

Future Study of Billiard Sports in Iran: A Scenario-Based Approach

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Ali Soltanpoor¹Rasool Norouzi Seyed Hossini^{2*} 
Shahram Nazari³

¹ Ph.D. Student of Sports Management University of Eyvanekey, Eyvanekey, Semnan, Iran

² Associate Professor of Sport Management, Tarbiat Modares University, Tehran, Iran

³ Assistant Professor of Sports Management, Farhangian University, Shahid Chamran Campus, Tehran, Iran

*Correspondence:

Rasool Norouzi Seyed Hossini, Associate Professor of Sport Management, Tarbiat Modares University, Tehran, Iran
Email:

rasool.norouzi@modares.ac.ir

ORCID: [0000-0003-0575-6811](https://orcid.org/0000-0003-0575-6811)

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Abstract

Purpose: The main objective of this research is to evaluate the current status and simulate various scenarios for the development of billiard sports in Iran.

Method: This study employs fuzzy Delphi techniques, MICMAC analysis, and scenario writing to explore and identify the future trajectories of billiard sports in Iran. Fourteen experts and specialists in billiard sports and sports policy participated in the research process. The SPLISS framework, which consists of nine pillars categorized into three groups—"Inputs," "Capacities," and "Outputs"—was selected as the basis for analyzing these factors.

Results: The findings of the research indicate that the key factors for the successful development of billiard sports in Iran include financial investment, infrastructure development, government support, and active participation in international competitions. The scenario analysis predicts four potential future scenarios for the sport in Iran: the "Shadow of the Decline of Billiards," "Unstable Leap," "Golden Age of Billiards," and "Unsustainable Growth." In positive scenarios, such as the "Golden Age of Billiards," with extensive government support, sustainable investments, and the development of professional leagues, the sport can achieve success and sustainable growth. In contrast, negative scenarios such as the "Shadow of the Decline of Billiards" and "Unsustainable Growth" point to economic and structural challenges that could hinder the sustainable development of this sport.

Conclusion: The research emphasizes that to achieve positive scenarios and sustainable growth, a comprehensive and long-term approach is necessary. This approach should include strengthening infrastructure, supporting elite athletes, and increasing interaction with the international community. Furthermore, attention to the social and cultural aspects of the sport could accelerate its development process.

Keywords: International Success, Billiards, Golden Age, Unsustainable Growth, Future study.

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Introduction

Billiard sports, including billiards, snooker, and pool, are globally recognized as highly engaging, skill-based, and centered on concentration and strategy (Elmaged et al., 2017; Gutkin, 2012). With a long history, these sports have undergone significant evolution, from early forms of stick-and-ball games in the Middle Ages to professional international competitions in the 21st century (Huang & Baum, 2012; Lassen, 2014). Today, billiards is considered one of the most popular intellectual and skill-based sports, which, in addition to its recreational aspect, has developed into a competitive sport at the international level (Chen, 2007; Soumiya et al., 2025). In many countries, this sport is not only recognized as a recreational activity but also, through extensive investments in education, tournament organization, and infrastructure development, has become one of the growing revenue-generating industries in the sports sector (Zhang, Q., Wang, Z., Long, et al., 2025; Chen & Yiu, 2024). However, in Iran, this sport has not yet reached its deserved status and faces challenges such as lack of government support, insufficient investment, and cultural limitations (Janatnia, et al., 2023). This situation calls for scientific and future-oriented research to identify the factors affecting the development of this sport and provide appropriate solutions to improve its status in the country.

The development of professional sports requires the application of scientific frameworks and sports policy models. One of the established models in this field is the SPLISS model (Sport Policy Leading to International Sporting Success), introduced by De Bosscher et al. (2007; 2015). This model demonstrates that international success in a sport depends on a combination of nine key factors, including financial investment, organizational structures, talent development, sports infrastructure, government support, and sports culture (De Bosscher et al., 2019, 2010,

2011; Truyens et al., 2014; Brouwers et al., 2015). In this study, the SPLISS model will be used as the main theoretical framework for analyzing the status of billiards in Iran and providing development strategies. In addition to the SPLISS model, theories of elite sports development and sports economics will also be considered in analyzing the conditions and future of this sport in Iran. Despite the significant growth of Billiard sports at the international level, they are still regarded as a minor sport in Iran (Janatnia et al., 2023). Currently, countries such as the United Kingdom, China, and India have made substantial investments in this field, developing billiards as one of their main sports (Gladskii, 2023). In contrast, in Iran, despite the potential talent and interest of a segment of the sports community, the sport faces numerous challenges, including a lack of proper infrastructure, weak support policies, restrictive social attitudes, and insufficient investment. Therefore, the main research question is: What is the future of Billiard sports in Iran, and what policies could contribute to the development and success of this sport in the country?

There has been limited research on Billiard sports that addresses various aspects of the field. Suteja et al. (2022) conducted a study on communication and marketing strategies in billiard clubs and concluded that social media platforms such as Instagram and YouTube play a significant role in attracting visitors. Additionally, they examined barriers caused by health protocols that may impact visitor attendance. Zhang (2024) analyzed gender dynamics in billiard halls and demonstrated that gender dynamics in billiards are more complex compared to other sports. He emphasized that various social environments in these clubs can significantly impact gender equality. Zhang et al. (2025) predicted that in the near future, the use of advanced technologies such as sensors and GPS cameras to collect billiard data would become a common trend. These data will be used for various analyses, such as identifying

tactics and assessing performance. Fatheh et al. (2014) showed that there is a positive and significant relationship between service quality and customer satisfaction in billiard clubs. Specifically, components like reliability and responsiveness to customer complaints have a greater impact on customer loyalty. Asadollahi & Kheibari (2014) examined the role of cultural, social, and economic capital in women's inclination toward Billiard sports. They found that cultural capital with a focus on sports has the most significant impact on women's attraction to billiards. In a study by Janatnia et al. (2023), a qualitative model was developed for evaluating the performance of billiard federations, concluding that various factors such as leadership, standardization, education, and a positive image affect federation performance. Furthermore, Radoicic et al. (2021) emphasized the need for institutions and support mechanisms to cultivate successful billiard players. Borysova et al. (2020) predicted that the participation of women in Billiard sports would significantly increase in the future, with more women joining this professional field. Multiple studies, such as those by De Bosscher et al. (2008) and Radoicic et al. (2021), have shown that financial support, talent identification, and international competition participation are crucial factors for success at the international level in sports. Overall, existing research indicates that the future of Billiard sports in Iran can achieve significant progress through leveraging modern technologies, improving service quality, addressing gender and social issues, and developing supportive structures. These aspects should be considered in future policymaking and planning to bring Billiard sports in Iran closer to international standards.

Given global trends in the development of professional sports, this research holds special significance. The growth of Billiard sports in countries like China, the UK, and India demonstrates that with appropriate investment and effective policies, this sport can become

one of the most popular and lucrative activities (Gladskii, 2023). In Iran, the increasing interest of young people in Billiard sports and the existence of latent talents indicate the potential for development in this field. Moreover, the development of Billiard sports can have positive impacts in both social and economic spheres. Socially, this sport can be seen as a healthy and cultural activity, while economically, it can create opportunities for employment, professional competitions, and attract investment. Furthermore, the development of this sport can contribute to increasing Iran's participation in international competitions and enhance the country's position in global sports. Based on the above, the primary research question is: what will the future of Billiard sports in Iran look like, and what policies can support its development and international success? This question will be addressed using foresight research methods and sports policy analysis. Analyzing the current situation, identifying challenges, and providing actionable solutions for the development of Billiard sports are among the goals of this research.

Materials and Methods

In this study, the future of Billiard sports in Iran was explored and identified using fuzzy Delphi methods, MICMAC analysis, and scenario writing techniques. Initially, relevant documents and theoretical foundations related to these sports were reviewed. Since the primary focus of this research is on sports policy-making, the framework of the Sports Policy Leading to International Sporting Success (SPLISS), developed by De Bosscher et al. (2015), was chosen as the basis for the study. The SPLISS model offers a multidimensional approach to analyzing the factors influencing the international success of countries in sports, consisting of nine pillars categorized into three broad processes: "Inputs," "Capacities," and "Outputs." In this model, "Inputs" refer to financial support for

sports, "Capacities" represent a set of policy actions that involve decision-making processes about how and why resources are used, which may improve international sporting success. This stage also shows the efficiency of sports policy-making, which aims to optimize the use of inputs to achieve desired outputs. Finally, "Outputs" are considered as the level of international success (De Bosscher et al., 2015).

In this study, experts and specialists in the field of Billiard sports were identified and selected to participate based on predefined criteria. There are various viewpoints regarding the number of

participants in fuzzy Delphi techniques and structural interpretive modeling. However, Novakowski & Wellar (2008) stated that the optimal sample size in this method is between 5 and 15 specialists, as this range ensures a panel with sufficient diversity in terms of expertise and perspectives. Accordingly, 14 experts were selected as the sample for this study. The sampling method was purposive, and the researcher contacted these individuals based on established criteria. The characteristics of the participants in this study are presented in Table 1.

Table 1. Characteristics of the Participants in the Study

Work Experience (Years)	Gender	Position	Field	Education	Activity Type
12	Male	Member of Billiard Associations	Management	Master's	Executive
15	Male	Billiard Hall and Club Manager	Sports Science	Master's	Executive
8	Female	Federation Board Member	Sports Science	Master's	Executive
7	Male	Federation Board Member	Management	Master's	Executive
14	Female	Federation Board Member	Sports Science	Ph.D.	Executive
12	Female	Chairperson of the Board	Management	Master's	Executive
9	Female	Chairperson of the Board	Public Management	Ph.D.	Executive
14	Male	Sports Management Specialist	Engineering	Master's	Expert
17	Male	Sports Management Specialist	Economics	Master's	Expert
16	Male	University Faculty Member	Sports Science	Ph.D.	Academic
9	Male	University Faculty Member	Sports Management	Ph.D.	Academic
9	Female	Elite Billiard Athlete	Sports Management	Master's	Athlete
18	Male	Sports Economics Specialist	Sports Science	Ph.D.	Expert
11	Male	University Faculty Member	Sports Science	Ph.D.	Academic

In the present study, the first approach used was the fuzzy Delphi method. The traditional

Delphi method has always been associated with challenges such as uncertainty and ambiguity. To address these issues, Ishikawa et al. (1993) introduced the fuzzy Delphi method as an improved version. This method utilizes linguistic terms to assess the perspectives of participants. In fact, the fuzzy Delphi method (FDM) is a combination of the Delphi method and fuzzy set theory, in which selecting experts and providing explanations about the research topic are considered as the first step. Khalilzadeh et al. (2021) state that this method involves collecting opinions through surveys, sending them to experts, receiving responses, and performing analysis based on the collected data.

In addition, the analysis of influence and dependency was conducted using the MICMAC method. Based on this analysis, four groups of factors can be identified: autonomous, dependent, linkage, and independent factors. The first group consists of autonomous factors, which have weak influence and dependency and are somewhat separate from other factors. The second group includes dependent factors, which have weak influence but high dependency. The third group is composed of linkage factors, which have both high influence and high dependency; any action on these factors causes changes in other factors. The fourth group consists of independent factors, which have high influence and low dependency and are referred to as key factors. Key factors are categorized into either the independent or linkage group. This stage of the MICMAC technique was used to perform this analysis.

Results

To analyze and extract the factors affecting the

future of Billiard sports in Iran, based on expert opinions, which are considered as the output for the next stage (scenario writing), the fuzzy Delphi method was used. The spectrum considered in this stage was a five-point scale with a fuzzy two-stage approach and a threshold value of 0.6. In this stage, 14 experts participated to complete the data for this section. Based on the literature review and the theoretical framework of the study (the SPLISS model), 23 indicators were initially provided to the experts in the form of a fuzzy Delphi questionnaire. After consulting the experts regarding the approval or rejection of the indicators based on the set threshold value, the differences in opinions between the experts in the first and second surveys were then compared. Specifically, the differences in opinions between the experts in the first and second rounds of the survey were compared, and if the difference between the first and second rounds was less than 0.1, it indicated that the experts reached consensus on that question. If the difference was above 0.1, it indicated that the experts did not reach a consensus, and the indicator was removed. The value of 0.1 was used as a benchmark or indicator in terms of consistency rate in quantitative research. The results presented in Table 2 show that in this study, the difference in experts' opinions between the first and second surveys was below 0.1 for 20 indicators, indicating consensus on those questions. However, for the two indicators "promotion of ethical and social values in sports" and "player evaluation system," the difference was above 0.1, meaning that the experts did not reach consensus on these questions, and they were therefore removed.

Table 2. Results of the difference between the first and second round of the fuzzy Delphi survey

Criterion	Sub-criterion	First Round	Second Round	Difference between First and Second Round
A	Competitions and Leagues			
	Establishing domestic professional leagues	0.607	0.625	0.018

	Increasing participation in global competitions	0.708	0.720	0.012
	Support for Elite Athletes			
B	Providing selected support packages to athletes	0.667	0.661	-0.006
	Financial and welfare support for players	0.673	0.750	0.077
	Professional planning for elite athletes	0.649	0.738	0.089
	Internationalization and Global Interactions			
C	Hosting international competitions in Iran	0.714	0.673	0.042
	Facilitating cooperation with international federations	0.649	0.738	0.089
	Financial and Infrastructure Resources			
D	Dedicated budget for billiard development	0.696	0.667	-0.030
	Professional and club infrastructure	0.673	0.649	-0.024
	Access to professional equipment	0.673	0.738	0.065
	Talent Identification and Development			
E	National talent identification	0.649	0.685	0.036
	Youth player development programs	0.679	0.702	0.024
	Player evaluation system	0.607	0.744	0.137
	Organizational Management and Leadership			
F	Strengthening federations and provincial bodies	0.762	0.750	-0.012
	Developing long-term strategies	0.708	0.738	0.030
	Attracting and promoting specialized managers	0.696	0.685	-0.012
	Coach Education and Development			
G	Specialized coaching education	0.726	0.643	-0.083
	Increasing the number of professional coaches	0.661	0.649	-0.012
	International experience exchange for coaches	0.649	0.714	0.065
	Cultural Development and Public Participation			
H	Raising public awareness about billiards	0.667	0.690	0.024
	Expanding public access to billiards	0.637	0.661	0.024
	Promoting ethical and social values in sports	0.613	0.738	0.125

In the next phase, to identify the factors influencing Billiard sports, the Cross-Impact Matrix method was utilized with the help of the MICMAC software. Based on the theoretical framework of the study, this phase used a one-

stage analysis with the MICMAC approach. In this step of the research, the researchers conducted two stages of analysis of the Cross-Impact Matrix findings. The first stage was based on the results of the fuzzy Delphi

analysis (step two), and the second stage was based on the theoretical framework and model of the study (SPLISS model), organized into nine dimensions (step five).

In accordance with the results of the first step (fuzzy Delphi), eight factors were selected and

provided to the experts in the form of a pairwise comparison questionnaire. The experts assessed and compared each of the eight identified factors according to four scales: zero, one, two, and three. Table 3 presents the initial data of the Cross-Impact Matrix.

Table 3. Initial Data of the Cross-Impact Matrix

	1 : VarA	2 : VarB	3 : VarC	4 : VarD	5 : VarE	6 : VarF	7 : VarG	8 : VarH
1 : VarA	0	3	3	3	3	3	3	3
2 : VarB	3	0	3	3	3	2	2	3
3 : VarC	3	3	0	3	3	3	2	3
4 : VarD	3	3	2	0	3	3	2	3
5 : VarE	3	3	2	2	0	2	1	1
6 : VarF	3	2	3	3	2	0	2	2
7 : VarG	3	3	3	2	1	2	0	2
8 : VarH	3	2	1	2	2	1	1	0

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The matrix fill rate was 87.5%, indicating that the selected factors had a considerable and widespread influence on each other. It also suggested that the system was in an unstable state. Of the 56 evaluable relationships in this matrix (resulting from an 8x8 matrix), 8 relationships had a zero value, meaning the

factors did not influence each other. On the other hand, the matrix underwent two iterations of statistical analysis with 100% suitability and optimization, reflecting the high validity of the questionnaire and its responses. A complete explanation of the distribution of responses can be observed in Table 4.

Table 4. General Analysis of the Cross-Impact Matrix Data

Indicator	Value
Matrix size	8
Number of iterations	2
Number of zeros	8
Number of ones	6
Number of twos	18
Number of threes	32
Number of P	0
Total	56

Fill rate	87.5%
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The distribution of variables in the scatter plot reflects the stability or instability of the system. In stable systems, the variables' distribution forms an "L" shape, meaning some variables have high influence, and others have high susceptibility. In such systems, the position of each factor is clearly defined, and its role can be easily articulated. Based on the existing system, the identified drivers can be categorized into the following clusters:

- **Autonomous Cluster:** The first cluster is autonomous, consisting of factors with low driving power and dependency, leading to minimal influence on the overall system. The component "Organizational Management and Leadership" (F) is included in this cluster.
- **Dependent Cluster:** Variables with weak driving power but strong dependency fall into the dependent category. The "Talent

Identification and Development" (E) and "Cultural Development and Public Participation" (H) factors are included in this cluster.

- **Linking or Bidirectional Cluster:** This cluster contains variables with high dependency and strong driving power, indicating their close interrelation. Three factors in this cluster are: "Competitions and Leagues" (A), "Support for Elite Athletes" (B), "Internationalization and Global Interactions" (C), and "Financial Resources and Infrastructure" (D).
- **Independent Cluster:** Key factors in this cluster have high driving power and low dependency. These are categorized as critical drivers. "Coaching Education and Development" (G) is the most important factor that needs to be considered for the development of Billiard sports in Iran.

Table 4. Summary of the Categorization of Identified Drivers in Billiard sports

Cluster	Components	Component Identifier
Autonomous Variables	Organizational Management and Leadership	F
Dependent Variables	Talent Identification and Development	E
	Cultural Development and Public Participation	H
Independent Variables	Coaching Education and Development	G
Bidirectional Variables	Competitions and Leagues	A
	Support for Elite Athletes	B
	Internationalization and Global Interactions	C
	Financial Resources and Infrastructure	D

After identifying the bidirectional variables in the MICMAC software analysis, experts were asked to define the possible states of each of these variables. Following the identification of the states, their impacts were evaluated from -3 to +3 by the experts and entered into the ScenarioWizard software. The key drivers

identified in the MICMAC analysis were: *Competitions and Leagues* (A), *Support for Elite Athletes* (B), *Internationalization and Global Interactions* (C), and *Financial Resources and Infrastructure* (D). Based on the input from the expert panel, 12 possible scenarios were defined for these four key

drivers. These scenarios are critical for future planning in Billiard sports, and accurate analysis and definition of these potential states are essential for scenario development. In this step, three possible states (optimistic, middle-ground, and pessimistic) were determined for each of the four key drivers. Table 5 shows the identified 12 scenarios.

It is worth noting that for each factor, three assumptions were considered: *optimistic* (green), *middle-ground* (yellow), and *pessimistic* (red). The optimistic assumption represents the best-case scenario, the middle-ground assumption represents the current situation or trend, and the pessimistic assumption represents the worst-case scenario for Billiard sports.

Table 5. Key Drivers and Their Potential Scenarios for the Future of Billiard sports

Component ID	Component	Scenario	Scenario ID	Potential Scenarios
A	Competitions and Leagues	Optimistic	A1	Professional leagues with extensive support, media coverage, and international success.
		Middle-ground	A2	Regular leagues, but limited by facilities and moderate coverage.
		Pessimistic	A3	Irregular leagues and lack of effective participation in international competitions.
B	Support for Elite Athletes	Optimistic	B1	Extensive financial and technical support, with global success of athletes.
		Middle-ground	B2	Limited and scattered support with average results.
		Pessimistic	B3	Lack of support, decline in athlete quality, and failure in competitions.
C	Internationalization and Global Interactions	Optimistic	C1	Extensive interactions, hosting competitions, and improved global ranking.
		Middle-ground	C2	Limited interactions with average global standing.
		Pessimistic	C3	Lack of effective interactions and absence from international platforms.
D	Financial Resources and Infrastructure	Optimistic	D1	Stable financial support and modern, expansive infrastructure.
		Middle-ground	D2	Limited financial resources with improvements in infrastructure in some regions.
		Pessimistic	D3	Lack of funding and inadequate, outdated infrastructure.

These scenarios will serve as the foundation for future strategic planning and decision-making in the development of Billiard sports. Each scenario will help to assess potential outcomes based on different assumptions, guiding stakeholders in preparing for various future conditions. After identifying the 12 possible scenarios, they were placed in a 12×12 matrix for further analysis. In this new matrix, the scenarios can also reflect negative impacts, with matrix values ranging from +3 to -3. The

central question while filling this matrix was: *What impact will the occurrence of driver A have on the occurrence or non-occurrence of the status of driver B in the future of Billiard Sports?* In this evaluation, only direct effects of potential futures on one another are considered, while indirect effects are generated by the software.

The analytical method used in the ScenarioWizard software for this analysis is called Cross-Impact Balance (CIB). Its purpose

is to optimize the scenarios and make them more reliable, thereby ensuring that the predictions and results are valid and dependable.

In the subsequent phase, the SYSTEM GRIDE method was utilized to visualize the placement of bidirectional components within the scenario matrix. Before the data is analyzed using the ScenarioWizard software, a re-evaluation process is carried out to ensure that the identified components fall within the first quadrant on the right-hand side of the grid. These components represent the key drivers, which are critical factors for the development of strategies and plans in Billiard Sports. The key drivers identified at this stage are:

1. Competitions and Leagues (A)
2. Support for Elite Athletes (B)
3. Internationalization and Global Interactions (C)

(C)

4. Financial Resources and Infrastructure (D)

These components were found to have the greatest impact and vulnerability, meaning they will play a central role in shaping the future of Billiard Sports. As depicted in Figure 1, these components are placed in the first quadrant on the right-hand side, indicating that they are influential and highly interconnected with other elements. By using SYSTEM GRIDE, the matrix helps to determine how these key drivers (with their significant influence and susceptibility) will impact other factors and what strategies should be developed to enhance their effectiveness in promoting the growth of Billiard Sports. This method ensures that all scenarios are carefully examined for their long-term viability and provides a foundation for developing tailored strategies aligned with the identified key drivers.

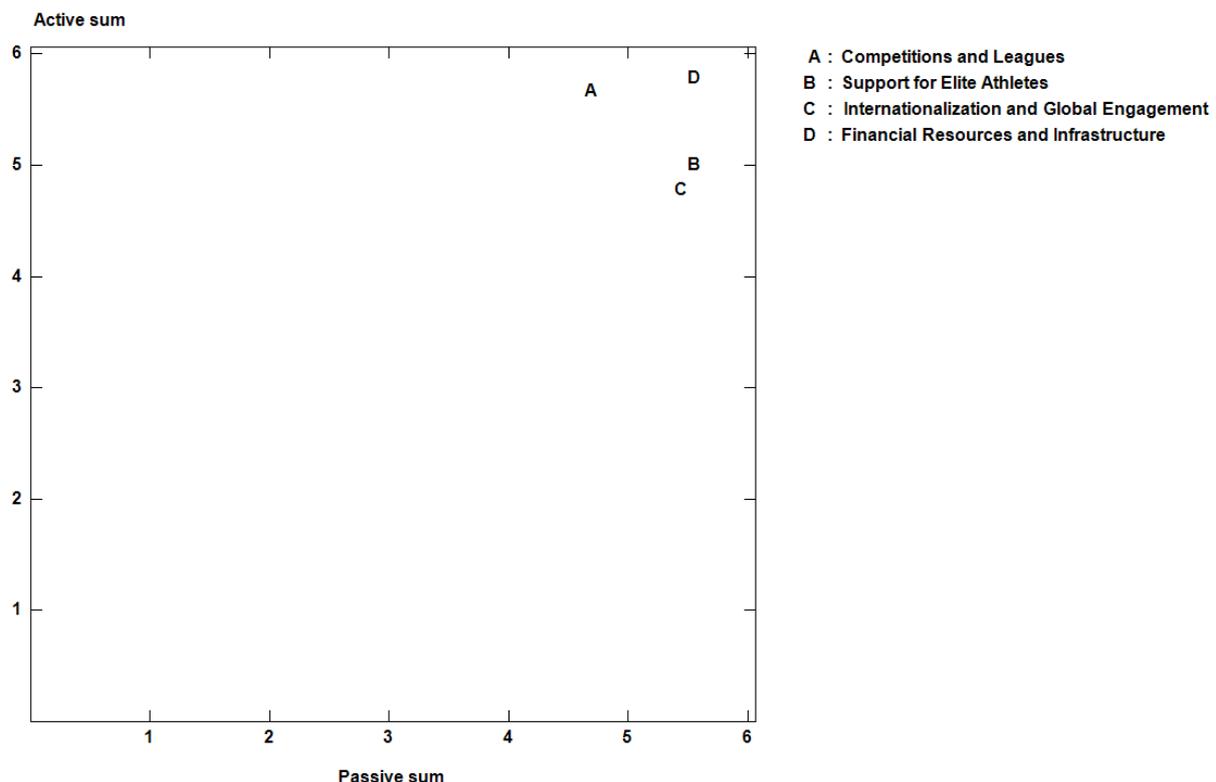


Figure 1. Systemic Network of Bidirectional Components

In the frequency statistics of the variables, Component A "Competitions and Leagues" includes three variables: A1 "Professional

leagues with extensive support, media coverage, and international success" with a frequency of 64.7%, variable A2 "Regular

leagues, but limited to facilities and moderate coverage" with a frequency of 0%, and variable A3 "Irregular league organization and ineffective presence in international competitions" with a frequency of 35.3%. In the frequency statistics of the variables, Component B "Support for Elite Athletes" includes three variables: B1 "Extensive financial and technical support and success of athletes on a global level" with a frequency of 64.7%, B2 "Limited and scattered support with average results" with a frequency of 0%, and B3 "Lack of support, decline in athlete quality, and failure in competitions" with a frequency of 35.3%. In the frequency statistics of the variables, Component C "Internationalization and Global Interactions" includes three variables: C1 "Extensive interactions, hosting competitions, and enhancing global ranking" with a frequency of 24.1%, C2 "Limited interactions and average global ranking" with a frequency of 40.6%, and C3 "Lack of effective interactions and absence from international stages" with a frequency of 35.3%. Finally, in the frequency statistics of the variables, Component D "Financial Resources and Infrastructure" includes three variables: D1 "Sustainable funding and modern, extensive infrastructure" with a frequency of 23.6%, D2 "Limited financial resources and improvement of infrastructure in some areas" with a frequency of 35.3%, and D3 "Lack of budget and insufficient, outdated infrastructure" with a frequency of 41.2%.

In the next phase, potential scenarios were identified. This technique determines various future scenarios based on the relationships between the key drivers, using scenario-writing methods and complex calculations. A matrix is used to evaluate the connections between the possible futures of Billiard Sports, where the values entered represent the positive and negative relationships, as well as the intensity of these connections. Based on the positive and negative impacts that the potential futures have on each other, various possible scenarios for the

future of Billiard Sports were identified, and each scenario was assigned a score based on the sum of positive and negative points. The ScenarioWizard software, with its complex and heavy calculations, allows the extraction of highly probable (likely) scenarios, low probability (possible) scenarios, and highly compatible and coherent scenarios (believable) for the researcher.

Given the size of the matrix (12×12), the scenario processor analyzed the data from the questionnaire and reported the following number of scenarios:

- Strong scenarios (likely): 4 scenarios
- Believable scenarios (with high internal coherence): 18 scenarios
- Weak scenarios (possible): 81 scenarios

The nature of this technique is to reduce the possible dimensions of scenarios from thousands of scenarios to a limited number of high-coherence scenarios. The results indicate that four scenarios with very high scores and a higher likelihood of occurrence in the future of Billiard Sports were identified, among which one scenario shows optimistic and favorable conditions (Scenario 3). Furthermore, the software shows 81 scenarios with weak probability, which, on the one hand, seems logical to trust a weak scenario, but on the other hand, addressing all 81 scenarios and formulating policies and strategies for them seems almost impossible and illogical. It is also important to note that 18 believable scenarios (with high internal coherence) were identified in this research. Given that there are a considerable number of strong scenarios (4), addressing the believable scenarios is not a necessity.

According to the results obtained from the calculated scores in the software, the four scenarios presented in Table 6 are considered strong scenarios in this evaluation, and Scenario 3, based on the sum of scores and

compatibilities with a score of 28, is identified and selected as the top scenario.

Table 6. Strong Scenarios of Billiard Sports Development

STRONG SSSCENARIO			
Scenario No. 1	Scenario No. 2	Scenario No. 3	Scenario No. 4
Weight : 28 Consistency value : 1 Total impact score: 31	Weight : 19 Consistency value : 0 Total impact score: 22	Weight : 19 Consistency value : 0 Total impact score: 25	Weight : 14 Consistency value : 0 Total impact score: 21
A. Competitions and Leagues: A3. Irregular leagues with no significant presence in international competitions.	A. Competitions and Leagues: A1. Professional leagues with strong support media coverage and international success.		
B. Support for Elite Athletes: B3. Lack of support declining athlete quality and failure in competitions.	B. Support for Elite Athletes: B1. Comprehensive financial and technical support leading to global success for athletes.		
C. Internationalization and Global Engagement: C3. Ineffective interactions and absence in the international arena.	C. Internationalization and Global Engagement: C1. Extensive interactions hosting international tournaments and improved global standing.	C. Internationalization and Global Engagement: C2. Limited engagement and an average global ranking.	
D. Financial Resources and Infrastructure: D2. Limited financial resources and partial improvement in some regions.	D. Financial Resources and Infrastructure: D3. Insufficient funding and inadequate outdated infrastructure.	D. Financial Resources and Infrastructure: D1. Stable financial support and widespread modern infrastructure.	D. Financial Resources and Infrastructure: D3. Insufficient funding and inadequate outdated infrastructure.

Unlike the phase of conducting software calculations to determine the compatibility of scenarios, which is a quantitative process with its own fixed and well-defined rules and formulas, the naming of scenarios is a completely qualitative and interpretive step. It should be noted that selecting a name for each scenario is not a mandatory part of scenario-building; however, names can help in distinguishing the scenarios and establishing a more effective connection with them. In this study, the choice of names was based on the combination of multiple variables. The dimensions of the scenarios become completely clear when the analysis of the status of other variables, issues, and trends, if each scenario is realized, is conducted, and appropriate

measures are taken where possible. Therefore, in a scenario-writing project, the status of variables and main issues in the case of the realization of each scenario should be analyzed and presented. The status of issues for each scenario is presented below:

Scenario 1: The Shadow of Billiard Decline

This scenario includes possible critical and unfavorable conditions for Billiard Sports. In this group, three variables have pessimistic conditions, and one variable has an intermediate condition. The weight of Scenario 1 is 28, with a consistency value of 1 and a total impact score of 31. The consistency values of the variables are as follows: the consistency value of variable D2 "limited financial

resources and infrastructure improvement in some regions" is 5, the consistency value of variable A3 "irregular holding of leagues and lack of effective participation in international competitions" is 2, the consistency value of variable B3 "lack of support, decline in athlete

quality, and failure in competitions" is 1, and the consistency value of variable C3 "lack of effective interaction and absence from international arenas" is 1. Table 7 shows the details of Scenario 1:

Table 7. Shadow of Billiard Decline Scenario

Descriptor	Assumption	Consistency Value
D: Financial and infrastructural resources	D2: Limited financial resources and infrastructure improvement in some regions	5
A: Competitions and leagues	A3: Irregular holding of leagues and lack of effective participation in international competitions	2
B: Support for elite athletes	B3: Lack of support, decline in athlete quality, and failure in competitions	1
C: Internationalization and global interactions	C3: Lack of effective interaction and absence from international arenas	1

Therefore, if the Shadow of Billiard Decline scenario materializes, the conditions for Billiard Sports will decrease compared to the past. According to Table 6, the scenario for strong Billiard Sports will progress toward an intermediate state. Based on the output from the ScenarioWizard software, the elements of the reported scenario form a complete set of cross-supporting assumptions. Thus, this scenario can be evaluated as having desirable internal consistency.

Scenario 2: Unstable Leap

This scenario represents a relatively favorable condition for Billiard Sports. In this group, three variables have optimistic conditions, and

one variable has a pessimistic condition. The weight of Scenario 2 is 19, with a consistency value of 0 and a total impact score of 22. The consistency values of the variables are as follows: the consistency value of variable A1 "professional leagues with widespread support, media coverage, and international success" is 1, the consistency value of variable B1 "extensive financial and technical support, and success of athletes at the global level" is 1, the consistency value of variable D3 "lack of budget and inadequate, outdated infrastructure" is 1, and the consistency value of variable C1 "extensive interactions, hosting competitions, and improving global ranking" is 0. Table 8 shows the details of Scenario 2:

Table 8. Unstable Leap Scenario

Descriptor	Assumption	Consistency Value
A: Competitions and leagues	A1: Professional leagues with widespread support, media coverage, and international success	1
B: Support for elite athletes	B1: Extensive financial and technical support, and success of athletes at the global level	1
D: Financial and infrastructural resources	D3: Lack of budget and inadequate, outdated infrastructure	1
C: Internationalization and global interactions	C1: Extensive interactions, hosting competitions, and improving global ranking	0

Therefore, if the Unstable Leap scenario materializes, the conditions for Billiard Sports will decrease compared to the past, and according to Table 6, the scenario for strong Billiard Sports will regress. Based on the output from the ScenarioWizard software, the elements of the reported scenario form a complete set of cross-supporting assumptions. Therefore, this scenario can be evaluated as having desirable internal consistency. However, support for assumptions related to component C "Internationalization and global interactions" is relatively weak.

Scenario 3: The Golden Age of Billiard

This scenario represents the best and most favorable situation for Billiard Sports. In this

group, three variables have optimistic conditions, and one variable has an intermediate condition. The weight of Scenario 3 is 19, with a consistency value of 0 and a total impact score of 25. The consistency values of the variables are as follows: the consistency value of variable A1 "professional leagues with widespread support, media coverage, and international success" is 1, the consistency value of variable B1 "extensive financial and technical support, and success of athletes at the global level" is 0, the consistency value of variable C2 "limited interactions and moderate global ranking" is 0, and the consistency value of variable D1 "sustainable funding and modern, extensive infrastructure" is 0. Table 9 shows the details of Scenario 3:

Table 9. The Golden Age of Billiard Scenario

Descriptor	Assumption	Consistency Value
A: Competitions and leagues	A1: Professional leagues with widespread support, media coverage, and international success	1
B: Support for elite athletes	B1: Extensive financial and technical support, and success of athletes at the global level	0
C: Internationalization and global interactions	C2: Limited interactions and moderate global ranking	0
D: Financial and infrastructural resources	D1: Sustainable funding and modern, extensive infrastructure	0

Therefore, if the Golden Age of Billiard scenario materializes, the conditions for Billiard Sports will increase compared to the past. According to Table 6, the scenario for strong Billiard Sports will progress toward improvement. Based on the output from the ScenarioWizard software, the elements of the reported scenario form a complete set of cross-supporting assumptions. Therefore, this scenario can be evaluated as having desirable internal consistency. However, support for assumptions related to component B "Support for elite athletes," component C "Internationalization and global interactions," and component D "Financial and infrastructural resources" is relatively weak.

Scenario 4: Unstable Growth

This scenario represents a relatively unfavorable condition for Billiard Sports. In this group, two variables have optimistic conditions, one variable has an intermediate condition, and one variable has a pessimistic condition. The weight of Scenario 4 is 14, with a consistency value of 0 and a total impact score of 21. The consistency values of the variables are as follows: the consistency value of variable A1 "professional leagues with widespread support, media coverage, and international success" is 1, the consistency value of variable B1 "extensive financial and technical support, and success of athletes at the global level" is 1, the consistency value of variable C2 "limited interactions and moderate global ranking" is 0, and the consistency value of variable D3 "lack of budget and inadequate,

outdated infrastructure" is 0. Table 10 shows the details of Scenario 4:

Table 10. Unstable Growth Scenario

Descriptor	Assumption	Consistency Value
A: Competitions and leagues	A1: Professional leagues with widespread support, media coverage, and international success	1
B: Support for elite athletes	B1: Extensive financial and technical support, and success of athletes at the global level	1
C: Internationalization and global interactions	C2: Limited interactions and moderate global ranking	0
D: Financial and infrastructural resources	D3: Lack of budget and inadequate, outdated infrastructure	0

Therefore, if the Unstable Growth scenario materializes, the conditions for Billiard Sports will decrease compared to the past, and according to Table 6, the scenario for strong Billiard Sports will regress. Based on the output from the ScenarioWizard software, the elements of the reported scenario form a complete set of cross-supporting assumptions. Therefore, this scenario can be evaluated as having desirable internal consistency. However, support for assumptions related to component C "Internationalization and global interactions" and component D "Financial and infrastructural resources" is relatively weak.

Discussion

This research, using the SPLISS model and scenario analysis, has evaluated the current state of Billiard Sports in Iran. According to the results of this study, success in the development of Billiard Sports in Iran depends on factors such as financial investment, infrastructure development, government support, and active participation in international competitions. These factors, similar to those observed in advanced countries like China and the United Kingdom, can lead to the sustainable growth of this sport in Iran. A study conducted by Zhang (2024) emphasized that through the use of modern technologies and the development of appropriate infrastructure, countries such as China have managed to make Billiard Sports one of their main sports. In this context, Iran could also become one of the key centers for

Billiard Sports in the region by improving these dimensions. The scenario analysis in this study included four possible scenarios for the future of Billiard Sports in Iran, namely the "Shadow of Billiard Decline," "Unstable Leap," "Golden Age of Billiard," and "Unstable Growth." These scenarios were analyzed based on various conditions regarding financial resources, support for elite athletes, sports infrastructure, and internationalization.

In the first scenario, "Shadow of Billiard Decline," the analysis points to critical and unfavorable conditions in which Billiard Sports in Iran would become a marginal activity due to severe financial constraints and structural problems. This scenario is similar to the conditions emphasized by Janatnia et al. (2023) in their studies, where lack of government support and proper infrastructure hinder the growth and development of Billiard Sports in Iran. In the second scenario, "Unstable Leap," there are improvements in financial and technical support for athletes and the organization of professional leagues, but economic and infrastructural problems still prevent the sustainable development of the sport. This situation is similar to what is observed in some developing countries, as noted by Zhang et al. (2025), who highlighted that growth in skill-based sports may sometimes be unstable due to insufficient infrastructure.

The third scenario, "Golden Age of Billiards,"

predicts the best possible future for Billiard Sports in Iran. In this scenario, with extensive government support, sustainable investments, and the organization of professional leagues with media coverage, billiards in Iran will become a successful and prestigious sport. This scenario mirrors models observed in countries like China and the United Kingdom, and it demonstrates that, with serious attention to this sport, Iran could become one of the key hubs for billiards. In the fourth scenario, "Unstable Growth," there is significant growth in Billiard Sports in Iran, but this growth will be unstable due to infrastructural problems and a lack of financial resources. This scenario reflects conditions shown in the research by Suteja et al. (2022) and Asadollahi & Kheibari (2014), which indicate that, although developments are present in this area, the absence of infrastructure and lack of international competition participation prevent the achievement of sustainable growth. Considering these scenarios, it seems that for achieving positive scenarios, especially the "Golden Age of Billiards," a comprehensive and long-term approach is necessary. This approach should include investment in infrastructure, the development of professional leagues, support for elite athletes, and increased engagement with the international community. Moreover, attention to the social and cultural dimensions of the sport is also crucial. According to studies by De Bosscher et al. (2008) and Radoicic et al. (2021), financial support, talent identification, and participation in international competitions are among the key factors for success at a global level in this sport. Additionally, recent studies, such as those by Fatheh et al. (2014), show that focusing on service quality and user experience can contribute to the long-term success of the sport.

Conclusion

Finally, considering the global advancements in this field and the successful models observed in countries like China, the United Kingdom, and

India, Iran can leverage these experiences. The development of Billiard Sports in Iran requires synergy between various public and private sectors, particularly in areas such as finance, media, and internationalization. By implementing appropriate policies and focusing on existing capacities, Iran has the potential to become one of the leaders in this field in the region. Based on the findings of this study, different scenarios have been predicted for the future of Billiard Sports in Iran, including optimal conditions such as the "Golden Age of Billiards" and less favorable scenarios like the "Shadow of Billiard Decline." In the positive scenarios, financial investment, infrastructure development, support for elite athletes, and effective participation in international competitions are the key factors for success. On the other hand, insufficient support and structural issues could lead to the decline of this sport in the country. To achieve positive scenarios and sustainable growth, a comprehensive and long-term approach is required, which includes strengthening infrastructure, developing professional leagues, supporting talented athletes, and increasing interaction with the international community. Moreover, attention to the social and cultural dimensions of the sport could play a significant role in its development. The overall conclusion of this study is that with careful planning, appropriate investment, and supportive policies, Iran can turn Billiard Sports into one of the prominent and successful sports at a global level. Leveraging the experiences of countries that have succeeded in this field can significantly accelerate this process.

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