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Development of the Sports General Assessment Model (SGAM): A Proposed Multidimensional Framework for Sports Club Assessment

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Abstract

Objective: The aim of this study was to create the Sports General Assessment Model (SGAM), a standardised and transferable multi-criteria approach for the integrated evaluation of sports clubs; the model integrates the main sporting-organisational capabilities with wider social and developmental values. Methods: A method based on the development of a conceptual model was used. The indicators and assessment principles were obtained through a review of the literature concerning the valuation of sports clubs, sporting and organisational performance, sports management, multi-criteria decision-making, and multidimensional evaluation models. The development process involved specifying the constructs, generating the indicators, getting rid of any redundancy, designing the rules regarding the evidence and scoring, and carrying out a theoretical, content-related, and logical review. Empirical evaluations of the clubs were not carried out. Results: SGAM consists of 20 indicators, which are divided into Main Sports Values (MSV) and Additional Sports Values (ASV), there being 10 indicators in each of these categories. The indicators are assessed on a scale ranging from 0 to 5 based on documentary evidence, expert evaluation, and, where appropriate, stakeholder perception. The scores for each dimension are adjusted so that they fall on a 0 to 100 scale and are presented as the ordered pair SGAM = (MSV N, ASV N). A two-dimensional matrix defines four general types of club profiles. The Balanced SGAM Index uses the geometric mean to summarise the level of balance and to prevent compensation between the different dimensions. The protocol also specifies the quality of the evidence, the procedures to be followed in the case of missing data, the comparison frameworks, the sensitivity analysis, and the reporting standards. Conclusion: SGAM offers a clear structure that can be used for diagnosing clubs, carrying out benchmarking and planning with a view to strategy in a variety of sports and organizational settings. At present, it is still only a preliminary framework and further work such as Delphi reviews, pilot testing, reliability and validity assessments, and replication across sports is required before it can be fully implemented empirically.

Keywords: *Sports management, multi-criteria assessment, organizational performance, stakeholder evaluation, club benchmarking, SGAM*

Introduction

Sport has changed from being primarily a voluntary and competition-focused activity to becoming a broad global industry influenced by professionalisation, broadcasting, sponsorship, data analytics, international mobility, tourism, and increasingly complex regulatory systems. Sports clubs have played a significant role in this transformation. They seek to secure competitive success while at the same time managing their financial resources, their human resources, their facilities, safety issues, youth development, their communications, and their relationships

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with supporters, local communities, the governing bodies and their commercial partners. Consequently, the value generated by a club extends far beyond its performance on the field and its position in the league. Owing to the industrialisation of sport, clubs have become more economically significant and there has been a growing effort to assess their value. For instance, in the case of professional football, valuation studies have employed market capitalisation, discounted cash flow, revenue multiples, bankruptcy values, broker estimates and multivariate models. Markham (2013) demonstrated that the assumptions and findings of these methods can differ greatly and proposed a multivariate model designed to yield more consistent club valuations. Financial studies have also examined the relationship between solvency, profitability and sporting performance (Alaminos et al., 2020), while Galariotis et al. (2018) combined multi-criteria analysis with partial least squares structural equation modelling to examine business, financial and sporting performance concurrently. These contributions are important, but monetary valuation and financial health represent only part of the value generated by sports clubs.

A club's sporting system includes competitive results, the quality of coaching and professional staff, training processes, talent identification, youth pathways, athlete welfare, safety, governance and institutional continuity. Its wider value may include community participation, education, accessibility, inclusion, media visibility, digital engagement, tourism flows, environmental responsibility, international cooperation, brand recognition and local economic effects. These dimensions are not marginal additions. They influence legitimacy, resilience, stakeholder support and the club's ability to reproduce sporting success over time. The treatment of training as a planned, methodologically grounded and diagnostically supported process is consistent with Bjelica and Fratrić (2011) and Bjelica (2013).

The widening role of sport is particularly visible in sports tourism and infrastructure development. Stadiums, arenas, training centres, ski facilities and event venues affect mobility, visitor experience, urban image and territorial development. Studies have consequently used the Analytic Hierarchy Process (AHP) to determine criteria weights and priorities (Nisel & Özdemir, 2016), the Technique for Order Preference by Similarity to Ideal Solution (TOPSIS) to rank alternatives according to their proximity to an ideal solution (Hwang & Yoon, 1981), and the Decision-Making Trial and Evaluation Laboratory (DEMATEL) to analyse cause–effect relationships among criteria (Gabus & Fontela, 1972). Other MCDM techniques, including VIKOR, Simple Additive Weighting (SAW), Evaluation Based on Distance from Average Solution (EDAS), and related methods, have been applied to specific decision-making problems in sport, such as stadium location selection, ski centre performance assessment, athlete evaluation, player selection, and team formation. For example, Oralhan et al. (2022) combined fuzzy DEMATEL and TOPSIS to rank ski centres according to facility amenities, price, accessibility, accommodation, alternative tourism opportunities, and visitor ratings. Vavrek (2021) applied TOPSIS with alternative objective weighting methods to evaluate 581 NHL forwards, demonstrating that the choice of weighting procedure can materially influence the resulting rankings.

Recent reviews confirm the rapid diffusion of MCDM in sport. Ati et al. (2024) identified 66 relevant studies on football player selection and performance prediction and emphasised the capacity of MCDM to combine qualitative and quantitative criteria. Belhouchet et al. (2026) documented the growing use of MCDM in football and mapped studies employing AHP, TOPSIS, PROMETHEE, ELECTRE, VIKOR, and WASPAS. The most recurrent decision-making problems concerned player selection, performance evaluation and strategic planning, with AHP and TOPSIS appearing most frequently. Their findings support the suitability of multi-criteria reasoning for complex football decisions. However, the available evidence remains largely based on sport-specific, narrowly defined decision problems rather than on comprehensive frameworks for assessing sports organisations as integrated systems.

The problem is therefore not the absence of metrics or decision methods. It is the absence of a common assessment architecture capable of integrating the core and broader values of a sports club. Existing approaches usually answer narrower questions, such as "How much is a football club worth?" Which player should be selected? Which stadium location is preferable? Which ski centre performs best? Is a club financially sustainable? These are legitimate questions, but none provides a complete and transferable profile of a sports club as a sporting, organisational, infrastructural, educational, social and development institution.

A comparable methodological challenge has been addressed in geoheritage assessment, where systematic inventory, explicit indicators and quantitative evaluation support comparison and management (Brilha, 2016). The Geosite Assessment Model (GAM) organised heterogeneous indicators into main and additional values and expressed results in a two-dimensional matrix (Vujičić et al., 2011). Later modifications incorporated visitor perceptions and weighting (Tomić and Božić, 2014). The Urban Geoheritage Assessment Model (UGAM) further adapted the logic to urban geocultural settings by structuring scientific, natural, protection, interpretive and tourism-related indicators (Marjanović et al., 2024). These models became useful not because geoheritage and sports are substantively identical, but because their architecture is transparent, modular, visually interpretable and adaptable to objects that possess both essential/core and use/development values.

Drawing on this architectural principle, the present paper proposes the Sports General Assessment Model (SGAM). SGAM does not transfer geoheritage indicators into sport. Instead, it redesigns the domains, evidence rules, scales and interpretive categories for sports clubs. Its intended contribution is a shared assessment language through which clubs from different sports and organisational contexts can be diagnosed and, when appropriate, compared.

Research gap

Existing methodologies evaluate isolated aspects of sports organisations, such as financial performance, business efficiency, stadium location, facility attractiveness, athlete selection or competitive success. Current MCDM applications have improved the transparency of particular sports decisions, but they remain predominantly problem-specific and sport-specific. No standardised and transferable framework has been identified in the reviewed material that simultaneously integrates sporting, organisational, infrastructural, social, educational, environmental and development dimensions into a single assessment architecture for sports clubs. A second gap concerns the separation between auditable institutional evidence and stakeholder perception: objective indicators and user experience are frequently assessed in different studies rather than being combined within a single diagnostic system.

Aim, objectives and research questions

The main aim is to develop the conceptual and operational structure of SGAM as a multidimensional and transferable framework for the multi-criteria assessment of sports clubs. The

specific objectives are: (i) to define the assessment philosophy and unit of analysis; (ii) to establish Main Sports Values and Additional Sports Values; (iii) to operationalise indicators, evidence requirements and an anchored scoring scale; (iv) to design a procedure combining expert assessment and stakeholder perception; (v) to formulate normalised dimension scores, a balanced composite index and a classification matrix; and (vi) to conduct theoretical, content-oriented and logical appraisal before empirical validation.

The paper addresses three research questions: RQ1: Which value dimensions are required for an integral assessment of sports clubs? RQ2: How can documentary evidence, expert judgement and stakeholder perception be integrated transparently? RQ3: How can the resulting scores be represented so that the model supports both comparison and diagnosis?

Hypotheses and propositions

Because this is a model-development study without an empirical sample, the hypotheses are formulated as testable propositions for later empirical applications. H1: A comprehensive multi-criteria model based on explicitly defined indicators, evidence requirements, and scoring anchors can support objective, reproducible assessment of sports clubs. H2: Integrating expert evaluation with stakeholder perception can provide a more comprehensive and managerially relevant assessment than either source alone. H3: Separating core sporting-organisational values from wider additional values can reveal developmental imbalances that a single financial or competitive ranking would conceal.

Literature Review

Sports club evaluation and valuation

Sports organisations are hybrid institutions. Professional clubs may be incorporated businesses, but their objectives are rarely limited to profit maximisation. Sporting success affects attendance, broadcasting, sponsorship, and brand visibility, while financial resources affect player, coach, and infrastructure acquisition and retention. Community and member-based clubs may prioritise participation, youth development, and social value over commercial returns. A multidimensional, transferable assessment model must therefore distinguish financial viability from total club value, consistent with the balanced-scorecard principle that financial and non-financial perspectives should be considered together (Kaplan & Norton, 1992).

Football valuation literature illustrates both the sophistication and limits of monetary models. Markham (2013) compared market capitalisation, discounted cash flow, bankruptcy value, revenue multiples, Forbes estimates and broker valuations with actual transactions. His multivariate model incorporated revenue, net assets, profitability, stadium utilisation and wage control. The study is relevant to SGAM because it highlights the need for a repeatable procedure across club contexts; however, it remains financially scoped. It does not measure governance quality, youth development, community value, education or environmental performance.

Alaminos et al. (2020) analysed European football clubs using financial indicators and an artificial neural network. Their work shows that financial performance can be modelled using several interrelated measures rather than a single ratio. Galariotis et al. (2018) moved further toward integration by assessing business and financial performance through multi-criteria analysis and linking these results with league standing. Their findings show reciprocal connections between revenue and sporting achievement. Nevertheless, the combined methodology remains centred on business, finance and league performance, whereas SGAM aims at a transferable institutional assessment across sports.

Commercial rankings, including Forbes and brand-valuation reports, are influential because they translate complex organisations into accessible rankings. Yet these systems often depend on proprietary assumptions and focus on professional clubs with available market and revenue data. They may be unsuitable for amateur, non-profit, women's, youth or Olympic-sport clubs. SGAM therefore treats economic strength and brand recognition as relevant indicators, but neither defines overall value.

Multi-criteria decision models in sport

MCDM methods are appropriate when alternatives must be compared across multiple, potentially conflicting criteria (Taherdoost & Madanchian, 2023). AHP structures a problem hierarchically and derives weights through pairwise comparisons. TOPSIS ranks alternatives according to their distance from ideal and anti-ideal solutions. DEMATEL identifies causal influence among criteria. VIKOR seeks a compromise solution, while SAW, EDAS, PROMETHEE, ELECTRE, COPRAS, and WASPAS offer alternative aggregation and outranking logics. Their increasing use in sport reflects the multidimensional nature of performance and management decisions.

The reviewed studies cover diverse units of analysis. Athlete-level applications combine physical, technical, tactical and statistical attributes. Team-formation studies use MCDM to allocate players to positions or optimise line-ups (Dadelo, Turskis, & Zavadskas, 2014). Vavrek's (2021) NHL analysis illustrates the strength of comprehensive athlete evaluation but also a major methodological risk: different indicator-weighting procedures can alter the final order. Ati et al. (2024) similarly emphasise the variety of criteria and the potential of hybrid MCDM-machine learning approaches for player selection. These studies support SGAM's use of multiple criteria while warning against hidden or arbitrary weights.

Facility and destination studies broaden assessment beyond competitive data. Karaköprü and Kabadurmuş (2020) applied AHP and TOPSIS to stadium location selection, whereas Oralhan et al. (2022) combined expert and visitor information to evaluate ski centre performance. The ski-centre criteria—facility amenities, price, accessibility, accommodation, alternative tourism, and visitor ratings—show that sports-related value encompasses infrastructure, services, accessibility, and experience. However, a ski centre is a facility-destination rather than a sports club, so its criteria cannot simply be adopted without organisational redesign.

The literature therefore confirms methodological feasibility but also fragmentation. Existing MCDM models usually rank alternatives for a defined decision and dataset. SGAM has a different purpose. It supplies a stable assessment architecture before a specific ranking problem is introduced. AHP, Delphi, entropy weighting, TOPSIS or other procedures may subsequently be used within SGAM to determine weights or compare clubs. Still, SGAM itself defines what should be assessed, how evidence should be recorded and how a club's profile should be interpreted. The principal differences are summarised in Table 1.

Three architectural lessons from the preceding assessment models are transferred to SGAM. First, core value should be distinguished from enabling and development value. Second, the model should combine standardised indicators with context-sensitive evidence. Third, results should be visualised in a matrix that preserves the two-dimensional profile. The transfer is conceptual rather than substantive: sports clubs require original constructs, definitions, evaluators and scoring anchors.

Table 1. Position of SGAM Relative to Selected Assessment Approaches

Approach	Unit	Primary focus	Limitation	SGAM response
Financial valuation	Club/company	Market, revenue, assets, profitability	Produces monetary estimate; limited coverage of non-market values	Financial resilience is incorporated into MSV governance, while economic and territorial contribution is assessed within ASV; neither component defines total club value.
Combined business-financial-sport evaluation	Football club	Business, finance, league performance	More integrated but football- and performance-centred	Adds organization, youth, infrastructure, social, environmental and education domains
Player/athlete MCDM	Individual athlete	Technical, physical and statistical performance	Does not assess the club as an institution	Transfers transparent multi-criteria logic to club-level assessment
Stadium/ facility MCDM	Location or facility	Access, cost, location, service attributes	Decision-specific and spatially focused	Infrastructure and accessibility are embedded within a wider club system
Ski-centre MCDM	Sports-tourism destination	Amenities, price, access, accommodation, tourism	Facility/destination rather than club	Supports ASV design and stakeholder assessment
GAM/UGAM	Geosite/urban geosite	Main and additional values; matrix positioning	Different substantive domain	Provides transferable architecture, not sports indicators

Note. SGAM = Sports General Assessment Model; ASV = Additional Sports Values; MCDM = multi-criteria decision-making; GAM = Geosite Assessment Model; UGAM = Urban Geoheritage Assessment Model.

Methods

Study design and model-development procedure

This research used a conceptual model-development design supported by a targeted, non-systematic review of peer-reviewed and professional literature. Sources were selected purposively to cover five domains relevant to construct development: sports-club valuation; financial, organisational and sporting performance; MCDM applications in football and other sports; stadium and ski-centre assessment; and GAM/UGAM architecture. The review was intended to identify concepts, indicators, evidence requirements and transferable design principles rather than to provide an exhaustive or systematic synthesis of the literature. The development process comprised six stages: problem definition; construct-domain specification; indicator generation; removal of overlap and double counting; design of evidence and scoring rules; and theoretical, content-oriented and logical appraisal. No club was scored, and no empirical claims regarding reliability, validity or rankings are made.

The unit of analysis is the sports club as an organization. A club may be professional, semi-professional, amateur, member-based, privately owned or publicly supported. The base model is designed for club-based sports, including team and individual sports. National federations, leagues, national teams, temporary event organizations and stand-alone commercial facilities are outside the primary unit of analysis and would require adapted versions.

Conceptual definition of SGAM

SGAM is defined as a structured multi-criteria framework that assesses a sports club through two complementary dimensions. Main Sports Values (MSV) represent the club's core capacity to produce safe, ethical, sustainable and competitively meaningful sport. Additional Sports Values (ASV) represent the club's capacity to generate and mobilize wider social, educational, market, tourism, environmental and territorial benefits. The distinction is functional rather than hierarchical: ASV are not less important, but they are conceptually additional to the club's core sporting mission.

The SGAM architecture is intended to be transferable across sports, but it does not assume that all sports are identical. The indicator domains remain constant, whereas evidence benchmarks are calibrated by sport, competitive tier, gender category, age structure and legal-organisational context. Comparisons should therefore be made within clearly defined reference groups unless cross-sport measurement invariance and normalisation have been established empirically.

Indicator architecture

The preliminary SGAM contains 20 indicators: ten MSV and ten ASV indicators. Each indicator is conceptually distinct and designed to minimize double counting. Table 2 provides definitions, illustrative evidence and the preferred assessment source.

Table 2. Proposed SGAM Indicators and Evidence Base

Code	Indicator	Operational meaning	Illustrative evidence	Source
MSV1	Sporting achievement	Results relative to competitive tier and available resources; consistency over time	Official results, rankings, medals, promotion/relegation records	Expert/ documentary
MSV2	International competitiveness	Participation and performance beyond the domestic system	International competitions, cross-border ranking, representative athletes	Expert/ documentary
MSV3	Sports tradition and continuity	Institutional history, continuity, identity and recognized contribution to the sport	Foundation records, uninterrupted activity, archives, honours	Expert/ documentary

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Table 2. Proposed SGAM Indicators and Evidence Base

Code	Indicator	Operational meaning	Illustrative evidence	Source
MSV4	Youth academy and athlete pathway	Structured recruitment, retention and progression from youth to senior levels	Age groups, enrolment, progression rates, safeguarding records	Mixed
MSV5	Training system and athlete development	Evidence-based planning, monitoring, facilities and individualized development	Training plans, monitoring protocols, athlete development records	Expert
MSV6	Professional and technical staff	Qualifications, role coverage, continuing development and staff stability	Licences, education, contracts, CPD records, staff turnover	Expert/ documentary
MSV7	Infrastructure and equipment	Adequacy, condition, availability and sport-specific functionality	Facility audit, equipment inventory, utilization and maintenance	Mixed
MSV8	Safety, welfare and integrity	Safeguarding, medical support, anti-doping, injury prevention and ethical protection	Policies, incident records, medical protocols, safeguarding system	Mixed
MSV9	Governance and organizational capacity	Transparent leadership, accountability, planning, compliance and financial resilience	Statutes, reports, budget controls, strategic plan, compliance	Expert/ documentary
MSV10	Innovation and performance learning	Use of science, analytics, technology and organizational learning	Partnerships, data systems, research use, innovation projects	Expert
ASV1	Community engagement and social inclusion	Participation, volunteering, equity, inclusion and community programmes	Programme records, participation data, stakeholder feedback	Mixed
ASV2	Education and dual-career contribution	Formal and informal learning, school links and athlete dual-career support	Agreements, workshops, tutoring, dual-career services	Mixed
ASV3	Accessibility and user experience	Physical, financial, informational and disability-related accessibility	Access audit, pricing, transport, user survey, inclusive design	Stakeholder/ mixed
ASV4	Media visibility and public communication	Quality, reach and consistency of traditional media communication	Media monitoring, audience reach, communication plan	Mixed
ASV5	Digital presence and engagement	Website, social platforms, digital services, interaction and data responsibility	Analytics, content activity, accessibility, privacy practice	Mixed
ASV6	Brand recognition and reputation	Recognition, trust, identity and stakeholder attachment	Brand survey, sponsorship interest, reputation indicators	Stakeholder/ mixed
ASV7	Tourism and event value	Capacity to attract visitors and connect sport with destination experiences	Events, non-local visitors, packages, destination partnerships	Mixed
ASV8	Environmental sustainability	Resource efficiency, mobility, waste, procurement and climate action	Energy/water data, waste plan, travel policy, reporting	Expert/mixed
ASV9	International cooperation and networks	Sustained partnerships, exchanges, projects and knowledge transfer	Agreements, joint projects, exchanges, network membership	Expert/ documentary
ASV10	Economic and territorial contribution	Employment, local procurement, induced activity and contribution to place development	Jobs, procurement, event expenditure, partnerships, impact study	Expert/ documentary

Note. MSV = Main Sports Values; ASV = Additional Sports Values; CPD = continuing professional development.

Evidence protocol and scoring scale

Every score must be accompanied by an evidence note, source, reference year and confidence code. Evidence is organized into four classes: D1, verified official or audited documentation; D2, institutional records not independently audited; D3, structured expert observation or facility audit; and D4, stakeholder survey or interview evidence. A score without traceable evidence is provisional. The assessment period should normally cover the most recent three completed seasons, while tradition and continuity use a longer historical horizon.

Indicators are scored from 0 to 5. The common anchors in Table 3 establish comparability, while indicator-specific manuals developed in the empirical phase will supply quantitative thresholds for each sport and competitive tier. A zero is a substantive score and must not be used for missing information. Missing evidence is coded NA and triggers a coverage warning.

Table 3. Common Anchored SGAM Scoring Scale

Score	Anchor	General interpretation
0	Absent or unacceptable	No relevant system, activity or evidence; serious non-compliance may be present.
1	Very weak	Ad hoc, minimal or largely ineffective practice; major deficiencies and little evidence.
2	Limited	Basic elements exist but coverage, quality, regularity or outcomes remain below the reference standard.
3	Established	Functional and documented practice consistent with the reference group's normal standard.
4	Advanced	Systematic, well-resourced and demonstrably effective practice exceeding the reference standard.
5	Leading	Sustained exemplary practice, externally recognized outcomes and evidence of transferability or innovation.

Expert and stakeholder assessment

SGAM uses a triangulated design informed by a combined GAM-UGAM application that integrated documentary and field evidence, surveys, focus groups, expert assessment and stakeholder perspectives (Kalezić et al., 2026). It retains this multi-source logic but substitutes sports-club constructs for heritage domains. The expert panel should include knowledge of sports management, coaching or sport science, governance/finance, infrastructure and safety, and social or sustainability dimensions. A minimum panel size is not asserted in this theoretical paper; the empirical protocol should determine adequacy according to heterogeneity, Delphi stability and intraclass agreement. Experts complete conflict-of-interest declarations and score independently before consensus discussion.

Stakeholder assessment is applied only where direct experience is conceptually relevant, including accessibility, user experience, reputation, communication, community engagement, education and parts of infrastructure and safety. Stakeholder groups may include athletes, parents, supporters, volunteers, employees, local residents, partners and event visitors. Sampling quotas should prevent the largest or most vocal group from dominating the public component.

For indicator j, the expert score Ej and stakeholder score Pj are calculated as weighted means of valid responses within the respective respondent groups, with the within-group weights normalized to sum to one. Where both sources are applicable and available, the integrated indicator score is:

$$Sj = \alpha j\ Ej + (1-\alpha j)\ Pj,\ 0 \leq \alpha j \leq 1 \quad (1)$$

where αj denotes the weight assigned to the expert score. For mixed-source indicators, the preliminary default is set at αj = 0.60, reflecting the greater emphasis placed on verifiable institutional assessment while retaining a substantial stakeholder contribution. For exclusively expert- or documentary-based indicators, αj = 1.00. The value of 0.60 represents a prespecified and testable starting rule rather than an empirically validated optimum. The robustness of the results for mixed-source indicators must therefore be examined under at least three weighting scenarios, such as αj = 0.50, 0.60, and 0.70. Rules for handling unavailable or insufficient source-specific responses must be defined before model application.

Indicator weighting and aggregation

Equal indicator weights are adopted for the initial pilot because they provide a transparent baseline and avoid introducing unsupported precision at an early stage of model development. Accordingly, wi = vk = 0.10. Alternative weights may subsequently be derived through Delphi-based expert elicitation, AHP, the Best-Worst Method, entropy weighting or an explicitly defined hybrid procedure. Any alternative weighting scheme must be fully documented and evaluated through sensitivity and rank-stability analyses against the equal-weight baseline. Within each dimension, the indicator weights are non-negative and sum to one:

$$\mathrm{MSV} = \sum_{i=1}^{10} w_i\, S_i\,; \quad \mathrm{ASV} = \sum_{k=1}^{10} v_k\, S_k \quad (2)$$

Provided that all indicator scores range from 0 to 5, MSV and ASV also range from 0 to 5 under any non-negative weighting scheme whose weights sum to one. For communication and comparison, both dimensions are normalised to a 0-100 scale:

$$\mathrm{MSV}_N = 20 \times \mathrm{MSV}; \quad \mathrm{ASV}_N = 20 \times \mathrm{ASV} \quad (3)$$

The principal SGAM result is the ordered pair:

$$\mathrm{SGAM} = (\mathrm{MSV}_N, \mathrm{ASV}_N).$$

Retaining both coordinates is essential because clubs with the same overall summary score may have substantially different dimensional profiles. When a single summary statistic is required, and the two dimensions are assumed to be equally important, the Balanced SGAM Index (BSI) is calculated as their geometric mean:

$$\mathrm{BSI} = \sqrt{\mathrm{MSV}_N \times \mathrm{ASV}_N} \quad (4)$$

Compared with the arithmetic mean, the geometric mean reduces compensability by penalising imbalances between the two dimensions. Thus, a high score in one dimension cannot fully offset a weak score in the other. BSI ranges from 0 to 100 but must always be reported together with MSVN and ASVN. An optional balance ratio may additionally be calculated:

$$\mathrm{BR} = \frac{\min(\mathrm{MSV}_N, \mathrm{ASV}_N)}{\max(\mathrm{MSV}_N, \mathrm{ASV}_N)} \quad (5)$$

Values closer to 1 indicate greater balance between the dimensions but do not indicate their absolute performance level. Therefore, BR must be interpreted together with the two SGAM coordinates. If MSVN = ASVN = 0, BR is reported as not applicable. Missing indicator values must not be treated as zero; predefined completeness criteria and any renormalisation of the remaining weights must be fully reported.

Missing data, comparability and minimum evidence

A dimension score may be calculated when at least 80% of its indicator weight is supported by valid evidence. Available weights are rescaled within the dimension, and the result is marked as provisional. Below 80% coverage, no dimension or composite score is issued. Missing evidence, inapplicability and zero performance must be distinguished. An indicator may be declared structurally inapplicable only through a documented panel decision; routine absence of an activity is scored zero rather than removed.

Benchmarking requires a declared comparison frame: sport, country or regulatory system, competition tier, gender category, age structure, professional status and reference period. Direct cross-sport comparisons are limited to normalised institutional capacities until measurement invariance is empirically tested.

SGAM matrix and club profiles

MSV N forms the horizontal axis and ASV N the vertical axis. For detailed analysis, each axis is divided into five non-overlapping bands: very low (0 ≤ score < 20), low (20 ≤ score < 40), moderate (40 ≤ score < 60), high (60 ≤ score < 80), and very high (80 ≤ score ≤ 100), generating a 25-field SGAM matrix analogous in visual logic to UGAM. The 25 cells retain detail, while four broad profiles facilitate communication. The four broad profiles are summarised in Table 4 and visualised in Figure 1.

Table 4. Broad SGAM Profile Interpretation

Profile	MSV condition	ASV condition	Interpretation
Established / balanced club	MSV N ≥ 60	ASV N ≥ 60	Strong sporting-organizational core and developed wider contribution.
Competitive but under-leveraged club	MSV N ≥ 60	ASV N < 60	Core sport is strong, but social, market, tourism or sustainability value is insufficiently developed.
Emerging / development-oriented club	MSV N < 60	ASV N ≥ 60	External engagement is comparatively strong, but core sporting capacity requires consolidation.
Underdeveloped / priority club	MSV N < 60	ASV N < 60	Both dimensions require systematic institutional development.

Note. MSV N = normalized Main Sports Values score; ASV N = normalized Additional Sports Values score.

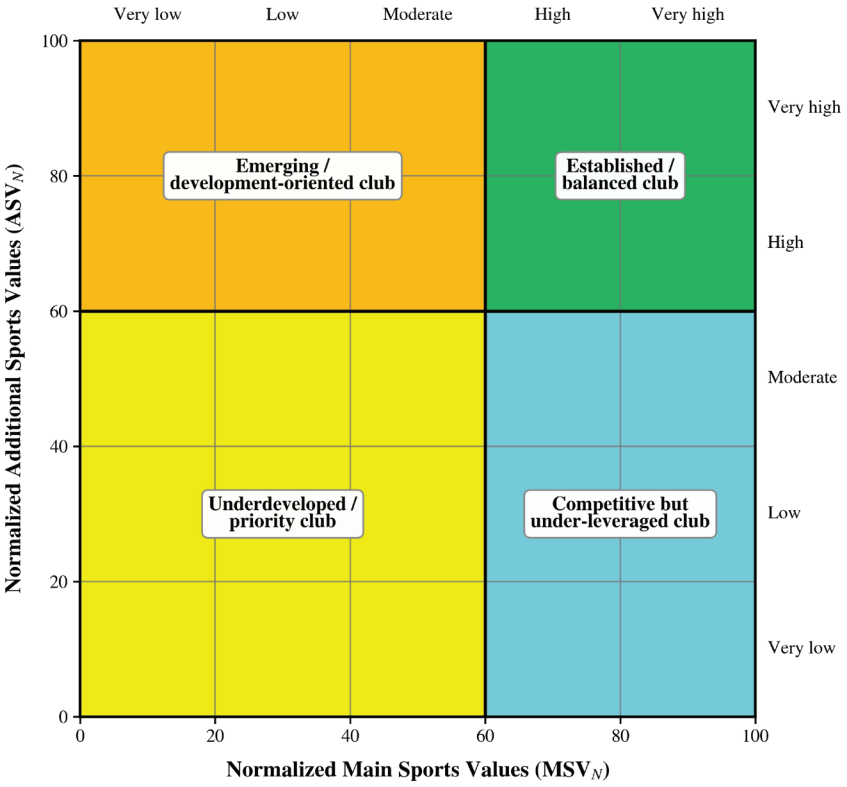

FIGURE 1. Figure 1. SGAM Matrix with Five Performance Levels and Four Broad Sports Club Profiles. Note. MSV N = normalized Main Sports Values score; ASV N = normalized Additional Sports Values score. The profile threshold of 60 is preliminary and should be reassessed empirically.

The threshold of 60 corresponds to the transition from the common anchor 'established' (score 3) toward 'advanced' performance. It is proposed for the pilot phase and must be reassessed empirically using score distributions, external criteria and stakeholder interpretation.

Reporting format

A complete SGAM report includes: the club and comparison-frame profile; evidence coverage; indicator scores and confidence codes; expert and stakeholder scores; weights; MSV N and ASV N; matrix position; BSI and BR; sensitivity results; strongest and weakest indicators; and priority interventions. Raw stakeholder responses are protected and reported only in aggregate.

Results

Model output

The principal result of this study is an operationally structured preliminary SGAM architecture. It translates the broad concept of total club value into two measurable dimensions, 20 indicators, a common scoring scale, a triangulated assessment procedure and a transparent aggregation system. Unlike a ranking method that begins with fixed alternatives, SGAM begins with the definition of constructs and evidence requirements. Ranking is optional, whereas diagnosis is its primary purpose.

MSV captures the conditions through which a club produces sport: achievement, international competitiveness, tradition, youth development, training, staff, infrastructure, safety, governance and innovation. ASV captures the conditions through

which the club connects sport to society and development: community, education, accessibility, communication, digital engagement, reputation, tourism, environment, international networks and economic-territorial contribution. The paired output prevents a commercially visible club with weak governance or athlete welfare from being interpreted as strong across all assessed dimensions; likewise, it prevents a socially valuable grassroots club from being judged solely through revenue or medals.

Content-oriented validation

Content-oriented appraisal was conducted by mapping the indicator set against the domains repeatedly identified in the reviewed literature and against the requirements implied by the club as a unit of analysis. Sporting performance and human-resource capability are represented within MSV; financial and organisational capacity is incorporated within governance; facility studies inform infrastructure, safety and accessibility; athlete-selection research informs training, staff, development and innovation; financial valuation informs brand and economic contribution; and sports-tourism research informs events, accessibility and destination linkages. The mapping indicates broad domain coverage without reproducing an existing model. The communication-related ASV domains are additionally supported by Bjelica's (2012) treatment of communication as a distinct field within sport. The theoretical appraisal criteria are summarised in Table 5.

Table 5. Theoretical Appraisal Criteria and Preliminary Assessment

Criterion	Appraisal question	Preliminary rationale	Empirical test required
Content coverage	Does the model represent core and wider club values?	Two dimensions and 20 indicators cover sporting, organizational, infrastructural, social, educational, market, tourism, environmental and economic domains.	Delphi content-validity indices
Construct separation	Are MSV and ASV conceptually distinguishable?	MSV represents sport-production capacity; ASV represents wider mobilization and development value.	Factor structure and discriminant validity
Traceability	Can every output be traced to evidence?	Evidence note, year and confidence class required for each score.	Inter-rater audit and reproducibility test
Transparency	Are weighting and aggregation visible?	Weights, expert–stakeholder blend, coordinates, geometric index and sensitivity scenarios are reported.	User comprehension and robustness tests
Balance sensitivity	Does the model reveal asymmetry?	Two-axis matrix and geometric mean preserve and penalize imbalance.	Comparison with arithmetic aggregation
Transferability	Can architecture be used across club sports?	Indicators are stable; benchmark thresholds are context-calibrated.	Multi-sport measurement invariance
Actionability	Do results identify management priorities?	Indicator gaps and matrix position translate into targeted interventions.	Longitudinal intervention studies

Note. MSV = Main Sports Values; ASV = Additional Sports Values.

Logical and sensitivity validation

Logical validation examined boundary conditions and aggregation behaviour. If all indicators equal zero, both dimensions and BSI equal zero. If all indicators equal five, MSV N, ASV N and BSI equal 100. If one dimension equals zero, BSI equals zero regardless of the other dimension, correctly signalling the absence of balanced development. Equal coordinates produce BSI equal to that common value. These properties are intuitive and reproducible.

Sensitivity is built into the protocol rather than treated as an optional afterthought. The expert-stakeholder coefficient, indicator weights, thresholds and missing-data decisions can all affect results. Therefore, the empirical SGAM application must present scenario results and identify indicators or clubs whose classification changes. Vavrek's (2021) finding that objective weighting methods can change NHL player rankings provides direct justification for this requirement.

Status of appraisal

The present appraisal is theoretical, content-oriented and logical. It demonstrates that the proposed constructs are defensible, that the calculations are coherent, and that the framework addresses gaps identified in the reviewed material. It does not demonstrate inter-rater reliability, test-retest stability, convergent validity, predictive validity, measurement invariance or stakeholder acceptance. Those properties require empirical data. Accordingly, SGAM should be described as a proposed model or preliminary framework until the validation programme is completed.

Discussion

SGAM in relation to sports valuation and performance models

The most important contribution of SGAM is not the introduction of MCDM into sport. Multi-criteria techniques are already established in player selection, performance evaluation, team formation, venue choice and destination assessment. The contribution lies in moving from fragmented decision models toward a standardised club-level architecture. SGAM asks a different question: not which alternative is best for a particular decision, but what constitutes the balanced value of a sports club and how to document that value.

Compared with Markham's (2013) multivariate football valuation model, SGAM substantially broadens the meaning of value. Revenue, profitability, assets, stadium utilisation and wage control are important for owners and financial stakeholders. However, a club may have limited transaction value while producing exceptional youth, community or educational outcomes. Conversely, a highly valued club may perform poorly in athlete welfare, environmental responsibility or local accessibility. SGAM makes these differences visible rather than forcing them into a monetary estimate.

Compared with Galariotis et al. (2018), SGAM shares the recognition that sports, business and finance are interdependent. Its distinction lies in organisational breadth and transferability. It includes, but does not privilege, business-financial outcomes, and it is intended for sports in which transaction prices, broadcasting revenue, or stock-market data are absent. This is essential for judo,

athletics, volleyball, women's clubs, youth clubs and community organisations.

Financial performance analysis remains useful within SGAM because governance and organisational capacity require financial resilience and transparent control. Yet SGAM deliberately avoids a separate dominant financial axis. Financial information supports an institutional indicator and parts of economic contribution; it does not substitute for sporting purpose or public value.

SGAM in relation to AHP, TOPSIS, DEMATEL and other MCDM applications

AHP, TOPSIS, DEMATEL, VIKOR and related techniques are decision engines. SGAM is primarily an assessment architecture. This distinction allows the model to incorporate those methods without being permanently tied to any one of them. A Delphi-AHP procedure may determine weights; TOPSIS may rank clubs after SGAM scoring; DEMATEL may explore causal relations among governance, staff, infrastructure and outcomes; and VIKOR may identify compromise development priorities. The stable elements are the construct system and the evidence protocol.

The ski-centre study by Oralhan et al. (2022) demonstrates the value of combining fuzzy DEMATEL and TOPSIS and of including both experts and visitors. It strongly supports the ASV domains of tourism, accessibility and user experience. Nevertheless, ski-centre performance is partly destination performance, while SGAM's object is the club. A skiing club using a resort would be assessed on its training system, coaches, youth pathway, governance, and community contribution; the resort would serve as contextual evidence rather than the whole unit.

Vavrek's (2021) NHL study shows that comprehensive athlete rankings depend on the weights assigned to indicators. SGAM responds by recommending equal weights in the initial pilot, full disclosure of any alternative weights and mandatory sensitivity testing. Equal weighting is not claimed to be substantively perfect. It is the most transparent baseline before expert consensus and empirical evidence justify differentiation.

The football reviews by Ati et al. (2024) and Belhouchet et al. (2026) indicate that MCDM research remains concentrated around player selection and performance. SGAM expands the analytical scope from the athlete to the institution. This shift is necessary because a club's long-term capacity is not reducible to the current roster. Governance, knowledge, infrastructure, youth systems and stakeholder legitimacy may persist when individual athletes change.

Methodological relationship with GAM and UGAM

The relationship between SGAM and GAM/UGAM is best understood as a combination of architectural inheritance and domain reconstruction. GAM demonstrated the practical value of separating main and additional values and plotting them on a matrix. UGAM showed that the architecture could be adapted to complex urban and geocultural objects, integrate qualitative and quantitative evidence, and identify deficits relevant to management and development planning (Kalezić et al., 2026; Marjanović et al., 2024). SGAM applies the same reasoning to the difference between the sporting-organisational core and the club's wider development environment.

The matrix is more informative than a league table. A club with high MSV and low ASV is not simply 'second best'; it has a specific strategic profile. Its priorities may include accessibility, digital communication, community programming, environmental management or tourism partnerships rather than changes to coaching or competition. A club with high ASV and lower MSV may have strong legitimacy and outreach but require investment in staff, youth development, training and governance. This diagnostic function is one of the clearest advantages of the model.

There is also an important departure from simple transposition. Geoheritage indicators such as rarity, scenic quality or protection status do not appear in SGAM. Sports-specific concerns—athlete welfare, training, integrity, professional staff, youth pathways and competitive level—require original definitions. Similarly, stakeholder perception is not applied indiscriminately: users can validly assess access and experience, but they should not replace documentary evidence for governance compliance or staff qualifications.

Expert judgement and stakeholder perception

H2 proposes that combining expert judgement with stakeholder perception can produce a more comprehensive and managerially relevant assessment. The rationale is epistemic complementarity: experts can interpret regulations, sport-specific standards, budgets, qualifications, and safety systems, whereas stakeholders can report on accessibility, communication, trust, inclusion, and lived experience. Either perspective alone is incomplete. A purely expert model may overlook barriers experienced by athletes and supporters, while a purely stakeholder-based model may reward visibility without adequately reflecting institutional quality.

The integration also creates methodological risks. Stakeholder responses may be affected by loyalty, recent results, rivalry or media narratives. Experts may have conflicts of interest or reproduce dominant institutional assumptions. SGAM therefore requires independent scoring, declared conflicts, group quotas, evidence notes and separate reporting of E j and P j before aggregation. Large disagreement is itself a result and should trigger qualitative investigation rather than automatic averaging.

Practical implications

For club managers, SGAM can function as a strategic diagnostic dashboard. Indicator gaps can be converted into annual priorities and monitored longitudinally. For municipalities and ministries, it can support transparent funding criteria while avoiding allocation based solely on medals or political visibility. For federations and leagues, it can complement licensing systems with developmental assessment. For researchers, it provides a common architecture for comparative studies and for testing relationships among governance, youth systems, social value and sporting outcomes. For sponsors and community partners, it offers a broader account of value creation.

The model should not be used mechanically to withdraw support from low-scoring clubs. A low profile may reflect structural disadvantage, limited facilities, or an early stage of development. In public policy, SGAM is better suited to identifying needs and monitoring improvement than to punitive ranking.

Limitations

The first limitation is the absence of empirical testing; indicator clarity, respondent burden, evidence availability and score distributions therefore remain unknown. Second, the model's transferability across sports has not yet been demonstrated. Sports differ in their season structures, professionalisation, facility dependence, competitive systems, and data availability. Third, some constructs may overlap in practice—for example, media visibility, digital engagement and brand reputation—despite their conceptual separation. Fourth, the preliminary expert–stakeholder coefficient and classification threshold are normative starting points. Fifth, financial data and impact evidence may be unavailable or incomparable for smaller clubs. Sixth, cultural and regulatory differences may affect the interpretation of governance, inclusion and community responsibility.

A further limitation concerns causality. SGAM measures the condition and profile of a club; it does not by itself demonstrate that a high score on one indicator causes success elsewhere. DEMATEL, longitudinal models or structural equation modelling could examine such relations after sufficient data have been collected.

Empirical validation programme

The recommended validation sequence is: (1) cognitive interviews with experts and club stakeholders; (2) a two- or three-round Delphi study to assess relevance, clarity and completeness; (3) calculation of item- and scale-level content validity indices; (4) pilot application to a relatively homogeneous sample, such as European judo clubs; (5) inter-rater reliability and test-retest analysis; (6) exploratory assessment of dimensionality; (7) convergent comparison with licensing, financial, participation and performance indicators; (8) sensitivity and rank-stability analysis; and (9) cross-sport replication in football, basketball and other Olympic sports. Only after these stages should fixed weights, normative thresholds or certification labels be considered.

Conclusion

This paper presents the first version of the Sports General Assessment Model, a transferable architecture for assessing sports clubs. The model addresses a clear methodological gap: existing studies provide valuable methods for financial valuation, sporting and business performance, athlete selection, facility location, and destination ranking, but do not integrate the full institutional value of a sports club.

SGAM organises assessment into Main Sports Values and Additional Sports Values. The 20 indicators cover sporting achievement, international competitiveness, tradition, youth development, training, staff, infrastructure, safety, governance, innovation, community, education, accessibility, communication, digital engagement, reputation, tourism, environmental sustainability, international cooperation and economic-territorial contribution. Scores are evidence-based, use a common 0-5 scale and combine experts with stakeholders where their knowledge is relevant.

The central methodological innovation is not another application of MCDM. It is the creation of a standardised, transparent and transferable structure through which different clubs can be assessed using the same conceptual language while retaining sport- and context-specific benchmarks. The SGAM coordinate pair and matrix preserve the distinction between core sporting-organisational strength and wider development value. The optional geometric index summarises balance without replacing the diagnostic profile.

At this stage, SGAM has undergone conceptual appraisal and an assessment of internal logical consistency but has not been empirically validated. Its further development depends on rigorous Delphi review, pilot testing and cross-sport replication. A subsequent application to European judo clubs would provide an appropriate first test, as it would examine whether the model performs effectively outside football and within an Olympic sport characterised by diverse club sizes, competitive levels, and organisational resources.

Conflict of interest

The author declares no conflict of interest.

Data availability

No empirical dataset was generated or analysed in this conceptual model-development study.

Ethics statement

Ethics approval was not required because this study was conceptual and involved no human participants or empirical data collection. Future expert- and stakeholder-based studies will require approval from the responsible institutions in accordance with applicable national regulations.

Use of Large Language Models, AI and Machine Learning Tools

Generative artificial intelligence tools, including Grammarly, were used solely to support language editing and manuscript refinement.

Author contributions

The author was solely responsible for the conceptualization, methodology, literature review, development of the SGAM framework, preparation of the original manuscript, and its review and editing. The author read and approved the final version of the manuscript.

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