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Artificial intelligence applications in improving sports management performance: A case study of the Directorate of Youth and Sports in Algiers

تطبيقات الذكاء الاصطناعي في تحسين أداء الإدارة الرياضية: دراسة حالة مديرية الشباب والرياضة لولاية الجزائر

Bouafia Mostafa [*1]
[1] Higher School of Sports Sciences and Technologies (ES/STS), Algeria,
bouafiamostafa7@gmail.com

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Abstract:

This study aims to investigate the influence of administrative support, organizational structure, availability of qualified human resources, and effective data management on the success of artificial intelligence applications in sports management. The study was conducted on a sample of 40 employees in the Directorate of Youth and Sports in Algiers, and the study tools included an electronic questionnaire. The descriptive-analytical approach was employed to address the study issue, and some statistics pertinent to the subject of the study were relied upon.

The results shows that effective administrative support, skilled human resources, good data management, and overcoming technical, financial, and cultural challenges are critical to the success of AI applications in sports management.The most important recommendations of the study is that long-term plans should be developed with the participation of many stakeholders to implement AI systems in Directorate of Youth and Sports. This should be done with a focus on establishing a specialized AI unit that relies on the expertise of specialists in this field.

Keywords: Artificial Intelligence; Sports Management; Electronic Management; Sports Organizations; AI.

Corresponding author: Bouafia Mostafa , E-mail: bouafiamostafa7@gmail.com

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Introduction:

Artificial intelligence (AI) is a contemporary field of computer science that prioritizes the development of systems and software capable of performing tasks that require human intelligence, including learning, reasoning, and decision-making. As a result of the rapid advancements in the field, AI has become an indispensable component of our daily lives, employed in a multitude of applications, including medicine, industry, services, and transportation. This technology enables enhanced efficiency and productivity, while also opening new avenues for innovation across various domains. This article seeks to examine the most significant recent advancements and applications in the field of artificial intelligence, with a particular focus on the benefits and challenges associated with them.

The sports field is undergoing a new phase of development that encompasses all its scientific, applied, and theoretical domains. This phase is characterized by the integration of revolutionary developments in digital technologies, information and communication technologies, and significant scientific innovations. These modern innovations in various fields of knowledge have had a profound impact on the sports field, revolutionizing all aspects of it and becoming integral to every aspect of the field. There has been a notable increase in interest in these innovations and their scientific applications, particularly in their theoretical and technological dimensions. This has led to a continuous breaking of world and Olympic records, improvements in performance, and a notable advancement in the level of sports achievement. (Mohamed, 2023, p. 298)

This necessitates that organizations implement diverse forms of transformation in the methods and techniques utilized throughout the various stages of business operations to fulfill the criteria for utilizing and integrating contemporary information technology tools and adopting the latest software and communication platforms, particularly in regard to the advancements in digital communication and online platforms relevant to the business, modern services, and the operational environment.

- **Research Questions:**

In consideration of the aforementioned points, we have formulated the following study questions: **How can the success of AI applications in sports management be optimized?**

We divide the general question into the following sub-questions:

- How does administrative support and organizational structure affect the success of AI applications in sport management?
- How does the availability of qualified human resources and training opportunities affect the success of AI applications in sport management?
- How can good data management contribute to the success of AI applications in sport management?
- What are the technical, financial, and cultural challenges of using AI in sport management?

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- **Hypotheses:**

In light of the problem, we propose the following hypotheses:

- Effective management support and a flexible organizational structure increase the chances of successful AI applications in sports management.
- The availability of qualified human resources and continuous training opportunities contribute significantly to the success of AI applications in sport management.
- Good data management contributes to the accuracy and effectiveness of AI applications in sports management.
- Technical, financial, and cultural challenges hinder AI applications in sport management and negatively affect their success.

- **Significance of the Study:**

This study represents a significant contribution to the scientific community, providing a comprehensive definition of artificial intelligence (AI) and its applications in the field of sports. It elucidates the process of enhancing performance management and demonstrates the practical applications of AI in the domain of sports.

- **Objectives of the Study:**

- Examine the impact of administrative support and organizational structure on the success of AI applications in sports management.
- How the availability of qualified human resources and training opportunities influence the success of AI applications in sports management.
- How good data management contributes to the success of AI applications in sports management.

- **Methodology of the Study:**

The descriptive-analytic approach was deemed an appropriate methodology for this study, as it allows for the effective presentation and clarification of concepts related to AI in general, as well as AI in sports.
Furthermore, the results and data obtained from the study were subjected to analysis based on the responses of the sampled population.

- **Organization of the Study:**

The following section outlines the structure of the study. The study is comprised of three sections:
The initial section of the study presents a comprehensive literature review on the subject of AI. The subsequent section focuses on the application of AI in the domain of sports management. The final section of the study builds upon the preceding two sections through a systematic and structured approach. This section is devoted to the practical phase of our case study of AI in the directorate of sports and youth.

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1. Artificial Intelligence Basic Concepts:

The advancement of scientific and technological fields has resulted in the advent of numerous modern sciences that are applicable to a multitude of disciplines and specialties. Artificial intelligence, in particular, stands out as a pivotal science. It can be defined as the application of human experience, expertise, and intelligence in the form of programs and devices that benefit individuals in various settings, including scientific research institutions and other organizations that require specialized assistance.

1.1. Definition of Artificial Intelligence:

The term "artificial intelligence" is a combination of two words: "artificial" and "intelligence." The word "artificial" is defined as "not real" or "unnatural," while "intelligence" is defined as "the ability to reason, to trigger new thoughts, to perceive and learn". (Mudit, 2018, p. 05)

The term "artificial intelligence" is typically used to describe a range of cognitive abilities, including the capacity to analyze, plan, solve problems, and simulate mental processes at a rapid pace. Additionally, it encompasses the ability to think abstractly, organize and coordinate ideas, comprehend language, and learn new concepts swiftly. Although the general public often equates intelligence with these abilities, psychological research distinguishes intelligence as a behavioral trait distinct from creativity, personality, wisdom, and even memory-related abilities. (Simoud & Dahmani, 2022, p. 90)

The concept of AI in its contemporary form is considered a field of computing science. However, its origins can be traced back to the work of neuroscientists and psychologists. The term "artificial intelligence" was coined to describe a field of study that combines techniques from various disciplines, including computer science, psychology, and neuroscience. These techniques aim to simulate human and animal mental abilities and work patterns without pre-programming those behaviors. The most important of these characteristics is the ability to infer and self-learn. (Alasad, 2023, p. 167)

AI is the study of how to direct computers to perform tasks typically carried out by workers in sports organizations in a more efficient manner, thereby enhancing the quality of sports services and activities. Additionally, AI enables the processing of electronic operations and the provision of workers with the data and information they require for informed decision-making. (Mustafa, 2022, p. 157)

1.2.Types of Artificial Intelligence:

The field of artificial intelligence (AI) is currently divided into three main categories, according to the prevailing scientific consensus.

- "Weak AI" or "narrow intelligence": This category is designed to develop technological systems that are capable of accurately and efficiently solving specific tasks. Examples of such systems include machine translation applications and data analytics systems. This category of AI is designed to create technological systems that can accurately and

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efficiently solve specific tasks, such as machine translation applications and data analysis systems.

- "General AI": refers to the capacity to process information in a manner analogous to that of a human being, and to solve problems that require a high degree of intelligence and creative thinking. This category of AI is still in the developmental and research phase, and scientists are still striving to comprehend the intricacies of human cognition and integrate it into computer systems. (Artabaz, 2022, p. 1254)
- "Artificial super-intelligence": represents a significant frontier in the field of AI. The current state of development and the ongoing efforts to emulate human characteristics can be observed in two fundamental patterns. The initial category of AI endeavors to grasp the nuances of human cognition and affect, which collectively shape human conduct. Nevertheless, it is limited in its capacity for social interaction. The second type of AI is a model of the theory of mind, wherein these models are capable of articulating their internal state, anticipating and interacting with the sentiments and attitudes of others. This represents the next generation of super-intelligent machines. (Chili, 2023, p. 87)

Table 1. Comparison between strong and weak AI

Strong AI:	Weak AI:
-Artificial General Intelligence. -Simulate real human behavior and consciousness. -Apply intelligence to any issue. -Make decisions and solve issues in general.	-Special (specific) artificial intelligence -Simulates an aspect of the human mind and lacks consciousness. -Applying intelligence to one specific issue. -Making decisions and solving issues in a very limited area.

Source: (Abdullah & Ahmed, 2019, p. 30)

Although applications based on weak AI are designed for specific tasks, they exhibit proficiency in those tasks. For example, robots employed in the manufacturing process are distinguished by their high level of intelligence, largely due to their precision and the complexity of their actions, which may appear to exceed the capabilities of the human mind. (Boubaha, 2022, p. 96)

1.3. Fields of Artificial Intelligence:

The advent of artificial intelligence has led to its pervasive influence across a multitude of domains, enabling the execution of intricate operations that were previously beyond the capabilities of humans. The deployment of AI techniques has facilitated a reduction in the burden of labor, allowing individuals to devote their attention to more complex tasks. The following represents a comprehensive list of the most widely utilized domains within the field of artificial intelligence: (Simoud & Dahmani, 2022, pp. 91-92)

- Artificial intelligence is also being applied in conjunction with other scientific fields, including communications, time management, health and safety, education, goal-setting and information needs, games, entertainment, and activities.

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- AI and infrastructure, including transportation, business decision-making, agriculture, engineering, architecture, energy, and conservation.
- AI and the consumer space encompasses the evolving relationship with computation, sensing, logic, and learning, as well as personalized smart applications, products, and services. It also addresses the challenges and opportunities presented by data and privacy.
- AI in science includes machine discovery, the design of resource-saving experiments, data interpretation, and applications in biology, chemistry, medicine, and climate.
- AI and application areas include natural language processing, computer vision technology, speech and voice recognition technology, expert systems technology, intelligent computer-aided teaching and learning, and intelligent education systems.

1.4. Characteristics of Artificial Intelligence:

Artificial intelligence (AI) possesses a multitude of characteristics that have rendered it an efficacious investment across a plethora of fields.

- The application of intelligence to the resolution of issues in the absence of comprehensive data.
- The capacity to respond expeditiously to novel situations and circumstances.
- The capacity to address challenging and intricate scenarios. (Touil & Seghir, 2023, pp. 53-54)
- The capacity to think, learn, perceive, acquire, and apply knowledge, utilizes past experiences, and applies them in novel contexts.
- The capacity to navigate challenging and intricate scenarios, even in the absence of complete information. (Kimeche, 2023, p. 356)

1.5. The Importance of Artificial Intelligence:

The significance of artificial intelligence can be broadly delineated in several key areas.

- It is anticipated that artificial intelligence will facilitate the preservation of accumulated human expertise by transferring it to intelligent machines. Human beings can utilize human language in their interactions with machines rather than computer programming languages. This makes the use of machines accessible to all segments of society, including those with special needs, as the operation of advanced machines was previously the domain of specialists and experts. (Cherirou, Boukalkoul, & Baci, 2022, p. 108)
- Artificial intelligence plays an important role in many sensitive fields, including assisting in the diagnosis of diseases and the prescription of medications, providing legal and professional consultations, facilitating interactive education, enhancing security and military operations, and contributing to numerous other fields.
- Intelligent systems contribute to decision-making processes in a number of areas. Their independence, accuracy, and objectivity mean that they are less susceptible to error,

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bias, racism, prejudice, and external or personal interference than human decision-makers. (Benlakhdar & Chenbi, 2022, p. 356)

2. Artificial Intelligence in Sports Management:

In consideration of the recent advancements in artificial intelligence, it is apparent that the future of sports is on the cusp of a substantial transformation. The convergence of these two fields promises to usher in an era of profound and diverse advancements, propelling us towards previously uncharted territories. Nevertheless, in the current era, it is of the extreme importance to develop a strategy that will ensure a more efficient and productive future. This necessitates a comprehensive reorganization of the existing, unwieldy sports industry, with the integration of the advantageous elements of artificial intelligence. It is evident that the domain of sports is characterized by intense competition between nations. Those who proactively embrace the advent of AI in this field will gain a competitive advantage.

2.1. The risks and impacts of applying artificial intelligence in sports management:

The optimistic outlook of sports organization executives has the potential to reduce their reliance on traditional alternatives and even eliminate them in the future. A further consequence of the increasing pervasiveness of AI is the potential for change in the delivery of administrative services in sports organizations, especially those of a commercial nature. This is occurring in an environment of intensifying competition, which is often associated with the winner-take-all dynamic that is often associated with scale and distrust of AI-generated products and digitization.

AI is disrupting sports organizations focused on customer and audience services. These sectors anticipate fundamental changes to their business models, the redefinition of audience engagement strategies, and the creation of alternative revenue streams. This is driven by the recognition that customer trends are evolving, creating an imperative to reimagine business practices to meet changing demands.

The failure to enhance the status quo and maintain the conventional mode of management will result in substantial alterations in the cost of service delivery due to the advent of AI and digitization. This novel approach to work will seek value through collaboration and integration, with the added advantage of disseminating AI to other sports organizations. (Dahia & Bensayah, 2023, p. 1013)

2.2. Reasons for using artificial intelligence in sports management:

The field of management in sports organizations has been significantly impacted by the advent of artificial intelligence (AI) for several key reasons.

- The creation of a knowledge base that serves to support the organizational memory of sports institutions, thereby enabling workers to refer to it in order to obtain knowledge and learn the empirical rules that are not available in books and documents.

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- The storage of AI-related knowledge for the purpose of preventing its loss or leakage due to factors such as employee turnover, resignation, or death.
- The creation of a mechanism that is not susceptible to the influence of human emotions, such as anxiety, fatigue, or exhaustion, is particularly beneficial in organizational contexts where work is inherently stressful and dangerous.
- The possession of effective crisis management tools within their applications.
- The generation of successful solutions to complex issues serves to enrich the knowledge base and enhance the organizational memory, thereby enabling the timely analysis and addressing of issues in accordance with the requisite criteria. (Nasri & Khechaimia, 2021, p. 238)

2.3. The relationship between artificial intelligence and sports:

In recent years, there have been notable developments in the field of artificial intelligence, with its applications extending to a diverse range of domains, including sports. It enables the comprehension of the fundamental principles of sports through the analysis of processed information and is utilized to create virtual reality environments for player development and training. To illustrate, the National Football League (NFL) employs this technology to evaluate players' video performances with the objective of enhancing their abilities. Furthermore, it is employed in Major League Baseball (MLB) in the United States to facilitate well-informed decision-making regarding players. Moreover, it is utilized in the scouting process within the United States of America.

The application of artificial intelligence can assist teams in reducing the time and financial expenditures associated with their operations while simultaneously enhancing the quality of their performance. One of its most significant attributes is its capacity to enable smaller teams to compete with larger teams by providing them with access to data and tools that are typically available only to larger teams. (Touil & Seghir, 2023, p. 54)

3. Methods:

3.1. Data collection/analysis:

The field data was collected by relying on the questionnaire, which included 4 dimensions.

- The first is the organizational dimension, which includes 7 questions
- Second, the human potential dimension included 5 questions.
- Thirdly, the data management dimension included 5 questions.
- Fourth and lastly, the dimension of obstacles to the application of artificial intelligence included 6 questions,

On a unidirectional 3-point Likert-type scale, the 23 items were scored (1= disagree to 3= agree).

As for the methods of analyzing the primary data, the statistical processing was done using (SPSS V.22), where it was audited and checked for quality, then classified and categorized, and statistical measures were calculated according to the need of the research.

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3.2. Cronbach's alpha coefficient:

Cronbach's alpha coefficient was utilized to assess the reliability of the field study results. The value of this coefficient for the first dimension was (0.84), which has a good degree of stability, for the second dimension it was (0.684), which is an acceptable degree of stability, for the third dimension it was (0.908), which is an excellent degree of stability, and for the fourth dimension it was (0.754), which is a good degree of stability. The form's overall Cronbach's alpha coefficient was (0.864), indicating strong internal consistency and stability among its sentences. The following table shows this:

Table 2. Cronbach's alpha coefficient value

	α
First dimension	0.840
Second dimension	0.684
Third dimension	0.908
Forth dimension	0.754
All	0.864

Source: SPSS Outputs

3.3. Study Sample:

The research sample comprises employees of the Directorate of Youth and Sports in Algiers. The questionnaire was prepared and submitted to the sample electronically between June 22 and July 16, 2024. The results of the sample are summarized in the following table:

Table 3. Sample Characteristics

	(N = 30)	
	n	**(%)**
Gender:		
Male	26	86.7
Female	4	13.3
Age (Years):		
25-35	12	40
36-45	8	26.7
46-60	10	33.3
Work Experience (Years):		
Less than 5	7	23.3
5-10	10	33.3
Over 10	13	43.3

Source: Respondents of the study

According to table (03), we notice that the majority of the sample was the male group with 26 people (86.7%), while the percentage of females amounted to 13.3% of the total sample with four people, and the ages of the sample ranged in the largest percentage in the category (25–35 years) with a percentage of 40% estimated at 12 people, followed by the

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category (46–60 years) with 10 people and 33%, and finally the category (36–45 years) with 8 people and 26%. We note that the professional experience of the sample was (more than 10 years) by 43.3% (13 people), then 10 people with experience (5–10 years) by 33.3%, and finally (less than 5 years) by 23.3% (7 people).

4. Discussion:

This section will examine each dimension and sub-question individually, with a focus on the most significant statements within each dimension of the study.

4.1. Organizational Dimension:

Table 4. Organizational Dimension Analysis

	Sentences	Agree	Neutral	Disagree	Total	Mean	Chi²	Df	Rank
01	The Directorate has an acceptance of the application of AI in sports activities.	11	5	14	30	1.90	4.200*	02	03
		36.7%	16.6%	46.7%	100%				
02	Using AI in the workplace fosters leadership and excellence.	26	2	2	30	2.80	38.400*	02	01
		86.7%	6.7%	6.7%	100%				
03	The department's organizational structure makes it easier to manage operations and provide services.	22	1	7	30	2.50	23.400*	02	02
		73.4%	3.3%	23.3%	100%				
04	Top management prepares employees psychologically and morally to use AI technologies.	5	7	18	30	1.566	9.800*	02	04
		16.7%	23.3%	60%	100%				
05	There is flexibility in administrative systems towards the application of AI.	4	8	18	30	1.533	10.400*	02	05
		13.3%	26.7%	60%	100%				
06	Management supports the policy of implementing AI.	5	5	20	30	1.50	15.200*	02	06
		16.7%	16.7%	66.7%	100%				
07	The systems and programs needed to implement AI are available in the workplace.	4	6	20	30	1.466	15.200*	02	07
		13.3%	20%	66.7%	100%				

*Chi² value at significance level of 0.05

Source: SPSS Outputs

The table 4 shows the frequencies, percentages of responses, mean, chi-square value and degrees of freedom (Df) for each of the statements in the first dimension, where we find that the chi-square value ranges from 4.200 to 38.400 with degrees of freedom (2) and a significance level of 0.05.

In Sentence No. 02, which ranked first with mean of (2.80), we see that the majority of the sample (86.7%) agrees that "Using AI in the workplace fosters leadership and excellence". This indicates that employees see AI as a powerful tool to improve work performance and develop leadership skills. This can be attributed to AI's ability to:

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- Analyze large amounts of data quickly and accurately, helping leaders make informed decisions.
- Improve operational efficiency by automating routine tasks, allowing leaders to focus on new strategies and initiatives.
- Drive innovation by providing advanced tools and technologies that help create innovative solutions.

In Sentence No. 03, which ranked second with mean of (2.50), we note that the majority of the sample (73.4%) agrees that "The department's organizational structure makes it easier to manage operations and provide services". This indicates that the internal organization is designed in a way that allows effective performance and achievement of goals, which indicates the effectiveness of the organization in this regard, and this can be manifested in:

- The existence of a clear distribution of tasks and responsibilities, which prevents conflicts and duplication of work.
- The existence of effective communication channels between different departments and administrative levels facilitates the exchange of information and coordination.
- The ability to adapt to changes and challenges is thanks to a flexible organizational structure that allows resources to be reallocated as needed.

Sentence No. 07, comes last with mean of (1.466), and (66.7%) of the sample disagreed with "The systems and programs needed to implement AI are available in the workplace". This indicates that there is a lack of technical infrastructure required to effectively implement AI solutions. Possible reasons include:

- Lack of investment in modern technology results in a lack of necessary tools and software.
- Lack of clear plans for infrastructure development hinders the adoption of new technologies.
- Lack of training and technical support makes it difficult for employees to effectively use available tools and programs.

4.2. Human Potential Dimension:

Table 5. Human Potential Analysis

	Sentences	Agree	Neutral	Disagree	Total	Mean	Chi²	Df	Rank
01	The Directorate has the necessary human cadres to apply artificial intelligence.	8	6	16	30	1.733	5.600*	02	03
		26.7%	20%	53.3%	100%				
02	Employees have the ability to use computers and the Internet.	20	3	7	30	2.433	15.800*	02	02
		66.7%	10%	23.3%	100%				
03	The Directorate organises training courses and seminars to increase awareness of the value of using AI systems.	4	1	25	30	1.30	34.200*	02	05
		13.3%	3.3%	83.4%	100%				
04	I have the ability to deal with the computer and its applications well.	24	5	1	30	2.76	30.200*	02	01
		80%	16.7%	3.3%	100%				
05	The administration has a specialized staff specialized in artificial intelligence.	3	4	23	30	1.33	25.400*	02	04
		10%	13.3%	76.7%	100%				

*Chi² value at significance level of 0.05

Source: SPSS Outputs

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The table 5 shows the frequencies, percentages of responses, mean, chi-square value and degrees of freedom (Df) for each of the statements in the second dimension, where we find that the chi-square value ranges from 5,600 to 34,200 with degrees of freedom (2) and a significance level of 0.05.

In Sentence No. 04 which ranked first with mean of (2.76). We note that the majority of the sample (80%) agrees that they "Have the ability to deal with the computer and its applications well". This suggests that most employees have a high level of basic technical skills that enable them to use programs and applications effectively, providing a strong foundation for learning and using AI applications. Possible factors contributing to this finding include:

- Previous education and training: Employees are likely to have a strong educational background or training in IT.
- Work experience: They may have extensive hands-on experience with computers, which enhances their skills.
- Technical infrastructure: The organization may have computers and software that allow employees to work efficiently.

For Sentence No. 02, which ranked second with mean of (2.433), we find that (66.7%) of the sample agrees that employees "have the ability to use computers and the Internet". This indicates a good level of technical skills among employees, which is essential for the adoption of AI technology. Factors contributing to this result may include

- Internet access: the availability of a high-speed, easily accessible Internet connection.
- Technical training: Employees may have received regular training on how to use computers and the Internet.
- Personal experience: Employees have personal experience using computers and the Internet outside of the work environment.

Sentence No. 03, comes last with mean of (1.30), it is notable that a substantial majority of the sample (83.4%) expressed disagreement with the assertion that "The Directorate organizes training courses and seminars to increase awareness of the value of using AI systems". This indicates that there is a significant gap in training and awareness in this field. Potential contributing factors include:

- Insufficient training programs: There may be an inadequate number of training programs or they may not be conducted on a regular basis.
- Lack of management awareness: Management may not be adequately informed of the importance of AI training.
- Lack of resources: There may be a lack of financial or human resources to organize these courses and seminars.

Corresponding author: Bouafia Mostafa , **E-mail:** bouafiamostafa7@gmail.com

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4.3. Data Management Dimension:

Table 6. Data Management Analysis

	Sentences	Agree	Neutral	Disagree	Total	Mean	Chi²	Df	Rank
01	There is a unit for information systems and artificial intelligence that has a clear work mechanism in the directorate.	2	4	24	30	1.266	29.600*	02	05
		6.7%	13.3%	80%	100%				
02	Data quality management and dealing with errors when they are discovered.	6	6	18	30	1.60	9.600*	02	03
		20%	20%	60%	100%				
03	The Directorate is equipped with the technical tools required to exchange data with other organizations.	10	7	13	30	1.90	1.800*	02	01
		33.3%	23.3%	43.4%	100%				
04	There is a mechanism to continuously assess the extent of utilization of open data.	5	8	17	30	1.60	7.800*	02	04
		16.6%	26.7%	56.7%	100%				
05	There are tools and capabilities to validate the quality of the data.	8	8	14	30	1.80	2.400*	02	02
		26.7%	26.7%	46.7%	100%				

*Chi² value at significance level of 0.05

Source: SPSS Outputs

The table 6 shows the frequencies, percentages of responses, mean, chi-square value and degrees of freedom (Df) for each of the statements in the second dimension, where we find that the chi-square value ranges from 1,800 to 29,600 with degrees of freedom (2) and a significance level of 0.05.

Statement No. 03, came first with mean of (1.90), the statement is about "The Directorate is equipped with the technical tools required to exchange data with other organizations". We note that (33.3%) of the sample agreed, while (43.4%) disagreed, indicating a variation in individual experiences or a disparity in the equipment of the directorate. This may be due to:

- Insufficient training and professional development: It is possible that a portion of the sample is unfamiliar with the available technologies due to a lack of training and professional development, which may impact their ability to assess the extent to which the directorate is equipped with technical tools.
- Differing organizational priorities: organizational priorities may vary significantly from one department to another. Some departments may prioritize data sharing, while others may prioritize internal operations or customer service.
- Resource management issues: There is a possibility of resource mismanagement, leading to an unequal distribution of technical tools between different departments within the directorate. This is reflected in the opinions of the sample.

Statement No. 05, which ranked second with mean of (1.80), refers to "There are tools and capabilities to validate the quality of the data". We note that (46.7%) of the sample disagreed

Corresponding author: Bouafia Mostafa , **E-mail:** bouafiamostafa7@gmail.com

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with this statement, indicating that some tools exist, but they may be insufficient or ineffective. Factors contributing to this result may include:

- The efficacy of the available tools is to be evaluated. The discrepancy observed in a significant proportion of the sample suggests that the efficacy of the available tools for data quality assessment may be suboptimal, potentially impacting the accuracy and quality of the data utilized.
- Inadequate control and supervision: It is possible that the data quality verification process is not adequately controlled or supervised, which may result in irregular or inaccurate use of the tools.
- Lack of integration: There may be a lack of integration between the different tools used to validate data quality, which could result in gaps in the validation process and data not receiving the comprehensive validation required.

Statement No. 01, comes last with mean of (1.266), the statement refers to "There is a unit for information systems and artificial intelligence that has a clear work mechanism in the directorate". We note that (80%) of the sample disagrees with this opinion, which indicates that the majority of employees do not see the existence of a clearly defined unit in this field within the Directorate. and this can be manifested in:

- Lack of a dedicated unit: A large percentage of the sample was unaware of the existence of a unit dedicated to information systems and artificial intelligence, suggesting that this unit may not actually exist within the Directorate.
- Weak internal communication: This may indicate that internal communication channels within the Directorate are weak, and that information about the existence and functioning of AI unit is not sufficiently available to staff.
- Lack of management support: There may be a lack of administrative support for this unit, resulting in its presence not being effective or having a tangible impact on operations within the directorate.

4.4. AI Application Barriers Dimension Analysis:

Table 7. AI Application Barriers Analysis

	Sentences	Agree	Neutral	Disagree	Total	Mean	Chi²	df	Rank
01	These technologies require large sums of money for training that the Directorate does not have.	11	5	14	30	1.90	4.200*	02	04
		36.7%	16.6%	46.7%	100%				
02	Technologies need customized activities within the workplace.	21	5	4	30	2.566	18.200*	02	03
		70%	16.7%	13.3%	100%				
03	These technologies need a qualified and specialized human supply in the field of technology.	26	1	3	30	2.766	38.600*	02	01
		86.7%	3.3%	10%	100%				
04	There is no benefit to using these technologies.	5	7	18	30	1.566	9.800*	02	06
		16.6%	23.3%	60%	100%				
05	The culture in the workplace is not keeping up with these technological developments.	22	6	2	30	2.666	22.400*	02	02
		73.3%	20%	6.7%	100%				
06	The threat of using AI systems for fear of reducing the number of employees.	9	6	15	30	1.80	4.200*	02	05
		30%	20%	50%	100%				

*Chi² value at significance level of 0.05

Source: SPSS Outputs

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The table 7 shows the frequencies, percentages of responses, mean, chi-square value and degrees of freedom (Df) for each of the statements in the second dimension, where we find that the chi-square value ranges from 4,200 to 38,600 with degrees of freedom (2) and a significance level of 0.05.

Statement No. 03, which ranked first with mean of (2.766), says: "These technologies require qualified and specialized human resources in the field of technology. With (86.7%) of the sample agreeing with this statement, the percentages indicate the recognition of the urgent need for qualified and specialized human competencies to operate and manage modern technologies. Without these skills, technology adoption efforts may be ineffective.

- The strategic importance of training is a topic worthy of further investigation. This high level of agreement may also indicate that workers recognize the importance of investing in training and professional development in order to equip them with the necessary skills to deal with new technologies.
- Increased Productive Efficiency: The hiring of qualified individuals can enhance the efficiency and effectiveness of technology use, thereby improving the overall performance of the directorate and optimizing the return on investment in technologies.
- Recruitment Challenges: The Directorate may face challenges in attracting or retaining qualified employees in the field of technology, which may require additional efforts to develop an attractive and motivating work environment.

Statement No. 05, which ranked second with mean of (2.266), refers to "the prevailing culture in the workplace is not keeping pace with these technological developments". We note that (73.7%) of the sample agrees with this statement, which indicates that there is resistance to change and digital transformation, which could hinder the directorate's progress in adopting new technologies.

- The necessity for awareness is evident. This suggests the necessity of fostering awareness regarding the significance of technology and technological advancements among employees while simultaneously cultivating a culture of innovation and renewal within the workplace.
- Communication and motivation: There may be a need to enhance communication and motivation among employees to engage them in the digital transformation process and make them more willing to accept and apply new technology.
- Leadership influence: Organizational culture can be influenced by the approach of leadership and senior management. A change in management approach may be needed to promote positive adoption of new technologies.

Then statement No. 04 ranked last with mean of (1.566). The statement refers to "the return on investment from the use of such technologies is not worth it". We note that (60%) of the sample disagreed with this statement, which means that there are potential benefits from using AI technologies that help improve operations and increase efficiency.

- Economic valuation: There may be a difference in how the economic returns of AI are assessed. Some may focus on immediate financial returns, while others may consider

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long-term returns and process improvements that are difficult to measure in direct monetary terms.

- Analyze costs and benefits: There may be a need for a deeper analysis of the costs and benefits of using AI. Future benefits and long-term cost savings need to be clarified.
- Raise awareness of the value of AI: There is widespread understanding and awareness of the importance and benefits of AI.

5. Conclusions:

At the end of this study on the Artificial intelligence applications in improving sports management performance: A case study of the Directorate of Youth and Sports in Algiers, we can answer the study questions and test our hypotheses.

The first question is: "Does administrative support and organizational structure affect the success of AI applications in sport management?"; The results show that effective administrative support and a flexible organizational structure contribute significantly to the success of AI applications. A strong organizational structure helps manage operations and service delivery efficiently, and administrative support promotes leadership and excellence in the workplace, which supports the hypothesis that effective management support and a flexible organizational structure increase the chances of successful AI applications in sports management.

Second question: "How does the availability of qualified human resources and training opportunities affect the success of AI applications in sport management?"; The results indicate that the availability of qualified human resources and ongoing training opportunities play a critical role in the success of AI applications. The ability to use computers and the Internet and the provision of training courses enhance the skills of employees, which supports the hypothesis that the availability of qualified human resources and continuous training opportunities contribute significantly to the success of AI applications in sport management.

Third question: "How can good data management contribute to the success of AI applications in sport management?"; The results show that good data management contributes to the accuracy and effectiveness of AI applications. The presence of an information systems unit and clear work mechanisms enhances the quality of data management and error handling, supporting the hypothesis that good data management contributes to the accuracy and effectiveness of AI applications in sports management.

Fourth question: "What are the technical, financial, and cultural challenges of using AI in sport management?"; The results show that technical, financial, and cultural challenges hinder AI applications and negatively impact their success. High training costs, the need for qualified human resources, and keeping organizational culture abreast of technological developments are major barriers, supporting the hypothesis that technical, financial, and cultural challenges hinder AI applications in sport management and negatively affect their success.

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Based on these findings, it is clear that the success of AI applications in sports management depends on strong administrative support, qualified human resources, good data management, and overcoming technical, financial, and cultural challenges.

6. Recommendations:

In consideration of the findings, the researcher proposes the following recommendations:

- The need to develop long-term plans in which many stakeholders participate in order to apply artificial intelligence systems in the Directorate of Youth and Sports.
- Spread the culture of using artificial intelligence applications in the Youth and Sports Directorate in the performance of administrative work.
- The Directorate of Youth and Sports should undergo a digital transformation through the implementation of artificial intelligence applications.
- The necessity of introducing modern technological programs necessary for the application of artificial intelligence in the directorate in an integrated and harmonious manner.
- Interest in seeking to establish a specialized artificial intelligence unit with the help of specialists in artificial intelligence.
- Developing the skills of employees to keep pace with technological developments to deal with artificial intelligence methods.
- The necessity of developing specialized training programs using AI applications for workers within the directorate.
- Provide workshops to benefit from experts in the field of technological development.
- The necessary financial allocations must be provided to help introduce the latest modern technological means within the Directorate of Youth and Sports.

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