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IDENTIFYING AND DIAGNOSING THE GAP IN APPLYING ARTIFICIAL INTELLIGENCE TECHNIQUES SCALE IN MANAGING HIGH-PERFORMANCE SPORTS ORGANIZATIONS

Aseel H. Obaid[1], Naeema Zeidan Khalaf[2]

[1]Iraqi Ministry of Education, General Directorate of Education, Rusafa II, Iraq
[2]College of Physical Education and Sports Sciences for Girls, University of Baghdad, Iraq

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Abstract
This study seeks to evaluate the technician in the Department of Sports and School Activity in the General Directorate of Education of Baghdad / Al-Rusafa II, according to the requirements of the standard of artificial intelligence techniques in order to diagnose and identify the gap between the technical performance of this section with the requirements of the standard, identify the causes of the gap and propose effective solutions for it. The checklist was used to collect data and information according to the scale of artificial intelligence technologies with five axes (expert systems, virtual reality, smart agents, information technologies, and process automation). The Department of Sports and School Activity in the General Directorate of Education of Baghdad / Al-Rusafa II (case study) have a clear perception of the importance of the measure of artificial intelligence techniques, but the absence of financial and technical capabilities prevents the adoption of this measure in the management of the department, in addition to the lack of management of the department of an administrative unit to follow up the functional work And technology and studying the causes of deviation and the procedures to be followed for the purpose of controlling all factors affecting artificial intelligence techniques, and by examining the results of this study obtained from the checklists, it can be indicated that there are weaknesses in all the requirements that must be available in the sports and school activity section and according to the requirements of the intelligence techniques scale With regard to the axis of expert systems and the axis of smart agents, the percentage of matching dolls was (0%) and the gap for non-conformity amounted to (1). As for the axis of virtual impact, it is not less important than them, as the amount of the gap amounted to (0.9), but the amount of the gap for the axes of information technology and process automation is (0.3), which indicates that the Department of Sports and School Activity applies in its work to most of the paragraphs of these two axes to the requirements of the scale of artificial intelligence technologies.
Keywords: Artificial Intelligence techniques, High-Performance Sports Organizations, Checklists, Gap-Size.

INTRODUCTION

Sports organizations live in a fast-changing environment in the 21st century due to the rapid developments in technology and its various techniques, including Artificial Intelligence (AI) which is a set of digital processes that simulate human intelligence (Kzar et al, 2022). The adoption of various AI applications by sports organizations has contributed to the speed and ease of interacting with beneficiaries, expanding the scope of this interaction to include large numbers of beneficiaries around the clock (Andrew and Sathesh, 2018). Expert systems, artificial neural networks, genetic algorithms, intelligent agents, simulation systems, robots, and automation systems have replaced human resources in these organizations to achieve outstanding results (Faiq, Neran, 2016). This is what high-performance sports organizations with excellent responsive outputs that meet the requirements of competition and are capable of staying, continuing, growing, and developing in a changing environment need (Aseel, 2018). Therefore, their reliance on AI technology applications is increasing significantly for current and future development (Al-Zwainy, Shalal, and Abdul Qader, 2019).

The research problem lies in the weak implementation and response to the requirements of artificial intelligence (AI) technology application in sports and school activity departments. This is due to the lack of competition among these departments in the general directorates of education in Baghdad, as well as the absence of material and technical resources, which leads to a deficit in their duties. Therefore, the application of the AI technology assessment in sports and school activity departments contributes to ensuring that they acquire the characteristics of high-performance sports organizations.

In modern administrative thinking, topics related to artificial intelligence (AI) technologies and high-performance sports organizations are among the contemporary and relevant topics, whether at the level of professional application or academic theorizing (Lapham and Bartlett, 1995) (Ibraheem and Faiq, 2017). On the other hand, technological developments and innovations in the field of AI continue to be ongoing and persistent, thus studying these two topics and their connection in

the sports field is of utmost importance from the researchers' perspective. Therefore, the importance of the study is manifested in two main aspects:

The current study is an extension of previous studies that focus on AI technologies in general, and it adds to the academic accumulation in its field by targeting the knowledge of the applications of AI technologies in sports organizations, which are rarely studied and attempted to be applied in the Iraqi sports environment. (Faiq, 2014).

Determining the necessary foundations, principles, and requirements for applying AI technology measures to develop the sports and school activity departments in the general directorates of education in Baghdad province as high-performance sports organizations (Firas, Nidal, and Al-Zwainy, (2020)

The main objective of this research is to identify the gap between the current reality of the application of artificial intelligence technologies in the sports and school activity department at the General Directorate of Education in Baghdad / Al-Rusafa II (case study) and the requirements of applying artificial intelligence technology in high-performance sports organizations, while laying foundations for how to apply the requirements of this scale in the sports and school activity department, in order to ensure that this department has the required qualifications to compete internally and externally and increase its material and moral returns.

The current study included three areas. The first area is the human resources, which represents the human resources in the sports and school activity department at the General Directorate of Education in Baghdad / Al-Rusafa II. The second area is the time domain, which extended from January 1st, 2023 to March 30th, 2023. The final area is the spatial domain, as the spatial domain for this study was identified in the sports and school activity department at the General Directorate of Education in Baghdad / Al-Rusafa II in Baghdad Governorate, Iraq.

METHOD AND TOOLS

Choosing the appropriate methodology for the current study is one of the most difficult and important steps that determines the success of scientific research in sports management (Aseel and Lamya,2020) (Safa and Najlaa, 2022) (Muwafaq at el, 2023). Therefore, the researchers decided to use the descriptive methodology with an analytical approach as it is suitable for the nature of the research problem. It is known that the descriptive methodology provides an accurate picture of the relationships between the community and its sample, and gives the scientific research a picture of the real-life situation, with the ability to predict the future (Israa and Fatima Abid, 2022) (Zainab and Sundus, 2021) (Mohammed at el, 2021). The study community was deliberately selected from the sports and school activity department in the Directorate General of Education in Baghdad/ Al-Rusafa II in Baghdad province. The community included (57) individuals, such as managers of sports activity departments and their assistants, officials of departments and administrative units, technical supervisors, technicians and administrators. This number represents the research community for the academic year 2022-2023, and table (1) shows the study community and sample. The sample size was chosen to represent the study community because the nature of the research requires a deep understanding and perception in dealing with the questionnaire items designed to study the applications of artificial intelligence in sports and school activity departments and their relationship to principles and foundations of high-performance organizations"

Table 1. Research Population and Sample Table

Workplace	Research Population	Research Sample
Department of Sports and School Activity in the General Directorate of Education in Baghdad / Al-Rusafa First	57	57
Percentage	100%	100%

Researchers specializing in sports management require various technologies, tools, and methods to obtain the necessary data and information to carry out their research as required. Thus, the two researchers used a scale for artificial intelligence techniques built by (Reem and Intisar, 2021)

(Jawoosh at el, 2021), in addition to reliable scientific references, websites, personal interviews, and field visits to sports and school activity departments (Mohammed, and Nahida, 2021).

The field research procedures are the basic foundation on which the two researchers relied on to develop the theoretical framework for their research, starting from theoretical studies, passing through the research methodology, and reaching the conclusions drawn from it. The value of the results obtained by the two researchers in this study lies in the accuracy of the field research procedures that have been chosen to address the subject of building a scale for the applications of artificial intelligence in the sports and school activity department at the General Directorate of Education in Baghdad/Al-Rusafa Al-Thaniya in Baghdad province. The two researchers relied on the method adopted by researcher Gaith Mahmoud (Ghaith, 2016) in the field research procedures, which include:

The first procedure: identifying the phenomenon that needs to be measured, as this procedure involves examining the actual situation of the sports and school activity department in the General Directorate of Education in Baghdad/Al-Rusafa II (the case study) and studying the actual work context adopted in it, in addition to analyzing the data collected about the performance of this department to identify the gap with the requirements of the scale for artificial intelligence techniques, using checklists.

The second procedure: analyzing the characteristics of the research sample, as the two researchers visited the sports and school activity department in the General Directorate of Education in Baghdad/Al-Rusafa II to obtain information about the research sample, such as their academic qualifications, specialties, job experience, and number of years of experience. The researchers were all graduates of various Iraqi universities.

The third procedure: analyzing the context of the research, as the researchers examined the context of the sports and school activity department in terms of its administrative structure, policies, and regulations, as well as the extent of the department's implementation of these policies and regulations (Asaad et al, (2021).

Table 2. Three-Item Scale and their Weights

No.	Three-Level Scale Items	Weight
1	Fully Applied	2
2	Partially Applied	1
3	Not Applied	0

A) Calculate the weighted mean for the level of agreement by calculating the values of repetitions for each list of tests according to Equation (1): ***Weighted Mean = (Sum of repetitions * weights) / Sum of repetitions….. (1)***

B) Calculate the percentage of agreement by dividing the weighted mean by the highest score in the ternary scale according to Equation (2)" ***Percentage of Agreement = (Weighted Mean / Highest score in the ternary scale) …… (2)***

C) Calculate the gap size using Equation (3): ***Gap size = 1 - Percentage of Agreement ..... (3)***

The fourth step involves presenting and analyzing the current situation of the sports and educational activity department in the General Directorate of Education in Baghdad / Al-Rusafa II. Information was collected by conducting personal interviews with a research sample, including the directors of the sports activity departments and their assistants, departmental and administrative unit managers, technical, technological, and administrative supervisors concerned. The aim was to determine the extent of applying the sports and educational activity department in the General Directorate of Education in Baghdad / Al-Rusafa II to the Artificial Intelligence Techniques scale, and to identify the strengths and weaknesses in terms of application, and to calculate the gap size for each axis of the Artificial Intelligence Techniques scale.

RESULTS

This aspect of the research includes presenting the results for the axes of the artificial intelligence techniques scale and calculating the weighted arithmetic mean of the degree of match, as well as calculating the percentage of the degree of match and then determining the gap, from the perspective of the sample of workers in the sports and school activity department in the General Directorate of

Education in Baghdad/Al-Rusafa II. Considering that this department aspires to be a high-performance sports organization, the following are the results of the five axes included in this scale: expert systems axis, virtual reality axis, intelligent agents' axis, information technology axis, and process automation axis. The researcher used a Likert scale with its three levels (applied, partially applied, not applied) to measure the weighted arithmetic mean and the percentage of the degree of match. The individual's answers to the three-point Likert scale items were converted into a quantitative measure by assigning numbers that reflect those answers, which are [2 for (applied), 1 for (partially applied), and 0 for (not applied)] (Salam et al, (2018). The results were as follows:

Firstly: Expert systems axis: The checklist for the expert systems axis contains five phrases, as shown in Table (3), which also illustrates the sample individuals' responses to each of the five phrases. It also shows the weighted arithmetic mean of the degree of match and the percentage of the degree of match for each phrase. Then the gap was determined in the sports and school activity department in the General Directorate of Education in Baghdad/Al-Rusafa II. By studying the checklist, it was found that there are weaknesses in all the requirements that should be present in the sports and school activity department according to the requirements of the artificial intelligence techniques scale. The percentage of non-matching items was 0%, indicating a significant gap of 1, which indicates that the sports and school activity department is not fully applied to all the items of the expert systems axis in its work.

Table 3. Checklist for Expert Systems for the Sports and School Activity Department at the General Directorate of Education in Baghdad/Rusafa II

Phrase	Applied	Partially Applied	Not Applied
Expert systems rely on rare expertise in solving complex problems.			*
Expert systems act as a consulting expert for top management to contribute to making the right decisions.			*
Expert systems assist in supporting electronic archiving by storing and organizing information and data in sports and school activity departments.			*
Expert systems contribute to acquiring knowledge in various sports fields that support the decisions of top management and the capabilities of employees.			*
Expert systems assist top management by providing information and data to find optimal solutions, alternatives, and conclusions and make decisions.			*
Repetitions	0	0	5
Result	0	0	0
Weighted Mean Score	(5*0)+(0*2)+(0*3)/5=0		
Percentage of Compliance Range	(0/2)=0		
Gap Size	1-0=1		

Secondly: Virtual Reality Axis: The checklist for the Virtual Reality axis includes five phrases, as shown in Table (4), which also shows the responses of the sample individuals to each phrase, along with the mean deviation score and the percentage of conformity for each phrase, as well as identifying the gap for the sports and educational activities department at the Directorate of Education in Baghdad/Al-Rusafa II, it is concluded through the checklist that there are four weak points in the requirements that should be met in the sports and educational activities department according to the

Artificial Intelligence Technologies scale. The weighted mean score is (0.2), and the percentage of conformity is (0.1), indicating a significant gap of (0.9) for non-conformity. This indicates that the sports and educational activities department is not fully compliant with most of the phrases in the Virtual Reality axis in its work, which requires those responsible for the sports and educational activities in the Directorate of Education in Baghdad/Al-Rusafa II to pay attention to these requirements and address them in the future."

Table 4. Checklist for Virtual Reality for the Sports and School Activity Department at the General Directorate of Education in Baghdad/Rusafa II

Phrase	Applied	Partially Applied	Not Applied
Expert systems rely on rare expertise in solving complex problems.			*
Expert systems act as a consulting expert for top management to contribute to making the right decisions.		*	
Expert systems assist in supporting electronic archiving by storing and organizing information and data in sports and school activity departments.			*
Expert systems contribute to acquiring knowledge in various sports fields that support the decisions of top management and the capabilities of employees.			*
Expert systems assist top management by providing information and data to find optimal solutions, alternatives, and conclusions and make decisions.			*
Repetitions	0	1	4
Result	0	1	0
Weighted Mean Score	1/5=0.2		
Percentage of Compliance Range	(0.2/2)=0.1		
Gap Size	0.9		

Thirdly: Intelligent agents' axis: The inspection checklist for the intelligent agent's axis includes five phrases, like the other axes of the artificial intelligence technologies scale, as shown in Table (5). It is also noted that the weighted arithmetic means of the degree of matching equals zero, and the percentage of matching also equals zero. Therefore, the gap value is one. Through studying the inspection checklist, it can be inferred that there are weaknesses in all the requirements that must be met in the sports and educational activity department according to the requirements of the artificial intelligence technologies scale. This indicates that the sports and educational activity department is not fully compliant with all the phrases of the intelligent agent's axis in its work. This requires those responsible for the sports and educational activity department in the General Directorate of Education in Baghdad/ Rusafa II to pay attention to these requirements and address them in the future.

Fourthly: Information Technology Axis: The inspection checklist for the Information Technology Axis contains five phrases, as shown in Table (6), which also illustrates the sample respondents' responses to each of the five phrases, as well as the weighted mean score and the percentage of conformity for each phrase. After determining the gap value for the sports and school activities section at the Directorate General of Education in Baghdad / Al-Rusafa II, it is noted through the inspection checklist that there are no weaknesses in the requirements that must be available in the sports and school activities section. Instead, there are strengths according to the requirements of the Artificial Intelligence Technologies scale, such as the efficient and speedy contribution of information technologies in accomplishing various administrative tasks and functions. By presenting the results of the inspection checklist in Table (5) for the Information Technology Axis, the percentage of conformity is (0.7%), indicating a relatively small gap of non-conformity of (0.3). This indicates that the sports and school activities section is applied in its work for most of the phrases of the Information Technology Axis.

Table 5. Checklist for Smart agents for the Sports and School Activity Department at the General Directorate of Education in Baghdad/Rusafa II

Phrase	Applied	Partially Applied	Not Applied
Smart agents assist top management in making the right decisions based on the knowledge base they possess.			*
Smart agents reduce the time employees spend on administrative tasks to achieve their goals.			*
Smart agents perform administrative tasks on behalf of employees and assist them in specific situations.			*
Smart agents contribute to reducing costs and expenses by serving as an alternative to human resources.			*
Smart agent software helps improve and develop the administrative and technical performance of employees.			*
Repetitions	0	0	5
Result	0	0	0
Weighted Mean Score	(5*0)+(0*2)+(0*3)/5=0		
Percentage of Compliance Range	(0/2)=0		
Gap Size	1-0=1		

Table 6. Checklist for Information technologies for the Sports and School Activity Department at the General Directorate of Education in Baghdad/Rusafa II

Phrase	Applied	Partially Applied	Not Applied
Information technologies provide useful methods to facilitate the collection, storage, analysis and use of information with high efficiency and effectiveness in organizing work and effectively in decision-making.		*	
Information technologies contribute to the development of human resource skills and improve their level of performance and productivity.		*	
Information technology plays a prominent role in creating values for sports organizations, in addition to assisting them in implementing their strategy, especially in light of the increasing competition.		*	
Information technologies contribute efficiently and quickly to the completion of various business and administrative functions.	*		
The software used in information technologies has multiple purposes and is constantly updated.	*		
Repetitions	2	3	0
Result	4	3	0
Weighted Mean Score	7/5=1.4		
Percentage of Compliance Range	(1.4/2)=0.7		
Gap Size	0.3		

Fifthly: Process Automation Axis: The process automation checklist contains five phrases, as shown in Table (7), which also illustrates the sample responses to each of the five phrases, as well as the weighted average score of the matching range, and the percentage of matching for each phrase. Then, the gap was identified for the sports and educational activity department in the Directorate of Education for Baghdad/Al-Rusafa II. Through studying the checklist, it was found that there is only one weakness point in the requirements that must be available in the sports and educational activity department, according to the requirements of the Artificial Intelligence Techniques Scale, which is the lack of financial and technical resources to prepare for business automation requirements. By presenting the results of the checklist in Table (7), it can be observed that the matching rate is (0.7%), indicating a relatively small gap of non-matching (0.3). This indicates that the sports and educational activity department is applied in its work to most of the process automation axis phrases."

Table 7. Checklist for Process automation for the Sports and School Activity Department at the General Directorate of Education in Baghdad/Rusafa II

Phrase	Applied	Partially Applied	Not Applied
The sports and school activity departments seek to improve their technical performance by automating administrative work.		*	
The sports and school activity departments have the financial and technical capabilities that allow them to meet the business automation requirements in managing their various activities.			*
The sports and school activity departments have specialized human resources that contribute to enhancing their role in the transition towards business automation and abandoning traditional management.	*		
Process automation requires specialized human resources with high technical expertise and skills	*		
The sports and school activity departments are interested in automating the internal and external procedures through the website in order to provide all services to the beneficiaries in an easy and fast way and work to improve the work environment.	*		
Repetitions	3	1	1
Result	6	1	0
Weighted Mean Score	7/5=1.4		
Percentage of Compliance Range	(1.4/2)=0.7		
Gap Size	0.3		

DISCUSSIONS

The main goal of this study is to evaluate the status quo of artificial intelligence technology management according to the Artificial Intelligence Technologies Scale in high-performance sports organizations. This is to ensure high performance in terms of quality, time, and cost. The case study method was used for the purposes of this research, and through field observation in the sports and school activity department at the Directorate General of Education in Baghdad/Al-Rusafa II (the case study), details of all work processes were identified, and all documents related to the work of this department were reviewed to identify any malfunction in the work processes of this department. In addition, interviews were conducted with relevant officials, experts, and specialists in artificial intelligence. Checklists were used to determine the actual performance status of the department's activities compared to the requirements of the Artificial Intelligence Technologies Scale, to highlight the strengths and weaknesses, and to analyze the reasons for the gap between them.

Through the search results, it becomes clear that the majority of the employees in the Department of Sports and School Activities at the Directorate

General of Education in Baghdad/Rusafa Al-Rusafa II (educational level) have a clear understanding of the importance of the artificial intelligence techniques scale. However, the lack of financial and technical resources prevents the adoption of this scale in managing the department. In addition, the department lacks an administrative unit to monitor the functional and technical work, study the causes of deviation, and determine the necessary procedures to control all factors affecting artificial intelligence techniques. Through the analysis of the results obtained from the inspection lists, it can be noted that there are weaknesses in all the requirements that should be present in the Department of Sports and School Activities according to the requirements of the artificial intelligence techniques scale. As for the expert systems and intelligent agents' axis, the percentage of conformity is (0%) and the gap amount for non-conformity is (1), indicating that the Department of Sports and School Activities is not fully implementing all the paragraphs of the expert systems and intelligent agents' axis in its work. As for the virtual reality axis, it is no less important than the previous two axes, as the gap amount reached (0.9). However, the gap amount for the information technology and process automation axes is (0.3), indicating that the Department of Sports and School Activities is implementing most of the paragraphs of these two axes according to the requirements of the artificial intelligence techniques scale.

CONCLUSIONS

Through presenting and analyzing the results, the following conclusions can be drawn:

The Department of Sports and School Activities in the Directorate of Education in Baghdad/Al-Rusafa II suffers specifically from poor planning and management, as well as a significant weakness in the application of artificial intelligence technologies in all organizational aspects.

All workers in the Department of Sports and School Activities in the Directorate of Education in Baghdad/Al-Rusafa II are in dire need of raising awareness about the importance of applying artificial intelligence technologies in managing high-performance sports organizations.

The study found the most important smart applications in artificial intelligence to be expert systems, virtual reality, intelligent agents, information technologies, and process automation.

The gap in the Department of Sports and School Activities in the Directorate of Education in Baghdad/Al-Rusafa II, according to the scale of artificial intelligence technologies applications, reaches (1) for the expert systems and intelligent agents' axis, (0.9) for the virtual reality axis, and (0.3) for the information technologies and process automation axis.

Based on the above conclusions, the following recommendations can be made:

The necessity of adopting a scale for artificial intelligence technologies in Iraqi sports institutions to improve their performance.

Conducting similar studies in the Departments of Sports and School Activities in other Directorates of Education in the Republic of Iraq and examining the common points in these studies and the possibility of generalizing them to the country.

Involving administrative levels in the Departments of Sports and School Activities in the Directorates of Education in training courses on the concept of artificial intelligence technologies, with the possibility of seeking the help of specialized professors in Iraqi universities to give lectures on the topic.

Establishing an administrative unit to manage artificial intelligence technologies within the organizational structure of the Departments of Sports and School Activities in the Directorates of Education to carry out the tasks assigned to it in implementing the requirements of the artificial intelligence technologies scale.

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Correspondence to:
Aseel H. Obaid
College of Physical Education and Sports Sciences for Girls,
University of Baghdad, Iraq
Email:aseel.hameed1104a@copew.uobaghdad.edu.iq