Bundled with each new phone was a 6-month KKBOX membership, paid for by Dopod (B. Chen, 2006). In 2011, HTC acquired an 11.1% share of KKBOX in order to build a strategic partnership. It integrates KKBOX's service with its devices to bring a unified user experience (KKBOX, 2011). This is similar to Apple's software and hardware integration, that is, the closed environment of the iTunes store, Apple Music, and Apple devices (iPhone, iPad, etc.).

Sonos, a US-based speaker manufacturer, also worked with DSPs in China when it entered the Chinese market. In 2011, Sonos collaborated with Duomi Music by adding its music service platform into its wireless Wi-Fi streaming speaker PLAY 3, allowing users to stream Duomi's catalogue directly from Sonos' interface (Sonos Launched Speaker PLAY 3 With Partner Duomi Music," 2011). Tencent's QQ Music built a partnership with Sonos 2 years later, adding to Tencent's partnerships with several audio equipment and TV manufacturers, including DENON, Marantz, and TCL (Ong, 2013). Its users also receive a premium VIP feature (QQ Green Diamond) when streaming QQ Music through a SONOS device at no additional cost (Sonos Custom Service, 2016).

Demand component

The *demand* component includes the end users of digital music services and advertisers. There are three main income streams generated by end users: streaming service subscriptions, ringback tone subscriptions, and digital downloading. On the advertiser side, the main income is from display ads in the streaming services. Although China is one of the biggest markets in terms of digital music consumption, with at least 478 million users in 2014 (Zhao, 2015), the revenue generated by those users is insufficient for supporting the business model.

Most of the digital music SPs are using a freemium model. Unlike other freemium services such as Spotify, where large proportions of users (roughly 25%) subscribe to the service, music services in China have an extremely low subscription rate (3.5%), partly because of the highly competitive environment of the free tier services (G. Li, Meng, Liu, & Yang, 2015).

In addition, unlike in Western countries, where a large number of users are still buying music in digital format, digital downloading services in China are a niche market with a limited income stream. This is owed to the high piracy environment of the past decade (Priest, 2014), and to the fact that most subscriptions offered by China's streaming services include downloading as part of the package.

As the revenues contributed by end users are not sufficient to cover the costs of digital music services and given that most music streaming services in China are using the freemium model, advertising revenue has become the primary source of income generated from digital music services, especially for independent SPs.

In China, most music services are owned by huge IT companies. These companies have bargaining power, clients, and a successful business model based on advertising, giving their music services better opportunities to earn advertising revenue than pure-play services, such as Changba or Duomi. So far, all major SPs in China have their own advertising platforms within their own ecosystems, that is, Alibaba has Alimama and Baidu has Baidu AD Union; Tencent has Tencent MIND. Each SP is able to offer highly customized advertising services for their clients, helping to cover the licensing costs for free digital music services. However, even though these large SPs have the capacity, resources, and relationships with advertisers, the ad revenue generated from digital music services is still insufficient to breakeven. Data show that a music service would make 1 RMB per 1000 streaming, whereas the net expense is more than 4 RMB, including a 2.5 RMB

licensing fee, and a 1.6 RMB bandwidth cost (G. Li et al., 2015). Streaming services still have to cover the majority of costs associated with free digital music services despite the revenue from ads.

Owing to the fact that the freemium/ad-supported model is not an ideal business model to generate profits, music services are putting more focus on converting free users into paid users in recent years. QQ Music is at the forefront of this trend. QQ Music is well known for its large catalog and exclusive content. Users must become a QQ Green Diamond subscriber (15 RMB/month) to listen to some of the exclusive content. QQ Music also introduced digital downloading in its service, and some cases the user must buy the digital copy of particular content (such as a newly released album) in order to listen it. The deep catalog and the new exclusive content not only attract more active users but also aid in converting more users into subscribers. As a music service under Tencent, QQ Music can leverage Tencent's social networking services (QQ, WeChat) and e-payment (WeChat Payment) to enhance the user experience and smooth the payment process; these are significant advantages not enjoyed by smaller "pure play" services (i.e. companies that offer only music streaming). Their service is now at breakeven, with total 400 million users and 10 million paid subscribers (X. Chen, 2016).

Support component

The *support* component includes those organizations outside the digital music value chain that support the ecosystem as a whole. These are international organizations, government organizations, organizations within the IP law system, infrastructure providers, investors, and large IT companies with interests in social networks, e-commerce, and messaging services.

Notable organizations at the international level include the WTO, the IFPI, and the World Intellectual Property Organization (WIPO). These international organizations protect the rights of foreign companies, such as the major labels.

At the national level, Chinese government organizations include China's Ministry of Culture,³ the NCAC,⁴ and copyright organizations, such as the Music Copyright Society of China (MCSC)⁵ and the Chinese Audio Visual Copyright Association (CAVCA).⁶ Government organizations focus on policy making and enforcement, while copyright collectives represent the rights of content creators. These copyright entities in China are still relatively new organizations compared with their counterparts in the West. NCAC was established in 1985, MCSC was created in 1992, and CAVCA was established in 2008. By comparison, the first Performance Rights Organization for music in the United States, the Association of Songwriters, Composers, and Authors (ASCAP), was created in 1914.

Even with the development of IP infrastructures in China, piracy in the last two decades continued to hinder the growth of a viable digital music ecosystem. One might contrast the cases of Napster in the United States with the Chinese search engine giant Baidu. Napster, a social network launched in 1999, offered users the ability to share unlicensed content through peer-to-peer (P2P) networking. Soon after the service was launched, A&M Records and 17 other record labels sued Napster for copyright infringement. Only 1 year later, a California court granted the plaintiff's motion for a preliminary injunction against Napster, and Napster eventually filed for bankruptcy and shut down in 2002 (Carrier, 2012). In contrast, Baidu provided "deep links," that is, direct links to downloadable unlicensed mp3 files, via their music search service "Baidu MP3" (the predecessor of Baidu Music, which launched in 2002), enabling users to download pirated content from the third party websites. Since 2005, several different organizations have sued Baidu for copyright

infringement (*IFPI v. Baidu, 2005; Music Copyright Society of China v. Baidu, 2008; Universal, Sony BMG, and Warner v. Baidu 2008*). Three of these lawsuits ended in Baidu's favor or attracted only minimal penalties. Baidu continued to offer unlicensed content until the company made a licensing deal with the major labels in 2011 (Dong & Jayakar, 2013). This was seen as a significant event, real evidence of the increasing importance of copyright to SPs. Respect for music copyright is now further incentivized by the competition between SPs, who are pursuing their own exclusive music licensing deals, as mentioned above. Now that their businesses depend upon their music catalogs, they have a greater stake in a stable IP environment.

Part of the Chinese government's recent efforts to increase IP enforcement and encourage self-regulation is the Alliance of Digital Music Industry, formed in July 2011 under the auspices of China's Ministry of Culture. The Alliance is comprised of nine music companies, thirteen websites, and three wireless operators, all committed to abide by new Chinese laws and regulations designed for the development of a healthy online music industry. Through this alliance, CPs and SPs can more easily negotiate price and profit-sharing mechanisms among themselves, greatly reducing the friction between these music-based businesses (Dong & Jayakar, 2013).

Another recent example of the Chinese government's anti-piracy campaign is "Sword Net 2015." This action, supported by the NCAC, established a July 2015 deadline for all Chinese music services to take down their catalogs of unlicensed songs. After the deadline, 2.2 million unlicensed songs were removed (Flanagan, 2015).

Infrastructure providers (including ISPs) are responsible for the physical and virtual infrastructure that users employ to consume digital music. They should not be confused with players in the pipe component, which are firms outside the industry directly involved with the music business. Rather, infrastructure providers are players outside the industry providing basic infrastructure for the general public, which results in greatly influencing people's music consumption.

Moving from the Ownership model to the Access model, which is currently highly relevant in China, we see that the following technology infrastructures that support the consumption of digital music: smartphones, mobile applications, cloud computing, online payment systems, and other technologies, are all crucial factors in supporting the digital music market. The three state-owned ISPs (China Mobile, China Unicom, and China Telecom) are also supporting the fast developing digital music market by building physical infrastructures throughout the country. With the rapid development of 3G and 4G coverage, mobile music consumption has become the most important part of the digital music ecosystem. According to a survey conducted by Sootoo.com (a social media and online service platform in the Chinese Internet industry), 56.6% of users are consuming music through mobile devices, and only 22.4% of users listen to music through a PC (Zheng, 2016). This high proportion of mobile music service users is comparable to that of the United States (Zheng & Li, 2015). In the 2015 Music Industry Development Report, data show the Chinese online music user base in 2014 was about 478 million, up by 5.5% from 2013, including 366 million online mobile music users, a 25.9% growth rate (CUC, 2015). The rapid growth of the mobile consumer market corresponds to actions by the infrastructure providers, such as domestic smartphone manufacturers (Huawei and Xiaomi) offering low-cost smartphones, and ISPs providing fast 3G/4G internet speeds, especially in the mass emerging market outside the major cities of China, where streaming music has become a major form of entertainment (Jubb, 2016).

Investors also play an important role in China's digital music ecosystem. As the Internet has replaced the traditional physical distribution channel of the music industry, many small tech startups have entered into this sector. The West has seen the growth of music services, such as Spotify,

Table 3. Major service providers in China and their parent companies.

Music services	Kugou, Kuwo	QQ Music	Xiami, TTPod	Netease Music	Baidu Music
Parent company	Tencent/China Music Corporation	Tencent	Alibaba	Netease	Baidu
IT company	Yes	Yes	Yes	Yes	Yes
Background	Dominant in messaging (WeChat, QQ) and gaming/IP management (Ocean Music)	Dominant in messaging (WeChat, QQ) and gaming	Dominant in e-Commerce (Taobao, Alibaba)	Gaming, e-mail service (163.com)	Dominant in search engine

IT: information technology.

Pandora, Deezer, and Beats music (now Apple Music). In China, thanks to low barriers to entry for investors in Chinese music services (including illegal content services), investors have aggressively sought opportunities to invest or acquire music services in the last decade. Strong support from investors has helped streaming services overcome their losses in the short term. However, due to the aforementioned increase in IP enforcement in recent years, the barriers for investment have become higher due to increased licensing costs. Without wide adoption of paid subscriptions, investors are unable to see a return on their investment in the short run (Han, 2016).

Finally, IT companies are key stakeholders in this ecosystem. Most of the top IT companies, including Baidu, Alibaba, Tencent and Netease (Wangyi), have developed or acquired streaming services. In the past, CMC used to be the only major SP in China's digital music market without a tech company as a parent company. However, after its recent merger with Tencent in July 2016 (MacFarlane & Osawa, 2016), Tencent has become the largest shareholder of CMC; as a result, nearly all of the digital music services in China's music industry falls under the control of IT companies. The major music services and their parent companies are shown in Table 3.

IT companies act a bit like investors, funding subsidiaries or acquiring companies for long-term benefit. However, they differ from investors, in that their interest in music services is not solely directed at profits; instead, these music services are combined with their other services (e-commerce, search, social messaging, games) to create synergies within their own corporate structures. In addition, unlike investors, IT companies have large existing user bases, well-known brands, and large marketing resources. Although they do not have music industry backgrounds, these IT companies have been a driving force in the transition from physical to digital in China's music industry.

Unlike angel investors, whose primary focus is a return on investment, IT companies consider music services as a value-added element used to gain market share. These companies have taken to competing with each other by signing exclusive deals with CPs and providing freemium services at a net loss. While the loss leader strategy of IT companies can benefit from both consumers and CPs, it creates unfair competition for smaller, niche players or pure-play music services since their first priority is sustainability and cannot sustain long-term losses (L. Chen, 2015).

Conclusion

Based on the following five components: Supply, Interface, Pipe, Demand, and a Supporting Infrastructure, we can apply an ecosystem lens with which to view China's digital music ecosystem

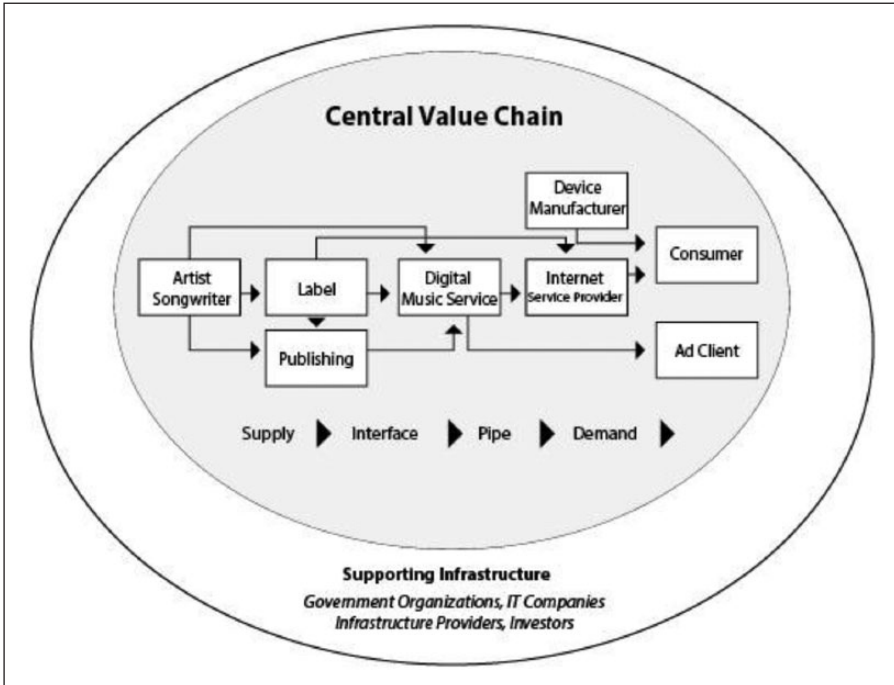


Figure 8. Framework of China's digital music ecosystem.

(Figure 8). Service and flow relationships between segments are shown with arrows. Taken together, these components form a group of dynamically interrelated stakeholders reminiscent of a digital music ecosystem.

In the context of this ecosystem model, we do not see the music market in the digital era as solely a supply chain operating within a single industry. Rather, it is a community of players from different industries and backgrounds, with each player making their own contribution in the development of China's digital music ecosystem.

For example, an artist or songwriter creates content, a song, and/or recording that are licensed by a publishing house or label (Supply). The catalogs of these recordings and/or songs) are licensed by a Digital Music Service, such as QQ Music (Interface). A music service is provided via mobile subscription to the consumer by an ISP (Pipe), either as a subscription or for free, and accompanied by advertising (Demand). This flow of digital music from artist to consumer would not be possible without the environment created by the following Supporting Infrastructure: government organizations, IT companies, infrastructure providers, and investors. Government agencies create and enforce a legal framework, including IP rights, contracts, and currencies, and each step of the flow depends upon it. Physical infrastructure supplies the digital services, such as the mobile telephony of China's telecommunications companies. The IT companies, giants like Tencent, Alibaba, and Baidu, are corporate parents of the major streaming services, and offer multiple services on their platforms, such as social messaging (Tencent's WeChat), e-commerce (Alibaba's TaoBao), or search (Baidu.com). Investors supply the capital which funds the music services, either as stand-alone ventures or through their corporate parents.

The evolution and interplay among these elements offer insights into the development and maturity of China's digital music industry. For example, the creation of the CMC was an initiative by investors to acquire two major music services in the Interface segment: Kugou and Kuwo. This move triggered competition in the Interface segment for artist/content exclusivity in the Supply segment. CMC has since merged with Tencent, owner of the largest music service (QQ Music), thus amassing market share while consolidating ownership of these Supply segment companies with an IT company.

Yet another example of the interplay of elements can be seen in the massive infrastructural build-out that has enabled mobile Internet use by 656 million people as of June 2016 (China Internet Network Information Center [CNNIC], 2016). This rollout by infrastructure providers is part of a government-mandated effort and has greatly contributed toward the preponderance of music service consumption through mobile phones. This, in turn, has impacted the Pipe segment, affecting the growth of both mobile device manufacturers and ISPs selling subscriptions.

In his keynote address at Marché International Record and Music Publishing (MIDEM)⁷ in 2014, industry executive Marc Geiger predicted that Western subscription streaming services would be absorbed and deployed by Internet platforms with massive scale, such as Facebook, Amazon, and Apple (Smirke, 2014). We find it intriguing that the future he predicts, with music streaming services integrated with large-scale social messaging and e-commerce platforms, already seems to exist in China. We suggest further research on the utility of applying an ecosystem model to digital music industry companies in Western markets like the United States or Scandinavia, and the evolution of Interface players like Spotify, Apple Music, or Deezer. In addition, while an ecosystem model has the virtue of being inclusive of important elements not captured in value chain analysis, there are areas where further research would be useful in clarifying components. Specifically, the role of China's state-owned telecoms within Support Infrastructure (i.e. cell towers, 4G technical standards) overlaps somewhat with their role as the final consumer delivery channel (i.e. mobile subscription services) in the Pipe component. Further research could clarify the relationship and boundaries between the consumer facing business of mobile subscriptions and the Chinese government's decisions on mobile telephony investment.

As China continues to move along a trajectory toward stronger music IP rights protection, it has the potential to emerge as a leading force in the global industry. A comprehensive understanding of the complex forces within and among the elements of its digital music industry will be of increasing importance to all interested external participants. We suggest that by placing a value chain model in the context of an ecosystem framework, a useful lens is created to examine current and future developments in the evolution of China's digital music industry.

Funding

The author(s) received no financial support for the research, authorship, and/or publication of this article.

Notes

1. Ringback tones are not stored on the device, they are played by the telecom service to callers before the call is picked up or sent to voicemail. The phone subscriber can, for a small fee, choose particular songs as ringback tones.
2. For ringback tone subscription in Migu (music service under China Mobile), the monthly subscription fee is 4 RMB per month. Retrieved from music.migu.cn/#/ringmonth/184_96.html.
3. Available from <http://www.mcprc.gov.cn/>

4. Available from <http://www.ncac.gov.cn/>
5. Available from <http://www.mscs.com.cn/>
6. Available from <http://www.cavca.org/>
7. Marché International du Disque et de l'Édition Musicale.

References

- Aliplanet's press conference. (2016, May 18). *Musician Guide*. Retrieved from <http://musicianguide.cn/aliplanet-press-conference>
- Bin, Z. (2016, January 27). Listening song software, which is best? *Zol*. Retrieved from <http://sound.zol.com.cn/566/5662121.html>
- Bockstedt, J. C., Kauffman, R. J., & Riggins, F. J. (2006). The move to artist-led on-line music distribution: A theory-based assessment and prospects for structural changes in the digital music market. *International Journal of Electronic Commerce*, 10, 7–38. doi:10.2753/jec1086-4415100301
- Cadell, C. (2015, December 3). Baidu music to merge with Taihe as Baidu continues to open assets to investment. *TechNode*. Retrieved from <http://technode.com/2015/12/03/baidu-music-to-merge-with-taihe-as-baidu-continues-to-open-assets-to-investment/>
- Carrier, M. (2012). Copyright and innovation: The untold story. *Wisconsin Law Review*, 891. Retrieved from <https://ssrn.com/abstract=2099876>
- Chen, B. (2006, November 24). Dopod M700 with KKBOX interface. *Engadget*. Retrieved from <http://cn.engadget.com/2006/11/23/kkbox-dopod-m700/>
- Chen, L. (2015, August 17). Songtaste leaves music market, 9 years of struggling on copyright barrier. *Ceweekly*. Retrieved from <http://www.ceweekly.cn/2015/0807/123038.shtml>
- Chen, X. (2016, July 29). QQ Music finally admitted it: Breakeven already. *Tencent*. Retrieved from <http://ent.qq.com/a/20160729/026904.htm>
- China Internet Network Information Center. (2016). *Statistical report on internet development in China*. Retrieved from <http://www.cnnic.net.cn/gywm/xwzx/rdxw/2016/201608/W020160803204144417902.pdf>
- Communication University of China. (2015). *2015 China music industry development report*. Beijing: School of Music and Recording Arts, Communication University of China.
- Dolata, U. (2011). The music industry and the Internet: A decade of disruptive and uncontrolled sectorial change. *SOI Discussion Paper*, 2, 5–28. Retrieved from <http://nbn-resolving.de/urn:nbn:de:bsz:93-opus-62707>
- Dong, X., & Jayakar, K. (2013). The Baidu music settlement: A turning point for copyright reform in China? *Journal of Information Policy*, 3, 77–103. doi:10.5325/jinfopoli.3.2013.0077
- Du, H. (2014, September 16). Douban's "golden wool" project. *Tencent*. Retrieved from <http://tech.qq.com/a/20140916/033457.htm>
- Flanagan, A. (2015, August 7). China pulls 2.2 million songs from the web. *Billboard*. Retrieved from <http://www.billboard.com/articles/business/6656695/china-takes-down-millions-of-songs-in-push-towards-digital-music>
- Han, Y. (2015, July 17). Music app removed, market disruption by the battle of copyright? *Tencent*. Retrieved from <http://tech.qq.com/a/20150717/023886.htm>
- Han, Y. (2016, June 6). Ocean music and its dangerous moment. *Tencent*. Retrieved from <http://tech.qq.com/a/20160606/007526.htm>
- Iansiti, M., & Levien, R. (2004). *The keystone advantage: What the new dynamics of business ecosystems mean for strategy, innovation, and sustainability*. Boston, MA: Harvard Business School Press.
- International Federation of the Phonographic Industry. (2016). *IFPI global music report 2016*. Retrieved from <http://www.ifpi.org/downloads/GMR2016.pdf>
- Johansson, D. (2013). From products to consumption-changes on the Swedish music market as a result of streaming technologies. Retrieved from: [https://medarbetare.lnu.se/polopoly_fs/1.95498!Johansson%20D.%20\(2013\)%20From%20Products%20to%20Consumption2.pdf](https://medarbetare.lnu.se/polopoly_fs/1.95498!Johansson%20D.%20(2013)%20From%20Products%20to%20Consumption2.pdf)

- Jubb, N. (2016, October 19). The future of music streaming lies in China's small cities. *Sixth Tone*. Retrieved from <http://www.sixthtone.com/news/future-music-streaming-lies-china%E2%80%99s-small-cities>
- KKBOX. (2011, March 29). HTC invested KKBOX [Web log post]. Retrieved from <https://www.kkbox.com/about/zh-cn/news/detail/123>
- Kugou and Kuwo merge, QQ music how will it go? (2015, March 25). *ReChord*. Retrieved from <http://www.re-chord.net/data/figure/6713>
- Lai, M. (2015, October 14). New breakthrough on digital music sublicensing between DSPs: Tencent sublicensed 1.5 million songs to Netease. *Chinaxweb*. Retrieved from <http://www.sapprft.gov.cn/sapprft/govpublic/6693/283444.shtml>
- Li, G., Meng, Z., Liu, Q., & Yang, Q. (2015). *Music industry development report*. Retrieved from <http://www.tisi.org/3855>
- Li, J. F. (2012, December 27). A brief history of China's music industry. *Music Business Research*. Retrieved from <https://musicbusinessresearch.wordpress.com/2012/12/27/a-brief-history-of-chinas-music-industry-part-1-introduction/>
- Li, Y. (2013, July 11). Xiami launches online musician platform, no royalty split within two years. *Sina Tech*. Retrieved from <http://tech.sina.com.cn/i/2013-07-11/16418530349.shtml>
- Lovelock, C., & Gummesson, E. (2004). Whither services marketing? In search of a new paradigm and fresh perspectives. *Journal of Service Research*, 7(1), 20–41. doi:10.1177/1094670504266131
- MacFarlane, A., & Osawa, J. (2016, July 14). Tencent to buy majority stake in China Music Corp., creating streaming giant. *The Wall Street Journal*. Retrieved from <http://www.wsj.com/articles/tencent-to-buy-majority-stake-in-china-music-corp-creating-streaming-giant-1468470851>
- Merger between Kugou and Kuwo, planning on IPO in the end of the year. (2015, March 13). *Sina Tech*. Retrieved from <http://tech.sina.com.cn/i/2015-03-13/doc-iavxeafs1738812.shtml>
- Ministry of Industry and Information Technology of the People's Republic of China. (2016). *Economic operation of telecommunication industry in January*. Retrieved from <http://www.miit.gov.cn/n1146285/n1146352/n3054355/n3057511/n3057518/c4652953/content.html>
- Moore, J. F. (1993). Predators and prey: A new ecology of competition. *Harvard Business Review*, 71, 75–86.
- NetDragon partners with China mobile's wireless music base: Create new service model for millions of legal songs. (2011, December 18). *NetDragon Websoft Inc*. Retrieved from <http://www.prnewswire.com/news-releases/netdragon-partners-with-china-mobiles-wireless-music-base-135837078.html>
- Ong, J. (2013, March 12). Tencent partners with SONOS on wireless speakers for QQ Music. *The Next Web*. Retrieved from <http://thenextweb.com/asia/2013/03/12/chinas-tencent-turns-on-qq-music-hardware-strategy-with-Sonos-wireless-speaker-partnership/>
- Priest, E. (2014). Copyright extremophiles: Do creative industries thrive or just survive in China's high-piracy environment? *Harvard Journal of Law and Technology*, 27, 467–541.
- QuestMobile. (2016, April 17). QuestMobile 2016 Q1 app report. Retrieved from <http://www.questmobile.cn/blog/blog-39.html>
- Smirke, R. (2014, February 3). WME's Marc Geiger stresses streaming in vision of \$100B recorded music industry at MIDEM. *Billboard*. Retrieved from <http://www.billboard.com/biz/articles/news/global/5893871/wmes-marc-geiger-stresses-streaming-in-vision-of-100b-recorded>
- Sonos Custom Service. (2016). *Introduction of Sonos's music services to users in China*. Retrieved from https://www.sonos.com/graphics/rn/sonos/Sonos_10.pdf
- Sonos launched speaker PLAY 3 with partner Duomi Music. (2011, July 25). *Tencent*. Retrieved from <http://tech.qq.com/a/20110725/000317.htm>
- Spotify. (n.d.). *Spotify explained*. Retrieved from <http://www.spotifyartists.com/spotify-explained/>
- Taihe Music Group. (2015, December 18). Chinese music entertainment giants Taihe Music Group (TMG) and Baidu Music Merge. *PR Newswire*. Retrieved from <http://www.prnewswire.com/news-releases/chinese-music-entertainment-giants-taihe-music-group-tmg-and-baidu-music-merge-300189475.html>

- Teng, S. (2013). Discussion on new development of mobile value-added services. *Guangxi Communication Technology*, 4, 35–39.
- Tong, X. (2012). Digital music from the value chain perspective. *Music Communication*, 1, 62–67.
- Tong, X. (2013). An analysis of industrial value chain of digital music. *Journal of Chongqing University*, 19, 165–172.
- Wang, J. (2009). The development of Chinese digital music industry from the point of view of industry value chain. *Journal of Xinyang Normal University*, 29, 103–106.
- Wikstrom, P. (2012). A typology of music distribution models. *International Journal of Music Business Research*, 1(1), 7–20.
- Xiang, T. (2014, September 17). Chinese still want to build an infrastructure for digital music publishing: Douban launches new ad revenue-sharing Program. *TechNode*. Retrieved from <http://technode.com/2014/09/17/douban-launches-digi-music-publishing-platform/>
- Xie, G. (2015, November 5). Ocean music, only legal music. *Chinaxweb*. Retrieved from http://www.chinaxweb.com/2015-11/05/content_328411.htm
- Xu, Y. (2006). A value chain perspective of popular music industry's division, consolidation, and development. *Journal of Nanjing Arts Institute*, 4, 82–85.
- Yu, Y. (2015, July 7). Accelerating consolidation of China's digital music, digital music copyright becomes the focus. *Legal Daily*. Retrieved from <http://epaper.legaldaily.com.cn/fzrb/content/20150707/Article106002GN.htm>
- Zhang, H. (2016, April 12). China music industry revenue increased 60% on last year. *China Daily*. Retrieved from http://news.xinhuanet.com/politics/2016-04/13/c_128888467.htm
- Zhang, S. (2015, June 4). Independent label under the BAT content battle: How to break through by album releasing and star creating. Retrieved from <https://www.huxiu.com/article/117714/1.html>
- Zheng, C. (2016). *Mobile music market report (Q1 2016)*. Retrieved from <http://www.sootoo.com/content/663217.shtml>
- Zheng, C., & Li, G. (2015). *Mobile music market report 2015*. Retrieved from <http://www.sootoo.com/content/557592.shtml>
- Zhou, X. (2016, January 15). Kugou, Kuwo, and QQ Music cross-licensed more than 1 million songs. *Techweb*. Retrieved from <http://www.techweb.com.cn/internet/2016-01-15/2260996.shtml>

Author biographies

Diming Tang, MS, BA, is an independent researcher and jazz bassist. He earned his Masters degree in Music Industry Leadership at Northeastern University, and his BA in Jazz Studies at Shanghai Conservatory of Music. His academic interests include: Music Industry, Streaming Music and Intellectual Property.

Robert Lyons, MBA, is a Lecturer at the College of Arts, Media and Design at Northeastern University where he teaches in the Masters of Music Industry Leadership program. His previous industry experience focused on digital media, music streaming and mobile applications at WGBH, a major public media company.