Future of Work and Digital Management Journal

Article type:
Original Research

Article history:
Received 20 August 2025
Revised 19 November 2025
Accepted 26 November 2025
Initial Publish: 28 November 2025
Final Publish: 01 May 2026

Assessment of the Effectiveness of Iraq's Futsal Development Model: A Structural Equation Modeling (SEM) Approach with Emphasis on Performance Indicators

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How to cite this article:
Sakhil, H. A. M., Eshraghi, H., Hadi Kzar, M., & Zamani Nukaabadi, A. (2026). Assessment of the Effectiveness of Iraq's Futsal Development Model: A Structural Equation Modeling (SEM) Approach with Emphasis on Performance Indicators. *Future of Work and Digital Management Journal, 4*(3), 1-13. https://doi.org/10.61838/fwdmj.189

ABSTRACT

The objective of the present study was to assess the effectiveness of Iraq's futsal development model using a Structural Equation Modeling (SEM) approach with an emphasis on performance indicators. This study aims to evaluate and validate the causal relationships among the primary dimensions identified after formulating the initial futsal development model in a previous qualitative research phase. The research design was applied in nature and, in terms of execution, descriptive–analytical and quantitative. The statistical population consisted of coaches, players, referees, and futsal managers in Iraq. The sample included 300 experts in this field, selected using purposive–convenience sampling. The data collection instrument was a researcher-made questionnaire based on eleven components (national barriers, international barriers, motivational elements, private-sector participation, bureaucracy and relations, domestic and global standards, legal and executive frameworks, economic and financial infrastructures, software and hardware infrastructures, professionalization, and cultural–social enhancement). The questionnaire's validity was confirmed by subject-matter experts as well as through confirmatory factor analysis, and its reliability was reported with a Cronbach's alpha above 0.81. Structural equation modeling using LISREL was employed to test the model. The results indicated that the fit indices were at an acceptable level (CFI = 0.93, RMSEA = 0.068, χ^2/df = 2.41), and the relationships among the model dimensions were significant. Moreover, the model quality assessment was confirmed. Therefore, Iraq's futsal excellence model possesses sufficient statistical validity and can serve as a basis for sports policymaking in the country.

Keywords: Iraq futsal, model validation, structural equation modeling (SEM)

Introduction

The development of futsal as an organized, professional, and socially influential sport has attracted increasing attention in recent years, particularly in countries where the sport has strong cultural roots or strategic value for youth engagement and athletic performance. As a rapidly growing indoor team sport, futsal has evolved beyond its recreational origins and now constitutes a significant component of national sports systems, talent development pipelines, and community sports programs [1]. The physical, technical, and tactical demands of futsal—highlighted in studies on aerobic capacity, match

tempo, and physiological responses—demonstrate its complexity and potential for structured professional development [1, 2]. Given this increasing complexity, there is a growing need for evidence-based, context-specific development models to guide strategic planning and governance in futsal systems worldwide.

At the global level, futsal development is shaped by broader sport management theories, socio-cultural dynamics, and governance frameworks that emphasize organizational capacity, collaborative planning, and social impact. Sport-for-development literature stresses that sports, including futsal, can promote social inclusion, community cohesion, and positive youth development when designed through systematic and contextually grounded planning [3-5]. This integrative perspective places futsal within broader discussions of sport governance, institutional support, and collective action, where effective development requires cooperation among federations, private actors, communities, and government entities [6, 7]. Thus, the development of futsal is not only an athletic process but also a socio-organizational endeavor that must align with national cultural, economic, and managerial structures.

The literature further highlights that futsal development is closely connected to talent identification systems, coaching standards, leadership in training programs, and the establishment of youth pathways [8-10]. Structured frameworks contribute to cultivating expertise by integrating technical skill training, psychological readiness, and long-term athletic development. For example, professional players' perceptions of pathways to expertise underscore the need for coherent development models that account for social support, training environments, and competitive systems [10]. Meanwhile, youth curriculum models for ages 6–8 illustrate the importance of early foundational programs in building structured pipelines for future elite performance [11]. These findings show that without a systematic model, futsal systems may face fragmented development, inconsistent performance outcomes, and inefficient use of resources.

In addition to technical and managerial considerations, futsal development is deeply influenced by socio-economic and institutional contexts. Studies emphasize that national sports systems often encounter barriers such as bureaucratic obstacles, inadequate infrastructure, insufficient financial investment, and limitations in legal frameworks [12, 13]. These challenges may restrict coordination among stakeholders or hinder the implementation of development programs. Research conducted in various regions—including Iran, Iraq, and other Asian contexts—shows that futsal faces structural limitations ranging from coaching quality to lack of private-sector engagement, demonstrating the importance of context-based assessments and tailored development strategies [14-16]. Understanding these local constraints is essential for designing models that can realistically address performance gaps and maximize athletic potential.

The regional and national relevance of futsal is particularly pronounced in West and Central Asia, where the sport has become embedded in the social fabric and has significant implications for national identity and youth engagement. The exceptional success of the Iranian national futsal team, for example, has prompted researchers to investigate the underlying factors that contributed to these achievements, such as talent development, administrative support, and effective coaching structures [17]. These insights reinforce the notion that sustained success in futsal emerges from an interplay of cultural motivation, organizational strength, and strategic planning. Meanwhile, research on neighboring countries indicates that, despite rising interest in futsal, systematic models that identify key development factors remain scarce [12, 13]. This knowledge gap underscores the necessity of empirical research aimed at designing context-specific futsal development frameworks.

At a conceptual level, sport development scholars emphasize the importance of considering social, managerial, and cultural dimensions when designing sport development models. Integrative reviews highlight how sport development efforts must account for community participation, social cohesion, and long-term strategic planning to support sustainable sport systems [18, 19]. In this context, futsal is increasingly framed not only as a competitive sport but also as a tool for social engagement, youth empowerment, and cultural integration. Theoretical perspectives on social cohesion, for example, highlight the role of sports in fostering communal bonds and reducing socio-economic disparities when governed effectively [5, 20]. These frameworks are particularly relevant for countries undergoing social transitions or facing systemic governance challenges.

Developing a futsal system also requires attention to measurement, assessment, and data-driven decision-making. Recent studies emphasize the importance of using valid and reliable measurement tools to evaluate technical skills, player performance, and organizational effectiveness [21, 22]. Monitoring workloads, physiological stress, and performance indicators across a season provides foundational data for optimizing coaching strategies and minimizing injury risks, particularly in professional female teams [23]. These findings demonstrate that scientific measurement is essential for understanding the multilayered demands of futsal and for supporting evidence-based policy design.

Another crucial dimension of futsal development involves identifying and overcoming structural and national-level obstacles. Research conducted in various Iranian and Iraqi regions reveals that futsal faces limitations such as weaknesses in administrative planning, lack of standardized facilities, insufficient investment in grassroots development, and limited professionalization pathways [12-15]. Additionally, social development literature indicates that sports can become key drivers of social progress only when integrated into wider societal strategies that include economic development, cultural participation, and institutional strengthening [7, 24]. This broader societal lens helps frame futsal not merely as a sport but as a multidimensional system influenced by policy, culture, and socio-economic structures.

The global push toward sustainability in sports, including the Olympic movement, suggests that sports organizations must align their development models with environmental, economic, and social sustainability principles [25]. This applies equally to futsal, where sustainable development requires strategic resource allocation, long-term planning, and institutional coordination. Moreover, selective regional studies show that the development of futsal can contribute to local and national sustainability goals when appropriately managed [26]. Thus, futsal development must be understood as embedded within national policy priorities, economic frameworks, and community needs.

While previous research has contributed valuable insights into futsal training, strategy development, talent identification, and sport-for-development applications, significant gaps remain in understanding how these dimensions collectively inform a comprehensive futsal development model. Many existing studies examine isolated variables—technical skills, workloads, coaching, or administrative barriers—without integrating them into a holistic structural model. Recent attempts at model development, such as provincial or regional futsal frameworks, highlight that systematic methodological approaches are essential for conceptualizing futsal development in a way that accurately reflects real-world conditions and stakeholder experiences [11, 27]. However, a validated, statistically tested development model specifically tailored to the Iraqi futsal ecosystem remains largely unexplored in the academic literature.

In Iraq, futsal has gained significant popularity over the past two decades, becoming an important sport particularly among youth populations. Nevertheless, research indicates that the sport suffers from uneven development patterns, limited

strategic planning, and a lack of cohesive policy frameworks [15, 16]. Additional studies within the Iraqi context identify various obstacles including inadequate facilities, lack of specialized training programs, insufficient organizational support, and limited engagement of private-sector stakeholders [14, 28]. These findings underscore the urgent need for a validated development model capable of guiding national efforts to enhance futsal performance, infrastructure, and professionalization in Iraq.

Given these insights, researchers increasingly call for empirically validated models that rely on methodological rigor, incorporate stakeholder perspectives, and allow for quantitative testing of development dimensions. Structural equation modeling (SEM) provides an appropriate analytical framework, allowing researchers to examine causal relationships among the multiple dimensions that influence futsal development [20, 24]. Using SEM to validate a futsal development model can provide policymakers, sport managers, and federations with evidence-based guidance for designing strategies that address both structural challenges and performance-enhancing opportunities.

Therefore, the aim of this study is to assess the effectiveness and validate the structural model of futsal development in Iraq using Structural Equation Modeling (SEM) with an emphasis on performance indicators.

Methodology

This study is applied in terms of purpose and descriptive–analytical in terms of method. The statistical population consisted of coaches, professional players, referees, and futsal managers in Iraq. Sampling was conducted using a purposive–convenience method, and the sample size was determined as 300 individuals based on the criteria for confirmatory factor analysis. In the present study, data integration was carried out through the development of items for the Iraq futsal development scale. After identifying and extracting the indicators and defining the concept of professional development of this sport in Iraq, a researcher-made questionnaire was designed. This questionnaire contained forty-four items and included eleven components (national barriers, international barriers, motivational elements, private-sector participation, bureaucracy and relations, domestic and global standards, legal and executive frameworks, economic and financial infrastructures, software and hardware infrastructures, professionalization, and cultural–social enhancement), measured on a five-point Likert scale. Content validity of the questionnaire was confirmed by experts, and exploratory and confirmatory factor analyses validated its construct validity. Reliability of the instrument was reported as satisfactory, with Cronbach's alpha values ranging from 0.81 to 0.91 for the components.

Data analysis was performed using SPSS version 23 and LISREL 9.2 statistical software at the significance level of $P \leq 0.05$. Fit indices including CFI, TLI, RMSEA, and χ^2/df were utilized to assess the congruence of the data with the conceptual model. Model validation was carried out using the structural equation modeling approach, which enables testing causal paths among the various dimensions of the model and can identify which dimensions have the most significant and influential roles in futsal development.

Findings and Results

The table below presents the demographic characteristics of the questionnaire respondents based on four factors: gender, age, professional category, and educational level.

Table 1

Frequency and Percentage of Demographic Characteristics of Respondents

Demographic Variable	Subscale	Frequency	Percentage
Gender	Female	83	27.66
	Male	217	72.33
Age	Under 25 years	64	21.33
	26–35 years	151	50.33
	36 and above	85	28.33
Professional Category	Player	95	31.66
	Coach	92	30.66
	Referee	80	26.66
	Sports Manager	33	11
Educational Level	Diploma	73	24.33
	Associate Degree	52	17.33
	Bachelor's Degree	68	22.66
	Master's Degree	69	23
	PhD	38	12.66
Total	—	300	100

The data obtained regarding the respondents' gender showed that 83 individuals (27.66%) were female and 217 individuals (72.33%) were male. In terms of age, 64 individuals (21.33%) were under 25 years old, 151 individuals (50.33%) were between 26 and 35 years old, and 85 individuals (28.33%) were 36 years old or older. Regarding professional category, 95 individuals (31.66%) were players, 92 individuals (30.66%) were coaches, 80 individuals (26.66%) were referees, and 33 individuals (11%) were sports managers. For educational level, 73 individuals (24.33%) held a diploma, 52 individuals (17.33%) held an associate degree, 68 individuals (22.66%) held a bachelor's degree, 69 individuals (23%) held a master's degree, and 38 individuals (12.66%) held a PhD.

A questionnaire or attitude measurement scale is used to assess the viewpoint of a statistical sample toward a given phenomenon. The assessment of different aspects of a phenomenon is conducted based on various questionnaire items. Therefore, to accurately measure and evaluate a phenomenon, one must first ensure the precision of the questionnaire. For this purpose, the concept of validity is used. Questionnaire validity indicates how appropriate the items are. One method for calculating validity is content validity. To determine the content validity of the instrument, the CVR model introduced by Lawshe was used. To calculate this ratio, the opinions of specialists with expertise in the content of the instrument were obtained.

Confirmatory factor analysis evaluates the model previously generated through exploratory factor analysis and enables the researcher to confirm or reject the proposed model. Generally, when scales are employed for measurement, CFA is used to assess the validity of the scale. This method identifies the influential variables within the model and removes secondary or non-significant variables. In summary, CFA allows the researcher to confirm or reject the validity of the measurement scales used in the study.

According to the results regarding the relationships between items and components, it was determined that the relationships of all items (1) to (4) with the component of national barriers, items (5) to (8) with the component of international barriers, items (9) to (12) with the component of motivational elements, items (13) to (16) with the component of private-sector participation, items (17) to (20) with the component of bureaucracy and relations, items (21) to (24) with the component of domestic and global standards, items (25) to (28) with the component of legal and executive frameworks, items (29) to (32) with the component of economic and financial infrastructures, items (33) to (36) with the component of

software and hardware infrastructures, items (37) to (40) with the component of professionalization, and items (41) to (44) with the component of cultural–social enhancement were significant.

Based on the magnitude of the relationships and the T-values of the eleven components with the concept of futsal development in Iraq, it is evident that the t-statistic for all components exceeds 1.96. Therefore, significant relationships exist between national barriers (T-Value = 9.73, PC = 0.54), international barriers (T-Value = 11.24, PC = 0.46), motivational elements (T-Value = 8.61, PC = 0.75), private-sector participation (T-Value = 7.59, PC = 0.63), bureaucracy and relations (T-Value = 10.92, PC = 0.78), domestic and global standards (T-Value = 7.63, PC = 0.59), legal and executive frameworks (T-Value = 14.31, PC = 0.81), economic and financial infrastructures (T-Value = 8.05, PC = 0.65), software and hardware infrastructures (T-Value = 9.78, PC = 0.72), professionalization (T-Value = 10.32, PC = 0.80), and cultural–social enhancement (T-Value = 9.14, PC = 0.62) with the concept of the futsal development model in Iraq.

According to Lawshe (1975), because 15 experts participated in determining content validity, the acceptable threshold for the CVR index is 0.49. Therefore, based on the values obtained in Table 2, the content validity of all items was confirmed.

Table 2

Results of CVR Content Validity Analysis

Item Number	CVR	Result
1	0.72	Confirmed
2	0.65	Confirmed
3	0.71	Confirmed
4	0.83	Confirmed
5	0.65	Confirmed
6	0.64	Confirmed
7	0.74	Confirmed
8	0.78	Confirmed
9	0.80	Confirmed
10	0.61	Confirmed
11	0.70	Confirmed
12	0.58	Confirmed
13	0.55	Confirmed
14	0.75	Confirmed
15	0.64	Confirmed
16	0.57	Confirmed
17	0.68	Confirmed
18	0.71	Confirmed
19	0.70	Confirmed
20	0.65	Confirmed
21	0.89	Confirmed
22	0.73	Confirmed
23	0.63	Confirmed
24	0.66	Confirmed
25	0.61	Confirmed
26	0.72	Confirmed
27	0.82	Confirmed
28	0.65	Confirmed
29	0.80	Confirmed
30	0.67	Confirmed
31	0.75	Confirmed
32	0.54	Confirmed
33	0.71	Confirmed
34	0.58	Confirmed
35	0.70	Confirmed
36	0.66	Confirmed
37	0.75	Confirmed
38	0.77	Confirmed
39	0.71	Confirmed

40	0.58	Confirmed
41	0.74	Confirmed
42	0.66	Confirmed
43	0.71	Confirmed
44	0.59	Confirmed

As shown in Table 3, the KMO value is 0.899, which indicates the adequacy of the sample size for conducting exploratory factor analysis. The KMO value must exceed 0.70 for exploratory factor analysis to be appropriate. In other words, based on the KMO result (0.899), the research data can be reduced to several underlying and fundamental factors. Moreover, the result of Bartlett's test (χ^2 = 17,896.632), which is significant at the 0.01 level, indicates that, on one hand, the items within each factor are highly correlated, and on the other hand, items belonging to different factors do not show correlation. In other words, the Bartlett's test statistic (17,896.632) with a significance level of 0.001 confirms proper factor separation based on factor loadings.

Table 3

Results of Bartlett's Test and KMO

Index	Value
KMO (Sampling Adequacy)	0.899
Chi-square	17,896.632
Degrees of Freedom	734
Significance Level	0.001

Next, the eigenvalues, factor variance, and cumulative variance percentages are examined (Table 4). Based on these results, the predictive power of the model according to the total cumulative variance of the factors is 82.51%.

Table 4

Variance Contribution of Each Component

Row	Component Name	Extracted Sums of Squares	Variance %	Cumulative Variance %
1	National Barriers	5.21	5.21	
2	International Barriers	6.28	11.49	
3	Motivational Elements	4.11	15.6	
4	Private-Sector Participation	7.35	22.95	
5	Bureaucracy and Relations	6.73	29.68	
6	Domestic and Global Standards	8.78	38.46	
7	Legal and Executive Frameworks	10.51	48.97	
8	Economic and Financial Infrastructures	5.26	54.23	
9	Software and Hardware Infrastructures	7.51	61.74	
10	Professionalization	10.26	72.00	
11	Cultural–Social Enhancement	10.51	82.51	

The results of the principal component factor analysis with Varimax rotation indicated that the questionnaire items explained 82.51% of the total variance. Therefore, given that items showed high factor loadings on their respective components and lower loadings on other components, discriminant validity was confirmed.

Table 5

Relationship Between Components and the Concept of Iraq Futsal Development Model

Row	Components	Concept	Factor Loading	Standard Error	R^2	T-Value	Result
1	National Barriers	Iraq Futsal Development Model	0.54	6.86	0.67	9.73	Confirmed
2	International Barriers		0.46	11.21	0.54	11.24	Confirmed
3	Motivational Elements		0.75	7.42	0.72	8.61	Confirmed
4	Private-Sector Participation		0.63	4.31	0.63	7.59	Confirmed
5	Bureaucracy and Relations		0.78	5.98	0.55	10.92	Confirmed

6	Domestic and Global Standards	0.59	8.47	0.43	7.63	Confirmed
7	Legal and Executive Frameworks	0.81	9.28	0.81	14.31	Confirmed
8	Economic and Financial Infrastructures	0.65	10.64	0.41	8.05	Confirmed
9	Software and Hardware Infrastructures	0.72	7.86	0.52	9.78	Confirmed
10	Professionalization	0.80	9.23	0.66	10.32	Confirmed
11	Cultural–Social Enhancement	0.62	5.75	0.70	9.14	Confirmed

Figure 1

Standardized Estimate of the Effectiveness of the Iraq Futsal Development Model

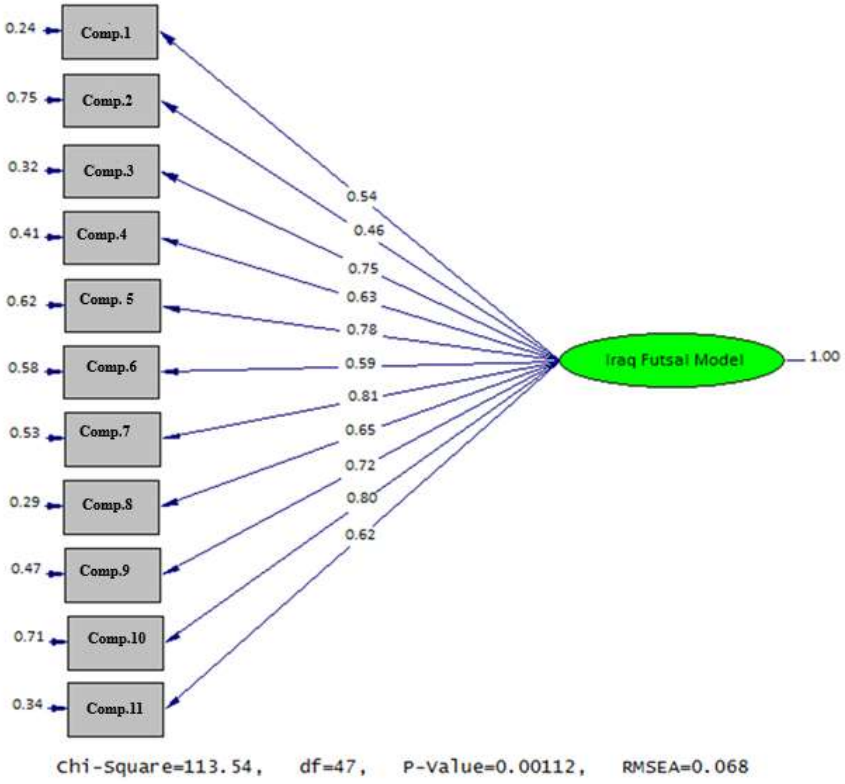

Figure 2

Significance Model of the Effectiveness of the Iraq Futsal Development Model

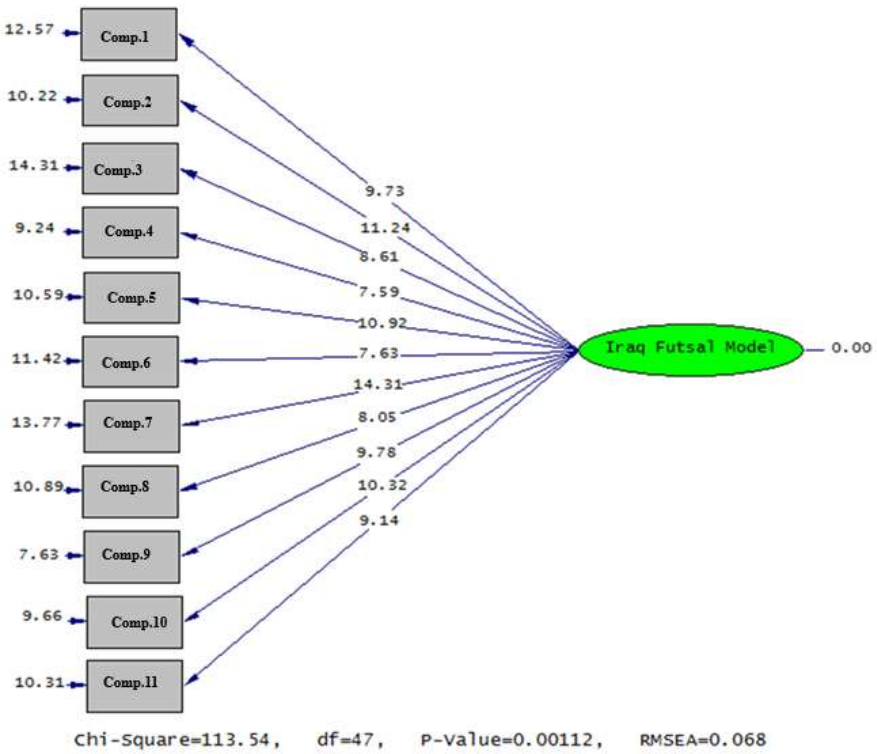

Table 6 summarizes the acceptable thresholds for various goodness-of-fit indices and the corresponding results for the proposed model.

Table 6

Goodness-of-Fit Indices

Model Fit Index	Acceptable Range	Results
χ^2/df	1–5	2.41
RMSEA	< 0.08	0.062
GFI	> 0.90	0.91
TLI	> 0.90	0.95
CFI	> 0.90	0.93
NFI	> 0.90	0.94
IFI	0–1	0.91

The results indicate that the model's fit indices are at desirable levels (CFI = 0.93, TLI = 0.91, RMSEA = 0.068, χ^2/df = 2.41). All structural paths among the model dimensions were statistically significant. Specifically:

- Barriers to development had a negative but significant effect on participation and relational structures.
- Participation and bureaucracy had a positive and significant effect on financial resources and infrastructures.
- Legal and executive frameworks exhibited direct and positive effects on human and cultural development and on professionalization.
- Financial infrastructures played an important mediating role in human and cultural development.

These results indicate that the extracted model is empirically validated and can be used effectively in policymaking contexts.

Discussion and Conclusion

The present study aimed at validating a comprehensive structural model for the development of futsal in Iraq based on eleven key dimensions identified through exploratory and confirmatory analyses. The findings demonstrated that the proposed model possesses acceptable fit indices and statistically significant path relationships between the identified constructs, suggesting that the model effectively captures the underlying mechanisms shaping futsal development. These results align with broader sport development research, indicating that multifactorial approaches—encompassing organizational, cultural, economic, infrastructural, and performance-related variables—are essential for understanding the complexities of sport systems [3, 18]. The strong model validity observed in this study reinforces the importance of adopting an integrated, evidence-based framework for guiding futsal development strategies nationally.

One of the major findings of the present study concerns the significant influence of national and international barriers on the overall development structure. The data showed that barriers at the macro-level—including administrative inefficiencies, weak inter-organizational coordination, and insufficient government support—exerted strong causal effects on other dimensions. This is consistent with studies indicating that bureaucratic and institutional limitations represent pervasive obstacles to sport development in various regions, particularly in countries with emerging sport systems [12, 13]. Research in Iraq similarly highlights structural weaknesses such as fragmented governance, limited facility standards, and inadequate regulatory frameworks [15, 16]. These findings collectively support the conclusion that overcoming systemic barriers must be prioritized in policy agendas to ensure coherent and sustainable futsal growth.

The results also confirmed the significant role of motivational elements, professionalization processes, and cultural–social enhancement in the model. The loading values associated with these factors suggest that player motivation, pathways to expertise, and socio-cultural support systems are crucial for strengthening futsal participation and performance. Similar patterns are evident in international research demonstrating that effective athlete development depends on structured motivational climates, supportive coaching environments, and accessible social resources [9, 10]. The importance of social cohesion in sports development, highlighted in conceptual studies, further supports the significance of cultural and community-level factors [5, 20]. Therefore, strengthening community engagement, enhancing youth motivation, and promoting positive attitudes toward futsal represent critical pathways for improving development outcomes.

The structural equation modeling results also emphasized the significance of economic and financial infrastructures as mediators of development. These findings are consistent with the literature emphasizing that sport growth is contingent not only on talent development and coaching quality but also on financial investment, sustainable funding mechanisms, and private-sector engagement [7, 24]. Research indicates that the absence of robust financial systems can restrict access to training resources, facilities, and professional development opportunities, thereby limiting both performance and participation [14, 28]. These insights align with international evidence suggesting that financial sustainability is a defining feature of high-functioning sport ecosystems [25, 26]. Thus, economic investment constitutes a cornerstone for operationalizing strategic development initiatives in futsal.

Furthermore, the results revealed strong relationships between software and hardware infrastructures and other dimensions of the model. The adequacy of facilities, technological readiness, and access to equipment emerged as fundamental variables influencing development. Previous studies on skill development, technical performance assessment, workload monitoring, and training evaluation similarly highlight the importance of infrastructural support for improving

performance outcomes [21-23]. Research on elite futsal players' physiological workload confirms that professional-level performance requires specialized environments that meet international standards [1, 2]. Thus, the confirmation of infrastructural variables within the structural model reinforces the assertion that futsal development requires consistent investment in facility modernization and technological advancement.

The factor representing legal and executive frameworks also demonstrated significant explanatory power within the model. The presence of clear regulatory guidelines, transparent administrative procedures, and coherent executive structures appears to shape other model components significantly. This finding reflects conclusions drawn in earlier studies showing that policy clarity, strategic planning, and executive coordination directly influence the success of sport development initiatives [8, 27]. Strategic planning models used in Iraqi futsal development research similarly emphasize the importance of well-structured implementation frameworks for aligning stakeholders and facilitating progress [15, 16]. Therefore, the observed statistical significance of legal–executive frameworks underscores the necessity of governance reforms and administrative modernization.

Professionalization emerged as another strongly validated dimension in the model. The pathways through which futsal transitions from amateur participation to professional-level competition require institutional support, talent development systems, and standardized coaching mechanisms. Findings from studies on talent identification, youth training curriculum development, and elite player pathways emphasize that professionalization depends on longitudinal planning, access to expert coaching, and structured competition frameworks [8, 10, 11]. Moreover, research on athlete preparation and training strategies in futsal confirms that professionalization enhances performance by facilitating advanced tactical and physiological preparation [28]. These findings support the interpretation that professionalization must be embedded within national futsal development initiatives.

Additionally, the present findings reaffirm the relevance of sociological and cultural perspectives in explaining sport development. The significant relationship between cultural–social enhancement and other development dimensions mirrors evidence showing that sports function as tools for social integration, identity-building, and community empowerment [18, 19]. Research in sociology of sport shows that confidence, group belonging, and community support influence participation motivations and skill acquisition in youth sport [4]. These patterns appear consistent with the empirical results of this study, suggesting that cultural support structures are indispensable for fostering sustainable futsal development in Iraq.

International comparisons further validate the present findings. Progress made in futsal systems in Iran, Uzbekistan, and other Asian nations has been attributed to structured development models, reliable measurement systems, and integrated governance approaches [17, 26]. Studies indicate that countries achieving significant success in futsal have established coherent development pathways, talent management programs, and professional infrastructures that support elite performance [14, 17]. The strong model fit in the present study suggests that Iraq can similarly benefit from adopting a comprehensive and validated development framework.

The results also show alignment with global sport governance literature that emphasizes collaborative governance, multi-stakeholder strategic planning, and system-wide analysis [6]. Integrated sport governance models argue that collaborative decision-making and participatory planning produce more sustainable development outcomes than fragmented or top-down approaches. This literature aligns with the structural model validated here, which incorporates multiple dimensions—social, organizational, financial, legal, and infrastructural—into a unified framework.

Finally, the strong cumulative variance explained by the model indicates that the eleven dimensions collectively provide a robust conceptual explanation of futsal development in Iraq. This validates previous conceptual and empirical studies suggesting that sport development is intrinsically multidimensional and must be analyzed using holistic frameworks [3, 7]. Therefore, the validated model offers a comprehensive and empirically grounded basis for informing future sport policies and strategic planning in Iraq.

This study faced several limitations. The data were collected only from futsal stakeholders in Iraq, which may limit the generalizability of the findings to other countries or sports. The cross-sectional design also restricts the ability to draw causal inferences over time. Additionally, the reliance on self-reported data may introduce response bias, and the model did not incorporate potential moderating variables such as regional disparities, federation capacity, or political influences. Lastly, the rapid changes in the national sport environment may affect the long-term stability of the model.

Future studies should apply longitudinal designs to assess how the relationships between development dimensions evolve over time. Researchers may also compare the Iraqi model with futsal development models in other countries to identify cross-cultural similarities and differences. Including moderating factors such as organizational maturity, regional resources, and coaching expertise could further enhance model precision. Expanding future research toward mixed-methods approaches may also offer deeper insights into stakeholder perceptions, system bottlenecks, and policy implementation challenges.

Based on the findings, futsal policymakers should prioritize structural reforms to address national-level barriers and improve administrative coherence. Investment in infrastructure, workforce development, and private-sector partnerships can enhance overall system capacity. Strengthening youth development pathways, community engagement programs, and professional training systems will also support sustainable growth. Finally, implementing monitoring and evaluation mechanisms can ensure that development strategies remain aligned with national objectives and performance needs.

Acknowledgments

We would like to express our appreciation and gratitude to all those who cooperated in carrying out this study.

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.

Funding

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

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