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Media infrastructure iteration and the reconfiguration of music's commodity form: Communicative-institutional change across the evolution of digital platforms

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Abstract

The iterative evolution of digital platforms has not only changed the channels through which music circulates but has fundamentally redefined music's attributes as a commodity. Adopting media infrastructure theory as its analytical lens, this study draws on a longitudinal analysis of 71,931 weekly-chart records from a Mandarin-language music streaming platform between 2005 and 2025, together with semi-structured interviews with 25 music industry practitioners, to examine systematically how the iteration of media infrastructure, from physical records to streaming platforms to short-video platforms, has reconstructed the commodity attributes of music and the institutional arrangements of its communication. The study finds that music's commodity form has undergone three fundamental reconfigurations: an ownable product in the physical-record period, an accessible service in the streaming period, and appropriable raw material in the short-video period. The chart data provide structural evidence of this process: the top 10% of songs account for 60.8% of all chart appearances, and systematic defects in the platform's metadata governance indicate that digital platforms are not neutral conduits but actively participate, through their data architectures, in constructing music's commodity attributes. The paper advances the theoretical proposition of the distribution channel as a commodity-attribute-defining apparatus, arguing that media infrastructure determines not only how music reaches consumers but also what music is.

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1. Introduction

From vinyl to the compact disc (CD), from MP3 downloads to streaming subscriptions, and on to background music on short-video platforms, the way musical content circulates has undergone repeated and fundamental changes over the past four decades. These transformations are usually understood as technological upgrades at the level of the channel, in which a new transmission technology replaces an older one while

the music itself appears to remain unchanged. This paper argues a more fundamental proposition: a change in the distribution channel alters not only how music reaches consumers but what music is. When a song shifts from a physical object pressed onto a CD into a data stream that can be accessed at any moment on a streaming platform, and then into a 15-second background clip in a short video, its commodity attributes, namely its mode of existence, its unit of valuation, and its mode of consumption, have changed in kind.

Taking the weekly-chart data of a Mandarin-language music streaming platform from 2005 to 2025 as its core empirical material, and combining these with semi-structured interviews of 25 practitioners, this study examines the three reconfigurations of music's commodity form. The platform studied is the longest-running licensed streaming service operating natively in the Taiwan region, and its two decades of chart data cover the complete transition from the end of the physical-record era to streaming maturity, providing a rare basis for continuous data for longitudinal analysis. This study is addressed primarily to scholars of media and communication, the cultural and creative industries, and platform and infrastructure studies; its findings on metadata governance, creative homogenization, and the changing aesthetics of popular music also speak to music industry practitioners and policymakers concerned with cultural diversity and creators' rights.

The paper's core contributions lie at three levels. First, it advances the proposition of the distribution channel as a commodity-attribute-defining apparatus, reconceptualizing the channel from a passive conduit into an active constructor of attributes. Second, drawing on 21 years of longitudinal data, it presents systematic structural evidence of how Mandarin popular music has changed across three generations of platform iteration, including the historical evolution of chart concentration, song life cycles, and content-turnover rates. Third, through a micro-level analysis of metadata-governance defects, it argues that a platform's data architecture is itself an institutional apparatus that re-encodes music's commodity attributes, providing empirical support, from within the music industry, for the proposition of platform non-neutrality.

The paper's principal theoretical interlocutor is media infrastructure theory. Parks and Starosielski¹ showed that media infrastructures are not neutral conduits but actively participate, through their materiality, institutional arrangements, and governance rules, in the production of meaning and the ordering of circulation. Plantin *et al.*² further advance the concept of the platformization of infrastructure, revealing how digital platforms combine

the public character of infrastructure with the commercial character of the platform. This paper imports that perspective into music-industry research and proposes that each generation of media infrastructure not only transmits musical content but also, through its pricing models, recommendation mechanisms, data architectures, and interface design, systematically redefines music's commodity attributes.

2. Literature review and theoretical framework

2.1. Media infrastructure theory and platform studies

Media infrastructure theory stresses that the materiality and institutional arrangements of communication technologies play a constitutive role in the circulation of content. Parks and Starosielski¹ noted that media infrastructure is not merely the physical carrier of signal transmission but the materialized expression of power relations, economic logics, and cultural norms. In the music industry, the spatial layout of record shops, the physical capacity of the CD, the subscription pricing of streaming, and the duration limits of short videos are seemingly technical features that profoundly shape the mode of existence and consumption of music as a commodity. The concept of the platformization of infrastructure² further reveals that contemporary digital platforms have moved beyond the role of pure commercial intermediary to assume infrastructure-like public functions while retaining the private character of platform governance, a dual character grounded in the way platforms render data platform-ready³ and that makes the role platforms play in music circulation far more active than the word intermediary suggests.

This perspective resonates with Castells's⁴ theory of the network society. Castells⁴ argued that, in the information age, the organizing principle of society shifts from hierarchy to network, and that a space of flows progressively displaces the space of places. The transition of the music industry from physical channels to digital platforms is a concrete instance of this macro-logic: the geographic network of record shops is replaced by a placeless platform interface, and the locus of power migrates from those who controlled physical distribution to those who control the platform's data and algorithms. Yet the network is not flat. As the evidence below shows, platformization produces its own concentration, so that the displacement of hierarchy by network does not abolish inequality but reconstitutes it on a new infrastructural basis.

Scholarship on platform capitalism argues that platform logic is permeating every domain of social and economic life.⁵ Nieborg and Poell's⁶ concept of platformization

describes how digital platforms permeate the production, distribution, and commercialization of cultural goods and reshape the contingent character of the cultural commodity. Vonderau's⁷ study of streaming reveals how platforms reshape the institutional arrangements of music distribution through a logic of financial growth, while Morris's⁸ analysis of curation by code shows how algorithms participate, as a new kind of cultural intermediary, in the production and allocation of taste. Together, these studies indicate that the influence of digital platforms on music goes far beyond channel substitution and involves a fundamental reconfiguration of music's very mode of existence as a commodity.

At the level of theory-building, the paper's proposition enters into dialogue with Straw's⁹ theory of scenes. Straw⁹ argued that the way musical culture is organized is profoundly conditioned by the material conditions of its circulation, and that different circulation infrastructures give rise to different forms of musical culture. This paper carries that insight from cultural analysis to the analysis of commodity attributes, arguing that circulation infrastructure constructs different commodity attributes, so that the mode of existence, the mode of exchange, and the standard of valuation of music are all institutional products of the distribution channel. Seabrook's¹⁰ investigation of the hit factory offers corroboration, tracing the transfer of power from the hit formula of the traditional record industry to platform algorithmic recommendation.

2.2. Theorizing music's commodity attributes and aesthetics

The special character of music as a commodity has long attracted scholarly attention, from Frith's¹¹ account of the value of popular music to Caves's¹² observation that cultural products have a nobody-knows character and Hesmondhalgh's¹³ emphasis on their character as a semi-public good. Yet existing research has rarely asked whether these attributes are themselves fixed. This paper argues that music's commodity attributes are not its intrinsic essence but institutional products constructed by the media infrastructure through which it circulates. As the distribution channel shifts from physical retail to digital platforms, music's exclusivity, rivalry, durability, and divisibility all change systematically. A CD has clear exclusivity, but the same song on a streaming platform can be played concurrently by an unlimited number of users; a physical album is an indivisible bundled commodity, but streaming unbundles it into singles consumed individually; a complete song is cut into a fifteen-second fragment on a short-video platform, and its very attribute of wholeness is dissolved.

These changes are not confined to the legal-economic surface of the commodity; they reach into musical form itself, because changes in distribution technology have historically driven changes in aesthetics. The three-minute single, constrained by the physical capacity of the 78- and 45-rpm record, disciplined songwriting toward compact verse-chorus forms; the long play and later the CD album licensed longer, conceptually unified works, and the rise of the album artist whose creative unit was the record rather than the song.¹¹ Each format thus carried an implicit aesthetic mandate. Streaming, and more sharply short video, reverse this expansion, compressing the salient unit back toward the hook and the fragment and rewarding songs that declare their chorus within seconds.

Crucially, these format-driven aesthetics are not simply imposed on artists by firms; artists actively retool their craft in response to the conditions of distribution. McConville¹⁴ describes how musicians come to treat the platform itself as an artistic device, patching their creative practice into the subscription logic of streaming so that the very conditions of distribution become materials of composition. In the Mandarin-language repertoire examined here, this is audible in the front-loading of choruses, the shortening or elimination of instrumental intros, and the deliberate design of a 15-s segment intended to travel as a short-video hook, tendencies developed with concrete cases in Sections 4 and 5.3. Music's commodity attributes and its aesthetic form are therefore co-produced by the same infrastructural shift.

2.3. Core proposition: the distribution channel as a commodity-attribute-defining apparatus

On this basis, the paper advances its core theoretical proposition: music's commodity attributes are not intrinsic features determined by the musical content itself but are constructed by the media infrastructure of its circulation through institutional arrangements such as pricing models, recommendation mechanisms, data architectures, and interface design. The paper examines three reconfigurations. In the physical-record period, music is an ownable product governed by an ownership logic, a one-time transaction, and album bundling. In the streaming period, music becomes an accessible service governed by a usage-right logic, subscription, and the unbundling of singles. In the short-video period, music is further fragmented into appropriable raw material governed by a material logic, attention metering, and fragmentary use. The three reconfigurations involve a comprehensive transformation in the unit of valuation, the mode of consumption, and the structure of power allocation.

3. Data and methods

3.1. The Mandarin weekly-chart dataset

The quantitative analysis drew on the weekly-chart data of a Mandarin-language music streaming platform from October 2005 to December 2025. The dataset comprised 71,931 weekly-chart records covering 5,537 unique songs across 21 complete years. Each weekly chart covered 50 songs, with fields including song title, artist, album title, and release date. During data cleaning, we identified and addressed 94 records with inconsistent artist-name formatting, nine records in which a soundtrack or music variety show was credited as the artist, and three records that mixed simplified and traditional characters. These metadata problems constitute important empirical material for analyzing the platform as a non-neutral conduit. The basic descriptive statistics are shown in Table 1.

Table 1. Basic descriptive statistics of the Mandarin weekly-chart dataset

Indicator	Value
Time span	October 2005–December 2025 (21 years)
Total records	71,931
Unique songs	5,537
Weekly chart size	50 songs per week
Mean chart weeks per song	13.0 weeks (median 4 weeks)
Longest chart run	501 weeks
Songs charting for only one week	895 (16.2%)
Songs charting for over 50 weeks	298 (5.4%)
Top 10% of songs, share of all chart appearances	60.8%
Top 1% of songs, share of all chart appearances	19.0%
Metadata issue: inconsistent attribution	94 records
Metadata issue: soundtrack or variety show credited as artist	9 records

Note: percentages are computed over all unique songs or over all chart appearances, as indicated.

The data analysis adopts three strategies. Longitudinal trend analysis examines the historical evolution of indicators such as the number of charting songs, song life cycle, and concentration. Distributional-structure analysis measures the degree of head concentration. Metadata-quality analysis systematically reviews the attribution problems and classification logic of the platform's data

architecture as micro-level evidence for the proposition of platform non-neutrality. With respect to chord-progression analysis, the paper further classifies the chords of the 420 songs in the annual top 20 (chord-verification rate of 100%) using Roman numeral analysis to examine whether platform algorithmic preferences are associated with particular compositional structural patterns. It should be noted that the chart data reflect only the content most listened to on the platform and do not represent the full landscape of Mandarin music creation; as a Taiwan region-based platform, it also has a user composition that differs from global platforms, so the generalizability of the conclusions must be treated with caution.

3.2. Semi-structured interviews

The qualitative material comes from semi-structured interviews with 25 music industry practitioners across the Taiwan region, mainland China, and Hong Kong. The interviewees were recruited through purposive and snowball sampling so as to cover the full value chain of the industry, from record-label executives, senior artists and repertoire (A&R) directors, and music publishers to streaming and short-video platform operators, collective-management-organization administrators, copyright lawyers, distributors, and independent and platform-native creators (Table 2). They are identified only by code (C01–C25) because many hold or have held senior positions at named labels, platforms, and rights organizations, and agreed to speak only on condition of anonymity about commercially and legally sensitive matters such as royalty rates, platform agreements, and internal A&R practice; confidentiality was a precondition of their candor and follows standard research-ethics protection of expert informants. Table 2 reports each interviewee's years of experience, professional role, and interview date, which establishes their standing as expert witnesses to the changes analyzed here while protecting their identities. Quotations below are presented verbatim in translation and attributed to these codes.

4. Results: Three reconfigurations of music's commodity form

This section traces, across three eras of media infrastructure, how music's commodity form has been successively reconstituted. Figure 1 summarizes the analytical framework: each era is anchored by a distinct scarcity basis, pricing logic, gatekeeping mechanism, and mode of consumption, and the transitions between them are driven by infrastructural ruptures rather than by changes in the music itself.

Table 2. Profile of interviewees

Code	Years	Professional role	Interview date
C01	10+	An artist who left a label to self-release	December 2024
C02	15+	Singer-songwriter (signed, then independent)	July 2025
C03	10+	Music producer/songwriter	August 2024
C04	10+	PRO administrator	November 2024
C05	10+	Former executive, local streaming platform	November 2025
C06	10+	Music streaming platform operator	December 2025
C07	20+	Physical record distributor/retail-channel operator	January 2026
C08	5	Short-video platform artist-operations specialist	December 2025
C09	10+	Performer/university popular-music instructor	February 2025
C10	10+	Owner of a music aggregation/distribution agency	August 2025
C11	25+	Senior A&R/planning director	December 2025
C12	10+	Artist manager (rights-operations focus)	July 2024
C13	10+	Independent music creator/producer	July 2025
C14	7	Copyright lawyer	December 2024
C15	5+	Taiwan representative, international streaming platform	February 2026
C16	15+	Early digital-music distribution pioneer	January 2026
C17	20+	Mid-level label manager through the piracy shock	November 2025
C18	30+	Senior record-label executive	November 2025
C19	3	Short-video-native music creator	January 2026
C20	15+	Owner of a music-publishing (rights) company	December 2025
C21	5+	Self-releasing independent singer	December 2025
C22	7	Short-video platform music-content specialist	December 2025
C23	10+	Independent label owner	December 2025
C24	10+	YouTube music-channel operator	March 2026
C25	10+	PRO staff member (Hong Kong)	July 2024

Note: "Years" denotes years of industry experience.

Abbreviations: A&R: Artists and repertoire; PRO: Performing-rights organization.

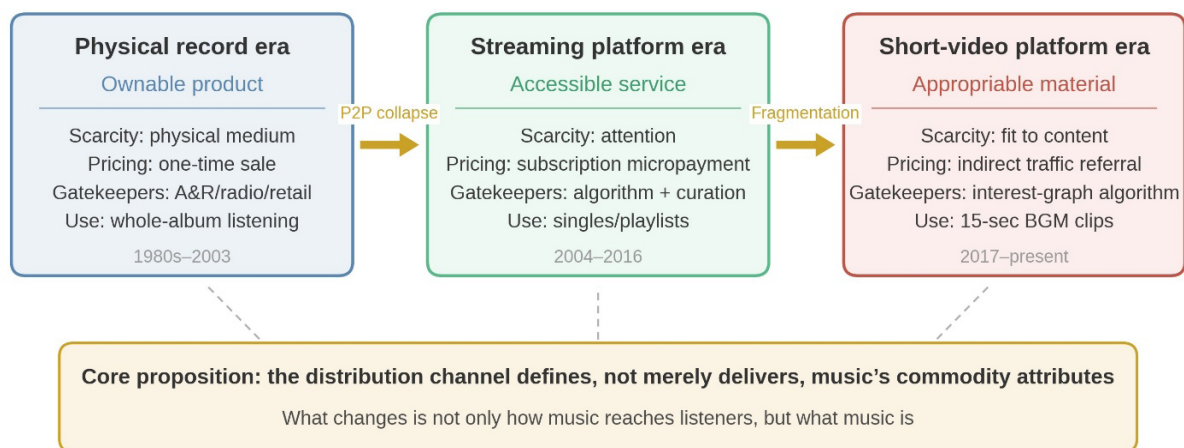


Figure 1. The triple reconfiguration of music's commodity form
Source: compiled by the authors from literature and interviews.

4.1. The product era: physical records as ownable objects (before 2005)

In the era of physical records, music's commodity attributes were determined by the physical carrier. A CD was an object that could be owned, transferred, and collected; the consumer acquired ownership through a one-time purchase, and the value of the music was fully realized at the instant the purchase was completed. The album, as the core unit of sale, bundled 10–15 songs into an indivisible whole, allowing the record company to maximize willingness to pay by bundling high-demand lead singles with low-demand tracks.¹⁵ In Taiwan, the network of record shops constituted the physical infrastructure of music circulation, and its spatial distribution reflected the geography of the consumer market. Interviewee C07 recalled the operating logic of the traditional distribution system:

In the old days of physical distribution, the single most important thing was the stocking strategy. When a new album came out, you had to decide how much volume to ship to each region, which record shops would display it prominently, and how many copies to press in the first run. All of these decisions rested on experienced judgment: get it wrong and you were left with dead stock; get it right, and it sold out, and you ordered more. Music was something with weight and volume; you had to move it, store it, and display it. That physicality determined how the whole industry worked (C07, personal communication, January 2026).

Music in this era possessed clear exclusivity, rivalry, durability, and indivisibility, allowing it to be priced and consumed as a standard commodity. Interviewee C17 recalled how the piracy shock dismantled the material basis of these attributes: when peer-to-peer technology made unlimited copying and instantaneous transmission possible¹⁶, the exclusivity, rivalry, and scarcity of music collapsed almost overnight, and the Taiwan record market shrank by more than 70% within a few years. Aesthetically, the album logic underwrote the era's signature form: the carefully sequenced ballad-led album. Jay Chou, whose catalog later accumulated 3,584 total chart-weeks in the dataset, exemplifies the album artist whose value resided in the coherent record rather than the isolated track.

During the heyday of Taiwan's record industry in the 1990s, annual record sales revenue reached billions of New Taiwan dollars, and major labels each relied on professional distributors to form competing distribution networks.¹⁷ The master-recording cost of an album constituted a fixed cost, whereas reproduction and distribution costs were proportional to output. This structure gave the record industry a typical economy of scale, incentivizing

companies to concentrate resources on the large-scale sale of a few albums rather than cultivating many small-scale products.

4.2. The service era: streaming platforms turn music into accessible data streams (2005–2018)

The institutionalization of licensed streaming reset the terms of the commodity. Under the streaming model, the consumer no longer purchases ownership but obtains access rights through subscription: for a fixed monthly fee, the listener can access a catalog of tens of millions of songs without limit.¹⁸ Music shifts from an ownable product to an accessible service, and once a song can no longer be individually owned, whether it remains a commodity in the conventional sense becomes an open question.¹⁹ Exclusivity disappears, rivalry migrates from physical space to attentional space, and the unit in which value is measured is reset from the album to the play.²⁰ As a regional platform, the service studied sustained its position through a localized strategy of Mandarin-catalog curation and brand extension.²¹

The data provide structural evidence of this shift. Of the 5,537 unique songs, the top 10% (554 songs) account for 60.8% of all chart appearances, and the top 1% (55 songs) for 19.0%, a typical power-law distribution. This concentration is a structural consequence of attentional scarcity replacing physical scarcity: when the catalog expands without limit, what is scarce is no longer the content but the listener's attention, and algorithmic recommendation becomes the central mechanism for allocating it.²² Interviewee C05 described, from inside the platform, the rise of algorithmic power:

Every week, our editorial team curates a new-release recommendation playlist, but to be honest, the influence of editorial recommendations is declining while the weight of algorithmic recommendations keeps rising. In the past, whether a song could take off depended largely on whether we editors were willing to put it into a top playlist. Now the algorithm automatically matches content to users based on their listening behavior, and the editor's role has shifted from decider to assistant. We still curate, but frankly, the algorithm is the real editor-in-chief (C05, personal communication, November 2025).

This account aligns with the finding that platform gatekeeping shifts from editorial to algorithmic curation over the lifecycle of a release²³, and with the argument that streaming playlists are a key site of curatorial power.²⁴ The trend in the annual number of unique charting songs also reflects this change. In 2012, only 224 unique songs charted, whereas by 2022 the number had risen to 500, more than

doubling, in line with the proliferation of releases enabled by digitization.²⁵ Yet the average number of chart weeks per song did not lengthen correspondingly: accelerating content turnover, rather than deeper consumption, became the structural feature of the streaming era. Figure 2 displays this trend, in which the 2012 trough and the 2022 peak bracket the transition.

Multi-platform competition, as global services entered the market alongside the regional incumbent, improved revenue-sharing terms for content providers while increasing the complexity and transaction costs of rights management and intermediation.²⁶ The micropayment logic of streaming also reshaped creators' income.²⁷ Per-play payments are minute, so that even 100,000 plays yield only a few thousand New Taiwan dollars, shifting the realization of value from a one-time album sale to a continuous, micro-scale accumulation per play. Interviewee C02 felt this directly: "The sea of royalties is very deep; right now more than 80% of creators cannot make a living from it" (C02, personal communication, July 2025). The resulting M-shaped polarization of income, in which top catalogs accrue sizable returns while most creators receive little, lies at the center of the debate over whether streaming is bad for musicians.²⁸

This shift also rewired the economics of the catalog. Under the single logic, each track must justify itself independently in the competition for plays, and the value of a catalog is recomputed continuously as the long tail of older songs accrues micro-revenues²⁹; yet the head remains extraordinarily concentrated even as the tail lengthens³⁰, because attention, unlike shelf space, does not expand with the catalog.

4.3. The material era: Short-video platforms fragment music into appropriable background elements (2018–present)

Around 2018, the global rise of short video marked the third reconfiguration. Music is no longer a work consumed in its own right but raw material serving visual content: a song is cut into a 15–60-second fragment, combined with user-generated video, and circulated virally.³¹ Comparative computational analyses of hit songs on Douyin and TikTok confirm that platform architecture, rather than the music alone, increasingly governs which fragments circulate³², a dynamic that has reshaped popular-music dissemination in the Chinese-language market³³ and is part of the broader platformization of Chinese society.³⁴ In this process, the attribute of wholeness is dissolved. The aesthetic consequence is concrete and audible: songs are increasingly

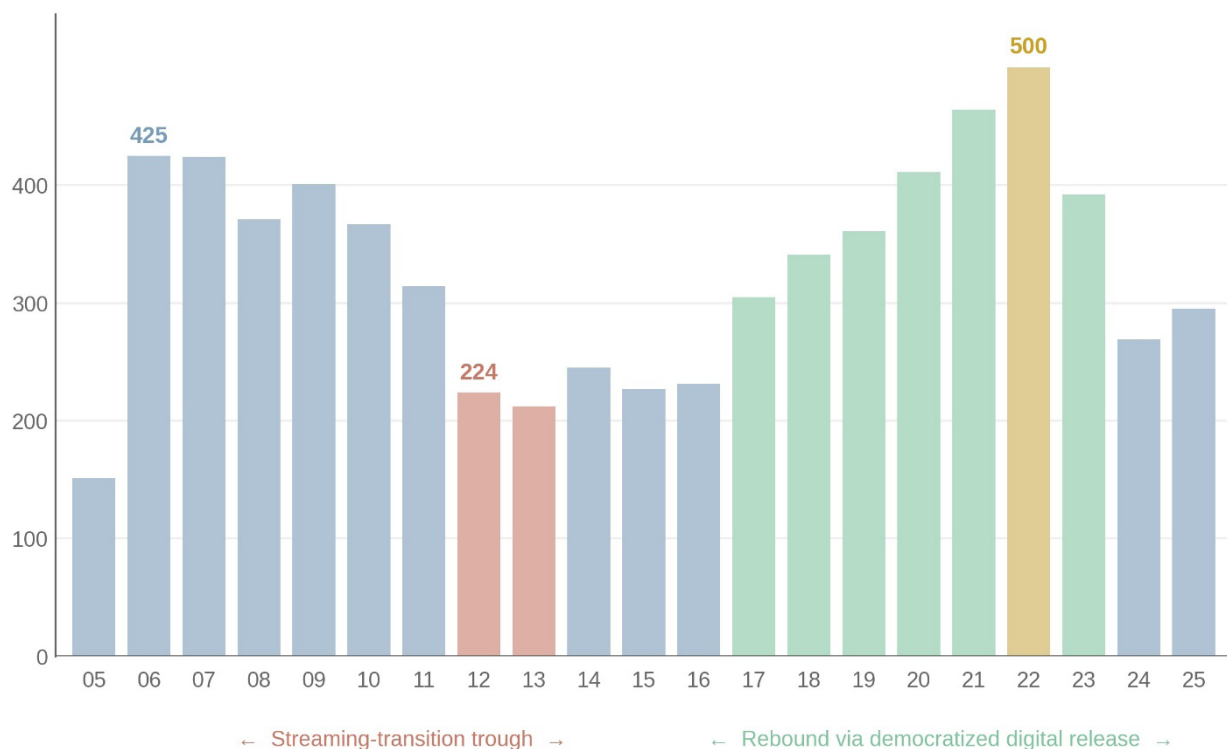


Figure 2. Annual number of unique charting songs (2005–2025)
Source: KKBOX Mandarin weekly charts, $n = 71,931$.

engineered so that a single memorable segment, often the chorus or a post-chorus refrain, arrives within the first 15 seconds, the window in which a short-video viewer decides whether to keep watching. The lifecycle data make the stakes visible, since 16.2% of charting songs disappear after a single week, rewarding songs built for an instant, fragment-scale hook over those built for sustained, album-scale listening.

The platform's artist-support mechanism is actually quite utilitarian. We support you because you can help the platform produce good content and bring in watch time and engagement data. The way traffic allocation shapes creative behavior is very direct: when we find that a certain type of musical content has a high completion rate, we tilt more traffic toward it. Artists quickly sense this preference and adjust their work accordingly. So the platform is essentially training creators through traffic-based rewards and punishments, which is really the same logic as training an artificial intelligence model (C08, personal communication, December 2025).

Interviewee C10 summarized the trend in a single sentence: "People's reception of the visual is certainly greater than that of the audio" (C10, personal communication, August 2025), implying that music's status in a multimodal

content ecology is degrading from subject to accessory. In commodity terms, music in the short-video period has lost wholeness (it is cut into fragments), independence (it is subordinate to visual content), and durability (it turns over rapidly with the heat of the short video). Figure 3 visualizes the resulting distribution of chart weeks per song.

5. The platform as a non-neutral apparatus: Metadata governance and creative structure

5.1. The platformized reconfiguration of artist attribution

If platforms were merely neutral conduits, the presentation of works on a platform should faithfully reflect the facts of their creation. Yet the systematic metadata problems found during data cleaning indicate that the platform's data architecture is itself an institutional apparatus that re-encodes music's commodity attributes.

Among the 71,931 records, 94 cases of double-counting in the annual chart arose from inconsistent artist-name formatting, together with nine sets of artist-name variants. For example, "Eric 周興哲" and "周興哲 (Eric Chou)" are treated as two different artists, accumulating 1,401 and 1,190 chart appearances respectively (2,591 combined);

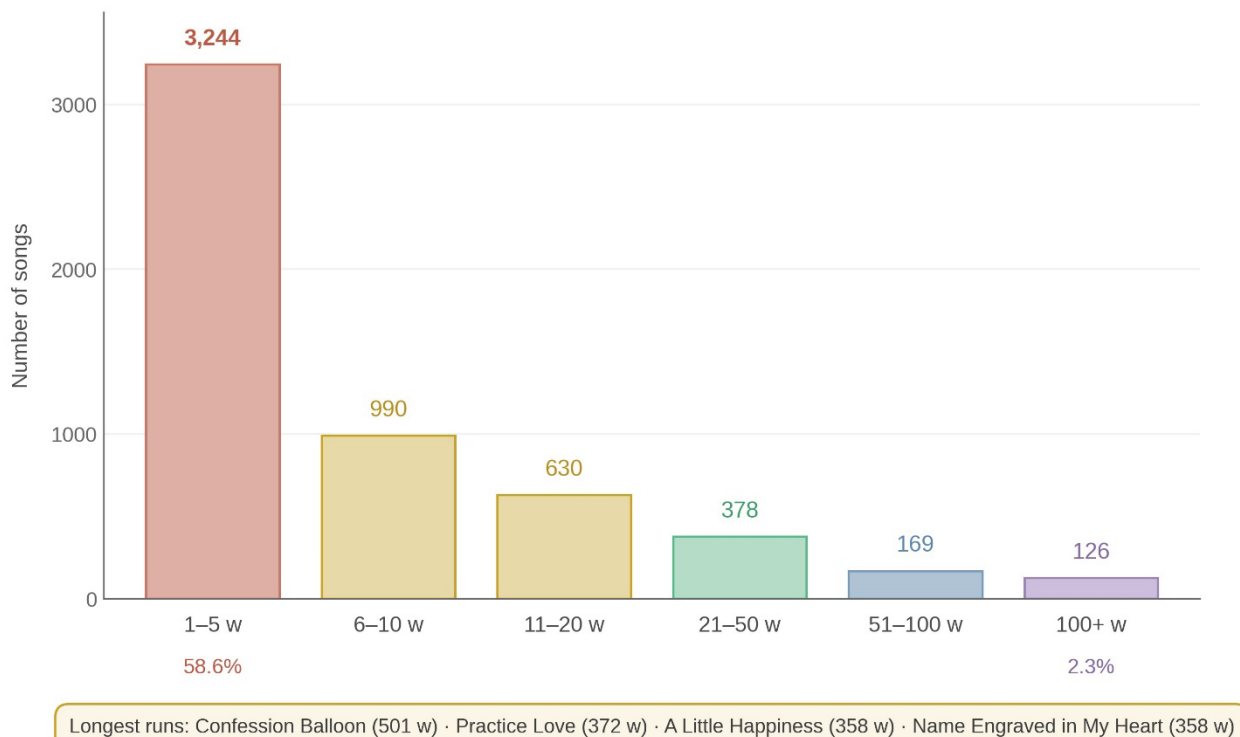


Figure 3. Distribution of chart weeks per song: evergreen head, ephemeral tail
Source: KKBOX Mandarin weekly charts, $n = 5,537$ unique songs.

G.E.M. likewise appears under two labels differing only by a single space. The same song may thus occupy two chart positions because of an attribution format, a systematic information bias for practitioners who rely on chart data. This re-encoding of identity rests on the platform's prior rendering of works and artists as platform-ready data.³

A deeper problem is the dissolution of authorship through the attribution of soundtracks and variety shows. When a film soundtrack is credited as the artist rather than the actual performer, and when the name of a variety show replaces the performer's attribution, the metadata architecture carries out a reallocation of the author function: who the author of a song is ceases to be a settled fact and becomes a mutable attribute constructed by the platform database. Copyright lawyer C14 noted that, in disputes over digital music, the user-generated-content gray zone is increasingly prominent, since a song can become background music for a short video viewed millions of times, and although content-identification mechanisms offer some protection, their coverage and accuracy are far from sufficient, so that large firms can enforce their rights while small creators endure.

5.2. The link between metadata accuracy and revenue distribution

Under a revenue mechanism that charges by play count, inaccurate metadata translates directly into a misallocation of economic benefit, an issue that intensifies as the industry pivots from selling recordings to managing data about recordings.³⁵ Interviewee C04, from a collective-management organization, pointed to this contradiction:

The biggest challenge a collective-management organization faces in the digital age is the gap between the explosive growth of usage scenarios and the capacity to track them. In the past, it was radio, television, karaoke, and public venues, because these scenarios were limited and traceable. But now a single song can appear on hundreds of platforms, in tens of thousands of short videos, and in countless livestream rooms. How do you track that? How do you calculate it? The refinement of digital royalty-distribution mechanisms lags far behind the speed and breadth at which music is used (C04, personal communication, November 2024).

Music-publishing operator C20 felt this keenly: "We have gone from being a publisher to being a rights-data management company; if you do not understand the data, you do not know how much your assets are worth" (C20, personal communication, December 2025). This shift reflects the extension of music's commodity attributes from content to data. In the dataset, the song

"Ye Ke Yi" (也可以) performed by Janice Yan stayed on the chart for 70 weeks under a "Various Artists" label, and Yoga Lin's "Going in Circles" (兜圈) for 62 weeks; if such high-play works cannot be accurately attributed, the economic consequences are considerable. This echoes Hesmondhalgh's¹³ central question of who benefits from creation: platform metadata governance is not merely a technical matter but an institutional precondition of distributive justice.

5.3. The co-shaping of algorithmic distribution and creative structure

Beyond reconstructing identifying attributes, the platform shapes the creative structure of music through algorithmic recommendations, which individuate listeners and thereby condition what creators produce.³⁶ Chord verification of the 420 songs in the annual top 20 shows that songs containing the 4–5–3–6 (IV–V–iii–vi) progression make up as much as 85% of the sample, stable from 2005 to 2025 (annual minimum 70%, maximum 100%, median 85%); such formulaic concentration is consistent with accounts of how hits are industrially manufactured.³⁷ The finding has a dual implication. On the one hand, it reflects the path dependence of Mandarin popular music under the influence of aesthetic tradition and market selection. On the other hand, it reveals the structural reinforcement of homogenization by platform algorithms: when the algorithm rewards content that sounds safe, creators compose within the existing framework, forming a positive feedback loop of algorithmic preference, creative adaptation, data validation, and reinforcement. Figure 4 displays the annual trend.

The aesthetic signature of this template is concrete. Several of the most enduring titles in the sample sit squarely within the 4–5–3–6 idiom of the Mandarin ballad, among them Jay Chou's "Confession Balloon" (告白氣球, 501 chart-weeks) and Hebe Tien's "A Little Happiness" (小幸運, 358 chart-weeks), whose front-loaded, hummable choruses are precisely the material that travels well as a short-video hook. The reconfiguration is, moreover, not only a corporate strategy but a change in the artists' own craft. Several independent and platform-native creators we interviewed (for example, C13, C19, and C21) described composing hook-first, designing the 15-second segment before the full song, which is how the conditions of distribution enter the act of composition; this is the practical face of treating the platform as an artistic device discussed in Section 2.2.¹⁴

Interviewee C09 observed the generational transmission of this effect from the classroom:

I teach popular music at university, and I have found

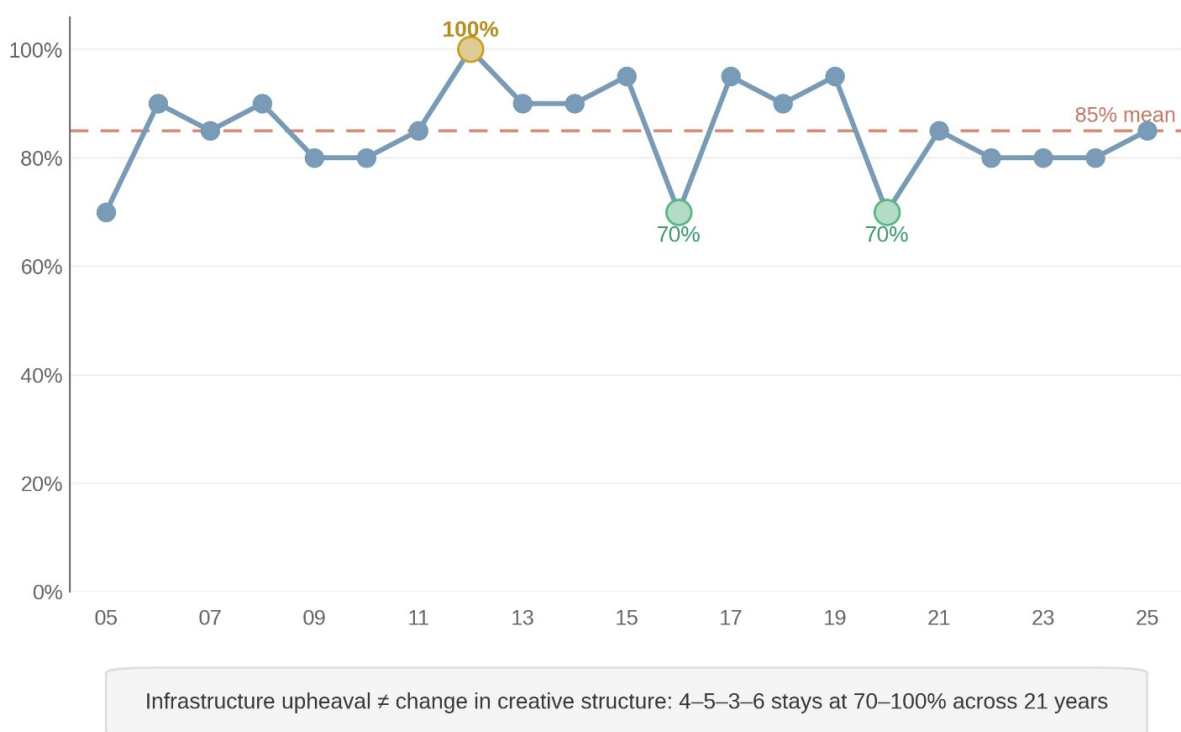


Figure 4. Annual share of songs containing the 4-5-3-6 (IV-V-iii-vi) progression (2005-2025)

Source: annual top 20 chord-verification data, $n = 420$.

that students' creative thinking is completely different from 10 years ago. The starting point for writing a song is no longer melody or chords, but "what kind of short video could this section go with?" One student told me that before writing a song, he first checks on Douyin which types of music have a high completion rate, and then reverse-engineers it. When the starting point of creation becomes adapting to the algorithm rather than expressing oneself, music education needs to rethink what we are teaching (C09, personal communication, February 2025).

This reorientation is enabled by the digitalization of production itself, as the digital audio workstation and the networked studio turned composition into a modular, data-legible practice.^{38,39} The recommendation mechanisms of streaming and short-video platforms nevertheless differ in their power structures, and their opacity has invited treatment of the platform as a black box to be reverse-engineered.⁴⁰ Streaming platforms combine editorial curation with collaborative-filtering algorithms keyed to completion, save, and skip rates; short-video platforms are dominated by interest-graph algorithms keyed to completion, share, and engagement. Senior A&R director C11 confirmed the shift in power: whereas A&R staff once judged a song by ear, younger colleagues now look at the

data first and will not even play a song whose data looks weak.

The Mandarin-language case is distinctive in ways that bear on these dynamics. Unlike the idol-centered, heavily visual production system of Korean pop, in which choreography and the music video are primary creative units⁴¹, Mandopop has historically foregrounded lyrics and melody, with the ballad as a central form; and unlike the Anglo-American market served by globally dominant platforms, the Mandarin-language market is mediated by both regional platforms, with localized curation, and global ones, producing a layered, sometimes competing gatekeeping environment.⁴² The durable prevalence of the 4-5-3-6 progression should therefore be read partly as a feature of a melody- and lyrics-centered tradition, and not solely as an artifact of platform optimization. For Taiwan-region creators, this layering is double-edged: regional platforms afford a measure of local protection for Mandarin content, whereas within global algorithmic frameworks that carry no regional preference, original Mandarin work competes for attention with the entire Anglophone catalog.

6. Conclusion

Through a mixed-methods study combining 21 years of longitudinal Mandarin weekly-chart data with interviews

with 25 practitioners, this paper has advanced and substantiated the proposition that the distribution channel is a commodity-attribute-defining apparatus. Music's commodity attributes have undergone three qualitative changes, from product to service to material, involving a comprehensive transformation in the unit of valuation, the mode of consumption, and the structure of power allocation. The data confirm the concentration effect (the top 10% of songs account for 60.8% of appearances), the fast-in, fast-out rhythm of streaming-era consumption, the non-neutrality of metadata governance, and a positive feedback loop between algorithmic preference and the path dependence of creation, evidenced by the durable 85% dominance of the 4–5–3–6 progression.

The paper's theoretical contribution is to import media infrastructure theory into music-industry research and to reconceptualize the channel from a passive conduit into an active attribute-constructing apparatus. This proposition transcends music: when the circulation channel of any content undergoes a fundamental change, the question is not only how it reaches consumers but whether the content has itself become a different kind of thing. At the practical level, the findings carry value for creators (differentiated release strategies across infrastructures), platform operators (metadata governance as a precondition of distributive justice), and policymakers (algorithmic transparency, metadata standards, and cross-platform data interoperability).

The stability of the 4–5–3–6 share over 21 years also frames the disruptive potential of generative artificial intelligence. Because contemporary music-generation systems are trained on large corpora of existing popular music, they are intrinsically adept at reproducing the high-frequency, formulaic structures the chord data make visible, implying a differentiated threat gradient: the more formulaic and algorithmically optimized a segment of production already is, the more readily it can be automated, whereas work whose value rests on idiosyncratic expression, cultural specificity, and aesthetic judgment is comparatively more defensible. Two qualifications specific to the Mandarin-language case sharpen this point. First, because today's generative systems are trained predominantly on Anglophone material, their command of Mandarin prosody, tone-to-melody alignment, and idiomatic lyric writing remains comparatively weak, which may, for now, shelter the lyric- and melody-centered core of Mandopop from full automation. Second, and conversely, the very harmonic regularity documented here makes the instrumental and arrangement layer of Mandarin pop unusually tractable for current models. The likely near-term outcome is therefore an uneven automation in which

formulaic backing tracks become cheap to generate while culturally and linguistically specific lyric-writing and vocal expression retain a human premium. We offer this as a hypothesis rather than a measured finding, since the technology is evolving too rapidly for settled empirical assessment, and we flag it as a priority for future research on Mandarin-language popular music.

The paper's limitations should be acknowledged. As a Taiwan region-based local platform, the data source may reflect the particularities of the regional market. The three-reconfiguration framework is also an ideal type, whereas in practice the three modes coexist; a listener may, within one day, consume the same song as a service through streaming, as material in a short-video clip, and as a product through a collector's edition. Future research could undertake cross-platform comparisons, consumer experiments, and an extension of the framework to other audio content types such as podcasts and audiobooks.

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Conflict of interest

The authors declare they have no competing interests.

Author contributions

Conceptualization: All authors

Formal analysis: Jim Potseng Yeh

Investigation: Jim Potseng Yeh

Methodology: Jim Potseng Yeh

Writing—original draft: Jim Potseng Yeh

Writing—review & editing: All authors

Ethics approval and consent to participate

This study is a non-interventional social science study based on semi-structured interviews with industry professionals. It involved no clinical, biomedical, or physically or psychologically invasive procedures and collected no sensitive personal data. At the time the fieldwork was

conducted, institutional regulations did not require ethics committee review for non-interventional, interview-based research in the humanities and social sciences; therefore, the study did not undergo formal institutional review board approval. The study was conducted in accordance with the ethical principles of the Declaration of Helsinki. All participants were adults who were informed in advance of the purpose of the study, the intended use of their statements, the anonymization procedure, and their right to decline any question or to withdraw at any time, and all gave informed consent before the interview began. No personally identifying information was recorded, and all participants are referred to solely by anonymized codes (C01 to C25).

Consent for publication

All participants were informed and consented to the possibility that anonymized excerpts from their interviews might be quoted in academic publications arising from this research. No data, images, or other information capable of revealing the identity of any individual participant are included in this manuscript; all interviewees are identified solely by anonymized codes. The authors affirm that the relevant consent records are held by the corresponding author and are available upon reasonable request.

Availability of data

The weekly-chart records analyzed in this study were compiled from weekly charts published by the streaming platform between October 2005 and December 2025. The cleaned dataset supporting the findings of this study is available from the corresponding author upon reasonable request. The interview transcripts are not publicly available.

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