A Tripartite Game Theoretic Model of the Governance of Music Education as a Discipline in Chinese Higher Education

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Abstract

Amid China's current wave of higher education reform and the elevation of aesthetic education in national cultural strategy, music education as a university discipline remains constrained by structural marginalization, program homogeneity and fragmented governance. This study investigates the institutional dynamics and stakeholder misalignments that impede the high quality development of music education in Chinese universities. a conceptual tripartite game theoretic framework is constructed to model the strategic interactions among government, universities and society, using a static complete information game as the baseline and an evolutionary game extension to examine the stability of different strategy profiles. The analysis shows that under existing incentive structures the government tends to adopt regulation oriented policies, universities converge on conformist disciplinary strategies and societal actors remain weakly engaged, forming a suboptimal yet stable Nash equilibrium characterized by limited innovation and low coordination. Evolutionary dynamics further indicate that, in the absence of effective incentives, feedback channels and trust building, cooperative and innovation oriented strategies cannot become evolutionarily stable. Building on these results, the study proposes an optimized governance model that couples differentiated incentives, tripartite dialogue platforms and institutionalized societal participation to shift the system toward a cooperative equilibrium. The research extends the application of game theory to the governance of arts related disciplines and offers a conceptual foundation for future empirical studies on reform in marginalized academic fields.
Keywords: Music Education; Higher Education Governance; Game Theory; Institutional Reform; Strategic Interaction; Chinese Higher Education

Introduction

Against the backdrop of China's national strategy to build a strong educational system and the ongoing development of "Double First-Class" universities, higher education in China has entered a new phase characterized by a strong emphasis on high-quality development (Xu, 2024). The *14th Five-Year Plan for National Education Development* explicitly calls for the optimization of academic and disciplinary structures in higher education, the promotion of comprehensive arts education, and the enhancement of universities' capacity to contribute to national cultural strategy and innovation systems (Xiao, 2023). Furthermore, the 20th National Congress of the Communist Party of China stressed the importance of prospering cultural industries and enhancing the global influence of Chinese civilization, offering fresh momentum for the systemic construction of arts-related disciplines in universities (Gao et al., 2023). As a core component of the national aesthetic education framework, music education not only bears the responsibility of cultivating artistic talent but also plays an irreplaceable role in improving aesthetic literacy and enhancing cultural soft power.

Nevertheless, the current development of music education as a discipline in Chinese higher education institutions is confronted with multiple structural constraints, including marginalization, insufficient resource allocation, and the absence of a standardized evaluation mechanism (Wang, 2024). According to the *Approval and Filing Results of Undergraduate Programs in General Higher Education Institutions (2022)* released by the Ministry of Education, there are over 1,100 music-related undergraduate programs nationwide. However, the system suffers from problems such as curriculum homogenization, overlapping program structures, and a mismatch between talent supply and market demand. In addition, the *China Arts Education Development Report (2021)* points out that although the overall scale of arts education continues to grow, the quality assurance system remains underdeveloped, and the disciplinary status, policy support, and investment intensity for music education do not align with its strategic positioning within national cultural policy (Li et al., 2022; Tu & Duangbung, 2025; Xiao, 2024).

In terms of policy support, a series of documents—including the *National Standards for Teaching Quality in Music Programs* and the *14th Five-Year Plan for Arts Education Development*—have been issued in recent years to standardize and promote the development of music education. However, their implementation has encountered challenges due to internal limitations within universities and the dynamic nature of external societal demands. Governmental institutions, higher education institutions, and society at large represent the three key stakeholders in music education development, yet their interactions are increasingly complex (Wang, 2024; Yang, 2021). The government provides direction and funding through policy tools; universities implement strategies amid limited resources and performance evaluation pressures; and society influences program design and talent cultivation through employment trends and cultural consumption. These three parties do not function in perfect coordination—instead, they often operate in a strategic, competitive, and sometimes conflicting manner, which has hindered the systematic, standardized, and high-quality development of music education as a discipline.

While existing research has primarily focused on music education curriculum reform, faculty development, and teaching models, relatively little attention has been paid to the institutional and strategic dimensions of disciplinary construction. More specifically, there is a clear lack of studies that apply quantitative models to analyze the behavioral logic and interaction mechanisms among the government, universities, and society (Cai & Mountford, 2022; Ming et al., 2023; Yang, 2022). In response to this research gap, this study introduces a game-theoretic approach to model the strategic interactions among the three stakeholders, with the aim of revealing the logic of their decisions and identifying equilibrium strategies that can support sustainable development of the discipline.

This study contributes in three main ways. First, it brings a game theoretic perspective to the governance of music education, a field in which strategic modeling and quantitative analysis remain relatively underdeveloped. Second, it develops a tripartite model that links policy incentives, institutional strategies and societal engagement, thereby explaining how a stable but suboptimal equilibrium emerges in the governance of music education in China. Third, it proposes an optimized governance pathway that can inform both national policy making and future empirical research on reform in arts related and other marginalized academic disciplines. The remainder of this article is organized as follows. The next section reviews the historical development and policy background of music education in China, the multilateral governance structure involving government, universities and society, and existing applications of game theory in educational policy research. The third section presents the game theoretic modeling framework and the evolutionary extension. The fourth section reports the equilibrium analysis of the current governance configuration and elaborates the optimized governance model. The fifth section discusses the theoretical and practical implications of the findings, and the final section concludes with limitations and directions for future research.

Research Objectives

1. To systematically review and analyze the current status, structural challenges, and stakeholder dynamics in the development of music education as a discipline in Chinese higher education;

2. To construct a game-theoretic model that captures the strategic interactions among the government, universities, and society, and to propose an equilibrium-based theoretical framework for optimizing the development pathway of music education disciplines in China.

Literature Review

The Historical Development and Policy Background of Music Education in China

Music education in China has evolved from vocational and teacher-training systems into a multi-level academic discipline aligned with national cultural strategies (Ma & Wang, 2025). Key policy documents such as the Catalogue of Undergraduate Majors (2012), National Standards for Teaching Quality in Music Majors (2018), and the 14th Five-Year Plan for Arts Education (2021) established structural foundations and curriculum guidelines.

Despite this, the discipline faces major challenges. Over 70% of music programs are concentrated in only two fields－musicology and performance－resulting in curricular homogeneity. Furthermore, high-quality resources remain concentrated in elite institutions, while most local universities struggle with outdated pedagogy and weak infrastructure (Kemelbayeva & Kurmanov, 2024).

China＇s music education has achieved institutional completeness but suffers from structural inequality, program isomorphism, and limited curricular innovation.

Multilateral Governance of Music Education: Government, Universities, and Society

The governance of music education involves three core actors: the government, universities, and society. Government policy plays a dominant role, setting standards and funding allocations, but often limits institutional flexibility (Ji et al., 2022). Universities respond strategically to external evaluation systems, frequently prioritizing rankings over disciplinary diversity (Han et al., 2023). In contrast, societal stakeholders—such as employers and cultural sectors－remain marginal in the decision-making process due to fragmented engagement and institutional barriers (Baker et al., 2024; Eikelenboom & Long, 2023).

While models like Collaborative Governance and the Triple Helix suggest potential for actor synergy, real-world collaboration remains limited and lacks policy incentive.

Music education governance in China is marked by policy dominance and weak cross-sector collaboration, creating barriers to responsive and inclusive development (Huang et al., 2025).

Game Theory in Educational Policy and Discipline Development

Game theory offers valuable tools for modeling strategic behavior in education systems, especially in resource allocation and institutional competition (Madani, 2010; Mesterton-Gibbons, 1993). Studies have used game theory to analyze university responses to performance-based policies (Dougherty & Natow, 2020; Ekinci et al., 2022; Shang et al., 2024), but few focus on music or arts education.

Given the multi-actor complexity and value divergence in music education, applying game-theoretic frameworks can help simulate triadic interactions and identify equilibrium solutions. Waeber et al. (2023) calls for game-based modeling to address marginalization and strategy misalignment in arts governance.

Game theory can address the governance asymmetries in music education by modeling tri-party interactions and optimizing policy alignment and resource coordination.

Taken together, the existing literature shows that music education in China has gradually been incorporated into national education and cultural strategies and has developed a relatively complete formal disciplinary structure. Research has documented persistent problems of disciplinary isomorphism, resource concentration in elite institutions and weak cross sector collaboration, and has highlighted the dominant role of government policy and performance based evaluation in shaping university behaviour. At the same time, studies of governance and collaboration in higher education and public policy have proposed models such as network governance, collaborative governance and the triple helix, while game theory has been used to analyse strategic responses to policy incentives in other sectors. However, these strands of work have not yet been integrated into a systematic analysis of how

government, universities and society jointly generate a stable but suboptimal governance equilibrium in music education. In particular, there is still a lack of formal models that translate policy dominance, institutional conformity and societal marginalization into explicit players, strategies and payoffs, and that can explain why existing governance arrangements persist despite policy calls for reform. This study addresses this knowledge gap by constructing a tripartite game theoretic model that captures the strategic interactions among government, universities and society, and by using equilibrium and evolutionary analysis to identify the conditions under which music education governance can shift from a control oriented, low coordination configuration to a cooperative, innovation oriented pathway aligned with the stated goals of high quality development.

Building on this synthesis, the next section specifies the game structure by defining the three players, their strategy sets and utility functions in direct correspondence with the governance patterns and structural issues identified in the literature.

Research Methodology

This is a conceptual and analytical modelling study rather than an empirical survey or experiment. No primary quantitative data are collected; instead, the analysis relies on formal game-theoretic reasoning supported by policy documents and illustrative governance cases. This study adopts a game-theoretic modeling approach to explore the strategic interactions among three key actors government, universities, and society in the governance and development of music education as an academic discipline in China. Rooted in the assumptions of bounded rationality and strategic interdependence, the game-theoretic method enables a structured analysis of how each actor's decisions are influenced not only by their own preferences but also by the anticipated responses of the others.

We construct a static game with complete information to simulate the decision-making process within a policy implementation context. In this framework, the players are defined as:

(i) G (government), which determines the level and structure of policy support or regulatory intervention;

(ii) U (universities), which choose between innovative or conformist disciplinary strategies;

(iii) S (society), including employers, cultural institutions, and the public, which may choose to actively engage (e.g., via partnerships, funding, feedback) or remain passive.

Let the strategy sets for the three players be：

$S_G = \{s_g^1, s_g^2\}$: where s_g^1 represents a supportive/incentive policy and s_g^2 represents a regulatory/control-oriented policy.

$S_U = \{s_u^1, s_u^2\}$: where s_u^1 is an innovative disciplinary strategy and s_u^2 is a conformist one.

$S_S = \{s_s^1, s_s^2\}$: where s_s^1 indicates active participation and s_s^2 represents low engagement or indifference.

Each player seeks to maximize its own utility function U_iU_iU_i, which depends on the combination of strategies chosen by all players. Formally, the game can be expressed as:

$$\Gamma = \langle \{G,U,S\}, \{S_G, S_U, S_S\}, \{U_G, U_U, U_S\} \rangle$$

The payoff structure is specified at a relational rather than numerical level, focusing on ordinal preferences over strategy combinations instead of explicit functional forms. The payoff functions are defined as follows:

1) The government aims to enhance national cultural development and policy legitimacy, which increases when universities adopt innovative strategies and society actively participates.

2) Universities aim to maximize disciplinary recognition and secure resource support, balancing innovation costs against policy incentives.

3) Society's utility increases when high-quality music education outputs benefit public culture and industry needs.

For government, payoffs increase when innovative university strategies and active societal participation jointly enhance policy legitimacy, cultural influence and efficient use of public funds. For universities, payoffs combine disciplinary recognition, funding access and evaluation scores, net of innovation cost. For society, payoffs capture improvements in cultural services, employability of graduates and symbolic status.

Assuming rational choice, the **Nash Equilibrium** $(s_g^*, s_u^*, s_s^*) \in S_G \times S_U \times S_S$ is defined as a set of strategies such that:

$$U_i(s_i^*, s_{-i}^*) \geq U_i(s_i', s_{-i}^*) \quad \forall s_i' \in S_i, \ \forall i \in \{G, U, S\}$$

where s_{-i}^* denotes the equilibrium strategies of the other two players.

For example, under a high-incentive policy s_g^1, universities are more likely to choose an innovative strategy s_u^1 if the perceived support outweighs the risk and cost. This in turn may trigger greater engagement from society s_s^1, resulting in a Pareto-efficient outcome. Conversely, if the government applies strict regulation s_g^2 and universities choose conformity s_u^2, societal actors may perceive a lack of innovation and withdraw participation s_s^2, leading to a sub-optimal equilibrium.

To explore the dynamics beyond the static equilibrium, we extend the model using an evolutionary game framework, introducing a replicator dynamic system to simulate the strategy adjustment over time. Let x, y, z$\in$ [0,1] represent the proportions of G, U, and S choosing their respective "active" strategies $s_g^1 \ s_u^1 \ s_s^1$. The evolution of strategies can be modeled as:

$$\frac{dx}{dt} = x(U_G^1 - \bar{U}_G), \quad \frac{dy}{dt} = y(U_U^1 - \bar{U}_U), \quad \frac{dz}{dt} = z(U_S^1 - \bar{U}_S)$$

where $\bar{U}_i$ denotes the average payoff of all strategies available to player iii. This system allows us to examine whether cooperative, innovation-oriented strategies become evolutionarily stable under specific conditions of incentive strength, risk perception, and external engagement.

In addition to the formal model, this study draws on supportive case-based evidence to ground the theoretical assumptions in practical observations. For instance, the collaboration between the Central Conservatory of Music and the Beijing Municipal Bureau of Culture and Tourism illustrates a partial realization of tripartite interaction with policy support, university reform, and societal contribution. In addition to the formal model, illustrative case evidence is used to ground the assumptions in observed practice. Cases such as the collaboration between the Central Conservatory of Music and the Beijing Municipal Bureau of Culture and Tourism were selected because they involve explicit policy support, institutional reform initiatives and societal participation. These examples do not serve as statistical data but as plausibility checks that help validate the behavioural assumptions and calibrate the relative magnitude of payoffs in the model.Such cases are used to validate the plausibility of strategic assumptions and calibrate potential payoff values in the matrix.

In addition to the formal model, the study draws on supportive case-based evidence to ground the theoretical assumptions in actual governance practice. Illustrative examples, such as recent collaborations between leading conservatories and municipal culture or tourism bureaus, were selected because they feature explicit tripartite interaction among government, universities, and societal partners in the field of music education. These cases are not analysed statistically; instead, they are used to check the plausibility of assumed strategy sets, to identify typical trade-offs in the payoff structure (for example, between policy recognition and innovation risk), and to inform the qualitative calibration of parameter relationships in the model. No numerical simulations or calibrated payoff functions are introduced; instead, the model is used to derive analytical propositions and interpret governance patterns in a stylised manner.

Research Results

In line with the two research objectives, this section reports the model-based results in two steps. First, it uses the tripartite game to diagnose the current governance equilibrium of music education in Chinese higher education (Research Objective 1). Second, it derives an optimized governance pathway and a cooperative equilibrium configuration by adjusting incentive and trust parameters in the model (Research Objective 2).

Analysis of Strategic Equilibrium in the Current Structure

Addressing Research Objective 1, the static game is first used to characterise the existing governance equilibrium for music education in Chinese universities. Rather than calculating numerical equilibria, this section uses the conceptual game framework to diagnose

the prevailing strategy configuration in current governance practice.The strategic interactions among the government, universities, and society in the context of music education governance reveal a structurally imbalanced but relatively stable behavioral configuration (Guan, 2023). Based on the static complete information game constructed in the previous chapter, this section analyzes the equilibrium outcomes generated under different strategic combinations and explains why the existing governance structure tends to gravitate toward a sub-optimal yet persistent equilibrium.

The baseline model assumes rational actors selecting strategies to maximize their respective utility functions under the influence of institutional incentives and behavioral expectations. However, the current incentive structure in China's music education system favors short-term performance metrics and top-down administrative control rather than long-term innovation or collaborative development (Shen et al., 2023). As a result, each actor—government, universities, and society—tends to choose conservative or risk-averse strategies that are individually rational but collectively inefficient.

Under the most commonly observed configuration, the government opts for a regulatory stance with limited differentiated incentives s_g^2, universities respond by conforming to standardized evaluation criteria s_u^2, and societal actors remain passive or disengaged due to unclear roles and benefits s_s^2. This leads to a Nash equilibrium (s_g^2, s_u^2, s_s^2), where no actor has sufficient motivation to unilaterally deviate from their current strategy given the behavior of the others. Formally:

$$U_i(s_i^*, s_{-i}^*) \geq U_i(s_i', s_{-i}^*) \quad \forall s_i' \in S_i, \ \forall i \in \{G, U, S\}$$

This equilibrium is sub-optimal because it results in limited innovation, fragmented cooperation, and low systemic adaptability. Yet it remains stable in practice because deviating from it involves institutional risks, uncertain payoffs, and weak trust mechanisms. For example, if a university attempts to innovate s_u^1 while the government remains regulatory and society disengaged, it may incur high costs with limited recognition or support—thus rationalizing a return to conformity.

Incentive misalignment plays a critical role in reinforcing this sub-optimal structure. The government often lacks precise instruments to reward innovation in disciplines like music education, whose outcomes are qualitative and long-term (Branch et al., 2025). Consequently, universities internalize this risk and avoid allocating resources to experimental or interdisciplinary programs. Society, lacking mechanisms for feedback, influence, or shared governance, does not exert meaningful pressure on institutional agendas. The result is a constrained strategic space where innovative configurations are theoretically possible but practically infeasible.

To assess whether this equilibrium can evolve under repeated interaction, the study applies a simplified evolutionary dynamic system. Let x, y, z∈ [0,1] represent the proportions of actors adopting the "active" strategies (s_g^1 , s_u^1 , s_s^1). The evolution of strategies over time can be expressed as:

$$\frac{dx}{dt} = x(U_G^1 - \bar{U}_G), \quad \frac{dy}{dt} = y(U_U^1 - \bar{U}_U), \quad \frac{dz}{dt} = z(U_S^1 - \bar{U}_S)$$

The model suggests that unless at least one actor consistently improves its relative utility through a shift toward engagement or innovation, the system will revert to its equilibrium trap. The lack of communication channels, shared platforms, or institutionalized incentives further suppresses the emergence of cooperative evolution. From an evolutionary perspective, defensive strategies dominate as long as they yield at least comparable expected returns in repeated interactions; cooperative configurations are fragile unless supported by credible incentives and trust-building mechanisms.

Theoretical Interpretation and Real-World Mapping

The game-theoretic model constructed in this study provides not only a conceptual framework for understanding strategic behavior in the governance of music education but also a robust interpretive tool for explaining persistent structural dilemmas observed in the Chinese higher education context. By modeling the interactions among government, universities, and society as interdependent strategy selections based on perceived utility, the model allows us to reframe familiar governance challenges in terms of strategic rationality and incentive alignment.

One of the most salient real-world reflections of the model lies in the phenomenon of disciplinary isomorphism across music education programs. The widespread replication of similar academic structures—such as musicology and performance—despite diverse institutional missions, can be understood as a rational conformity strategy by universities. Facing uniform evaluation criteria and limited policy flexibility, universities minimize risk and optimize funding security by aligning with recognized models rather than exploring innovation.

This behavioral outcome corresponds closely to the model's equilibrium s_u^2 , where conformity maximizes expected utility under existing conditions.

A second observable issue is the reform stagnation in local institutions, especially those outside the "Double First-Class" initiative. While central policies often advocate aesthetic and interdisciplinary education, local universities frequently lack the fiscal autonomy, strategic clarity, or institutional support to act upon such directives (Pan & Songco, 2023). According to the model, this reluctance is not the result of ignorance or inertia, but of a rational cost–benefit calculation. Without guaranteed long-term rewards or buffering mechanisms, universities have no strategic incentive to deviate from status-quo strategies.

The model also explains the limited and fragmented role of society—including cultural industries, parents, and civil organizations—in shaping music education. In the absence of clearly institutionalized mechanisms for input, representation, or reward-sharing, societal actors are rationally disincentivized from active engagement. This aligns with the equilibrium

outcome s_s^2 , where passive participation reflects a strategic retreat from a low-payoff environment. Consequently, societal expectations become reactive rather than constructive, and their potential contributions to curriculum reform, quality assurance, or public cultural value remain underutilized.
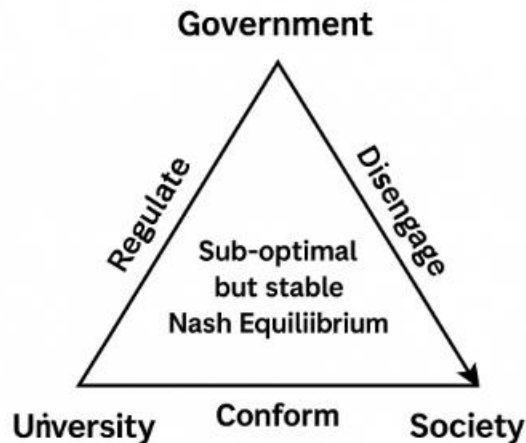

Figure 1 Strategic Interaction Structure and Low-Coordination Equilibrium in Music Education Governance

The theoretical mapping presented reveals that the current configuration of music education governance in China reflects a structurally embedded sub-optimal equilibrium. This equilibrium is not simply a product of institutional inertia or normative failure, but the outcome of strategic interactions under constrained incentives and fragmented feedback systems. Despite formal policy support, the triadic relationship among government, universities, and society remains characterized by regulatory rigidity, institutional conformity, and societal disengagement.

To provide a visual representation of this interaction logic, Figure 1 depicts the prevailing strategic configuration across the three actors. The government predominantly adopts a control-oriented approach, universities replicate standardized models to minimize institutional risk, and society participates passively, if at all. This strategy set constitutes a Nash equilibrium in which no actor is incentivized to deviate unilaterally, even though the aggregate outcome is inefficient from a systemic development perspective. The diagram highlights the critical bottlenecks and asymmetries in the existing structure, serving as both a diagnostic tool and a foundation for the optimization framework proposed in the subsequent section.

Structuring an Optimized Pathway for Music Education Governance

Responding to Research Objective 2, the model is then used to derive an optimized governance pathway for music education. Building upon the equilibrium analysis and theoretical mapping in the preceding sections, this study aims to develop a structurally optimized pathway for music education governance that transcends the limitations of the current sub-optimal equilibrium. Rather than offering fragmented policy advice, the goal is to

reconstruct the interactive logic among government, universities, and society based on realigned incentives, improved institutional coordination, and behaviorally sustainable mechanisms. This fulfills the second objective of the study: to construct a theoretically grounded and practically adaptable model for reform.

The starting point of this optimization lies in acknowledging that the current equilibrium is not inherently irreversible—it is a rational response to a misaligned incentive structure and insufficient systemic trust. Therefore, a redesigned governance model must address three core deficits identified in the game-theoretic analysis: (1) the absence of positive-sum incentives, (2) the lack of institutionalized feedback and communication channels, and (3) the underutilization of societal engagement as a co-productive force.

In the optimized structure, the government no longer acts solely as a regulator but evolves into a multi-dimensional enabler. It adopts a differentiated incentive system that rewards universities not only for compliance with national priorities but also for context-sensitive innovation, interdisciplinary exploration, and collaborative practices. These incentives may include performance-contingent funding, policy flexibility, and recognition mechanisms for localized excellence. In game-theoretic terms, this adjustment increases the utility payoff of the "innovate" strategy s_u^1 for universities, making deviation from conformity rationally attractive under the new conditions.

Universities, in turn, transition from reactive actors to strategic innovators. Rather than merely responding to top-down expectations, they begin to internalize development goals and reposition music education as a cross-functional academic field. This requires restructuring internal performance evaluations, promoting interdepartmental cooperation, and investing in faculty development for digital and cross-media capacities. The optimized model assumes that universities are capable of making calculated long-term strategic shifts, provided the environmental risks are reduced and the benefits are tangible.

Society is repositioned in this model from a peripheral audience to a co-constructive partner. This requires formalizing channels for participation and ensuring that societal stakeholders—such as cultural organizations, industry representatives, and community networks—have a voice in curriculum design, program evaluation, and outcome dissemination. Crucially, the system must provide calculable and symbolic returns to these actors, whether in the form of visibility, cultural capital, or shared access to educational resources. This transforms society's engagement from reactive to proactive, aligning its interests with those of the other two players.

At the systemic level, this tripartite coordination is sustained through the introduction of platform-based governance mechanisms—policy labs, joint councils, or digital forums—that function as dynamic feedback systems. These platforms reduce information asymmetry, build trust through repeated interaction, and allow for the real-time recalibration of strategies in response to contextual changes. The optimized pathway, thus, does not rely on one-time reform, but envisions governance as a continuous evolutionary process marked by institutional learning and adaptive co-regulation.

Table 1. Optimized pathway model: Variables and mechanisms overview

Variable Category	Variable / Element	Academic Function / Description
Strategic Actor	**Government**	State actor responsible for policy design and resource allocation; in the optimized model, shifts from regulator to multidimensional enabler to encourage innovation.
	University	Institutional actor implementing academic programs; transitions from compliance-driven unit to strategic innovator under restructured incentives.
	Society	Societal stakeholders (industry, culture sectors, communities); redefined from passive observers to co-constructive participants with formal input mechanisms.
Strategy Option	**Regulate vs. Incentivize (G)**	Government's shift from control to incentive governance alters universities' strategic payoffs, encouraging proactive engagement in reform.
	Conform vs. Innovate (U)	University's strategic choice between replicating standard models or exploring interdisciplinary, localized innovation affects system equilibrium.
	Disengage vs. Engage (S)	Society's engagement depends on perceived returns and structural integration in governance and curriculum development.
Incentive Mechanism	**Performance-Based Funding**	Rewards innovative academic efforts; alters universities' utility calculus and encourages deviation from risk-averse behaviors.
	Differentiated Evaluation	Shifts assessment from uniformity to diversity; supports tailored excellence in music education program development.
	Autonomy and Flexibility	Enables localized, risk-adjusted reform by expanding universities' discretionary space within strategic frameworks.
	Cultural Capital Feedback	Offers societal stakeholders symbolic value and access benefits, increasing motivation to participate in co-governance.
Game Evolution Enabler	**Repeated Interaction**	Allows for adaptive learning and behavioral shifts over time; critical for transitioning from static to cooperative equilibrium.
	Information Transparency	Reduces asymmetry and misperceptions across actors, improving coordination and reducing defection risks.

Variable Category	Variable / Element	Academic Function / Description
	Trust Accumulation	Built through repeated, low-conflict interactions; enables long-term cooperation and multi-actor synergy.
	Feedback Loops	Responsive institutional adjustments to actor behavior reinforce trust and promote strategic recalibration.
Institutional Mechanism	**Tripartite Dialogue Platforms**	Establishes structured forums for consultation, resource coordination, and joint decision-making among government, universities, and society.
	Innovation-Outcome Coupling	Links innovative efforts to resource access and recognition, increasing universities' expected utility from reform participation.
	Public-Private Benefit Sharing	Aligns incentives by ensuring societal actors derive tangible or symbolic gains through their engagement in university governance.
	Incentive Compatibility	Ensures all actors benefit from cooperation, stabilizing a new equilibrium where defection becomes irrational.

To systematically illustrate the theoretical reconstruction proposed in this study, Table 1 consolidates the core strategic variables, incentive mechanisms, and institutional factors that underpin the optimized governance pathway for music education. Each variable reflects a shift in actor behavior or system architecture, transitioning from the current risk-averse equilibrium to a collaborative and innovation-oriented configuration. These elements are not isolated; rather, they are interdependent components of a complex interaction system where incentive alignment, strategic recalibration, and trust accumulation co-determine the sustainability of reform.

Figure 2 complements this tabular framework by visualizing the dynamic flow of strategic transformation across three actor domains—government, universities, and society—through a multilayered process of policy realignment, institutional innovation, and participatory integration. The flowchart highlights how the reconfiguration of utility payoffs and behavioral incentives facilitates a movement from a sub-optimal Nash equilibrium to a cooperative strategic equilibrium. In doing so, it underscores that governance evolution is not the result of unilateral directives but a consequence of rational, repeated interactions supported by enabling institutional conditions. Together, Table 1 and Figure 2 offer a coherent analytical synthesis that anchors the proposed model in both theoretical abstraction and implementation logic.
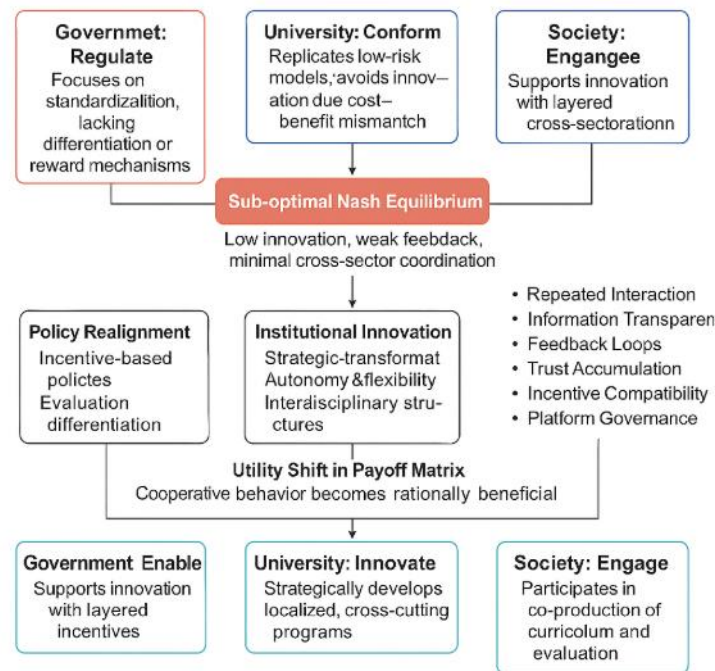
Figure 2. Optimised Tripartite Governance Pathway: From Low-Coordination to Cooperative Equilibrium

1. Discussions

This study pursued two main objectives. The first was to diagnose the structural and behavioural dilemmas that constrain the development of music education as a discipline in Chinese higher education. The second was to construct an optimized governance pathway through a tripartite game theoretic model that realigns incentives and reshapes interaction among government, universities, and society. The discussion therefore returns to these objectives by interpreting the diagnosed equilibrium, considering the implications of the optimized pathway, and highlighting broader theoretical and practical contributions.

Interpretation of the diagnosed equilibrium (Objective 1)

The game theoretic analysis shows that the current governance of music education in China tends to converge on a suboptimal but stable equilibrium. In this configuration, the government relies mainly on regulatory control and uniform evaluation, universities respond with conformity to standard program models, and societal actors remain weakly engaged. This pattern is consistent with empirical descriptions of music education as structurally marginal within university systems and only partially aligned with national cultural strategies. Wang (2024) documents how music education in Chinese colleges and universities continues to face constraints in terms of resources, policy implementation, and recognition, despite growing rhetorical support. Guan (2023) similarly observes that institutional management modes often emphasise administrative compliance rather than disciplinary innovation, which helps explain why universities treat conformity as a rational response to top down performance pressures. At the level of quality assurance, Li et al. (2022) show that performing arts education still lacks mature multi dimensional evaluation mechanisms, which reinforces risk aversion and

discourages investment in experimental or interdisciplinary programs. Taken together, these studies support the model's conclusion that conservative strategies by all three actors are not accidental but arise from a shared incentive structure that privileges short term stability over long term innovation.

The diagnosed equilibrium also clarifies why recent reforms in aesthetic education and higher education have not automatically transformed the position of music education. Xu (2024) and Xiao (2023) point out that national initiatives such as Double First-Class development and digital transformation have reshaped university priorities and strengthened performance orientation, but these system level strategies often translate into intensified competition in research and technology fields rather than renewed support for arts disciplines. Ma and Wang (2025) further show that the integration of technology into music education is uneven and depends on institutional agendas and capacity. Pan and Songco (2023) emphasise that effective implementation of aesthetic education reform requires an internal culture of collaboration and shared leadership, which is difficult to build when evaluation criteria remain narrow and resource allocation is centralised. The equilibrium identified in this study provides a behavioural explanation for these observations. It shows that under current conditions, universities maximise expected utility by reproducing familiar program structures in music rather than experimenting with new forms that might not be recognised or rewarded in existing policy frameworks.

Implications of the optimized pathway (Objective 2)

The second objective was to design an optimized governance pathway that can move the system away from this suboptimal equilibrium toward a more cooperative arrangement. The model suggests that such a transition depends on changes in both incentives and institutional mechanisms. From a policy perspective, the shift from control oriented regulation to incentive oriented governance resonates with broader debates on performance funding and strategic choice in higher education. Dougherty and Natow (2020) show that performance based funding in higher education can significantly shape institutional behaviour, but its effects depend on how indicators are designed and how risks are distributed. If incentives focus narrowly on quantifiable outputs, universities may become even more risk averse. Ekinci et al. (2022) demonstrate that combining multi criteria decision methods with game theory can help anticipate the strategic consequences of different policy options, which supports the idea that policy makers should carefully model how universities and other actors will respond to new funding or evaluation schemes. Building on these insights, the optimized pathway proposed in this study advocates differentiated performance criteria, explicit recognition of innovation in music education, and policy instruments that reduce the cost of experimentation for universities.

The model also indicates that governance reform cannot rely on incentive redesign alone. It highlights the need for repeated interaction, trust building, and institutionalised feedback mechanisms among the three actors. Shang et al. (2024) use a game theoretic perspective to explain non performance oriented behaviour in local governments under performance based promotion systems, and they emphasise that actors will favour defensive strategies when they lack credible signals that innovation will be rewarded and when communication channels are weak. Ji et al. (2022) argue that the effectiveness of policy

instruments depends on the broader mix of tools and on the capacity to adjust them in response to feedback, which supports the introduction of tripartite dialogue platforms and joint councils in the optimized model. Huang et al. (2025) further show that collaborative strategies shape network structures in local governance, indicating that once new forums for interaction and trust building are institutionalised, they can gradually change the underlying patterns of cooperation. In this sense, the optimized pathway proposed here combines incentive compatibility with structural mechanisms that make cooperative strategies both rational and sustainable.

Broader theoretical and practical contributions

Beyond addressing the two specific objectives, this study contributes to wider discussions on educational governance and the development of marginalised academic disciplines. On the theoretical side, it extends work that has examined collaborative and network governance in other policy domains and applies similar concerns to the arts and humanities. Wang and Ran (2023) compare network governance and collaborative governance and point out that formal structures of cooperation can coexist with deep seated tensions and entanglements. Yu et al. (2021) show how top down intergovernmental relations can limit local agency in urban redevelopment, even when participatory language is used. By modelling music education governance as a tripartite game among government, universities, and society, this study offers a behavioural explanation for why collaborative rhetoric around aesthetic education often fails to produce genuine co production in practice. It replaces general references to "governance failure" with a structured account of how rational strategies interact under misaligned incentives and incomplete feedback loops.

Practically, the findings suggest several directions for stakeholders. For policy makers, the model underscores the importance of designing funding and evaluation regimes that explicitly reward innovation, interdisciplinarity, and social engagement in music education rather than treating these programmes as peripheral to core institutional performance. For universities, especially those outside the most elite tier, the analysis highlights the strategic value of repositioning music education as a field where cross departmental collaboration, digital development, and community partnership can be piloted under more supportive conditions. For societal actors, including cultural institutions and community organisations, the study points to the need for formalised roles and benefit sharing arrangements so that engagement in music education governance generates tangible and symbolic returns. Ma and Wang (2025) remind us that technology empowered music education can expand reach and impact when embedded in supportive structures, and Pan and Songco (2023) illustrate how collaborative cultures at faculty level can translate policy discourses on aesthetic education into concrete practice. Taken together, the game theoretic model and the optimized pathway provide a conceptual foundation for future empirical work that tests these propositions in specific institutional and regional contexts.

Overall, the discussion shows that the governance of music education in Chinese higher education is best understood as the outcome of strategic interaction under particular incentive and institutional conditions. By diagnosing the existing equilibrium and outlining a feasible cooperative alternative, this study offers both an analytical lens and a reform oriented roadmap

for enhancing the disciplinary development of music education and, by extension, other marginalised fields in the arts and humanities.

Conclusion

This study examined the strategic and institutional dynamics of music education governance in Chinese higher education through a tripartite game theoretic framework. In response to long standing challenges of policy centralization, institutional conformity, and weak societal participation, it pursued two core objectives, to diagnose the behavioural logic underpinning the current governance configuration and to outline a feasible pathway for its optimization.

The findings indicate that government, universities, and society are currently locked into a stable low coordination equilibrium in which cooperation is discouraged and innovation remains marginal. This configuration persists because, under existing incentives and trust conditions, none of the three actors can improve its position by unilaterally changing strategy, even though the overall outcome is clearly inefficient. Building on the static and evolutionary game analysis, the study proposes an alternative configuration in which the government shifts from control to enabling incentives, universities move from passive compliance to proactive innovation, and societal actors participate as co producers rather than peripheral observers. In this form, the model combines analytical rigour with practical relevance for overcoming governance inertia in under resourced academic disciplines.

Several limitations should be acknowledged. The model is based on stylized assumptions of rational behaviour and relatively complete information, which do not fully reflect cognitive biases, information asymmetries, and institutional frictions that shape real decision making. The analysis is also primarily conceptual and theoretical. Although it is informed by policy documents and structural trends, more systematic empirical validation through case studies, interviews, or longitudinal data would strengthen the framework. In addition, the heterogeneity among different types of universities and regional cultural institutions is not analysed in depth, which may limit the generalizability of the proposed pathway.

Future research can extend this work by applying the framework to comparative case studies that examine how different governance models operate across institutional types and regions. Further studies could incorporate bounded rationality, policy shocks, and learning processes among actors in order to develop more adaptive versions of the model. Expanding the analysis to include additional stakeholders, such as international partners or digital platforms, would also help to capture how music education governance evolves in an increasingly interconnected and digitally mediated higher education environment.

Overall, the study offers a novel theoretical lens and a reform oriented roadmap for revitalizing music education in China. Beyond this specific disciplinary context, it illustrates how tripartite game theoretic analysis can be used to rethink and redesign the governance of marginalized fields within contemporary higher education systems.

Suggestion

Based on the game-theoretic analysis and the optimized governance model developed in this study, several targeted recommendations can be proposed to support the sustainable development of music education as a disciplinary field in Chinese higher education. These recommendations are designed to enhance strategic coordination, improve incentive compatibility, and promote inclusive institutional participation among the three principal stakeholders: government, universities, and society.

For policymakers, it is essential to shift from a regulation-centric model toward an enabling governance structure. This involves the introduction of differentiated, performance-based funding mechanisms that reward context-sensitive innovation, interdisciplinary integration, and social outreach within music education programs. Evaluation frameworks should be reformed to include qualitative indicators such as cultural contribution, public engagement, and curriculum innovation, thereby reducing the strategic attractiveness of standardized conformity. In addition, the establishment of long-term policy platforms—such as regional arts education councils or tri-sectoral digital governance forums—can institutionalize communication and feedback among actors, facilitating adaptive and collaborative policy cycles.

For universities, especially those outside the elite tier, there is a strategic imperative to reposition music education from a legacy-oriented field to a site of pedagogical and organizational innovation. Internal governance structures should be reconfigured to support cross-departmental collaboration, digital media integration, and faculty development in emerging areas such as community arts, sound technology, and intercultural communication. Universities should also play a more active role in shaping policy dialogues by piloting new program models and articulating their institutional needs through coordinated channels.

For societal stakeholders, including cultural industries, local communities, and nonprofit organizations, the study recommends a transition from symbolic support to substantive co-production. Stakeholders should be institutionally recognized as governance partners with access to decision-making mechanisms and benefit-sharing arrangements. This could include co-designed courses, joint cultural festivals, and public–academic research collaborations. Building such partnerships would not only expand the societal impact of music education but also strengthen its legitimacy and sustainability within the broader higher education ecosystem.

These recommendations collectively aim to foster a cooperative strategic equilibrium in music education governance, in which all actors are incentivized to contribute, innovate, and engage. While the specific instruments may vary across institutional and regional contexts, the triadic framework developed in this study offers a transferable model for building trust-based, incentive-aligned, and participatory systems of academic governance.

New Knowledge

This study develops a tripartite game theoretic governance model that explains why music education in Chinese higher education is trapped in a stable but low coordination equilibrium and how this configuration can be transformed into a cooperative and innovation oriented one. Figure 1 summarizes the diagnosed equilibrium trap by depicting the prevailing strategy combination of regulatory dominance by government, conformity by universities, and disengagement by societal actors. Building on this diagnosis, Table 1 specifies the core strategic actors, strategy options, incentive mechanisms, evolutionary enablers, and institutional arrangements that together constitute the optimized governance pathway. Figure 2 visualizes the new governance model by showing how incentive realignment, feedback platforms, and tripartite coordination gradually shift the system from the sub optimal equilibrium to a cooperative equilibrium. Taken together, these visual elements and the accompanying analysis provide a synthesized and easy to apply framework that differs from existing descriptive or normatively collaborative models and can be adapted for reform in other marginalized academic disciplines.

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