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Development of the External Factors Evaluation Matrix Based on Scenario Planning (Case Study: Iran's Sports Industry)

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ABSTRACT

Appropriate organizational responses to environmental variables have oriented strategic planning toward novel approaches such as strategic foresight. The purpose of this study is the qualitative development of the External Factors Evaluation (EFE) Matrix affecting Iran's sports industry using scenario planning. This research is developmental–applied in terms of purpose, mixed-method in nature, and follows a survey path incorporating cross-impact analysis and scenario planning. The statistical population included associate professors and full professors in the field of sports management, selected through a mixed sampling method in four phases. The results indicated that, based on different states of key uncertainties in the Scenario Wizard software, four feasible scenarios with high internal consistency were identified. Based on the occurrence probabilities of their various assumptions, the EFE matrix can be developed. Therefore, the proposed matrix of this study can assist in formulating more resilient strategies in the uncertain environment of Iran's sports industry by enabling more precise identification and evaluation of external factors. The innovation of the present research lies in integrating the EFE matrix—as one of the most important tools in strategic management—with scenario planning, one of the most significant methods in futures studies. Hence, the use of the evolved EFE matrix extracted from this research is recommended not only for managers of organizations active in the sports industry but also for long-term planners in other sectors and organizations.

Keywords: Strategic foresight, Strategic planning, Scenario planning, Sports industry, External Factors Evaluation Matrix

Introduction

In today's rapidly evolving and uncertain environment, traditional strategic planning models are increasingly challenged by complex and dynamic changes, especially in developing sectors like sports. The emergence of new technological, environmental, economic, and social forces necessitates more adaptable and forward-thinking planning tools. Scenario planning, as a central method of strategic foresight, provides a structured yet flexible framework for envisioning multiple plausible futures. Within the domain of Iran's sports industry, which is deeply influenced by global

trends, regional developments, policy shifts, and societal dynamics, this approach is particularly relevant and necessary for identifying and responding to external challenges and opportunities (Samadi, 2025).

The application of scenario-based planning to develop tools such as the External Factors Evaluation (EFE) Matrix represents an innovative fusion of qualitative and semi-quantitative methods. This integrative approach allows decision-makers to not only assess environmental variables but also anticipate how these variables might shift under different plausible futures. As emphasized by previous studies, integrating scenario planning with strategic tools enables policymakers to enhance strategic flexibility and resilience, particularly in systems highly vulnerable to external shocks, such as sports tourism, energy management, or healthcare education (Ghasab et al., 2025; Hafezi et al., 2023; Nasrabadi et al., 2023).

The sports industry in Iran, while rich in potential, faces considerable challenges ranging from infrastructural limitations to socio-political instability and environmental pressures. Sports-related sectors such as health-oriented programs, sports tourism, and military sports are all influenced by the country's broader socio-economic context, technological advancements, and environmental sustainability goals (Farhangian et al., 2022; Karimzadeh et al., 2025; Kiani & Nazari, 2024). Thus, planning for the future of this industry requires an anticipatory and multidimensional strategy.

Within this framework, identifying key drivers of change and uncertainties is a foundational step. Uncertainties, as defined in foresight literature, represent variables whose future states are both highly impactful and unpredictable. These include trends in social capital, media influence, environmental policy, and the expansion of sports infrastructure—each playing a potentially transformative role in shaping the future of sports in Iran (Fouladgar et al., 2021; Ronaghi et al., 2024; Vesali et al., 2022). Scenario planning enables the modeling of these uncertainties and their interrelations, which are crucial for developing a resilient EFE Matrix.

This study builds upon previous efforts to implement foresight in Iran's national planning contexts. Notable examples include strategic foresight in energy systems, rural development, tourism, and aging populations—all of which have demonstrated the benefits of scenario-based strategies for confronting uncertainty (jorkesh & Nazari, 2019; Rezapouraghdam et al., 2020; Samadi, 2025; Yousefi et al., 2022). The evolution of sports in Iran, as both a cultural and economic institution, aligns closely with these broader national foresight goals. Particularly, sports tourism—a growing sub-sector with regional and international potential—requires coordinated, long-term planning to ensure its sustainability and competitiveness (Darabi et al., 2020; Ramzaninejad et al., 2020; Taherkhani et al., 2024).

Moreover, the application of hybrid research methodologies—combining qualitative scenario techniques with quantitative tools such as cross-impact analysis or causal layered analysis—has proven to be effective in managing uncertainties and supporting strategic decision-making in multiple domains, including innovation ecosystems, environmental sustainability, and urban planning (Kharazmi & Shaddel, 2024; Makki et al., 2023; Mejdar et al., 2023). This integrative research design is also adopted in the present study to develop a forward-looking EFE Matrix that not only reflects current environmental dynamics but also accommodates potential future developments.

The integration of environmental scanning and strategic foresight enables a more systemic evaluation of external variables. For instance, the STEEPLED framework (Social, Technological, Economic, Environmental, Political, Legal, Ethical, and Demographic) has been widely used to identify and prioritize external drivers of change in various sectors (Fouladgar et al., 2021; Ghasemi et al., 2021). In this study, the STEEPLED approach is combined with expert panel assessments and scenario modeling to systematically evaluate the impact and likelihood of external factors influencing Iran's sports industry over a defined future horizon.

The key novelty of this research lies in operationalizing scenario planning not merely as a narrative exercise, but as a strategic tool directly feeding into the EFE Matrix—a commonly used component of SWOT analysis. By doing so, this study bridges a critical gap between foresight studies and strategic management, making future-oriented planning more actionable and data-informed. This methodological integration has been supported in recent futures research and strategic governance literature, where scenario-based planning is shown to strengthen policy relevance and improve long-term strategic positioning (Hafezi et al., 2023; Kousari et al., 2021; Zackery et al., 2023).

This study is particularly timely as Iran's sports sector undergoes transformation in response to both internal policy shifts and external global trends. For instance, advancements in media technologies and the growing penetration of social networks are reshaping how sports content is produced, distributed, and consumed—posing both opportunities and threats to national sports institutions (Kiani & Nazari, 2024; Vesali et al., 2022). Similarly, social capital—comprising trust, networks, and civic engagement—emerges as a vital determinant of public participation in sports, especially in community-based and health-oriented initiatives (Ghasab et al., 2025; Karimzadeh et al., 2025).

Environmental concerns also factor prominently in shaping sports infrastructure and activity planning. The increasing frequency of extreme weather events, air pollution, and water scarcity challenge the viability of outdoor sports and the development of sustainable facilities (Fouladgar et al., 2021; Makki et al., 2023; Mejdar et al., 2023). These trends demand an adaptive strategy that includes ecological variables in sports development plans.

The role of mass media and digital platforms in this evolving context is equally crucial. As seen in other foresight-based studies of national sectors, media literacy and strategic communication have become essential in shaping public perception and stakeholder engagement in future planning (Nasrabadi et al., 2023; Vesali et al., 2022). In Iran's sports industry, harnessing media capabilities for promotional, educational, and participatory purposes could significantly influence the trajectory of strategic development.

Ultimately, the development of a scenario-informed EFE Matrix equips industry stakeholders with a more robust basis for SWOT analysis and strategic formulation. Unlike conventional EFE Matrices, which are grounded solely in present-day data, the scenario-based model integrates future uncertainties and provides flexible planning options under different environmental conditions. This innovation allows planners not only to better allocate resources but also to design proactive interventions aligned with probable future challenges and opportunities (Barasteh et al., 2024; Rasoulinezhad et al., 2019; Ronaghi et al., 2024).

In conclusion, the integration of strategic foresight with environmental factor analysis in the context of Iran's sports industry responds to an urgent need for future-readiness and strategic agility. By drawing on interdisciplinary foresight literature and employing a structured methodology combining expert elicitation, scenario modeling, and strategic evaluation, this study aims to produce a practical and future-oriented planning tool. The proposed framework holds the potential to guide both public and private sector stakeholders in developing responsive and resilient strategies in the face of increasing complexity and uncertainty.

Methods and Materials

The present study is developmental–applied in terms of purpose, mixed in nature, and employs a survey-based approach in the field of foresight research, including cross-impact analysis and scenario planning. According to Popper (2008), foresight research is classified into three categories based on its nature: qualitative, quantitative, and semi-quantitative. Based on his views, scenario planning and survey methods fall under qualitative research, as they are rooted in subjective and interpretive analysis and rely on individual creativity. Cross-impact analysis, due to the integration of mathematical principles into expert opinions, is categorized as semi-quantitative. Therefore, this research is of a mixed-method nature.

Moreover, Mintzberg (2007) asserts that developing a competitive strategy requires "synthesis" across the past, present, and future. Accordingly, in the first phase, the researcher conducted document and library studies and reviewed prior research related to the study. To model the environmental factors affecting Iran's sports industry and identify the related factors and components, a 61-item questionnaire based on a five-point Likert scale was used. To confirm its validity, three types of validity were employed: content validity, convergent validity, and divergent validity. For reliability assessment, Cronbach's alpha coefficient and composite reliability index were applied.

The statistical population consisted of faculty members in sports management with associate professor rank or higher, selected through a mixed sampling method (both probabilistic and non-probabilistic) in five stages. In the first phase, five faculty members evaluated the content validity of the semi-structured questionnaire. Additionally, because strategic foresight emphasizes outcomes over broad participation and focuses on expert input, the second phase

required a more focused population with less variance in responses. Thus, through narrowing the statistical population, 25 faculty members in sports management with associate professor rank or above and relevant research experience were selected as the study sample.

In the third, fourth, and fifth phases, for conducting cross-impact analysis (to identify key uncertainties affecting the future of Iran's sports industry), as well as for scenario planning and developing the External Factors Evaluation Matrix, the accessible sampling method and expert panels composed of sports management and foresight specialists were used. Moreover, in addition to descriptive statistics, the study employed expert panels and the *Scenario Wizard* software for data analysis.

Therefore, the steps undertaken in this study were as follows:

Step 1: Identification of key driving forces based on previous studies.

Step 2: Determination of key uncertainties using the cross-impact matrix.

Step 3: Formulation of scenarios for Iran's sports industry by 2036 (1415 in the Iranian calendar) using expert panels and *Scenario Wizard* software.

Step 4: Development of the External Factors Evaluation Matrix for Iran's sports industry based on scenario planning and the probability of different assumptions.

Findings and Results

According to the study by Farokhshahinia et al. (2021), which was conducted using the STEEPLED environmental scanning model and structural equation modeling, eight components were identified as the key driving forces influencing strategic foresight in Iran's sports industry. These include international trade, integration in sports management, expansion of the philosophy of sports, increase in per capita sports spaces and facilities, growth of social capital, environmental policies, the expansion of mass media and social networks, and the development of legal regulatory frameworks.

To identify key uncertainties that have both the highest priority in terms of influence and the highest priority in terms of being influenced, the relationships among the eight components were examined in a pairwise manner using an expert panel and a cross-impact matrix. At this stage, expert opinions were used to assess the relationships between components. If a component had no relationship with others, it was given a score of zero. Additionally, weak, moderate, and strong relationships were assigned scores of one, two, and three, respectively (Table 1).

Table 1. Relationship Score Matrix of Each Component with Others

Variable	International Trade	Integration in Sports Management	Sports Philosophy Expansion	Increase in Standard Sports Facilities	Social Capital Growth	Environmental Policies	Mass Media Expansion	Legal Regulatory Framework	Total Row Score
International Trade	0	0	1.25	3	1.25	2	2	1	10.5
Integration in Sports Management	1	0	0.5	3	3	1.25	2	2.5	13.25
Sports Philosophy Expansion	1.75	1.25	0	2.25	2.25	2	2	2	13.5
Increase in Standard Sports Facilities	0.25	0.75	1.25	0	3	2.75	2	1	11
Social Capital Growth	1.75	1.25	1.25	3	0	3	2.75	1	14
Environmental Policies	1	1	1.25	2.25	2.25	0	1.25	1	10
Mass Media Expansion	1.75	1.25	3	1.25	3	2.75	0	1	14
Legal Regulatory Framework	1.75	2	1.25	2.25	3	1	2	0	13.25
Column Total Score	9.25	7.5	9.75	17	17.75	14.75	14	9.5	

Finally, the computed row and column totals from Table 1 were analyzed in Microsoft Excel and presented in Figure 1. Based on the results, the eight identified drivers were introduced as uncertainties in Iran's sports industry due to their high susceptibility to external influence. Among them, four were identified as key uncertainties because of both high influence and high sensitivity. Thus, the components of social capital growth, expansion of mass and social media, increase in standard sports facility per capita, and environmental policies were determined to be the key uncertainties affecting strategic foresight in Iran's sports industry and were used for scenario planning.

Uncertainties represent possible future conditions that may or may not materialize, and no definitive or precise judgment can be made about them. Therefore, scenarios are formulated based on the most significant uncertainties.

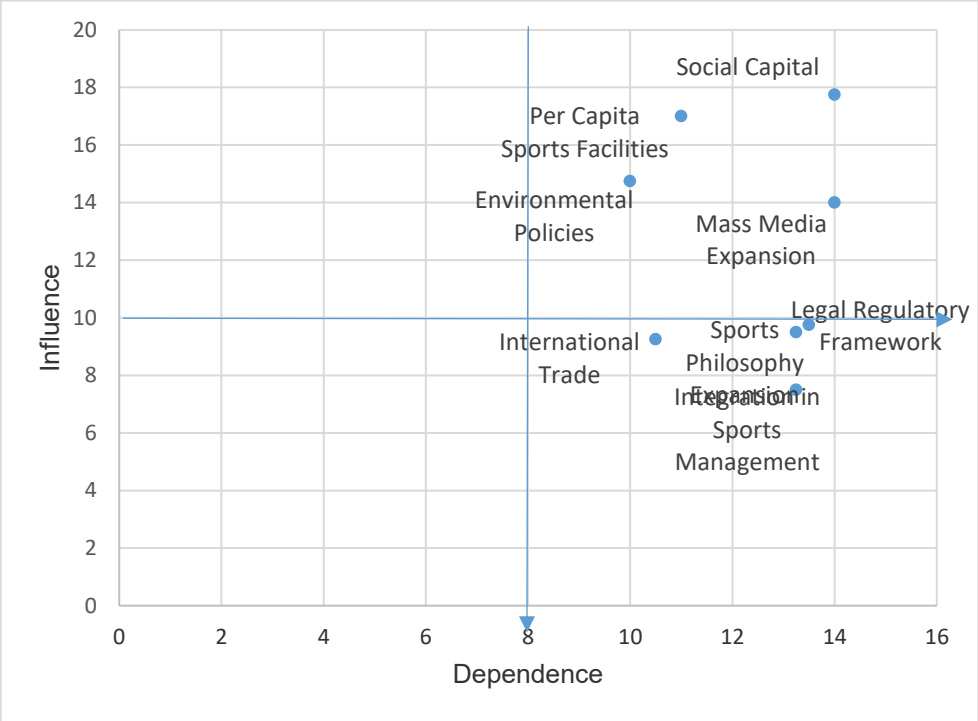

Figure 1. Distribution of Key Uncertainties Affecting Iran's Sports Industry

To develop scenarios based on key uncertainties, the *Scenario Wizard* software was used. This software operates on the basis of cross-impact matrices. These matrices are employed to extract expert opinions regarding the effect of one descriptor's state on another, using verbal descriptors. Ultimately, by calculating the direct and indirect effects of the states on each other, internally consistent scenarios are extracted.

According to the *Scenario Wizard* software application guide (Saeidpour & Behboudi, 2017), three states—optimistic, intermediate, and pessimistic—were considered for each key uncertainty by the year 2036 (1415 in the Iranian calendar). Since the software relies on the "cross-impact analysis" technique, the experts who participated in the identification of key uncertainties were asked to score the influence of the four key uncertainties on a seven-point scale.

Given that there are four key uncertainties and each has three states, a total of 81 scenarios were identified. The *Scenario Wizard* software, based on expert evaluations, extracted believable scenarios with high internal consistency as shown in Table 2. Scenarios are considered to have high internal consistency when the compatibility score of all key uncertainties forming the scenario is equal to or greater than zero. If the compatibility score of a driver in a scenario is negative, it indicates that the state of that driver is incompatible with the states of the other drivers forming the scenario. Consequently, the likelihood of such a scenario occurring is low, and it is excluded from scenario planning.

Table 2. Scenarios Extracted from the Scenario Wizard Software

Scenario No. 1	Scenario No. 2	Scenario No. 3	Scenario No. 4
Social Capital: *Pessimistic*	Social Capital: *Intermediate*	Social Capital: *Pessimistic*	Social Capital: *Pessimistic*
Mass Media: *Optimistic*	Mass Media: *Intermediate*	Mass Media: *Optimistic*	Mass Media: *Intermediate*
Sports Facility Standards: *Optimistic*	Sports Facility Standards: *Intermediate*	Sports Facility Standards: *Pessimistic*	Sports Facility Standards: *Intermediate*
Environmental Policies: *Optimistic*	Environmental Policies: *Intermediate*	Environmental Policies: *Pessimistic*	Environmental Policies: *Pessimistic*

When examining the status of key uncertainties across the different scenarios and prioritizing them based on their compatibility scores in each scenario, it was found—according to *Scenario Wizard* computations—that the compatibility scores of all key uncertainties in the four identified scenarios were equal to or greater than zero. Therefore, these scenarios exhibit internal consistency.

Additionally, based on input data, the software calculated the total impact score for Scenario 1 as 29, Scenario 2 as 21, and Scenarios 3 and 4 each as 25.

Scenarios offer a more comprehensive description of the environmental context and extend the time horizon of environmental analysis from the present into the future. Therefore, based on the four introduced scenarios and their corresponding states (optimistic, intermediate, and pessimistic), it becomes possible to calculate more precisely the weight, rating, and final score of the External Factors Evaluation (EFE) Matrix.

Based on the above, the steps to develop the EFE Matrix using scenario planning can be outlined as follows:

(1) Preparing a list of key uncertainties as strategic or high-priority external factors.

(2) Assigning importance weights to external factors: based on the scenario states and the significance and influence of each factor, a weight between 0 and 1 is assigned. The sum of all weights must not exceed 1.

(3) Assigning ratings to external factors: based on the current state of Iran's sports industry regarding its responsiveness, readiness, or adaptability to each external factor—alongside scenario states (optimistic, intermediate, pessimistic)—ratings from 1 to 4 are assigned. A rating of 1 indicates a very weak and ineffective response to the external factor. A rating of 2 indicates a weak response, 3 indicates a moderate response, and 4 indicates a strong and effective response.

(4) At this stage, the total of the factor ratings across different scenarios is calculated.

(5) In the next step, using the formula (Total Rating / Number of States × Weight = Final Score), each factor's score for the sports industry is determined.

(6) Finally, the total score of the external factors determines the final score of the EFE Matrix for Iran's sports industry.

In the EFE Matrix, regardless of how many key uncertainties exist that may act as opportunities or threats for the industry, the total final score never exceeds four and never drops below one. The average of this total is 2.5. A score of four indicates the industry responds excellently to factors that may present opportunities or threats now or in the future. A score of one indicates that the industry will likely be unable to exploit emerging opportunities or mitigate future threats.

Therefore, the insights derived from the EFE Matrix are used in constructing the SWOT Matrix and the Internal–External (IE) Matrix. Table 3 presents the evolved EFE Matrix for Iran's sports industry based on calculated weights and ratings in both the current situation and across different scenarios.

Table 3. External Factors Evaluation Matrix for Iran's Sports Industry Based on the Probability of Scenario Assumptions

Key Uncertainties	Weight	Rating (Present)	Rating (Scenario 1)	Rating (Scenario 2)	Rating (Scenario 3)	Rating (Scenario 4)	Total Ratings	Final Score
Social Capital	0.30	3	2	3	2	2	12	0.72
Mass Media & Social Networks	0.25	3	4	3	4	3	17	0.85
Environmental Policies	0.20	2	3	2	2	2	11	0.44
Per Capita Sports Facilities	0.25	2	4	3	2	2	13	0.65
Total Score								2.33

The final total score of **2.33** indicates a relatively unfavorable outlook for Iran's sports industry by the year 2036 (1415 in the Iranian calendar). This score reveals that current challenges in areas such as social capital and environmental policies require serious attention. Likewise, media capabilities and facility standards must be optimized to improve current conditions.

Accordingly, the proposed framework of this study can aid in identifying and evaluating future opportunities and threats, thereby supporting the development of more precise strategies for Iran's sports industry in today's uncertain,

challenging, and competitive environment. This approach strengthens the industry's capacity to capitalize on opportunities and reduce threats.

Strategic Foresight Framework for Developing the External Factors Evaluation Matrix:

1. Environmental Scanning
2. Identification of Key Drivers
3. Identification of Key Uncertainties
4. Scenario Planning
5. Development of the External Factors Evaluation Matrix
6. SWOT Analysis

Following the structure outlined above, the stages for developing the External Factors Evaluation Matrix for Iran's sports industry are as follows:

(1) **Input (Environmental Scanning):** In this stage, using the environmental scanning method and the STEEPLED model, environmental factors shaping the future are identified, categorized, and prioritized.

(2) **Analysis (Identifying Key Drivers):** This stage involves recognizing the most significant environmental forces shaping the future, also known as the driving forces of change.

(3) **Interpretation (Identifying Key Uncertainties):** This involves identifying and categorizing key uncertainties. At this stage, the relationships between components are analyzed using the cross-impact scoring matrix to identify uncertainties.

(4) **Projection (Scenario Planning):** This step involves developing forward-looking scenarios for the future of Iran's sports industry.

(5) **Development of the External Factors Evaluation Matrix:** This strategic tool is widely used to analyze environmental factors affecting strategic planning in organizations and industries. In this study, the evolved EFE Matrix was developed based on the probability of different assumptions occurring.

(6) **SWOT Analysis:** The SWOT Matrix is a tool for aligning and comparing internal factors derived from the Internal Factors Evaluation (IFE) Matrix with external factors derived from the EFE Matrix and scenario planning.

Discussion and Conclusion

The purpose of this study was to develop a future-oriented External Factors Evaluation (EFE) Matrix for Iran's sports industry using scenario planning and strategic foresight. The research process identified four key external uncertainties—social capital, mass media and social networks, environmental policies, and the per capita standard of sports facilities—that hold high influence and susceptibility within the future trajectory of the sector. By applying scenario planning techniques and constructing internally consistent scenarios through the *Scenario Wizard* software, four plausible and divergent futures were generated, each integrating optimistic, intermediate, and pessimistic assumptions about these uncertainties. The resulting scenario-based EFE Matrix demonstrated a total score of 2.33, reflecting a moderately unfavorable outlook for Iran's sports industry by the horizon year 1415 (2036).

The findings underscore the systemic challenges facing the sector, especially in terms of social capital and environmental policy. The low ratings attributed to these two factors across most scenarios, despite their high weights, highlight their critical role and the urgent need for targeted intervention. The consistently weak or intermediate scores for environmental policy, in particular, signal limited current responsiveness and a lack of robust strategies to counter the accelerating ecological constraints impacting sports infrastructure, especially in outdoor and water-based disciplines. This result aligns with the research by Fouladgar et al., who emphasized the underprioritization of environmental policy in Iranian strategic planning and the necessity of embedding ecological considerations into sectoral development (Fouladgar et al., 2021).

Similarly, the pessimistic trend observed in the social capital component across multiple scenarios suggests that the future viability of the sports industry is closely tied to the broader social fabric of the country. Low levels of civic engagement, trust, and community cohesion can reduce participation in grassroots sports programs and hinder the

development of health-promoting sports initiatives. The findings resonate with those of Karimzadeh et al., who argue that fostering social capital is foundational for embedding sport into public health and military lifestyle strategies (Karimzadeh et al., 2025). Without strengthening these socio-cultural foundations, future-oriented initiatives in sports will likely face resistance or stagnation.

In contrast, mass media and digital platforms emerged as the most resilient and opportunity-rich component in this study. This variable received the highest cumulative rating in the EFE Matrix, especially under optimistic and intermediate scenarios, suggesting the transformative role of digital communication and online platforms in promoting sports engagement. This finding supports Vesali et al., who emphasized the potential of media literacy and strategic communication to shape public perception and future planning in emerging sectors (Vesali et al., 2022). The increasing integration of digital tools in sports broadcasting, athlete branding, fan engagement, and virtual training provides avenues to overcome physical, economic, and geographic barriers—thereby expanding access and participation.

The per capita sports facility indicator displayed mixed trends across the scenarios. While the variable showed strength in scenarios characterized by infrastructural investment and policy support, its ratings declined under less favorable conditions, suggesting its dependency on both resource allocation and coordinated planning. This observation aligns with the findings of Kiani and Nazari, who identified infrastructural inconsistencies and inadequate facility distribution as persistent obstacles to sports tourism and community-level sports in Iran (Kiani & Nazari, 2024). The inconsistency in this variable across scenarios highlights the importance of robust planning and equitable investment strategies to ensure facility development aligns with population needs.

The scenario-based approach enabled a nuanced understanding of how these external factors might evolve under varying conditions of uncertainty. Scenario No. 1, for instance, presented an optimistic configuration for media and facilities but retained pessimistic projections for social capital and environmental policy. This divergence illustrates the disconnect that can arise when technological advancement outpaces socio-political development. Scenario No. 2, with balanced intermediate ratings, depicted a more realistic and coherent pathway—suggesting that incremental improvements across all uncertainties, even if not optimal, could yield a relatively stable future. Scenario No. 3 and No. 4, dominated by pessimistic outcomes for three or more variables, signaled urgent risks requiring immediate policy attention and cross-sectoral collaboration.

The development of the EFE Matrix in this context provides a decision-support tool for stakeholders by quantifying future vulnerabilities and resilience capacities. Importantly, the matrix's total score of 2.33—below the neutral average of 2.5—indicates a lack of sufficient preparedness and strategic agility to handle environmental shifts effectively. This is consistent with Samadi's research on rural futures, which demonstrated how suboptimal scores in future matrices correlate with fragile policy ecosystems and delayed adaptation efforts (Samadi, 2025). Therefore, strategic prioritization and capacity building in low-scoring areas, particularly in environmental responsiveness and social cohesion, should be placed at the forefront of sectoral planning.

Furthermore, the study reinforces the practicality and applicability of scenario planning as a foresight methodology in the sports sector. While most previous applications have focused on tourism (Darabi et al., 2020), environmental policy (Fouladgar et al., 2021), or urban futures (Zackery et al., 2023), this study demonstrates its direct utility in building performance-oriented tools such as the EFE Matrix. By integrating scenario outcomes into the rating system of strategic matrices, organizations can replace static and reactive planning with more flexible and adaptive strategies.

Notably, the incorporation of expert opinion through the Delphi-based cross-impact matrix adds legitimacy and contextual relevance to the final scenarios. The alignment of key uncertainties identified in this study with those reported by Nasrabadi et al. in nursing education and Barasteh et al. in palliative care planning suggests that across various sectors in Iran, foresight methods are converging around a few high-priority uncertainties—social capital, media dynamics, policy integration, and environmental resilience (Barasteh et al., 2024; Nasrabadi et al., 2023).

Despite the study's comprehensive approach, it is not without limitations. First, the reliance on expert judgment, while essential in foresight research, introduces potential bias, especially in the weighting and rating phases of the EFE Matrix. The composition of the expert panel, though selected from academic and policy circles, may not fully represent the diversity of stakeholders in the sports industry, such as private sector actors, athletes, or grassroots organizers.

Second, the scenario development was limited to four internally consistent outcomes. While sufficient for strategic modeling, additional or hybrid scenarios might reveal other critical pathways or unexpected interactions. Lastly, the study is context-specific to Iran, and generalizability to other national or regional sports ecosystems may be limited without further adaptation.

Future studies should consider expanding the diversity and number of expert participants to enhance the inclusivity and representativeness of the findings. Cross-sectoral panels that include not only policymakers and academics but also practitioners and end-users could offer more grounded insights. Moreover, longitudinal research designs could evaluate the real-world effectiveness of strategies derived from scenario-based EFE Matrices over time. Comparative studies between countries or regions with similar sports development challenges could also illuminate transferable patterns or strategies. Additionally, integrating quantitative modeling tools, such as system dynamics or agent-based modeling, alongside scenario planning could enhance the robustness and predictive value of foresight efforts in sports planning.

Practitioners in Iran's sports industry should utilize the scenario-based EFE Matrix as a strategic planning instrument to guide investment decisions, policy formulation, and infrastructure development. Strategic foresight units should be established within key organizations such as the Ministry of Sports and Youth to institutionalize anticipatory planning. Capacity-building programs in media literacy, environmental awareness, and social capital development should be prioritized to improve responsiveness in the lower-scoring areas identified. Finally, public-private partnerships and community-based initiatives should be encouraged to enhance adaptive capacity and ensure a more resilient and participatory sports ecosystem.

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Authors' Contributions

All authors equally contributed to this study.

Declaration of Interest

The authors of this article declared no conflict of interest.

Ethical Considerations

The study protocol adhered to the principles outlined in the Helsinki Declaration, which provides guidelines for ethical research involving human participants. Written consent was obtained from all participants in the study.

Transparency of Data

In accordance with the principles of transparency and open research, we declare that all data and materials used in this study are available upon request.

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References

Barasteh, S., Parandeh, A., Rassouli, M., Zaboli, R., Vahedian-Azimi, A., & Khaghanizadeh, M. (2024). Future Scenarios of Palliative Care in Health System of Iran: A Multi-Method Study. *Frontiers in Public Health*, *12*. https://doi.org/10.3389/fpubh.2024.1346234

Darabi, M., Keshtidar, M., Abadi, O. A. Y., Heydari, R., & Nazari-Torshizi, A. (2020). Scenario Planning of the Future of Sports Tourism Industry in Mashhad. *Annals of Applied Sport Science*, *8*(4), 0-0. https://doi.org/10.29252/aassjournal.788

Farhangian, S., Yektayar, M., Khodamoradpoor, M., & Nazari, R. (2022). Modelling Succession Planning in Health-Oriented Sports in Iran. *International journal of health sciences*, 7004-7017. https://doi.org/10.53730/ijhs.v6ns2.6682

Fouladgar, M. M., Kakhki, A. B., Esfahani, A. N., & Sedighi, M. (2021). A Policy Prioritization Framework Using Causal Layered Analysis and McDm: Case Study of Iran's Environmental Policies. *foresight*, *24*(6), 678-693. https://doi.org/10.1108/fs-04-2021-0085

Ghasab, A. A., Heydari, M., & Arab, M. (2025). Foresight for Internationalization of Medical Sciences Universities in Iran in the 2040 Horizon. *European Journal of Futures Research*, *13*(1). https://doi.org/10.1186/s40309-024-00245-1

Ghasemi, H., Rasekh, N., & izadparast, L. (2021). Overview of Sport History in Iran: Prehistory, Ancient and Modernization. https://doi.org/10.20944/preprints202106.0524.v1

Hafezi, R., Heirani, H., Akbari, M., Mortezaee, A., Bagherimoghaddam, N., Heydari, H., & Souhankar, A. (2023). Iran's Approach to Energy Policy Towards 2040: A Participatory Scenario Method. *foresight*, *25*(5), 649-665. https://doi.org/10.1108/fs-11-2021-0228

jorkesh, s., & Nazari, R. (2019). Future Study of Iran's Elderly Sports Using Cross-Impact Matrix. *Journal Of Shahid Sadoughi University Of Medical Sciences*. https://doi.org/10.18502/ssu.v26i12.666

Karimzadeh, M. S., Naderinasab, M., Taheri, M. H., & Biniyas, S. A. (2025). Identification and Analysis of Factors Influencing the Development of Sports in the Islamic Republic of Iran's Army Using Foresight Methodology (Focusing on Health and Lifestyle). *Int J Sport Stud Health*, *8*(1), 1-11. https://doi.org/10.61838/kman.intjssh.8.1.1

Kharazmi, O. A., & Shaddel, L. (2024). Transition of the Life Cycle of the Gold and Jewellery Innovation Ecosystem and Development of Its Future Scenarios: The Case of Mashhad, Iran's Second-Largest Metropolis. *International Journal of Technology Management and Sustainable Development*, *23*(2), 155-193. https://doi.org/10.1386/tmsd_00089_1

Kiani, M. S., & Nazari, L. (2024). Analysis of Innovative Marketing in Sports Tourism and Identification of Obstacles to Its Improvement (Case Study: Iran). *Sport I Turystyka Środkowoeuropejskie Czasopismo Naukowe*, *7*(3), 133-151. https://doi.org/10.16926/sit.2024.03.08

Kousari, S., Ghazinoory, S., & Saghafi, F. (2021). Societal Factors Affecting on Innovative Sustainable Development of Nanotechnology: A Morphological Approach. *foresight*, *23*(4), 421-438. https://doi.org/10.1108/fs-08-2020-0085

Makki, T., Mostafavi, H., Matkan, A. A., Valavi, R., Hughes, R. M., Shadloo, S., Aghighi, H., Abdoli, A., Teimori, A., Eagderi, S., & Coad, B. W. (2023). Predicting Climate Heating Impacts on Riverine Fish Species Diversity in a Biodiversity Hotspot Region. *Scientific reports*, *13*(1). https://doi.org/10.1038/s41598-023-41406-9

Mejdar, H. N., Moridi, A., & Najjar-Ghabel, S. (2023). Water Quantity–quality Assessment in the Transboundary River Basin Under Climate Change: A Case Study. *Journal of Water and Climate Change*, *14*(12), 4747-4762. https://doi.org/10.2166/wcc.2023.421

Nasrabadi, A. N., Ebadi, A., Fallahi-Khoshknab, M., Najafi-Mehri, S., Yaghmaei, F., Alhani, F., vaezi, a., Sepehrinia, M., & Shali, M. (2023). Future Scenarios of Nursing Education in Iran. *Iran Journal of Nursing*, *36*(142), 110-127. https://doi.org/10.32598/ijn.36.142.1398.7

Ramzaninejad, R., Boroumand, M. R., & Ahmadi, F. J. (2020). Content Analysis of Research Articles in Sport Tourism of Iran. *Annals of Applied Sport Science*, *8*(1), 0-0. https://doi.org/10.29252/aassjournal.677

Rasoulinezhad, E., Эхсан, Р., & Париса, С. (2019). Future Economic Scenarios of Iran and Russia Under Sanctions and Oil Price Shocks. *Rudn Journal of Economics*, *27*(3), 479-491. https://doi.org/10.22363/2313-2329-2019-27-3-479-491

Rezapouraghdam, H., Alipour, H., & Akhshik, A. (2020). A Futuristic Approach to Sustainable Tourism Development. 140-157. https://doi.org/10.4018/978-1-7998-4330-6.ch009

Ronaghi, S. S., Semnani, A. S. H., & Saffari, L. (2024). Workforce Planning for the Future of Sports Tourism. *Int J Sport Stud Health*, *7*(4), 26-39. https://doi.org/10.61838/kman.intjssh.7.4.4

Samadi, L. (2025). Scenario Planning for Future Development of Rural Areas in Iran: Case of Rural Areas Around the City of Varzegan. *Journal of Regional and Rural Development Planning*, *9*(1), 72-86. https://doi.org/10.29244/jp2wd.2025.9.1.72-86

Taherkhani, A., Biniaz, S. A., & Sarhadi, M. (2024). Identifying Key Drivers in the Development of Sport Tourism in Aquatic and Beach Sports: A Future Study. *Jsied*, 18-36. https://doi.org/10.61838/jsied.4.4.2

Vesali, L., Sadat, S. R. N., Afkhami, H., & Kia, A. A. (2022). Managing Uncertainties for Effective Social Network: Strategic Analysis of Media Literacy With Scenario Planning Method. *Journal of Governance and Accountability Studies*, *2*(1), 1-14. https://doi.org/10.35912/jgas.v2i1.755

Yousefi, H., Ghodusinejad, M. H., & Ghodrati, A. (2022). Multi-Criteria Future Energy System Planning and Analysis for Hot Arid Areas of Iran. *Energies*, *15*(24), 9405. https://doi.org/10.3390/en15249405

Zackery, A., Demneh, M. T., & Nejad, M. E. (2023). Colonization of Urban Futures in the Global South: Lessons From the Case of Isfahan 2040. *foresight*, *26*(1), 59-83. https://doi.org/10.1108/fs-01-2023-0004