Volume 3, Issue 4, pp 1-15
Article history:
Received 28 June 2026
Revised 14 September 2026
Accepted 23 September 2026
Published online 01 October 2026

Article type:
Original Research



Designing a Human Resource Management Ecosystem Model in Sport Organizations

Maryam. Chitsaz Qazvini[1], Mahdi. Naderi Nasab[2*], Seyed Abbas. Biniaz[3], Ali. Khorjahani[4]

1 PhD Student of Sport Management, Department of Physical Education and Sport Sciences, Qa.C., Islamic Azad University, Qazvin, Iran
2 Assistant Professor of Sport Management, Department of Physical Education and Sport Sciences, Qa.C., Islamic Azad University, Qazvin, Iran
3 Assistant Professor, Department of Physical Education and Sport Sciences, Qa.C., Islamic Azad University, Qazvin, Iran
4 Assistant Professor, Department of Physical Education and Sport Sciences, Ta.C., Islamic Azad University, Takestan, Iran

Corresponding author email address: Mehdynaderinasab@iau.ac.ir

How to cite this article:
Chitsaz Qazvini, M., Naderi Nasab, M., Biniaz, S. A., & Khorjahani, A. (2026). Designing a Human Resource Management Ecosystem Model in Sport Organizations. *Foresight and Health Governance*, 3(4), 1-15. https://doi.org/10.61838/jfhg.80

© 2026 the authors. This is an open access article under the terms of the Creative Commons Attribution-NonCommercial 4.0 International (CC BY-NC 4.0) License.

ABSTRACT

Human resource management in sport organizations is increasingly shaped by interdependence among federations, clubs, public agencies, universities, professional associations, technology providers, coaches, referees, medical staff, volunteers, and other specialist actors. Traditional organization-centered HRM approaches do not fully explain how knowledge, talent, professional capability, and employment relationships move across these boundaries. This study aimed to develop a human resource management ecosystem model for sport organizations and obtain preliminary empirical support for its proposed structure. An applied-developmental exploratory sequential mixed-methods design was used. In the qualitative phase, systematic grounded theory was conducted with 15 experts in sport management and human resource management selected through purposive and theoretical sampling. Semi-structured interviews continued until theoretical saturation and were analyzed through open, axial, and selective coding. The qualitative analysis generated 120 initial codes, 30 subcategories, and 15 main categories. In the quantitative phase, a researcher-developed 120-item questionnaire was administered online to 400 respondents drawn from sport organizations and related professional groups. Content validity was examined by 15 experts, a pilot reliability assessment was conducted with 30 respondents, and the measurement and structural models were examined using partial least squares structural equation modeling (PLS-SEM). The model included causal conditions (sport workforce complexity and institutional fragmentation), a core phenomenon (human capital networking and sport value co-creation), contextual conditions (sport institutional environment and sport performance culture), intervening conditions (sport transformation readiness and strategic sport support), strategies (professional sport empowerment, talent-cycle engineering, and ecosystem performance steering), and outcomes (flourishing professional capital, empowered sport organizations, excellent sport services, and sustainable sport development). The specified structural relationships were positive and statistically significant in the study sample. Causal conditions were strongly associated with the HRM ecosystem (beta = 0.95, t = 120.95, R2 = 0.917). The HRM ecosystem (beta = 0.96), contextual conditions (beta = 0.78), and intervening conditions (beta = 0.95) were associated with strategies, explaining 93.7% of their variance; strategies were strongly associated with outcomes (beta = 0.96, t = 183.84, R2 = 0.936). Because these coefficients and R2 values are unusually high for organizational research and the instrument was derived directly from the qualitative categories, the quantitative findings should be interpreted as preliminary internal support rather than independent external validation. The findings support a provisional conceptualization of HRM in sport organizations as a networked and multi-actor ecosystem rather than a set of isolated intra-organizational functions. The proposed model emphasizes coordination of specialist actors, shared capability development, strategic support, digital readiness, trust, talent-cycle integration, and multi-level performance governance.

Independent psychometric replication and additional discriminant-validity and predictive assessments are required before the model can be considered externally validated.
Keywords: human resource management ecosystem; sport organizations; human capital networking; value co-creation; talent management; sustainable sport development; mixed methods

Introduction

Human resources are central to the functioning of sport organizations because policy, finance, facilities, technology, and strategic plans only become operational through people. Sport organizations depend on managers, coaches, referees, technical experts, medical personnel, administrative employees, event staff, volunteers, and numerous external specialists. The quality of these human resources is not merely a support function; it directly shapes the capacity of sport organizations to stage events, develop athletes, protect safety, serve participants, innovate, and sustain performance over time (Hoye et al., 2020; Taylor et al., 2008). Yet the employment and professional structure of sport is unusually heterogeneous. Paid employees work beside volunteers, seasonal personnel, independent specialists, and professionals who may serve more than one organization. This diversity complicates recruitment, development, evaluation, retention, and succession planning and often exceeds the boundaries of a conventional HR department (Taylor & McGraw, 2006).

Traditional HRM frameworks generally focus on intra-organizational functions such as workforce planning, recruitment and selection, training, performance management, compensation, employee relations, and retention (Armstrong & Taylor, 2023). These functions remain essential, but sport organizations rarely possess all required talent and expertise internally. Federations depend on provincial associations, clubs, universities, coaches, referees, medical centers, technology firms, and public authorities. Clubs depend on governing bodies, professional labor markets, educational institutions, and specialist service providers. Coaches and technical experts may move among several organizations, carrying knowledge and professional relationships across formal boundaries. Therefore, the effective boundary of HRM in sport is often wider than the legal boundary of a single organization.

This reality is increasingly consistent with the emerging concept of an HR ecosystem. Snell et al. (2023) describe the HR ecosystem as interconnected work communities located both inside and outside formal organizational boundaries that collectively contribute to value creation (Snell et al., 2023). Burke and Morley (2023) further conceptualize the HRM ecosystem as a complex adaptive system characterized by porous boundaries, mutual dependence, contextual effects, and continuous change (Burke & Morley, 2023). Donnelly and Hughes (2023) show that strategic HRM tensions become especially visible in knowledge-intensive settings where professionals cross organizational boundaries (Donnelly & Hughes, 2023). These developments shift HRM from managing only employees toward coordinating broader flows of expertise, capability, knowledge, and work relationships.

An ecosystem perspective is particularly relevant to sport. Sport systems include public agencies, national and regional federations, clubs, educational institutions, private firms, professional communities, sponsors, media, and participants. Value is rarely created by a single actor. Buser et al. (2022) argue for a sport ecosystem logic in which sport value emerges through interaction and resource integration among multiple actors (Buser et al., 2022). Woratschek et al. (2014) similarly emphasize that sport value is co-created through networks of stakeholders rather than produced unilaterally by sport organizations (Woratschek et al., 2014). Morgan (2024) extends this perspective by proposing a broad sport ecosystem framework in which organizations, institutions, networks, and stakeholders are interdependent (Morgan, 2024). In such an environment, HRM

should be understood not only as the internal administration of employees but also as the governance of relationships through which human capital is supplied, developed, exchanged, and retained.

The ecosystem perspective also responds to the professionalization and digital transformation of sport. Professionalization has increased expectations regarding specialized skills, formal qualifications, governance, accountability, and strategic capability (Dowling et al., 2014; Shilbury & Ferkins, 2011). At the same time, digital technologies create new possibilities for talent databases, virtual learning, performance analytics, knowledge sharing, and cross-organizational coordination. However, technology alone does not create an ecosystem. It requires trust, shared rules, leadership support, compatible incentives, and actors willing to exchange information and resources. Open innovation research demonstrates that access to external knowledge can strengthen organizational capabilities, but the outcomes depend on how organizations manage boundaries and reciprocal relationships (Chesbrough, 2003; Dahlander et al., 2021). The same logic is applicable to sport HRM, where critical knowledge may reside in universities, specialist networks, other clubs, governing bodies, or technology providers.

A further issue is governance. Multi-actor systems may generate duplication, role ambiguity, conflicts of interest, uneven resource distribution, and weak accountability. Collaborative governance theory suggests that successful collective action depends on structured participation, shared motivation, institutional arrangements, and capacity for joint action (Ansell & Gash, 2008; Emerson et al., 2012). In HRM, these conditions may determine whether organizations are willing to share specialist information, coordinate development programs, recognize professional credentials, and create common approaches to talent mobility. Without such governance, the term "ecosystem" may become only a metaphor. Oh et al. (2016) caution that ecosystem concepts are useful only when actors, relationships, interdependencies, and value-creation mechanisms are clearly specified (Oh et al., 2016).

Despite these developments, the HRM literature and sport management literature remain only partially integrated. Existing HRM studies in sport often examine practices within a single organization, while ecosystem studies tend to focus on governance, innovation, stakeholder networks, or value creation. Research has not sufficiently explained how a sport-specific HRM ecosystem is formed, which actors and capabilities are central, what contextual and enabling conditions shape it, which strategies translate ecosystem capacity into coordinated action, and what outcomes are produced. This gap is important because fragmented HR policies may produce duplicated training, weak university-industry alignment, loss of knowledge after managerial turnover, limited succession planning, and difficulty retaining qualified specialists.

Accordingly, this study aimed to develop a human resource management ecosystem model for sport organizations and to examine whether the resulting qualitative structure received preliminary empirical support in a broader quantitative sample. The study addressed six linked questions: (1) what causal conditions create the need for an HRM ecosystem in sport organizations; (2) what constitutes the core phenomenon of the ecosystem; (3) which contextual conditions shape ecosystem functioning; (4) which intervening conditions facilitate or constrain implementation; (5) what strategies are required for effective ecosystem management; and (6) what individual, organizational, service, and system-level outcomes may follow. An exploratory sequential mixed-methods design was used so that a grounded model emerging from expert experience could subsequently be operationalized and examined quantitatively. Because the quantitative instrument was developed directly from the qualitative categories, the second phase was interpreted as preliminary empirical support for the proposed structure rather than definitive external validation.

Methodology

Study design

The research used an applied-developmental, exploratory sequential mixed-methods design. This design was selected because the concept of a sport HRM ecosystem required both inductive exploration and subsequent quantitative examination. Exploratory sequential designs begin with qualitative inquiry to identify concepts and relationships, followed by a quantitative phase that operationalizes and examines the emergent framework in a broader sample (Creswell & Plano Clark, 2018). The qualitative phase used a systematic grounded-theory approach, whereas the quantitative phase used a descriptive cross-sectional survey and partial least squares structural equation modeling (PLS-SEM). The quantitative phase was not designed to establish temporal causality; structural paths are therefore interpreted as associations among latent constructs in this sample.

Qualitative phase

The qualitative study population consisted of experts and practitioners with knowledge of sport management, human resource management, organizational behavior, sport policy, and sport organizations. Participants included university academics, federation managers, sport ministry personnel, provincial sport administrators, club HR managers, sport-policy specialists, organizational behavior experts, an organizational psychologist, a sport association president, an HR specialist in a federation, and an HR information-systems specialist. Participants were selected through purposive sampling and then theoretical sampling. Selection initially emphasized relevant scientific or executive experience; subsequent participants were chosen according to the analytical needs of emerging categories.

Sample size was determined by theoretical saturation. Interviews continued until additional data no longer generated substantively new concepts, properties, or relationships, and saturation was judged to have been reached after 15 interviews. The interview protocol contained broad open-ended questions addressing the current state of HRM in sport organizations and major actors and relationships, with prompts related to causal, contextual, intervening, strategic, and outcome dimensions. These prompts reflected the systematic grounded-theory paradigm and provided an organizing framework for category development. The guide was reviewed by the dissertation supervisor, advisors, and subject specialists for content relevance and clarity.

Before each interview, participants received information about the study purpose, interview topics, and intended use of the data. Informed consent, confidentiality, protection of participant identity, accurate data recording, and the freedom to decline questions or withdraw were observed. With participant permission, interviews were audio-recorded and fully transcribed. Supplementary field notes were also taken. Interviews lasted approximately 60 minutes on average.

Data were analyzed through open, axial, and selective coding using the constant-comparison method. During open coding, transcripts were examined line by line and meaning units were assigned conceptual labels. Related codes were grouped into subcategories and then into higher-order categories. During axial coding, categories were organized within a paradigm including causal conditions, the core phenomenon, contextual conditions, intervening conditions, strategies, and outcomes. During selective coding, the main categories were integrated around the core phenomenon to construct the final model. The constant-comparison procedure continued throughout data collection and analysis until theoretical saturation.

Quantitative phase and participants

The quantitative population included managers and specialists from the Ministry of Sport and Youth, sport federations, provincial departments of sport and youth, sport associations, clubs and sport complexes, HR managers and specialists in sport organizations, coaches and technical specialists, sport management academics, and other professionals knowledgeable about HRM in sport organizations.

Sample-size planning used the 10-times rule described by Barclay et al. (1995) (Barclay et al., 1995). The largest measurement block contained 32 indicators, yielding a heuristic minimum of 320 participants. To increase statistical precision, the questionnaire was distributed more broadly, and 400 complete and analyzable responses were obtained. The 10-times rule was used as a pragmatic planning criterion rather than a formal power analysis.

Instrument development

The quantitative instrument was developed directly from the qualitative findings. It contained a demographic section and a 120-item substantive section. The 120 items represented 30 subcategories, with four items allocated to each subcategory. Responses were recorded on a five-point Likert scale ranging from strongly disagree to strongly agree (Likert, 1932). Direct derivation of the items from the qualitative categories strengthened alignment between the two phases while also creating the possibility of item redundancy and construct overlap.

Content validity was evaluated by 15 experts. The content validity ratio (CVR) was calculated for questionnaire components, and all reported CVR values exceeded the minimum acceptable value of 0.49 for a 15-member expert panel according to Lawshe's criterion (Lawshe, 1975). Before final distribution, the questionnaire was pilot-tested among 30 individuals with characteristics similar to those of the target population, and Cronbach's alpha coefficients for the pilot constructs exceeded 0.70. These procedures provided preliminary evidence of content relevance and internal consistency.

Quantitative analysis

Data were screened for missing values, outliers, and indifferent response patterns before model estimation. PLS-SEM was conducted using SmartPLS. This approach was selected because the model contained multiple latent constructs, a relatively large number of indicators, and both measurement and structural components. PLS-SEM is suitable for prediction-oriented models and complex hierarchical structures (Hair et al., 2022). The higher-order blocks corresponded to the principal grounded-theory dimensions used in the proposed model.

Measurement-model assessment included factor loadings, Cronbach's alpha, composite reliability (CR), average variance extracted (AVE), and discriminant validity. All reported alpha and CR values exceeded 0.70 and all AVE values exceeded 0.50. Discriminant validity was assessed using the Fornell-Larcker criterion, and predictive relevance was examined using Q2 statistics, which were positive across the reported constructs. Structural-model assessment used standardized path coefficients, t statistics, and coefficients of determination (R2). Because of the very high structural coefficients, the measurement results were interpreted cautiously, particularly with respect to possible construct overlap and common-method effects.

Research Findings

Participant characteristics in the quantitative phase

Of the 400 respondents, 311 (77.75%) were men and 89 (22.25%) were women. Regarding education, 160 (40.0%) held a bachelor's degree, 178 (44.5%) held a master's degree, and 62 (15.5%) held a doctoral degree. The age distribution was 20-30 years (20.0%), 31-35 years (24.5%), 36-40 years (22.25%), 41-45 years (17.75%), and older than 45 years (15.5%). Occupationally, 10.0% were managers or specialists from the Ministry of Sport and Youth or sport federations, 20.0% were managers or specialists from provincial sport departments and sport associations, 30.0% were coaches or technical sport specialists, 17.5% were club or sport-complex managers/specialists, 11.25% were sport management academics/researchers, and 11.25% were HR managers/specialists in sport organizations (Table 1).

Table 1. Characteristics of the quantitative sample (N = 400)

Characteristic	Category	n (%)
Gender	Women	89 (22.25%)
	Men	311 (77.75%)
Education	Bachelor's degree	160 (40.0%)
	Master's degree	178 (44.5%)
	Doctoral degree	62 (15.5%)
Age	20-30 years	80 (20.0%)
	31-35 years	98 (24.5%)
	36-40 years	89 (22.25%)
	41-45 years	71 (17.75%)
	>45 years	62 (15.5%)
Occupational group	Ministry/federation managers and specialists	40 (10.0%)
	Provincial sport departments/associations	80 (20.0%)
	Coaches and technical specialists	120 (30.0%)
	Club/sport-complex managers and specialists	70 (17.5%)
	Sport management academics/researchers	45 (11.25%)
	HR managers/specialists in sport organizations	45 (11.25%)

Qualitative model development

Qualitative analysis produced 120 initial codes, 30 subcategories, and 15 main categories. These were organized into the grounded-theory paradigm shown in Table 2 and Figure 1.

Table 2. Paradigm structure of the sport HRM ecosystem model

Paradigm block	Main category	Subcategories
Causal conditions	Sport workforce complexity	Diversity of sport roles; instability of sport employment
Causal conditions	Institutional fragmentation	Weak actor coordination; siloed resource management
Core phenomenon	Human capital networking	Linking specialized actors; exchange of specialized resources
Core phenomenon	Sport value co-creation	Joint capability development; stakeholder value creation
Contextual conditions	Sport institutional environment	Professional sport rules; multilevel sport structure
Contextual conditions	Sport performance culture	Competitive result orientation; professional sport identity
Intervening conditions	Strategic sport support	Supportive leadership; enabling resources
Intervening conditions	Sport transformation readiness	Digital acceptance; network trust
Strategies	Talent-cycle engineering	Merit-based selection; sport succession planning
Strategies	Professional sport empowerment	Applied sport education; organizational coaching
Strategies	Ecosystem performance steering	Multilevel performance assessment; participatory rewards
Outcomes	Flourishing professional capital	Career-path development; occupational health
Outcomes	Empowered sport organizations	Operational agility; employer reputation
Outcomes	Excellent sport services	Service-recipient satisfaction; sport-operation safety

Outcomes	Sustainable sport development	Social impact; national competitiveness

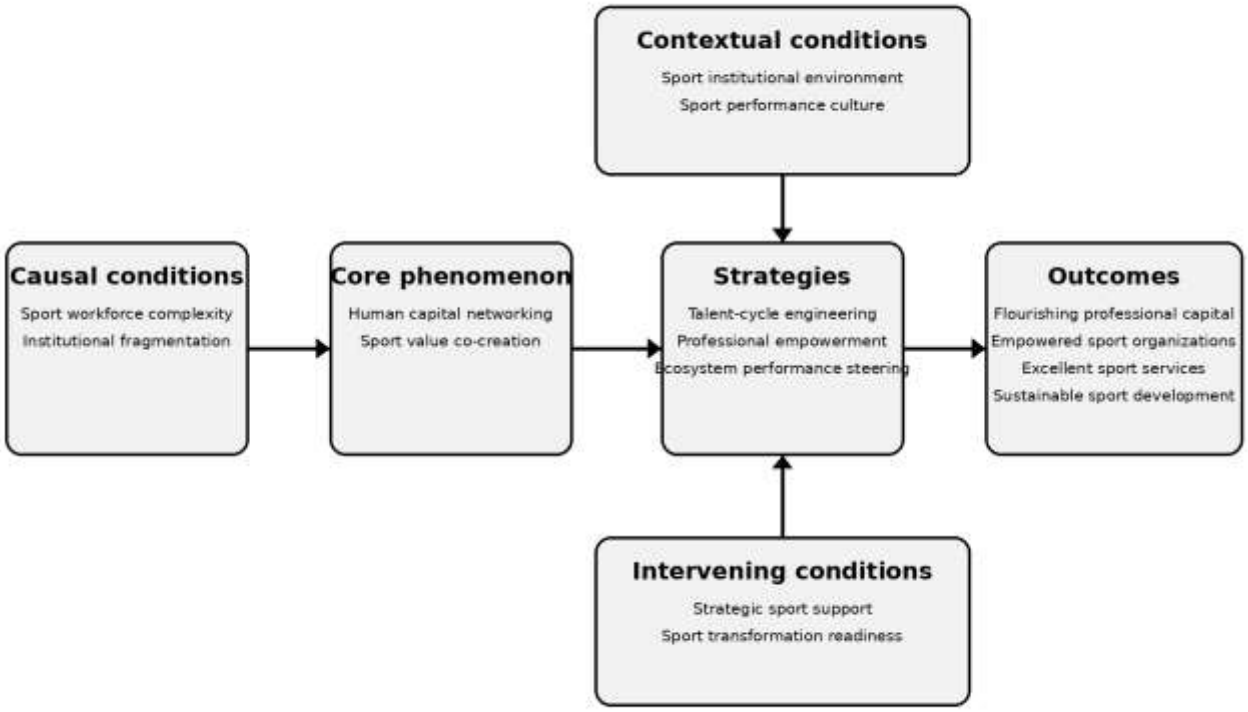


Figure 1. Human resource management ecosystem model for sport organizations.

Causal conditions comprised sport workforce complexity and institutional fragmentation. Sport workforce complexity included diversity of sport roles and instability of sport employment. The interview data indicated that sport organizations work with heterogeneous professional groups whose employment patterns, qualifications, and career structures differ. Institutional fragmentation included weak coordination among actors and siloed resource management. Participants described dispersed responsibilities, overlapping functions, and limited cross-organizational coordination as important reasons why organization-centered HRM was insufficient.

The core phenomenon consisted of human capital networking and sport value co-creation. Human capital networking included linking specialized actors and exchanging specialized resources. It reflected the need to connect coaches, experts, organizations, scientific centers, and professional labor markets. Sport value co-creation included joint capability development and stakeholder value creation. The model therefore interpreted HRM as a system in which shared learning, knowledge exchange, and joint professional capability development create value for employees, athletes, organizations, and other stakeholders.

Contextual conditions comprised the sport institutional environment and sport performance culture. The institutional environment included professional rules and the multilevel structure of sport. Professional credentials, federation regulations, and division of authority across national, provincial, federation, association, and club levels shaped HR decisions. Performance culture included competitive result orientation and professional sport identity. The qualitative data suggested that medal pressure, fan expectations, managerial instability associated with results, professional status, and the influence of reputation affect HR priorities.

Intervening conditions were strategic sport support and sport transformation readiness. Strategic support included supportive leadership and enabling resources. Transformation readiness included digital acceptance and network trust. Participants emphasized management support, access to HR technologies, digital skills, willingness to use virtual learning, trust in data-based performance analysis, willingness to share information, protection of professional rights, and clarity of mutual benefits.

Three strategy categories were identified. Talent-cycle engineering included merit-based selection and sport succession planning. Professional sport empowerment included applied sport education and organizational coaching. Ecosystem performance steering included multi-level performance assessment and participatory reward systems. These strategies were intended to integrate selection, development, succession, performance evaluation, learning, and incentives across organizational boundaries rather than treating them as isolated internal functions.

Four outcome categories emerged. Flourishing professional capital included career-path development and occupational health. Empowered sport organizations included operational agility and employer reputation. Excellent sport services included service-recipient satisfaction and sport-operation safety. Sustainable sport development included social impact and national competitiveness. Thus, the model connected ecosystem HRM not only to employee outcomes but also to organizational capacity, service quality and safety, and broader sport-system development.

Measurement model

Cronbach's alpha and composite reliability values exceeded 0.70 across the latent variables, and AVE values exceeded 0.50. The higher-order causal-conditions construct showed alpha = 0.96, CR = 0.96, and AVE = 0.60; the core phenomenon showed alpha = 0.96, CR = 0.96, and AVE = 0.60; and the contextual-conditions construct showed alpha = 0.96, CR = 0.96, and AVE = 0.60. The strategies construct showed alpha = 0.96, CR = 0.97, and AVE = 0.56, whereas outcomes showed alpha = 0.98, CR = 0.98, and AVE = 0.61. Positive Q2 values and acceptable Fornell-Larcker results supported preliminary measurement quality. The uniformly high reliability coefficients were nevertheless interpreted cautiously because they may also indicate substantial similarity among some items or constructs.

Table 3. Selected higher-order measurement-model indicators

Construct	Cronbach alpha	CR	AVE
Causal conditions	0.96	0.96	0.60
Core phenomenon	0.96	0.96	0.60
Contextual conditions	0.96	0.96	0.60
Intervening conditions	0.96	0.96	0.60
Strategies	0.96	0.97	0.56
Outcomes	0.98	0.98	0.61

Note. CR = composite reliability; AVE = average variance extracted.

Structural model

The structural model reproduced the proposed relationships in the study sample (Table 4). Causal conditions were strongly associated with the HRM ecosystem (beta = 0.95, t = 120.95), with R2 = 0.917 for the HRM ecosystem. Because the survey was cross-sectional and observational, these coefficients were interpreted as structural associations rather than evidence of temporal causation.

Table 4. Structural-model path coefficients

Path	Standardized beta	t statistic	R2 of endogenous construct
Causal conditions -> HRM ecosystem	0.95	120.95	0.917
HRM ecosystem -> strategies	0.96	119.76	
Contextual conditions -> strategies	0.78	88.61	0.937*
Intervening conditions -> strategies	0.95	121.23	
Strategies -> outcomes	0.96	183.84	0.936

Note. *R2 = 0.937 is the explained variance of the strategy construct by the HRM ecosystem, contextual conditions, and intervening conditions combined. All reported t statistics exceed 1.96.

The HRM ecosystem was positively associated with strategies (beta = 0.96, t = 119.76). Contextual conditions were also positively associated with strategies (beta = 0.78, t = 88.61), and intervening conditions showed a similarly strong association (beta = 0.95, t = 121.23). Collectively, these predictors accounted for 93.7% of the variance in the strategy construct (R2 = 0.937). The magnitude of these coefficients is unusually high for organizational and behavioral research and was therefore interpreted cautiously in relation to potential construct redundancy, multicollinearity, and common-method variance.

Strategies were positively associated with outcomes (beta = 0.96, t = 183.84), with R2 = 0.936 for the outcome construct. All reported t statistics exceeded the 1.96 threshold used for statistical significance. A global GoF value of 0.90 was also calculated; however, the substantive interpretation in this manuscript relies primarily on the reported measurement and structural parameters rather than on the GoF index. The structural findings therefore represent strong within-sample associations rather than independently established causal effects.

Discussion

This study developed a human resource management ecosystem model for sport organizations and obtained preliminary quantitative support for the proposed structure. The central contribution is the shift from an organization-centered view of HRM toward a networked perspective in which talent, knowledge, professional capabilities, and employment relationships are distributed across multiple actors. The qualitative model identified why such an ecosystem may be needed, what constitutes its core, the contexts in which it operates, the conditions that enable or constrain it, the strategies through which it can be managed, and the outcomes associated with those strategies. The quantitative phase reproduced the proposed relationships in the study sample and provides preliminary empirical support rather than definitive external validation.

The first major finding is that sport workforce complexity and institutional fragmentation act as causal conditions. The workforce of sport organizations is structurally heterogeneous: permanent staff, contract workers, volunteers, coaches, referees, medical and technical specialists, academics, and external service providers may contribute simultaneously. This finding is consistent with earlier observations that sport organizations often combine paid and volunteer work and therefore face distinctive HRM challenges (Taylor & McGraw, 2006). The finding also aligns with the broader HR ecosystem literature, which argues that organizations increasingly rely on people and capabilities beyond formal employment boundaries (Burke & Morley, 2023; Snell et al., 2023). The sport setting intensifies this challenge because professional credentials, seasonal cycles, events, competitive schedules, and movement of specialists between organizations make the workforce highly fluid.

Institutional fragmentation was equally important. Weak coordination and siloed resource management were identified as core reasons for adopting an ecosystem perspective. Sport organizations often operate within multilevel governance structures where ministries, federations, provincial organizations, clubs, and professional communities have overlapping or

interdependent responsibilities. Begovic and Garcia (2025) similarly show that the development of a coherent sport ecosystem can be constrained by institutional fragmentation and limited strategic coordination (Begović & Garcia, 2025). Morgan's (2024) ecosystem framework also emphasizes that sport actors cannot be understood in isolation because their capabilities and outputs depend on surrounding institutional and relational structures (Morgan, 2024). The high structural coefficient from causal conditions to the HRM ecosystem in the present study reflects the centrality of these pressures in the proposed model.

The second major finding concerns the core phenomenon: human capital networking and sport value co-creation. These two components are conceptually linked. Networking creates connections among specialized actors and enables the exchange of scarce resources, while co-creation turns those connections into shared capabilities and stakeholder value. This is consistent with the broader ecosystem argument that value emerges from interdependence rather than unilateral organizational action (Adner & Kapoor, 2010). It is also compatible with the sport value framework, in which value is created through resource integration among multiple sport stakeholders (Woratschek et al., 2014). For HRM, this means that a club or federation does not need to own every capability internally; it must be able to access, combine, and develop capabilities across the ecosystem.

The networking component also resonates with open innovation. Sport organizations face changing technologies, emerging specialties, and short knowledge cycles. External collaboration can provide access to expertise that would be expensive or impossible to maintain internally. Chesbrough (2003) established the broader logic of organizational openness (Chesbrough, 2003), while Dahlander et al. (2021) emphasized the need to manage the balance between internal and external knowledge flows (Dahlander et al., 2021). In the present model, human capital networking operationalizes this logic for sport HRM through links with scientific centers, professional markets, clubs, governing bodies, and specialist actors. Gerke (2016) similarly demonstrated the importance of network structures in sport innovation contexts (Gerke, 2016).

The third major finding is that the model is context-dependent. The sport institutional environment and sport performance culture shaped strategy selection. Professional regulations and multilevel governance influence who can perform specific roles, how qualifications are recognized, and where authority is located. At the same time, competitive result orientation and professional identity affect managerial priorities. Sport organizations can face intense pressure for immediate competitive outcomes, which may conflict with long-term staff development, learning, and succession planning. Shilbury and Ferkins (2011) described professionalization as involving both improved strategic capability and governance complexity (Shilbury & Ferkins, 2011). The present findings extend that reasoning to HRM by showing that professional rules and performance culture form the environment within which ecosystem strategies must be designed.

The fourth major finding highlights strategic support and transformation readiness as intervening conditions. The model indicates that ecosystem-oriented HRM cannot be implemented simply by creating formal networks. It requires supportive leadership, enabling resources, digital acceptance, and trust. This conclusion is consistent with collaborative governance theory. Ansell and Gash (2008) identify institutional design, facilitative leadership, and trust-building as central to collaboration (Ansell & Gash, 2008), while Emerson et al. (2012) emphasize shared motivation and capacity for joint action. In the present study, network trust included willingness to share information, confidence that professional rights would be protected, transparency of partner benefits, and positive prior collaboration (Emerson et al., 2012). These are practical conditions for resource exchange in HR ecosystems.

Digital readiness was another important element. Digital systems can support databases of specialists, virtual learning, HR analytics, and coordination across geographically dispersed sport organizations. However, participant accounts indicated that actors must understand and trust these systems. Acceptance of performance analytics and willingness to use virtual learning cannot be assumed. This finding is compatible with contemporary HRM arguments that technology changes both HR processes and the relationships among actors. It also supports ecosystem perspectives that treat digitalization as an enabler of coordination rather than as a substitute for governance and trust.

The fifth major finding concerns the three strategy categories: talent-cycle engineering, professional sport empowerment, and ecosystem performance steering. Talent-cycle engineering integrates merit-based selection with succession planning. In fragmented systems, selection without a broader talent pipeline can produce repeated shortages and reactive appointments. Succession planning becomes particularly important where managerial turnover and temporary employment may cause knowledge loss. Professional empowerment adds applied education and organizational coaching, emphasizing development that is connected to actual sport tasks rather than administrative completion of training requirements. This reflects the need for workforce capability development emphasized in strategic HRM (Armstrong & Taylor, 2023) and the sport literature on professionalization.

Ecosystem performance steering extends performance management beyond one organization. Multi-level performance measurement recognizes that outcomes may depend on coordinated contributions from several actors. Participatory rewards acknowledge collaboration, knowledge transfer, and shared project outcomes. This is important because conventional performance systems can unintentionally reward local optimization while discouraging interorganizational cooperation. The model therefore proposes that performance management and reward systems should be aligned with ecosystem-level objectives when actors are expected to share knowledge and resources.

The sixth major finding is the multi-level nature of the outcomes. The model does not treat HRM success as a single organizational performance indicator. Instead, outcomes occur at professional, organizational, service, and system levels. Flourishing professional capital captures career development and occupational health. Empowered sport organizations capture agility and employer reputation. Excellent sport services capture satisfaction and operational safety. Sustainable sport development captures social impact and national competitiveness. This broad outcome structure is consistent with ecosystem thinking, where value is distributed across several stakeholder groups and levels rather than captured by one organization alone (Buser et al., 2022; Woratschek et al., 2014).

The strong association between strategies and outcomes is theoretically notable, but it should be interpreted cautiously. The ecosystem concept becomes practically meaningful when network relationships are translated into coordinated practices involving selection, succession, capability development, performance management, rewards, services, safety, and longer-term sport development. This interpretation is consistent with Oh et al.'s (2016) argument that ecosystem research should move beyond broad metaphor toward specification of actors, relationships, and value mechanisms. Nevertheless, the cross-sectional design does not establish that the proposed strategies cause the reported outcomes.

The quantitative findings showed exceptionally high R2 values and path coefficients. These values may reflect strong coherence among the proposed dimensions, but they may also have been amplified by the direct construction of questionnaire items from the same grounded-theory categories, conceptual overlap among higher-order constructs, item redundancy, multicollinearity, or common-method variance. The findings therefore indicate that the qualitative structure

was strongly reproduced within this sample, while external validity and measurement distinctiveness require confirmation in independent samples.

Taken together, the results extend three areas of literature. First, they contribute to HR ecosystem research by specifying a sport-specific set of causal, contextual, enabling, strategic, and outcome dimensions. Second, they contribute to sport ecosystem research by placing human capital flows and HRM mechanisms at the center of ecosystem functioning. Third, they provide a bridge between strategic HRM and collaborative governance by showing that effective HRM in sport may depend on network-level coordination, trust, rules, leadership support, and joint capability development.

Practical Implications

The model provides a practical framework for ministries, federations, clubs, provincial sport bodies, universities, professional associations, and HR units. First, sport authorities can move from isolated HR databases and organization-specific training plans toward shared or interoperable systems that identify qualified coaches, referees, technical experts, managers, and other specialists. Such systems should include clear governance for data access, professional rights, and confidentiality because network trust was identified as a key enabling condition.

Second, the findings support joint workforce planning. Universities, sport organizations, and professional bodies can periodically map emerging competency needs and align education, certification, and continuing professional development accordingly. Where specialist shortages are shared across organizations, joint training may reduce duplication and improve consistency.

Third, talent management should be treated as a cycle rather than as episodic recruitment. Merit-based selection should connect with succession planning, career development, applied education, coaching, and mobility across sport organizations. This is especially relevant for roles where expertise is scarce or where turnover can lead to loss of organizational knowledge.

Fourth, performance systems should include ecosystem-level indicators. In addition to individual and organizational outputs, evaluation can consider knowledge transfer, collaboration quality, service safety, contribution to shared projects, and development of other actors. Reward systems should recognize cooperative behavior where cross-organizational collaboration is necessary for outcomes.

Finally, ecosystem implementation requires strategic sponsorship. Senior leaders should allocate resources, support cross-organizational arrangements, reduce uncertainty regarding responsibilities, and create continuity despite managerial change. Digital tools are most useful when accompanied by skills, trust, transparency, and agreed governance.

Limitations

Several limitations should be considered. First, the quantitative phase was cross-sectional and based on a single self-report questionnaire administered at one time point; therefore, temporal ordering and causal effects cannot be established, and common-method variance may have contributed to the magnitude of the associations. Second, the 120-item instrument was developed directly from the qualitative categories, which maximized content correspondence between phases but may also have increased item redundancy and conceptual overlap. The very high path coefficients, reliability estimates, and R2 values therefore warrant cautious interpretation. Third, sample-size planning relied on the 10-times rule rather than a formal a priori power analysis. Fourth, the quantitative sample combined heterogeneous professional groups, including managers, coaches,

academics, technical specialists, and HR personnel, and measurement invariance across these groups was not examined. Fifth, the online recruitment procedure did not permit calculation of a response rate, so the sample should not be treated as probability-representative of all sport organizations. Finally, the qualitative phase involved 15 experts and used a systematic grounded-theory paradigm that informed both the interview prompts and subsequent category organization. These features support structured model development but may limit transferability to other sport systems. Independent replication, longitudinal testing, and additional assessment of discriminant validity, collinearity, and predictive performance are warranted.

Conclusion

The findings support a provisional view of HRM in sport organizations as an ecosystem rather than a collection of isolated internal functions. In the proposed model, sport workforce complexity and institutional fragmentation are positioned as conditions associated with the need for a networked approach; human capital networking and sport value co-creation form the core phenomenon; and institutional context, performance culture, strategic support, digital readiness, and network trust are linked to ecosystem-oriented strategies. Talent-cycle engineering, professional empowerment, and ecosystem performance steering were, in turn, strongly associated with professional, organizational, service, and system-level outcomes in the study sample. These relationships should be interpreted as cross-sectional associations rather than demonstrated causal effects.

For sport managers, the central implication is that managing people increasingly means managing interdependence. The quality of a sport organization's human resources depends not only on whom it employs, but also on the networks through which it accesses expertise, shares knowledge, develops capabilities, coordinates professional standards, and creates value with other actors. A mature HRM ecosystem therefore requires deliberate governance of relationships as well as strong internal HR practices.

Acknowledgments

The authors thank the experts, managers, specialists, academics, coaches, and other respondents who contributed to the qualitative and quantitative phases of the study. This manuscript was extracted from the doctoral dissertation of the first author in Sport Management.

Authors' Contributions

Maryam Chitsaz Qazvini: conceptualization, investigation, data curation, formal analysis, and writing - original draft. Mahdi Naderi Nasab: supervision, conceptualization, methodology, and writing - review and editing. Seyed Abbas Biniaz: advisory supervision, methodology, validation, and writing - review and editing. Ali Khorjahani: advisory supervision, methodology, validation, and writing - review and editing. All authors approved the final manuscript.

Declaration of Interest

The authors of this article declared no conflict of interest.

AI use statement

Artificial intelligence tools were used only to support language editing, translation refinement, formatting, and consistency checks. The authors take full responsibility for the accuracy of the data, analyses, interpretations, citations, and final content of the manuscript.

Ethical Considerations

This study was conducted using interview and questionnaire data. Participation was voluntary, and the confidentiality of participants' responses was preserved. The research procedure was designed to avoid harm to participants and to respect the principles of informed participation and academic integrity.

Transparency of Data

Reasonable requests for research materials should be directed to the corresponding author, subject to university policies and participant confidentiality.

Funding

This research was carried out independently with personal funding and without the financial support of any governmental or private institution or organization.

References

Adner, R., & Kapoor, R. (2010). Value creation in innovation ecosystems: How the structure of technological interdependence affects firm performance in new technology generations. *Strategic management journal*, *31*(3), 306-333. https://doi.org/10.1002/smj.821

Ansell, C., & Gash, A. (2008). Collaborative governance in theory and practice. *Journal of Public Administration Research and Theory*, *18*(4), 543-571. https://doi.org/10.1093/jopart/mum032

Armstrong, M., & Taylor, S. (2023). *Armstrong's handbook of human resource management practice: A guide to the theory and practice of people management*. Kogan Page Publishers. https://books.google.com/books?hl=en&lr=&id=3oChEAAAQBAJ&oi=fnd&pg=PP1&dq=Armstrong,+M.+and+S.+Taylor+(2023).+Armstrong%27s+handbook+of+human+resource+management+practice:+A+guide+to+the+theory+and+practice+of+people+management,+Kogan+Page+Publishers.+%09&ots=YGoplmRENA&sig=eRR3KjQUv4YCjp6owHfUZfrkGWM

Barclay, D., Higgins, C., & Thompson, R. (1995). The partial least square (PLS) approach to causal modeling: Personal computer adoption and use as an illustration. *Technology Studies*, *2*(2), 285-309.

Begović, M., & Garcia, B. (2025). Development of contemporary sport ecosystem in Kosovo. *International Journal of Sport Policy and Politics*, *17*(1), 155-165. https://doi.org/10.1080/19406940.2024.2378162

Burke, C. M., & Morley, M. J. (2023). Toward a non-organizational theory of human resource management? A complex adaptive systems perspective on the human resource management ecosystem in (con)temporary organizing. *Human Resource Management*, *62*(1), 31-53. https://doi.org/10.1002/hrm.22132

Buser, M., Woratschek, H., Dickson, G., & Schönberner, J. (2022). Toward a sport ecosystem logic. *Journal of Sport Management*, *36*(6), 534-547. https://doi.org/10.1123/jsm.2021-0056

Chesbrough, H. W. (2003). *Open innovation: The new imperative for creating and profiting from technology*. Harvard Business School Press. https://www.researchgate.net/profile/Wim-Vanhaverbeke/publication/232957368_Open_Innovation_Researching_A_New_Paradigm/links/0912f50c638616b4b2000000/Open-Innovation-Researching-A-New-Paradigm.pdf

Creswell, J. W., & Plano Clark, V. L. (2018). *Designing and conducting mixed methods research* (3rd ed.). SAGE Publications. https://books.google.com/books?hl=en&lr=&id=FnY0BV-q-hYC&oi=fnd&pg=PR13&dq=Creswell,+J.+W.+and+V.+L.+Plano+Clark+(2018).+Designing+and+conducting+mixed+methods+research,+SAGE+Publications.+%09&ots=7bUD7AB2qE&sig=yDkAcPP2nCYDp8RmxYMNOWOGubs

Dahlander, L., Gann, D. M., & Wallin, M. W. (2021). How open is innovation? A retrospective and ideas forward. *Research Policy*, *50*(4), 104218. https://doi.org/10.1016/j.respol.2021.104218

Donnelly, R., & Hughes, E. (2023). The HR ecosystem framework: Examining strategic HRM tensions in knowledge-intensive organizations with boundary-crossing professionals. *Human Resource Management*, *62*(1), 79-95. https://doi.org/10.1002/hrm.22115

Dowling, M., Edwards, J., & Washington, M. (2014). Understanding the concept of professionalisation in sport management research. *Sport Management Review*, *17*(4), 520-529. https://doi.org/10.1016/j.smr.2014.02.003

Emerson, K., Nabatchi, T., & Balogh, S. (2012). An integrative framework for collaborative governance. *Journal of Public Administration Research and Theory*, *22*(1), 1-29. https://doi.org/10.1093/jopart/mur011

Gerke, A. (2016). Towards a network model of innovation in sport: The case of product innovation in nautical sport clusters. *Innovation: Management, Policy & Practice*, *18*(3), 270-288. https://doi.org/10.1080/14479338.2016.1237306

Hair, J. F., Hult, G. T. M., Ringle, C. M., & Sarstedt, M. (2022). *A primer on partial least squares structural equation modeling (PLS-SEM)* (3rd ed.). SAGE Publications. https://openlibrary.telkomuniversity.ac.id/home/catalog/id/198670/slug/a-primer-on-partial-least-squares-structural-equation-modeling-pls-sem-3-e-.html

Hoye, R., Smith, A. C., Nicholson, M., & Stewart, B. (2020). *Sport management: Principles and applications*. Routledge. https://books.google.com/books?hl=en&lr=&id=nzZDDwAAQBAJ&oi=fnd&pg=PT20&dq=Hoye,+R.,+et+al.+(2020).+Sport+management:+Principles+and+applications,+Routledge.+%09&ots=83hRpSW0sj&sig=df1Mzw1l9mZ6wOP65J-YXOiAwgA

Lawshe, C. H. (1975). A quantitative approach to content validity. *Personnel Psychology*, *28*(4), 563-575. https://parsmodir.com/wp-content/uploads/2015/03/lawshe.pdf

Likert, R. (1932). A Technique for the Measurement of Attitudes. *Archives of Psychology*, *140*, 1-55.

Morgan, S. A. (2024). *The hitchhiker's guide to the sport ecosystem: Development of a new theoretical framework and organisational model* Loughborough University].

Oh, D. S., Phillips, F., Park, S., & Lee, E. (2016). Innovation ecosystems: A critical examination. *Technovation*, *54*, 1-6. https://doi.org/10.1016/j.technovation.2016.02.004

Shilbury, D., & Ferkins, L. (2011). Professionalisation, sport governance and strategic capability. *Managing Leisure*, *16*(2), 108-127. https://doi.org/10.1080/13606719.2011.559090

Snell, S. A., Swart, J., Morris, S., & Boon, C. (2023). The HR ecosystem: Emerging trends and a future research agenda. *Human Resource Management*, *62*(1), 5-14. https://doi.org/10.1002/hrm.22158

Taylor, T., Doherty, A., & McGraw, P. (2008). *Managing people in sport organizations: A strategic human resource management perspective*. Routledge. https://api.taylorfrancis.com/content/books/mono/download?identifierName=doi&identifierValue=10.4324/9781003415893&type=googlepdf

Taylor, T., & McGraw, P. (2006). Exploring human resource management practices in nonprofit sport organisations. *Sport Management Review*, *9*(3), 229-251. https://doi.org/10.1016/S1441-3523(06)70027-4

Woratschek, H., Horbel, C., & Popp, B. (2014). The sport value framework - A new fundamental logic for analyses in sport management. *European Sport Management Quarterly*, *14*(1), 6-24. https://doi.org/10.1080/16184742.2013.865776