Vol 2 Issue 4 Thi Qar University Journal of Physical Education

مجلة جامعة ذي قار لعلوم التربية البدنية

مجلة علمية محكمة تصدرها كلية التربية البدنية وعلوم الرياضة

Digital Sports Managemen t Towards a Theoretical Model for the Application of Artificial Intelligence in the Development of the Administrative Performance of Clubs

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ABSTRACT

Published online: 20/ 12/2025

In light of the accelerating digital transformation, the need to develop sports management using artificial intelligence (AI) tools has become essential due to their ability to analyze data and make accurate and rapid administrative decisions. This research aims to construct a theoretical model to employ AI technologies in enhancing the administrative performance of sports clubs by analyzing related concepts, reviewing key applications and technologies, and proposing a practical model applicable in local environments. The study adopted a descriptive-analytical approach and relied on relevant theoretical literature and previous studies. The research concluded that preparing a digital infrastructure and training administrative staff are fundamental steps for AI application. It also presented a phased implementation model suitable for Arab environments. This research offers a scientific and practical contribution to digital sports management in the era of technological advancement.

Keywords:
-Digital Sports Management Artificial Intelligence- Administrative

.Performance- Theoretical Model

في ظل التحولات الرقمية المتسارعة، تبرز الحاجة الماسة إلى تطوير الإدارة الرياضية باستخدام أدوات الذكاء الاصطناعي، لما لها من قدرة على تحليل البيانات واتخاذ القرارات الإدارية بدقة وسرعة. يهدف هذا البحث إلى بناء نموذج نظري يسهم في توظيف تقنيات الذكاء الاصطناعي لتحسين الأداء الإداري داخل الأندية الرياضية، من خلال تحليل المفاهيم ذات الصلة، واستعراض أبرز التطبيقات والتقنيات المستخدمة، وتقديم تصور عملي يمكن تطبيقه في البيئات المحلية. اعتمد البحث على المنهج الوصفي التحليلي، وتم الاستفادة من الأدبيات النظرية والدراسات السابقة ذات الصلة. وخلص إلى ضرورة تهيئة البنية التحتية الرقمية وتدريب الكوادر الإدارية كأساس لتطبيق النموذج، كما قدم تصورًا مرحليًا يراعي واقع البيئة العربية. يمثل هذا البحث مساهمة علمية تطبيقية في مجال الإدارة الرياضية الرقمية في ظل الثورة التكنولوجية.

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1-1. Introduction:

In light of the rapid digital transformations that the world is witnessing in the 21st century, sports management has become more than ever required to reformulate its traditional frameworks to keep pace with the requirements of the digital age, as digitalization and artificial intelligence have become one of the most important factors affecting the efficiency of institutional performance, especially in sports organizations that are characterized by a high degree of public interaction and managerial diversity. Digital sports management is a strategic direction that aims to employ digital technologies and smart systems in improving sports management functions such as Planning, organizing, directing, and supervising, which contributes to achieving high operational efficiency, and raising the level of transparency and accuracy in decision-making. The use of artificial intelligence in sports management has become an urgent necessity, due to the advanced data analysis tools it provides, and its ability to support administrative decisions, predict performance, and improve the public and administrative experience alike (Al-Sayed, 2021, pp. 55-74). In this context, there is a need to build a theoretical model through which AI can be understood and interpreted in improving the administrative performance of sports clubs, especially in work environments that suffer from administrative challenges or lack of digitally qualified human resources. Exploring this topic is not just a cognitive luxury, but rather represents a scientific and practical response to modern global trends, as artificial intelligence has become an essential tool in developing administrative systems and achieving a competitive advantage in the sports field (Al-Hammadi, 2022, pp. 102-120).

1-2- Research Problem:

The problem of this research is to seek to answer the following main question:

How can a theoretical model be built that contributes to employing artificial intelligence to develop administrative performance in sports clubs? A set of sub-questions related to the research axes emerge from this main question, as follows:

1- What are the most prominent concepts and dimensions of artificial intelligence related to sports management?

2- What smart tools and techniques can be used to support sports administrative decision-making?
3- What are the challenges facing sports club administrations in the application of artificial intelligence?
4- What are the theoretical foundations that can be relied on in building a digital management model based on artificial intelligence?
5- What is the proposed concept of the theoretical model for developing administrative performance using artificial intelligence?

1-3- The general hypothesis of the research:

This research assumes that the application of artificial intelligence contributes to the development of the administrative performance of sports clubs, by building a theoretical model based on the concepts of digital sports management and modern technological transformation tools. Based on this general hypothesis, a set of sub-hypotheses can be formulated, so that each hypothesis addresses one of the main research axes, such as the reality of managerial performance, the employment of artificial intelligence technologies, management challenges, and the foundations of building the proposed model.

1.3.1 Digital sports management has characteristics and components that are fundamentally different from traditional management, and establishes a more efficient and flexible management environment.

1.3.2 Artificial intelligence has promising practical applications that can be used to support sports management functions such as planning, organization, and control.

3- It is possible to build a theoretical model based on artificial intelligence data that contributes to raising the efficiency of the administrative performance of sports clubs and achieving the quality of decision-making.

1-4- Research Objectives:

This research aims to:

1.4.1. Analyze the characteristics and theoretical components of digital sports management, and clarify the differences between it and traditional sports management.

1.4.2 Explore the most important applications of artificial intelligence in the field of sports, and determine their employability in effective management within sports clubs.

1.4.3 Building a proposed theoretical model that contributes to the development of the administrative performance of clubs, based on the concepts of digital management and artificial intelligence technologies.

1-5- The importance of the research:

The importance of this research stems from several theoretical and practical aspects, the most prominent of which are:

1.5.1. Theoretical Importance: The research contributes to enriching the scientific literature in the field of sports management, by presenting a new theoretical framework that combines the concepts of digital transformation and artificial intelligence, which is one of the modern trends that are not sufficiently explored in Arab studies.

1.5.2. Applied Importance: The research provides a practical concept that can be used to develop administrative work mechanisms within sports clubs, especially in the local or regional environment that still lacks clear digital frameworks.
1.5.3. Responding to the requirements of the current stage: In light of the digital transformations that the world is witnessing, the research is a scientific response to the need to adopt artificial intelligence tools in improving the efficiency of administrative performance and raising the competitiveness of sports institutions.

1-6- Research Methodology: This research is based on the descriptive-analytical method, which is used to analyze concepts and theoretical models related to digital sports management, and to explain the relationship between artificial intelligence and improving the administrative performance of clubs.

2- Scientific terminology:

2.1. Sports Management: It is the process of planning, organizing, directing and controlling sports activities, through the use of human, financial and technical resources, with the aim of achieving sports goals efficiently and effectively, whether at the level of individuals, teams or sports institutions. Abul-Ela, 2003, pp. 31-32), it is clear from the above that the function of management in the sports body, regardless of its level, is nothing but a method or method to achieve certain tasks with the best possible degree of competence, and this is done by making a change in the behavior of administrators within the sports body and improving their competencies, skills and abilities within the framework of the elements of the administration, its functions or operations with the aim of achieving the supreme interest of the sports body or institution (Shehadeh, 2019, p. 4).

2-2- Digital Management: Digital management or the so-called e-management is an innovative concept that emerged as a result of the information revolution, the knowledge economy and the digital economy, and due to the great development in all fields of information technology and its cheap prices, public and private departments and institutions have started to race to use the latest innovations in the administrative field, and the emergence of the Internet has helped to make it more effective in accomplishing the work of these departments, which led the current administration to rely heavily on Information technology because the use of this cutting-edge technology helps to simplify procedures and reduce the use of paper to a minimum. Digital management with its various applications is the most prominent component of the existence of the knowledge society in universities, as digital management is an integrated system that aims to transform the old administrative work from manual management to digital management by relying on strong information systems that help in making administrative decisions as quickly and at the lowest costs, as digital management aims to secure the necessary infrastructure of the university and link it to the information network. (Al-Batran, 2021, p. 601)

2-3- Digital Sports Management: It is the process that aims to improve the performance of the organization by bringing about fundamental changes by combining the organization's operations with information and communication technology and integrating digital transformation and smart

technologies within the administrative system of sports clubs and institutions (Ibrahim et al., 2022, p. 3).

2-4- Artificial Intelligence: It is defined as the ability to carry out the process of abstract thinking and the ability of the individual to reach the stage of the ability to the general learning process, mentally adapt to new situations and problems in life, employ previous experiences and benefit from them in solving current problems, in addition to predicting and anticipating future problems that the individual may be exposed to, which is the level of the individual's intellectual competence, which consists of a set of skills that enable the individual to use them in solving problems and acquiring New Knowledge (Holder of Religion, 2024, article in the magazine Space Student).

Some writers defined it as a large-scale, high-speed, versatile and cost-effective information asset that requires innovative forms of information processing to define vision and take capabilities (Al-Fiqi, 2012, p. 8).

2.5. Theoretical Model: An organized mental conception consisting of a set of concepts and relationships that aim to explain or predict a particular phenomenon, and is often derived from an existing theory or through the abstraction of realistic phenomena (Obeidat et al., 2001, p. 157).

2.6- The theoretical model is defined as a conceptual construct consisting of an interrelated set of concepts, principles, and assumptions, which is used to organize knowledge related to a particular phenomenon, interpret the relationships between its variables, and also serve as a frame of reference to guide scientific research, formulate hypotheses, and choose tools and methods of data collection and analysis (Al-Azzawi, 2019, p. 112)

2-7- Administrative Performance: Administrative performance in sports institutions is measured by the extent to which the management achieves the goals of the department using the available resources efficiently and effectively, and is an indicator of the leadership's ability to achieve organizational goals at the lowest costs and in a timely manner (Ali & Al-Khafaji, 2010, pp. 92-93).

2-8- Administrative performance is defined as the outcome of the efforts exerted by the manager or official in the exercise of his administrative functions (planning, organization, direction, control), with the aim of achieving the set goals efficiently and effectively, and performance is measured by the extent to which the expected results are achieved using the available resources (Al-Zubaidi, 2016, p. 189).

2-9- Performance Enhancement: Sports administrative performance improvement is a continuous development of administrative processes and tasks in sports institutions, which aims to raise the level of administrative efficiency and effectiveness, by employing modern methods, updating administrative skills, and improving the work environment in a way that contributes to achieving the goals of the sports institution in the best possible way (Al Suwaidi, 2012, pp. 211-212).

3- Previous reference studies:

3-1- Study: Mostafa Abdel Aziz Qalqila and Ahmed Mohamed Mostafa Abdel Qader (2024) The Requirements for Applying Artificial Intelligence Systems to Develop the Administrative Performance of Employees in Egyptian Sports Clubs. The study aimed to determine the requirements for the application of artificial intelligence and its impact on the development of administrative performance and administrative creativity for employees in sports clubs, and the methodology was used: descriptive and questionnaire on a sample of (160) administrators in Egyptian clubs, and the study concluded that the use of applications leads to leadership and administrative excellence, and there is acceptance from the senior management, but there is no unified model or specialized management of artificial intelligence.

3-3- Al-Salami, Ola Dakhilallah (2024) The Role of Artificial Intelligence Applications in Developing the Performance of Some Sports Institutions in the Kingdom of Saudi Arabia, Master's Thesis, King Abdulaziz University. This study aimed to monitor the impact of artificial intelligence applications on institutional performance in some Saudi sports institutions, where the descriptive and analytical approach was used and the study sample was used through a questionnaire distributed to (100) administrative employees. The study concluded that artificial intelligence analyzes big data and provides accurate recommendations, and contributes to marketing, communication, and analysis of the performance of teams and players.

3-3 Al-Tamimi, Manar Abdullah Mohammed (2022) The Role of Artificial Intelligence in Enhancing Administrative Creativity and Performance Development in Sports Club Administrations in the Kingdom of Bahrain, College of Health and Sports Sciences - University of Bahrain. The study aimed to measure the relationship between the application of artificial intelligence and administrative creativity and performance development, and the descriptive survey method was used on a sample of (384) administrators who analyzed (255) responses, and the results showed that there is an effective level of application of technology, a great enhancement of administrative creativity and a noticeable improvement in performance within Bahraini clubs, with some technical and organizational obstacles.

3-4- Zaitouni Nabil (2015) Study The Role of Artificial Intelligence Practices in Improving Institutional Excellence in the Sports Field, Ph.D. Thesis, Mohamed Boudiaf University-Messila (Algeria) The study aimed to analyze the role of artificial intelligence practices in achieving institutional excellence in the sports field, where the descriptive-analytical approach was used to describe and analyze some of the results of studies that dealt with artificial intelligence in sports institutions, and the results resulted that artificial intelligence improves the performance of employees, enhances decision-making, and contributes to the organization of More successful and unique sporting events.

3-5- Study of Muhammad Mardan Abd Zaid (2025) Administrative Competence in the Context of Knowledge Management and Information Technology for Iraqi Stars League Clubs, Master's Thesis, Faculty of Physical Education and Sport Sciences, University of Kufa. The study aimed to build measures of administrative efficiency and the impact of knowledge management and information technology in predicting them among the administrations of Iraqi football clubs, and to measure the level of knowledge management and information technology in sports departments, and the study concluded that the factors of

information technology and knowledge management were significant in predicting administrative efficiency, as the researcher recommended the development of digital infrastructure and the implementation of training programs.

4- Discussing the previous studies and the extent to which they are related to the research and benefiting from each study

4-1- Qalqila and Abdel Qader (2024) Study Correlation: Focuses on the requirements of applying artificial intelligence in clubs, and it directly intersects with an aspect of your research related to building the theoretical model according to the requirements of the administrative work environment.

Testimonial Support supported the need for a specialized model in artificial intelligence, which is what we are striving to achieve.

4-2- Al-Salami (2024) study of correlation: It dealt with the applications of artificial intelligence in sports institutions and its impact on performance, which enhances one of the research axes in the analysis of smart tools and applications to develop administrative performance.

Feedback: The importance of AI in supporting decision-making and data analysis is key building blocks of our model.

4-3- Al-Tamimi's (2022) study Linkage: It focused on enhancing administrative creativity and developing administrative performance through modern tools such as artificial intelligence.

Statement: Affirms that artificial intelligence plays an effective role in improving administrative work outputs and creativity.

4-4- Zaitouni's (2015) Linkage study: It focused on institutional excellence using artificial intelligence in the field of sports, to achieve managerial excellence through an intelligent model.

Statement: It highlights the positive results of the application of artificial intelligence in sports institutional work, which supports the theoretical premises of the research.

4-5- Mardan's (2025) study Linkage: It deals with the relationship between knowledge management, information technology, and administrative efficiency, which are aspects that fall within the general framework of digital sports management on which the research is based.

Statement: Explains the importance of digital infrastructure development and training, which are prerequisites for the implementation of any effective AI model.

All previous studies illustrate different aspects of the relationship between artificial intelligence and sports management, whether in terms of applications, requirements, impact, or creativity, thus forming a solid scientific basis that supports the construction of the theoretical model proposed in this research

Second Topic: Artificial Intelligence and its Applications in Sports Management

Artificial intelligence has become one of the basic tools for developing administrative performance in sports clubs, as it is used in analyzing big data and making accurate decisions based on predictive models, through the employment of artificial intelligence systems, which can monitor performance, plan sports seasons, and analyze competitors, which raises the efficiency of decisions and reduces reliance on personal estimates (Abu Zeid, 2021, pp. 112-120), and artificial intelligence contributes to making a qualitative leap in decision-making methods within sports clubs, especially in sports clubs. The fields of recruitment, budget management, and talent identification, and machine learning algorithms are also used to analyze player performance and predict injuries before they occur, which enhances strategic planning for clubs, and studies confirm that artificial intelligence enhances organizational effectiveness and reduces administrative errors (Abdel Halim, 2023, pp. 156-164). The most important AI tools and technologies used in the sports field can be highlighted under two main axes: data analysis, forecasting, automation, and smart applications

First: Data Analysis and Forecasting:

- Intelligent systems rely on collecting data from wearable devices (such as GPS , heart rate monitors, and motion sensors), then analyzing it via machine learning algorithms to predict players' injuries before they occur, and adjusting training programs based on each athlete's actual physical condition.
- Performance Prediction and Customized Training Techniques Machine learning algorithms are used to analyze past performance, predict the player's future, and develop personalized training plans based on his needs, strengths, and weaknesses, which increases the efficiency and effectiveness of training (Hassan, 2024, pp. 8-10).

Second: Automation, Audience Experience, and Tactical Modeling:

1- Computer Vision Video Analytics uses smart cameras to analyze the movement of players in matches and training, estimate their positioning, and highlight tactical patterns that may be absent from the human eye, such as tracking the ball or players with high accuracy.

2- Professional team management and analytics platforms (e.g. OPTA, SAP Sports One, Zone7)

- OPTA: Provides advanced tactical analytics to evaluate player performance, support match outcome prediction, and enrich broadcast coverage.
- SAP Sports One: Supports injury management, player performance, and optimization of club strategies in tune with training and match data.
- Zone7 specializes in analyzing stress and alert movement data, predicting injuries before they occur, and managing player recovery (Barazi, 2025, Articles).

- Developing Playing Strategies by AI: Playing strategies are one of the essential elements of sports, as they can significantly affect the outcome of matches through the use of AI, coaches and players can develop effective strategies based on data analysis. For example, AI can analyze different playing styles and make recommendations on how to deal with specific opponents. Some national teams use AI technologies to develop game strategies by analyzing match data Previously, coaches and players could use this information to determine the most effective strategies against specific opponents. This analysis can lead to improved performance and

increased chances of winning. Moreover, AI can help develop long-term strategies. By analyzing data over a long period of time, coaches and players can identify patterns and trends that may affect performance. This analysis can help develop effective data-driven strategies, leading to improved overall performance (Barazi, 2025, Articles).

- Artificial Intelligence Applications in Player Training: Artificial intelligence applications in player training are numerous, as they can be used to improve performance and develop skills. Through the use of AI technologies, coaches can provide personalized exercises to players based on performance data. For example, smartphone apps can be used to analyze players' performance and make recommendations on which exercises to focus on, some national teams use AI technologies to analyze players' performance in real-time, by analyzing This analysis can help identify areas that need improvement, leading to improved overall performance, in addition, AI can help provide instant feedback to players, through smartphone apps or wearables, players can receive real-time analytics about their performance, enabling them to make necessary adjustments during training or matches (Ayed, 2024, Published article)

-Domain Tools/Techniques Description: Data Analysis & Forecasting Wearable Devices + Machine Learning Physical and Preventive Reality Analysis & Prediction of Fatigue or Injury Machine Learning Algorithms Developing Personal Training Plans & Performance Forecasting Computer Vision & Tactics Smart Cameras & Smart Systems Tracking Player Movement & Tactical Decisions Managing Digital Teams Platforms Like OPTA SAP and Zone7 Performance Management, Predictions, Injuries, and Audience Analytics use AI techniques to make accurate predictions about match outcomes (Ayed, 2024, published article).

Third Topic: A Proposed Theoretical Concept for Developing Administrative Performance Using Artificial Intelligence

A proposed theoretical concept for the development of administrative performance in sports clubs can be presented by building a modern management model based on artificial intelligence technologies, so that this model is based on the creation of a smart digital administrative framework that contributes to supporting the decision-making process. This framework is based on artificial intelligence systems capable of analyzing and processing the administrative and technical data of the club, in a way that enhances performance efficiency and achieves a higher level of accuracy and speed in administrative and organizational procedures, developing smart management information systems based on performance data and realistic and predictive risks, using neural networks, expert systems, and genetic algorithms. (Ajam, 2018, pp. 89-94) Transform administrative processes into integrated automated systems that include player registration, training scheduling, funding follow-up, and audience analysis, through smart software tools connected to big data. (Al-Tamimi, 2022, p. 157)

First: Structure of the Theoretical Model: Components and Stages of Application:

1. Preparation Phase: Building a digital organizational structure that includes AI employees, and providing them with a training program. (Al-Tamimi, 2022)

2. Implementation Phase: Applying AI systems such as the Expert System to analyze player performance, and predict financial and administrative injuries.

3. Continuous Evaluation and Improvement Phase: Monitoring and reviewing performance indicators periodically using forecasting and data analysis tools to readjust policies and future planning (Hazrish, 2025, p. 1107).

Second: How to apply the model in the local environment (Iraqi or Arab clubs)

The proposed theoretical model for the development of administrative performance in Iraqi or Arab clubs can be applied using artificial intelligence through the following stages:

1**. Preparation and Organizational Preparation Stage:**

- Forming a specialized digital management team: includes employees trained in artificial intelligence technologies, management informatics systems, and data administrators.

- Building an administrative digital infrastructure that includes computing equipment, computers, and providing high-speed internet connection within the club.

- Preparing training programs to develop the capabilities of administrative and technical staff, with a focus on the use of artificial intelligence in data analysis and decision-making (Abdullah, 2024, pp. 264-285).

2. Implementation and Operation Phase:

- Implement intelligent systems to analyze administrative and technical data (e.g., player performance, match statistics, financial and logistical resources) using machine learning algorithms, expert systems, and genetic algorithms.

- Establishing a unified database that collects all administrative and technical data within the club's headquarters, and is automatically updated periodically.

- Using smart forecasting techniques to predict players' performance, identify injuries, and improve financial and administrative planning before events occur (Obeid & Khalaf, 2023, p. 30).

3**. Evaluation and Continuous Improvement Phase:**

- Monitor periodic administrative performance using KPIs such as decision-making period, administrative error rate, percentage of approvals and implementation of decisions.

- Retrain the AI-powered model based on the actual performance of the data flowing, ensuring improved results in the medium term.

- Enabling feedback from administrators and trainers to use the results of the systems to improve administrative policies internally (Laadi, 2020, p. 45).

Third: The most prominent challenges facing the applications of intelligence in Iraqi or Arab contexts:

In Iraq, factors such as weak infrastructure, lack of digital training, and lack of legislative and knowledge coordination are among the most prominent obstacles, so the applications of the model first begin with qualifying the human and technical aspects for full readiness (Abdullah, 2024, p. 295).

In Egypt and other Arab countries, such as the methodology adopted by "Zaid and Suleiman", it includes a practical and clear implementation of artificial intelligence systems in clubs to analyze the performance of players and plan financial resources, which is a similar practical model applicable within our region (Ibn Al-Tayeb, 2019, p. 90).

Fourth: Structure of the Proposed Theoretical Model (Complementary to Application):

1. Organizational structure: digital management team, modern infrastructure, training and capacity development.

2. Data System and Artificial Intelligence: Centralized database, analysis and future forecasting systems.

3. Smart Administrative Support: Recommendations and Indicators, Continuous Development Plan.

4. Evaluation and feedback: KPIs , continuous improvement based on data and outputs.

This plan is applicable locally in Iraqi or Arab clubs, provided that it starts first from digital capacity building and training, and then moves to the application of artificial intelligence in a gradual and disciplined manner

(Al-Ayadi et al., 2020, Bidun).

The end:

In light of the concepts and practices related to digital sports management that we have discussed in this research, it is clear that artificial intelligence represents a key pillar in the development of the administrative performance of sports clubs. Through the analysis of theoretical concepts and models, and the design of a smart management concept, we have shown that success in this path requires a comprehensive preparation of infrastructure, high-level training of administrative cadres, in addition to clear institutional and legislative support. This research opens up future

prospects for more in-depth studies on how AI can realistically and sustainably integrate AI into the Arab sports field.

Conclusions:

1. Digital sports management represents a paradigm shift from traditional methods to data-driven and artificial intelligence-based systems.
2. Artificial intelligence effectively contributes to improving decision-making efficiency, predicting performance, and reducing administrative errors in clubs.
3. The proposed model cannot be implemented without the preparation of the digital infrastructure, and the training of human resources on AI tools.
4. The proposed theoretical model achieves functional integration between machine analysis and administrative planning within the sports organization.
5. The local and Arab environment still needs a supportive legislative and regulatory framework for the adoption of artificial intelligence in the field of sports.

Recommendations:

1. Adopting a national strategy to develop digital infrastructure within sports clubs.
2. Launching ongoing training and qualification programs on the use of artificial intelligence in management.
3. Adopting smart management information systems used for data analysis and strategic planning.
4. Encouraging applied research that focuses on integrating artificial intelligence into sports management.
5. Creating a legislative and regulatory environment that helps facilitate the use of artificial intelligence and overcoming technical and administrative obstacles.

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