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Drivers of Sustainable Development in Commercial Martial Arts Gyms: The Mediating Role of Customer Perceived Value

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ABSTRACT
This mixed-method study examined the sustainable development of commercial martial arts gyms in Beijing, China. The research combined structured interviews with 15 experts, a questionnaire survey of 360 valid respondents, SmartPLS-based partial least squares structural equation modeling (PLS-SEM), and a follow-up focus group of 13 practitioners and experts. The findings show that Beijing gyms benefit from rising health awareness and supportive public policy, yet face uneven coaching quality, high venue costs, weak youth engagement, limited market positioning, and uneven digital adoption. Policy support, cultural inheritance, operations management, and a diversified income structure each exerted significant positive effects on sustainable development, both directly and through customer perceived value. The structural model explained 52.7% of the variance in sustainable development and 42.1% of customer perceived value. The study concludes that sustainable development requires policy guidance, culturally grounded service design, professional operations, diversified revenue, and continuous improvement of customer value.
Keywords: commercial martial arts gyms; sustainable development; policy support; cultural inheritance; customer perceived value

1. INTRODUCTION

Chinese martial arts gyms increasingly operate at the intersection of traditional cultural transmission, public fitness, and commercial sport services. Beijing provides a particularly important setting because national fitness policies, cultural-heritage initiatives, and a large urban consumer market create opportunities for growth while also intensifying competition. Commercial gyms are expected to provide safe and effective instruction, preserve the ethical and cultural meanings of martial arts, and respond to changing expectations for convenience, digital access, and diversified experiences (Guo & Chueachainat, 2024).

The original thesis identifies a sector with expanding demand but uneven development. Youth and older adults remain visible participant groups, whereas young adults are less consistently engaged with traditional martial arts. Established gyms often provide structured curricula and experienced coaches, but smaller institutions face recruitment, retention, and resource constraints. High rents in core districts, competition from fitness and combat-sport providers, and unclear market positioning further limit resilience.

The study therefore treats sustainability as a multidimensional organizational outcome rather than a single financial indicator. It links external policy support and cultural inheritance with internal operations, revenue structure, and customers' perceived value. This framing recognizes that the long-term viability of a martial arts gym depends on the interaction between institutional legitimacy, service quality, financial health, and cultural relevance (Drucker, 2019; Mehrenberg, 2013).

Beijing is also a useful case because the city combines strong administrative capacity with a highly competitive consumer market. A gym may have access to public programs and a large potential customer base, yet still struggle if its location is expensive, its teaching proposition is unclear, or its service experience is inconsistent. The original thesis therefore treats the gym as an organization embedded in a wider ecosystem of municipal policy,

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neighborhood demand, schools, families, cultural institutions, and competing sport providers. This ecosystem perspective helps explain why the same policy environment can produce different outcomes across gyms.

The commercial setting creates a further tension between standardization and authenticity (Khotimah, & Lusiana. 2026). Standardized curricula, safety procedures, coach qualifications, and measurable customer outcomes are necessary for trust and operational control. At the same time, martial arts customers often seek a sense of lineage, discipline, identity, and belonging that cannot be reduced to a generic fitness package. Sustainable development consequently requires managers to translate cultural meaning into reliable services without turning cultural practice into a superficial marketing symbol. The study addresses this tension by connecting cultural inheritance to customer perceived value and then to organizational sustainability.

The study pursued three purposes: (a) to describe the current sustainable-development situation of commercial martial arts gyms in Beijing; (b) to test the positive effects of policy support, cultural inheritance, operations management, and diversified income structure on sustainable development, including the mediating role of customer perceived value; and (c) to formulate an implementation-oriented development approach from expert consensus.

The population scope covered Beijing experts, gym managers, employees, members, parents, and related stakeholders. The geographical scope was Beijing, China. The variable scope comprised policy support, cultural inheritance, operations management, diversified income structure, customer perceived value, and sustainable development. The empirical stages used 15 structured-interview participants, 360 valid questionnaires, and 13 focus-group participants. Theoretically, the study integrates cultural inheritance and customer value into a sustainability model for commercial martial arts organizations. Practically, it offers policymakers and gym operators a tested evidence base for targeting subsidies, improving facilities and coaching, diversifying services, and strengthening cultural branding. The findings also clarify how cultural value becomes organizational value through customer experience and perceived benefits.

2.LITERATURE REVIEW

Sustainable development in sport organizations requires the coordination of economic viability, social legitimacy, and long-term resource stewardship. In commercial martial arts gyms, sustainability is shaped by the institutional environment in which facilities operate, the quality of services delivered, and the ability to retain participants over time. Policy instruments such as venue subsidies, tax incentives, national fitness programs, and cultural-heritage initiatives reduce environmental uncertainty and may improve access to resources (Beijing Municipal Government, 2020; National General Administration of Sports, 2019, 2021).

Cultural inheritance is not a decorative addition to the business model. Martial arts gyms transmit embodied knowledge, etiquette, narratives, and community practices. When cultural content is embedded in curricula and events, it can deepen emotional attachment and differentiate a gym from generic fitness providers. At the same time, cultural transmission must be communicated in ways that are accessible to contemporary participants. This balance between continuity and adaptation is central to the sustainable use of martial arts as cultural capital (Gao & Liu, 2022; Kim & Park, 2022; Li, L., Chen, & Luo, 2023).

Operations management provides the organizational infrastructure for sustainability. Resource allocation, scheduling, human-resource development, customer relationship management, and digital systems affect both cost control and service reliability. Research on digital transformation in commercial gyms emphasizes that online registration, class scheduling, communication, and data-supported decision-making can improve efficiency and customer convenience (Lee, H., Kim, & Park, 2020; Johnson, M., & Roberts, 2022).

Diversified income structure reduces dependence on a single tuition stream. Course packages, events, venue rental, cultural products, sponsorships, and online services can broaden revenue while increasing the number of ways participants interact with the organization. However, diversification should remain consistent with the gym's cultural identity and service capabilities; otherwise, commercial expansion may weaken trust or overload operations (Patel & Hernandez, 2019a; Roberts, A., Clark, & Thomas, 2022; Smith & White, 2021).

Customer perceived value is the mechanism that connects organizational practices to sustainability. Customers evaluate functional quality, emotional experience, social belonging, and cultural meaning. When these forms of value are consistently delivered, they support satisfaction, loyalty, positive word of mouth, and continued participation. The present study consequently tests customer perceived value as a mediator between the four strategic factors and sustainable development.

Conceptual relationships

Policy support is expected to influence sustainability through two routes. Directly, public programs can reduce operating uncertainty, improve access to venues, and create legitimacy for martial arts participation. Indirectly,

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policy signals can improve the customer experience by supporting safer facilities, public events, coach development, and opportunities for participation. The model therefore anticipates positive paths from policy support to both customer perceived value and sustainable development.

Cultural inheritance is expected to create differentiation and attachment. A gym that communicates the history, ethics, etiquette, and technical logic of a style can offer benefits that are difficult for generic fitness providers to imitate. Cultural programming may also strengthen intergenerational participation by connecting children, parents, coaches, and local communities. The hypothesized effect is not that tradition automatically produces commercial success, but that meaningful and accessible cultural design can increase perceived value and support long-term participation.

Operations management represents the internal capability to deliver the promise of the service. It includes staffing, scheduling, facility maintenance, safety, customer communication, performance monitoring, and the use of digital tools. Even a culturally distinctive gym may lose customers when classes are cancelled, coaches change frequently, or information is difficult to obtain. Operational consistency is therefore treated as a substantive source of value rather than a purely administrative concern.

A diversified income structure is likewise expected to strengthen resilience when it is strategically coherent. Tuition remains important, but supplementary income from events, camps, venue partnerships, cultural products, family programs, and online services can distribute risk across customer segments and seasons. Diversification can also create additional contact points through which customers experience the gym's culture. The model tests whether this broader revenue logic improves sustainable development directly and indirectly through perceived value.

Finally, customer perceived value is positioned as the central evaluative mechanism. Customers compare what they receive with the time, money, effort, and uncertainty they contribute. Functional benefits such as coaching quality and convenience interact with emotional benefits such as confidence, discipline, and belonging. The mediation hypotheses therefore ask whether the four organizational factors become sustainable outcomes partly because they make the service more valuable from the customer's perspective.

3. RESEARCH METHODOLOGY

A three-stage mixed-method design was used. Stage 1 applied structured interviews and document analysis to describe the current situation. Fifteen purposively selected participants included three experts or scholars, three gym managers, and nine gym employees. Interview content was examined through thematic content analysis, with interview items reviewed by experts using an Index of Objective Congruence above 0.50.

Stage 2 used a questionnaire with demographic items, five-point Likert measures, and open-ended questions. The target population included employees, owners, and members of Beijing commercial martial arts gyms. A total of 405 questionnaires were collected; after removing incomplete, contradictory, or patterned responses, 360 valid cases remained (88.9% effective response). SmartPLS 4.0 was used for reliability, convergent validity, discriminant validity, collinearity, explanatory power, predictive relevance, and hypothesis testing.

Stage 3 used a focus group with 13 participants: four gym managers, three gym employees, three parents of gym students, and three experts or scholars. The group reviewed the quantitative findings and refined an implementation approach through consensus-oriented content analysis. Ethical procedures included informed consent, confidentiality, voluntary participation, and secure handling of responses.

4.DATA ANALYSIS AND QUALITY ASSURANCE

The analysis followed the sequence recommended for variance-based structural equation modeling. First, descriptive statistics were used to check the distribution of respondent characteristics and identify patterns requiring interpretation. Second, the measurement model was examined through indicator reliability, internal consistency, convergent validity, and discriminant validity. Third, the structural model was assessed through collinearity diagnostics, path coefficients, bootstrapped t values and p values, explained variance (R^2), and predictive relevance (Q^2). This sequence allowed the study to distinguish measurement quality from substantive relationships.

The mixed-method design also provided a form of triangulation. Interview evidence was used to identify operational problems and contextual mechanisms; the questionnaire tested whether the proposed relationships were present across a larger respondent group; and the focus group interpreted the statistical results in practical terms. Agreement across these stages increased confidence that the findings were not artifacts of a single method. At the same time, the use of a Beijing-only sample means that the results should be transferred to other cities cautiously and with attention to local policy and market conditions.

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Table 1. Selected characteristics of the valid questionnaire sample (N = 360).

Profile	Category	n	%
Gender	Male	255	70.83
Gender	Female	105	29.17
Age	18–25	32	8.89
Age	26–35	214	59.44
Occupation	Gym managers	246	68.33
Occupation	Practitioners	29	8.06
Work experience	5–10 years	195	54.17

Findings and conclusion

The qualitative stage identified a sector with rising demand, but also uneven participation across age groups. Youth and older adults were comparatively visible, while young adults were less engaged with traditional formats. Well-known gyms generally maintained stronger teaching systems and cultural programming, whereas smaller and medium-sized gyms reported difficulties recruiting qualified instructors. Digital membership and scheduling systems were emerging, but facility modernization and technology adoption remained inconsistent. Brand-building through competitions and cultural events improved visibility, yet competition from fitness clubs and combat-sport providers remained intense.

The PLS-SEM results support all proposed relationships. Policy support had a positive effect on customer perceived value ($\beta = .197$, $p = .002$) and sustainable development ($\beta = .141$, $p = .016$). Cultural inheritance positively affected customer perceived value ($\beta = .295$, $p < .001$) and sustainable development ($\beta = .199$, $p = .005$). Operations management affected customer perceived value ($\beta = .189$, $p < .001$) and sustainable development ($\beta = .175$, $p < .001$). Diversified income structure affected customer perceived value ($\beta = .234$, $p < .001$) and sustainable development ($\beta = .150$, $p = .001$). Customer perceived value itself had a positive effect on sustainable development ($\beta = .328$, $p < .001$).

Table 2. Direct effects in the structural model (CPV = customer perceived value).

Structural path	β	t	p	Decision
Policy → CPV	.197	3.047	.002	Supported
Policy → Sustainable development	.141	2.407	.016	Supported
Cultural inheritance → CPV	.295	4.642	< .001	Supported
Cultural inheritance → Sustainable development	.199	2.812	.005	Supported
Operations management → CPV	.189	4.030	< .001	Supported
Diversified income → Sustainable development	.150	3.285	.001	Supported
CPV → Sustainable development	.328	3.982	< .001	Supported

The model explained 52.7% of the variance in sustainable development and 42.1% of customer perceived value. All VIF values were below 5, and Q^2 values exceeded .58 for the principal endogenous constructs, indicating acceptable collinearity and strong predictive relevance. Customer perceived value significantly mediated the effects of cultural inheritance (indirect effect = .097, $p = .004$), diversified income structure (.077, $p = .008$), operations management (.062, $p = .010$), and policy support (.065, $p = .042$).

Interpretation of the findings

The relative size of the coefficients suggests that customer perceived value is not a peripheral outcome. Its direct effect on sustainable development was the strongest path in the model ($\beta = .328$), while cultural inheritance had the strongest effect on perceived value ($\beta = .295$). This pattern indicates that cultural meaning becomes strategically important when customers can recognize it in the service they receive. A gym may possess a valuable tradition, but sustainability depends on whether the tradition is translated into teaching quality, community experience, and reasons to continue participating.

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The policy paths were smaller than the cultural and customer-value paths, but they remained statistically significant. This result should not be interpreted as evidence that policy is unimportant. Rather, policy support appears to operate partly as an enabling condition. Public programs, facilities, and cultural initiatives create room for organizations to improve, while managers still need to convert that room into dependable service and customer benefits. The mediation effect is consistent with this interpretation: policy support contributes to sustainability in part because it raises the value customers perceive.

Operations management produced positive direct and mediated effects, confirming that sustainability requires organizational capability. The qualitative evidence helps explain this relationship. Gyms reported uneven coaching quality, limited digital adoption, high venue costs, and weak customer-retention systems. These problems are not solved by adding more classes alone. They require routines for scheduling, staff development, safety, feedback, and data use. In this sense, operational professionalization is the infrastructure through which cultural and commercial goals become repeatable services.

Diversified income also had positive effects, although its direct coefficient was more modest than the effect of customer perceived value. The result favors a balanced interpretation. New revenue streams can reduce vulnerability, but they should be selected for their fit with the gym's competencies and identity. An event, family program, or cultural product is more likely to support sustainability when it deepens customer relationships instead of simply adding transactions. The focus-group discussion therefore emphasized coherent diversification rather than indiscriminate expansion.

Taken together, the findings support a capability chain: policy and cultural conditions shape what a gym can offer; operations and revenue design determine how consistently it can offer it; customers evaluate the resulting experience; and perceived value supports retention and sustainable development. This chain explains why isolated interventions are unlikely to be sufficient. A subsidy without service improvement, or a new product without cultural coherence, may generate short-term activity without long-term resilience.

Table 3. Mediation effects reported in the original study.

Indirect path through customer perceived value	Effect	t	p
Policy support → CPV → Sustainable development	.065	2.031	.042
Cultural inheritance → CPV → Sustainable development	.097	2.906	.004
Operations management → CPV → Sustainable development	.062	2.565	.010
Diversified income → CPV → Sustainable development	.077	2.634	.008

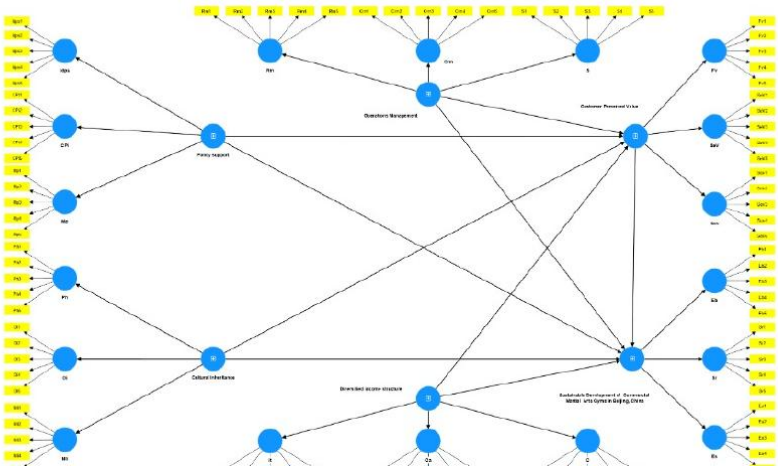


Figure 1. Structural model for sustainable development of Beijing commercial martial arts gyms (original study).

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The focus group confirmed a five-part development approach: policy support should provide stable institutional and financial conditions; cultural inheritance should differentiate the service and strengthen community legitimacy; operations management should improve resource use, coaching, safety, and customer relationships; diversified income should reduce financial vulnerability; and customer perceived value should remain the central outcome of service and cultural innovation. The evidence therefore supports a coordinated rather than isolated strategy.

5. RECOMMENDATIONS

First, local authorities should align subsidies, venue access, tax measures, youth programs, and cultural-heritage initiatives with transparent performance indicators. Second, gyms should institutionalize coach training, safety management, digital scheduling, customer feedback, and cost control. Third, operators should design tiered courses for youth, young adults, families, and older adults, while integrating martial arts history, etiquette, and cultural activities into instruction. Fourth, revenue diversification should prioritize coherent extensions such as events, parent–child programs, cultural products, venue partnerships, and online services. Finally, future studies should compare cities, use longitudinal designs, and examine digital transformation and changing customer segments.

For municipal agencies, the immediate priority is to make support predictable and accessible to smaller as well as prominent gyms. Competitive grant schemes can be combined with shared public facilities, coach-development subsidies, and common safety or safeguarding resources. Public reporting should focus on participation quality, retention, coach qualifications, cultural programming, and community access rather than only counting events. Such indicators would encourage organizations to pursue sustainable value rather than short-term visibility.

For gym owners and managers, the practical sequence is to clarify the target customer, standardize the core service, and then diversify. A clear curriculum and reliable timetable should come before additional products. Managers can use simple customer-feedback routines, attendance data, and renewal patterns to identify which classes create lasting value. Digital tools should reduce friction in registration and communication while preserving personal contact with coaches and families. This approach links operational discipline to the cultural atmosphere that customers value.

For coaches and cultural practitioners, sustainability requires a shared professional identity. Technical instruction, ethical conduct, injury prevention, communication with parents, and the explanation of cultural meaning should be treated as connected competencies. Partnerships with schools, museums, community centers, and cultural associations can extend the learning environment beyond the gym and increase public recognition. These partnerships also provide a pathway for younger adults to encounter martial arts in formats that are relevant to contemporary lifestyles.

The study has limitations. Its cross-sectional questionnaire cannot establish changes over time, and the Beijing setting may not represent smaller cities or rural areas. The model also relies on self-reported perceptions and does not include audited financial records. Future research should use longitudinal data, compare different city tiers, examine customer segments separately, and test whether digital services, coach certification, or public–private partnerships alter the strength of the observed relationships. These limitations identify a research agenda rather than weakening the practical value of the current evidence.

Implementation roadmap

A practical implementation sequence can be organized into three horizons. In the first six months, a gym should establish a baseline of attendance, renewal, coach qualifications, facility costs, customer feedback, and revenue by service line. This baseline makes the concept of sustainability operational and allows managers to identify the most urgent bottleneck. In the next six to eighteen months, the organization can standardize its core curriculum, introduce routine safety and service audits, strengthen digital scheduling, and pilot one or two culturally aligned revenue extensions. Beyond eighteen months, the gym can evaluate partnerships with schools, community centers, cultural institutions, and public programs, using retention and perceived-value indicators to decide which partnerships should be scaled.

The roadmap also clarifies the division of responsibility. Public agencies are best placed to improve the external conditions of access, legitimacy, and coordination. Gym managers control the internal routines that determine reliability and customer experience. Coaches translate cultural and technical knowledge into daily interaction. Customers and families provide feedback about whether the service is accessible, meaningful, and worth continuing. A sustainable ecosystem emerges when these actors share basic information and expectations rather than working through isolated projects.

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In summary, the article's central implication is that commercial martial arts gyms should be managed as cultural-service organizations with economic responsibilities. Their sustainability is strongest when policy support, cultural inheritance, operational capability, diversified income, and customer perceived value reinforce one another. The statistical model and the qualitative evidence converge on this conclusion. Beijing gyms do not need to choose between tradition and professional management; they need management systems capable of protecting tradition while delivering contemporary value. This synthesis provides a practical basis for future comparative research and for evidence-informed decisions by TCI-oriented sport-management practitioners

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