RESEARCH ARTICLE

The Contribution of Staff Training and Development Strategies to the Development of E-Management Applications in Modern Sports Institutions in Algeria: (A Field Study at the National School of Olympic Sports in Setif Province)

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Doi Serial https://doi.org/10.56334/sei/8.5.32

Keywords E-management, Training strategies, Sports institutions.

Abstract

The study aimed to identify the extent to which training and development strategies contribute to the development of e-management applications in modern sports institutions in Algeria, by studying the relationship between the on-the-job training strategy and the development of information technology applications by sports institutions, the relationship between the individual training plans strategy and the development of information technology applications in sports institutions, and the relationship between the project-based learning strategy and the development of information technology applications in sports institutions, in order to support the provision of distinguished services to customers and the development of e-management applications in sports institutions and associations in Algeria. To achieve this, we relied on the descriptive analytical approach, using the questionnaire as a study tool and on a sample of (40) respondents from employees of the National School of Olympic Sports in Setif State. We concluded that: There is a strong correlation between the on-the-job training strategy, the individual training plans strategy, and the project-based learning strategy and the development of e-management applications in sports institutions in Algeria.

Citation

Batli Y., Bouaziz S., Megrah O., Nehaoua L. (2025). The Contribution of Staff Training and Development Strategies to the Development of E-Management Applications in Modern Sports Institutions in Algeria: (A Field Study at the National School of Olympic Sports in Setif Province). *Science, Education and Innovations in the Context of Modern Problems*, 8(5), 310-325; doi:10.56352/sei/8.5.32. https://imcra-az.org/archive/363-science-education-and-innovations-in-the-context-of-modern-problems-issue-5-volviii-2025.html

Received: 05.02.2025	Accepted: 28.03.2025	Published: 20.05.2025 (available online)

Introduction

In recent years, the world has witnessed a tremendous advancement in knowledge and technology, resulting in an unprecedented rise in the use of modern technologies across all aspects of daily life, scientific research, and professional functions. Consequently, societies in general—and their economic, commercial, and service institutions in particular—have entered a fierce race to acquire advanced tools, technologies, and software used in administrative operations (Abbas, 2015, p.13).

Given that sports institutions are among the sectors significantly affected by this technological development, it has profoundly transformed the way they manage their operations. For instance, sports federations and leagues, which for decades relied primarily on traditional paper-based documentation, often suffered from low organizational efficiency. This inefficiency negatively impacted various activities, especially in organizing tournaments and sports competitions, which required considerable time, effort, and financial resources.

The noticeable technological evolution in administrative environments—often referred to as technological development in planning, organizing, and directing functions—has become a crucial factor that sports organizations strive to incorporate to enhance their effectiveness and performance. This is largely due to the rich data and information that technology offers, which can be leveraged to improve outcomes.

To implement this modern administrative model that relies on technology to execute its functions, several managerial requirements must be met. Chief among them is the presence of electronic leadership capable of efficiently utilizing information and communication technologies, fostering innovation, and rebuilding knowledge frameworks. Moreover, organizations must eliminate tedious bureaucratic and routine procedures that hinder organizational innovation (Ghoneim, 2004, p.238). Ghoneim emphasizes the need to raise awareness about the benefits of adopting e-management practices and highlights the importance of involving the private sector alongside government entities, as it serves as a driving force behind the success of e-management applications (Saad Ghaleb, 2005, p.22).

Strategic planning for the shift toward e-management must also be carried out by top-level executives. In this context, Mohammed Saddam Jabr argues that one of the key prerequisites for successful e-management is the development of human resources. This involves preparing highly skilled professionals familiar with information systems, databases, and internet-based work environments (Saddam Jabr, 2002, p.200).

this includes training all employees on how to effectively use computers, manage communication networks, handle data systems, and align electronic management practices with the latest technological advancements. Ideally, such training should be conducted through government-sponsored institutes or specialized training centers. Additionally, promoting a culture of e-management and educating citizens on how to use these systems effectively is equally important (Hamed, 2015, p.225).

It is worth noting that the implementation of e-management and the accompanying technologies often intimidate employees unfamiliar with such systems. Traditional employees tend to resist unfamiliar practices rather than embracing them from seeking to learn and adapt to it. Therefore, it is essential to convince those who show a

willingness to develop their skills and to disregard those who hinder the implementation of e-management in institutions (Al-Qubailat, 2014, p. 28).

Research Problem

This has led us to pose the following main research question:

1.1 Main Research Question:

Do training and development strategies for employees contribute to the advancement of e-management applications in modern sports institutions in Algeria?

From this main question emerge the following sub-questions:

Does on-the-job training strategy contribute to the development of information technology applications in modern Algerian sports institutions?

Does the strategy of individual training plans contribute to the development of IT applications in modern Algerian sports institutions?

Does project-based learning strategy contribute to the development of IT applications in modern Algerian sports institutions?

2. Research Hypotheses

2.1 General Hypothesis:

Training and development strategies for employees contribute to the advancement of e-management applications in modern sports institutions in Algeria.

2.2 Sub-Hypotheses:

The on-the-job training strategy contributes to the development of IT applications in modern Algerian sports institutions.

The strategy of individualized training plans contributes to the development of IT applications in modern Algerian sports institutions.

The project-based learning strategy contributes to the development of IT applications in modern Algerian sports institutions.

3. Significance of the Study

The significance of this study lies in its theoretical contribution to addressing the issue of training and development strategies for employees in sports institutions concerning the latest electronic applications. It aims to highlight the future vision and strategic outlook of these institutions in relying on this type of essential administrative input to efficiently and effectively manage and organize their administrative structure. The study also explores the most effective training methods for employees in these institutions to ensure the successful organization of events and overall sports management. Additionally, it underscores the importance of these strategies and modern technological techniques in the operation and administration of sports institutions. The study seeks to present scientifically supported results and recommendations based on statistical tools aimed at improving the effectiveness of employee training and development for e-management applications within sports organizations.

4 Objectives of the Study The primary goal of academic research into a specific topic or phenomenon is to train the researcher to seek out facts, uncover new areas of knowledge in subjects they are passionate about, and investigate them thoroughly. It also aims to shed light on the aspects that need to be explored.

In summary, the objectives we aim to achieve through this study are as follows:

- To identify the most important training and development strategies for employees that contribute to the advancement of e-management applications in modern sports institutions in Algeria.

- To highlight the significance of on-the-job training strategies in developing IT applications in modern Algerian sports institutions.

- To show the extent to which individualized training plans contribute to the development of IT applications in modern Algerian sports institutions.

- To assess the degree of contribution of project-based learning strategies in developing IT applications in modern Algerian sports institutions.

5. Previous Studies

Study 1:

Rizkayeni Marta, et al. (2024): "Innovative Learning Strategies: A Project-Based Learning Model for Excellence in Visual Programming" – Article published in TEM Journal.

This article explores the implementation of an innovative educational approach, namely Project-Based Learning (PjBL), within a visual programming course. The study aims to investigate the impact of this approach on student engagement and academic achievement. Using a Classroom Action Research (CAR) design, the research was conducted over two sessions involving 30 students enrolled in the Educational Informatics program at Universitas Negeri Padang. The study adopted a descriptive comparative approach to evaluate results and compare pre- and post-course outcomes. The findings revealed significant improvements in students' cognitive development (53.33%), emotional growth (46.66%), and psychomotor skills (56.66%) after applying the PjBL model. Moreover, there was a notable 43.44% increase in student active participation during the learning process after incorporating the project-based learning approach.

Study 2:

Piotr Glowacki & Gabriel Łasiński (2014): "The Potential for Applying E-learning Solutions in Sports Organizations" – Published in Economic Business Informatics Journal.

This article provides essential definitions related to the evolving concept of e-learning and technology-based education (e-learning). The study employed a literature analysis to highlight the potential for applying e-learning solutions in contemporary sports organizations. The main goal was to build a theoretical foundation for the effects of e-learning on knowledge repositories and the learning process. Considering the central role of knowledge and information as key resources for professional sports organizations, the article presents practical aspects and benefits of expanding educational capacities. In a time of constant change, organizations seek global, long-term, and flexible solutions for building knowledge based on compatible and open systems. The use of contemporary e-learning programs allows sports organizations to construct knowledge structures. E-learning functionalities, tailored to the organizations or department's specific needs, can support strategic change processes. Implementing educational models and learning management systems gives organizations the capacity to define key elements of organizational culture and encourages proactive knowledge creation.

Study 3:

Rose Chipembele, Richard Msacky & Miraji Mgonja (2024):

Published in NG Journal of Social Development.

This study assesses the impact of on-the-job training on the delivery of high-quality services at the National Food Reserve Agency (NFRA) in Tanzania. Adopting a quantitative cross-sectional design, data were collected using a structured questionnaire covering variables such as on-the-job training and service quality. Descriptive statistics and multiple linear regression analysis were used for data evaluation. The results revealed a significant positive relationship between on-the-job training and high-quality service delivery. Specifically, skill mastery (Beta = 0.596, $p < 0.001$) showed the strongest influence, followed by task efficiency (Beta = 0.156, $p = 0.005$), workforce competence (Beta = 0.116, $p = 0.039$), and adaptability (Beta = 0.113, $p = 0.041$). The findings emphasize the importance of

effective training programs in improving organizational performance and service quality. Therefore, it is recommended that regulatory bodies implement comprehensive on-the-job training programs focused on skill mastery, adaptability, and task efficiency to ensure that staff can consistently deliver high-quality services.

6. Definition of Concepts and Terms:

6.1. E-Management:

Theoretical Definition:

E-management is the administrative process based on the distinctive capabilities of the Internet and business networks in planning, directing, and controlling core competencies without limits, to achieve goals. It is paperless management that eliminates constraints of time and rigid requirements. It relies on electronic archives, emails, electronic directories, digital calendars, and voice messages. It is an intelligent, network-based institution that depends on knowledge workers.

(Batli & Layadi, 2023, p. 524)

Operational Definition:

E-management is a modern administrative approach that utilizes advanced technologies to complete various administrative tasks. Its main goal is to facilitate citizen access to services in the shortest time and at the lowest cost, while eliminating negative bureaucracy that hinders effective service delivery.

(Aïcha, 2022, p. 569)

This is the operational understanding adopted by the researcher.

6.2. Strategies

Linguistic Definition: Strategically, the term refers to the art of coordinating all forces during times of war and the method of organizing armies and setting military plans for battles.

(Batli & Laayadi, 2023, p. 550)

Terminological Definition:

Strategic decisions are crucial and impactful choices made by organizations to utilize their capabilities in capitalizing on environmental opportunities and to protect against environmental threats. These strategies are formulated at the organizational level.(Hamza, Boubekeur, & Elias, 2020, p. 51)

Training Strategy:

It is based on analyzing external opportunities and threats as well as internal strengths and weaknesses, whether human, material, or information within the organization. It also involves identifying the training needs of each department or unit.

(Hafedh, 2022, p. 294)

6.3. Sports Institutions

Terminological Definition:

According to Executive Decree No. 91-416 dated November 2, 1991, a sports institution is any facility prepared for sports activities under the authority of youth and sports administration offices, including multi-sports complexes and stadiums managed by the Ministry in charge.

(Bousaleh, Makhlouf, & Abdelwahab, 2021, p. 483)

Operational Definition:

Sports institutions are entities established to serve the sports sector comprehensively. They possess an organizational structure that aligns with their size and objectives. Examples include the Ministry of Youth and Sports, the National Olympic Committee, general sports federations for Olympic and non-Olympic disciplines, provincial branches of these federations, sports and social clubs, youth centers, indoor arenas, stadiums, training centers, permanent camps, sports medicine centers, youth palaces, and youth cultural centers.

Practical Framework:

1-. Methodological Approaches Used:

1-1. Pilot Study:

Before fully launching the present study, the researcher conducted a pilot study using a small exploration sample to assess the strength, clarity, and relevance of the instrument in relation to the research objectives. The pilot aimed to evaluate content validity, reliability, and the participants' understanding of the questionnaire's components. Accordingly, a trial version of the questionnaire was distributed to a sample of 9 respondents, which served as a preparatory step before administering the instrument to the actual study sample. The pilot study ensured the validity and reliability of the research tool (the questionnaire). The finalized questionnaire was then administered to the actual sample of 40 respondents. It is worth noting that the pilot study sample is entirely separate from the main study sample.

1-2. Research Method:

Research methodologies in social sciences vary according to the nature and objectives of the research problem. A methodology is defined as "a method for describing the subject of study through a sound scientific approach and presenting results in expressive numerical forms that allow for interpretation."

(Yassine & Laayadi, 2023, p. 526)

The nature of this study, which aims to examine "The Contribution of Training and Development Strategies of Employees in Enhancing E-Management Applications in Modern Sports Institutions in Algeria," necessitates the use of the descriptive method, as it suits the study's objectives and relies on the collection of field data.

1-3. Study Population:

The population of the study consisted of 40 employees from the National School of Olympic Sports in Sétif Province.

1-4. Study Sample:

The researcher adopted a random sampling method appropriate to the study topic and its characteristics. This technique aims to obtain comprehensive and representative data about the units of the target population. One of the main advantages of this approach is acquiring reliable and complete data that allows a thorough analysis of the studied phenomenon. The final sample included 40 respondents, all of whom completed and returned the questionnaire, which was valid and fully completed for analysis.

1-5. Study Instrument:

Following the pilot's study, the researcher adopted the questionnaire as the most suitable tool for data collection in this research. The questionnaire comprised 18 items divided into three dimensions:

First Dimension: On-the-job training strategy – 6 items

Second Dimension: Individual training plan strategy – 6 items

Third Dimension: Project-based learning strategy – 6 items

1-6- Fields of Study:

Human Field: Our study included (40) participants who are employees at the National School of Olympic Sports in Sétif.

Time Field: This study was conducted from October 8, 2024, to December 15, 2024.

Place Field: The study was applied at the National School of Olympic Sports in Sétif.

1-7 - Psychometric Characteristics:

To ensure the validity and reliability of the questionnaire (data collection tool), the final version of the questionnaire was distributed to a sample of 9 employees. Then, we checked its validity and reliability as follows:

1-7-.1 - Internal Consistency Validity:

Table (1): Values of the first axis items – Strategy of On-the-Job Training

tNO	Item	Correlation Coefficient	Significance Level(sig)	Result
01	On-the-job training helps improve your performance in using IT applications in administrative tasks	0.661**	0.000	Statistically significant
02	There is a positive impact from on-the-job training in changing how your team or organization performs daily tasks.	0.851**	0.000	Statistically significant
03	You make suggestions or recommendations to improve the on-the-job training strategy in your organization.	0.729**	0.000	Statistically significant
04	You are satisfied with the content of the on-the-job training strategies programmed by the top management in your organization	0.664**	0.000	Statistically significant
05	You believe that on-the-job training helped you improve your use of IT applications	0.857**	0.000	Statistically significant
06	Enough explanation was given about the on-the-job training strategy before starting the training.	0.778**	0.000	Statistically significant

data Source: Prepared by the researchers based on questionnaire and SPSS v26 outputs.

table (2): Values of the second axis – Strategy of Individual Training Plans.

NO	Item	Correlation Coefficient	Significance Level(sig)	Result
07	Your training needs were analyzed before giving you the individual training program.	0.777**	0.000	Statistically significant
08	You feel that the individual training program was specially designed to meet your personal needs.	0.907**	0.000	Statistically significant
09	Individual training helped improve your performance in using IT applications.	0.830**	0.000	Statistically significant
10	You believe the program's duration was enough to achieve your training goals.	0.889**	0.000	Statistically significant
11	You received enough support from supervisors and management during the individual training.	0.857**	0.000	Statistically significant
12	You make suggestions to improve the strategy of individual training plans in your organization.	0.767**	0.000	Statistically significant

data Source: Prepared by the researchers based on questionnaire and SPSS v26 outputs.

Table (3): Values of the third axis – Strategy of Project-Based Learning

NO	Item	Correlation Coefficient	Significance Level(sig)	Result
13	You have participated in a project-based training program in your organization.	0.887**	0.000	Statistically significant
14	The project-based learning strategy had clear and specific goals from the beginning.	0.807**	0.000	Statistically significant
15	Project-based learning helped improve your performance in using IT applications.	0.730**	0.000	Statistically significant
16	You received the necessary support from colleagues and supervisors during the project.	0.789**	0.000	Statistically significant
17	Your performance was evaluated regularly during the project.	0.757**	0.000	Statistically significant
18	The project motivated you and increased your desire to learn and improve your skills.	0.867**	0.000	Statistically significant

Source: Prepared by the researchers based on questionnaire data and SPSS v26 outputs.

Interpretation:

From Tables (1), (2), and (3), we see that all correlation coefficients are positive, which means that there is a direct relationship between the variables in all items.

The correlation values range from 0.66 to 0.88, meaning the relationship is either strong or very strong,

This confirms that the questionnaire items are internally consistent, and they measure what they are supposed to measure.

1-7-2 - Tool Reliability:

The following table shows the reliability results for each axis of the questionnaire using Cronbach's Alpha coefficient.

Table (4): Reliability Coefficient of the Questionnaire

Axis	Number of Items	Cronbach's Alpha
On-te-job training strategy	06	0.797
Individual training plan strategy	06	0.845
Project-based learning strategy	06	0.770
Total	18	0.804

Source: Prepared by the researchers based on SPSS v26 outputs.

Conclusion:

Table (4) shows that all reliability coefficients are high and statistically significant at the 0.05 level.

The highest reliability was for the individual training plan strategy (0.845), and the lowest was for the project-based learning strategy (0.770).

The total reliability coefficient of the questionnaire was 0.804, which is high and statistically significant, proving that the questionnaire is reliable.

Reliability of the Results Obtained Using the Questionnaire

Considering the results obtained by calculating the correlation coefficient for each item, along with the Cronbach's Alpha coefficient—and with reference to Tables (01), (02), (03), and (04)—the questionnaire can be considered highly reliable. Thus, it is deemed suitable for use in our study.

Objectivity;

During this study, all forms of bias and subjectivity were intentionally excluded. We made every effort to present the facts and data of the phenomenon as they are, without interference or personal interpretation. This objective was supported through the use of statistical methods aimed at minimizing researcher bias.

2. Presentation, Interpretation, and Discussion of Results*:*

2.1. Presentation and Aggregation of Respondents' Answers Regarding Axis One: On-the-Job Training Strategy.

Table 5: Shows the Most Frequent Response, Percentage, and the Calculated and Tabulated Chi-Square Values

Number of the phrase	Most Frequent Response	Percentage	Chi-Square		
			Calculated	Tabulated	Significance
01	Yes	86.33%	19.600	5.991	Significant
02	Yes	66.66%	6.800	5.991	Significant
03	No	51.66%	9.200	5.991	Significant
04	Yes	54.33%	18.300	5.991	Significant
05	Yes	76.33%	21.200	5.991	Significant
06	No	62.66%	14.506	5.991	Significant

source: Authors' elaboration based on SPSS V24 outputs.

Commentary on the Table:

From Table (05), we note the following*:*

For Item 01, the response Yes was selected by 86.33% of participants. This can be attributed to the organization's practical engagement with real challenges and concrete solutions. Such engagement enhances the consolidation of technical knowledge, fosters adaptability to new technologies, boosts confidence in using IT applications effectively, minimizes errors, and fosters collaboration toward shared objectives. For Item 02, the response Yes was chosen by 66.66%. This suggests that employees who received on-the-job training acquired new skills through hands-on experience, leading to greater efficiency and productivity in daily operations. This also reduced error rates and improved accuracy, while promoting technological competence and streamlining routine tasks.

For Item 03, response No was selected by 51.66%, which points to the need for improved communication between management and staff regarding the importance of contributing suggestions. Employees may feel their input is undervalued or may lack clarity about the impact their feedback could have. Building trust and establishing responsive feedback channels could enhance their willingness to participate.

For Item 04, the response Yes was recorded by 54.33%, indicating that training strategies were well-aligned with individual and team needs. The training content effectively addressed key areas of IT and managerial skills, while ongoing support from top management contributed to a motivating learning environment. Interactive teaching methods and modern technologies made the training more engaging and impactful.

for Item 05, Yes was the most frequent response at 76.33%, reflecting the opportunity to directly apply acquired knowledge. Facing real-world challenges during training provided valuable hands-on experience, while immediate support from supervisors and peers further enhanced skill development and problem-solving capabilities.

For Item 06, response No reached 62.66%, revealing a lack of clear communication regarding the training objectives and expectations. The absence of prior explanation may have hindered participants' readiness and confidence, contributing to anxiety and reduced engagement. Inadequate preparation and the absence of a structured plan undermined the perceived effectiveness of the training.

Overall, all items related to the on-the-job training strategy show statistically significant results—albeit with varying dominant responses—at a significance level of (0.05). The overall calculated Chi-Square value (18.86) exceeds the tabulated value (5.991), which indicates statistically significant differences in favor of the most frequent response (Yes). Therefore, the null hypothesis is rejected, and the alternative hypothesis is accepted: on-the-job training strategies contribute to the development of IT applications in modern sports institutions in Algeria, These findings are consistent with the study by Rose Chipembele, Richard Msacky, and Miraji Mgonja (2024), which reported a

high level of on-the-job training proficiency within the National Reserve Authority, including notable competence in practical applications.

Skills, Adaptability, Workforce Efficiency, and Task Competency

The high status of on-the-job training translates directly into improved delivery of high-quality services, where employees are better equipped to perform their roles effectively and efficiently, thus achieving organizational goals. Moreover, this study conclusively demonstrates that on-the-job training has a significant positive impact on the provision of good services. The results underscore the importance of effective training programs in enhancing organizational performance and service quality (Zouheyr H., Benada M, Djellouli M, Sofiane B., Abdellah R., Araf A. (2022).

This leads us to assert that sports institutions aim to improve technical competencies through on-the-job training, which, in turn, provides employees with opportunities to develop their technical and practical skills by applying what they learn directly in the work environment. This involves interacting with tools and software used in sports management and data analysis, thereby boosting productivity and efficiency. Employees learn to use technological applications more competently to enhance daily task performance, increasing productivity and reducing errors. These institutions also strive to adapt to technological updates by keeping pace with innovations and leveraging them to develop IT applications in their sports organizations.

Additionally, on-the-job training fosters collaboration among employees and the exchange of knowledge and experiences, leading to more effective implementation of technological projects and application development. It also enables the acquisition of practical experience in using technological applications, which improves employees' problem-solving skills and overall capabilities.

By analyzing employees' needs, institutions identify areas requiring development—whether technical or managerial—and design customized training programs tailored to individual needs. This helps employees enhance their technical and administrative skills in alignment with the institution's objectives.

All these efforts ensure continuous benefits from training, keep pace with technological changes, establish constructive feedback loops, improve future programs, and guarantee the achievement of desired goals.

2.1 Presentation and Aggregation of Sample Responses Regarding Axis One: Individual Training Plan Strategy

Table (6): Shows the Most Frequent Response, Percentages, and Calculated and Tabulated Chi-Square **Values**

Number of the phrase	Most Frequent Response	Percentage	Chi-Square		
			Calculated	Tabulated	Significance
07	Yes	67.66%	7.600	5.991	Significant
08	Yes	82.33%	13.650	5.991	Significant
09	No	53.33%	11.400	5.991	Significant
10	No	67%	6.066	5.991	Significant
11	Yes	74.66%	7.900	5.991	Significant
12	Yes	51.66%	15.200	5.991	Significant

Source: Researchers' preparation based on SPSS V22 outputs.

Commentary on Table (6):

From Table (6), the following observations are made: For Item 07, Yes was the response for 67.66%, attributed to the effective analysis of training needs. This analysis helps design training content that precisely fits individual requirements, enhancing training effectiveness. It also helps identify gaps in skills and knowledge, allowing targeted improvement, setting clear training objectives to measure progress and achieve desired results, and boosting performance in IT applications and administrative tasks. Furthermore, top management adopts training programs to keep up with modern technological developments, stay updated with innovations and efficiently use the latest tools and software.

For Item 08, Yes was chosen by 82.33%. This reflects a comprehensive needs analysis and content design that addresses areas needing improvement, whether technical or managerial. Clear, specific goals help trainees understand and measure their progress, regularly monitoring to ensure objectives are met. It also strengthens

strengths and focuses on overcoming work-related challenges, thus designing a training program that meets individual requirements and encourages active communication and participation. Individual training also fosters the acquisition of new technical and managerial skills that enhance overall performance.

For Item 09, No was the most frequent response at 53.33%, indicating that institutions adequately meet employee needs, allowing them to learn precisely the skills and knowledge required, focusing on areas needing development. This enhances efficiency in using technological applications and offers opportunities for personalized guidance from qualified trainers who assist employees in overcoming unique challenges. Employees learn at their own pace, avoiding fatigue or boredom, and have sufficient time to understand and apply complex concepts correctly. This process develops technical skills and gains experience that strengthens employees' ability to use applications more competently.

For Item 10, No was selected by 67%, attributed to meticulous prior planning and clear objective setting by top management, alongside carefully designed training programs with clear goals. This helped participants understand what was expected within the set timeframe. Additionally, a thorough needs analysis before program commencement contributed to delivering appropriate content matching participants' levels and skills. Management aims to cover all critical aspects related to electronic management applications in sports institutions comprehensively and practically. Despite all this, a variety of training methods such as lectures, workshops, and practical training were used, enhancing knowledge understanding and application. These factors likely contributed significantly to the perceived sufficiency of the training duration. These results reflect the effectiveness of program planning, execution, and follow-up, benefiting sports institutions in Algeria.

For Item 11, Yes was recorded at 74.66%, reflecting continuous guidance, effective communication between supervisors and trainees, personalized support, regular performance evaluations, and feedback provision. The continuous support helped trainees improve their performance and develop their skills. Regular monitoring of trainee progress ensured that training objectives were met, and necessary support was provided whenever needed. Comprehensive training materials and additwional resources such as books and online courses were also offered, enabling trainees to ask questions and receive immediate guidance. This contributed to a deeper understanding of the training content and enhanced the overall learning experience.

For Item 12, the most frequent response was No at 51.66%, indicating that the sample members were not completely satisfied with the current training program and did not see a need for improvements. This reflects a significant misalignment between the program and trainees' needs to fully achieve their goals. It also suggests a lack of clear communication channels for submitting suggestions or recommendations, or possibly that no open channels existed to receive them. Some participants may have feared criticism or negative impacts on their personal evaluations within the institution, which adversely affected the program's quality and efficiency and discouraged them from providing recommendations. Others might have felt no need to make suggestions or doubted that their input would result in real changes, making them reluctant to propose any recommendations. Some individuals may have had previous experiences where their suggestions were ignored, reducing their motivation to contribute new ideas.

Despite this, all survey items related to the Individual Training Plan Strategy contributing to the development of IT applications in modern sports institutions in Algeria were statistically significant with varying most frequent responses at the 0.05 significance level. The overall calculated chi-square value was 23.92, exceeding the tabulated value of 5.991. This indicates statistically significant differences in the sample responses favoring the most frequent alternative (Yes). Consequently, the null hypothesis can be rejected, and the alternative hypothesis accepted, stating that the individual training plan strategy contributes to the development of IT applications in modern sports institutions in Algeria.

This finding aligns with the study by Piotr Glowik and Gabriel Laseński (2014), which concluded that the use of contemporary e-learning programs in sports organizations provides opportunities to build knowledge structures. E-learning functions tailored to the specific needs of the organization or sports departments can be beneficial in strategic change processes. Implementing educational models and learning management systems grants organizations the ability to identify key elements of organizational culture and encourages more active participation in knowledge creation.

Modern sports institutions increasingly rely on information technology to enhance their performance and efficiency in managing sports and administrative activities. This reliance is primarily based on the individual training plan strategy, which plays a vital role in achieving this goal by developing employees' skills in using IT applications efficiently and effectively. By providing personalized education tailored to each employee's needs, institutions enable

employees to develop their technical skills more precisely and effectively. This personalized training includes how to use specialized software for sports data analysis, tournament management, effective communication with teams and audiences via social media platforms, continuous personal guidance and support, and encouragement to think creatively and adopt new technological innovations.

By fostering a stimulating learning environment, employees are empowered to discover new tools and techniques that help improve their performance and provide innovative solutions to challenges faced by sports institutions. This enhances institutions' ability to adopt the latest technologies and improve their administrative processes. Employees gain the confidence and skills needed to use technological applications competently in their daily tasks, thus increasing the overall efficiency of improving employees' productivity and enabling them to perform their tasks faster and more accurately, which reduces the time spent on administrative processes and increases work efficiency. This improvement in efficiency positively reflects on the overall performance of the institution and helps it achieve its strategic goals, in addition to preparing employees to keep up with ongoing technological changes. Thus, sports institutions can ensure that they have a qualified workforce capable of quickly adapting to technological updates and making the most of them.

2-3 Presentation and Summary of Sample Responses to the Second Axis Statements: Project-Based Learning Strategy

Table (7); shows the most frequent alternative, percentages, and calculated and tabulated Chi-square values for each statement:

Number of the phrase	Most Frequent Response	Percentage	Chi-Square		
			Calculated	Tabulated	Significance
13	Yes	67.66%	6.66	5.991	Significant
14	No	52%	12.400	5.991	Significant
15	To some extent	56.33%	19.667	5.991	Significant
16	Yes	86.66%	7.067	5.991	Significant
17	Yes	79.33%	15.400	5.991	Significant
18	No	55.66%	16.200	5.991	Significant

Source: Prepared *by* researchers based on SPSS V22 outputs.

Commentary on the Table:

Regarding statement No. (13): The answer was "Yes" at 67.66%, reflecting the strong commitment of the institution's senior management to precise and appropriate planning through clear goal setting and gap analysis in employees' skills and knowledge. This enables the development of training programs focused on closing these gaps in a customized manner, increasing training effectiveness and efficiency, improving employees' skills, and helping them understand and adapt to technological changes, thus enhancing overall institutional performance.

For Item No. (14): The answer was "No" at 52%, indicating a lack of customization in the training programs to meet individual needs. This may be due to reliance on general training content unsuitable for each trainee's specifics, a shortage of resources or tools to provide personalized training, or a lack of qualified trainers. Time pressure and the training environment may also affect the allocation of adequate time for each trainee, leading to trainees feeling the program does not meet their unique needs, causing a mismatch between expectations and reality.

For Item No. (15): The answer was "To some extent" at 56.33%, indicating the training content was somewhat based on individual needs and current knowledge level, with personal guidance from trainers to help trainees address individual problems. It also provided more opportunities for direct practical application of concepts, which helped improve performance, increase productivity by developing skills and reducing errors, and included continuous support and guidance.

For Item No. (16): The answer was "Yes" at 86.66%, reflecting the quality of prior planning with clear training objectives, designing the program and its duration appropriately, using varied training methods (lectures, workshops, practical training), and selecting experienced and competent trainers, which helped achieve training goals effectively and within the specified timeframe.

For Item No. (17): The answer was "Yes" at 79.33%, showing continuous communication between trainees and supervisors, provision of personal guidance and regular evaluations with continuous feedback, helping improve

performance and develop skills, creating a motivating and supportive training environment, offering emotional and moral support, and using diverse training methods. Regarding statement No. (18): The answer was "No" at 55.66%, indicating a lack of periodic updating of training materials to keep pace with technological and administrative developments, insufficient coverage of areas needing development such as data analysis, project management, and cybersecurity, lack of trainee involvement in feedback on content and teaching methods, insufficient interaction opportunities between trainees and trainers, neglect of continuous personal guidance, lack of resources like books and online courses, underutilization of advanced technologies such as virtual and augmented reality for interactive training experiences, and insufficient time allocation for trainees to absorb and practically apply the training contectProjects significantly contribute to the development of IT applications in modern sports institutions in Algeria. This is statistically significant, with a variation in the most frequently repeated responses, at a significance level of (0.05). The calculated chi-square value was 16.26, which is greater than the tabulated value of 5.99. This indicates the existence of statistically significant differences in the sample's responses in favor of the most repeated alternative ("Yes"). Accordingly, we can reject the null hypothesis and accept the alternative hypothesis stating that project-based learning strategies contribute to the development of IT applications in modern sports institutions in Algeria.

This finding is consistent with the study by Rizkayani Marta et al. (2024), which reported noticeable improvements in students' cognitive growth (53.33%) and psychomotor skills development (56.66%) after implementing the project-based learning model. Additionally, there was a significant 43.44% increase in students' active participation during the learning process following the integration of this model.

This leads us to conclude that the Project-Based Learning (PBL) strategy is among the most effective methods for developing IT applications in modern sports institutions in Algeria. This effectiveness stems from several actions taken by Algerian sports institutions to improve employee performance and enhance their competence in this field. These actions include emphasizing critical thinking and solving real-world problems by applying theoretical knowledge to real projects. Employees thereby gain a deeper understanding of how to use IT in the sports context and apply learned concepts and theories in practical situations.

Group projects also play a key role, enhancing communication, collaboration, and knowledge exchange among team members. They foster innovative thinking and encourage the finding new solutions to challenges faced in daily operations. These activities provide a safe environment for testing knowledge and skills, increasing self-confidence, and improving future performance. Employees also gain hands-on experience with the latest tools and technologies, which enhances their ability to adapt to rapid technological changes and apply them in practice.

Furthermore, this approach helps consolidate knowledge and develop technical skills more effectively in sports environments that require coordination across different teams. It also improves staff efficiency and productivity by applying their knowledge and skills to real projects and mastering the efficient use of IT. This results in substantial improvements in resource management and a reduction in time spent on traditional processes.

2-4- General Hypothesis Discussion:

Through the analysis and discussion of the study's sub-hypotheses, we concluded that training and development strategies for employees significantly contribute to the development of electronic management applications in modern sports institutions in Algeria. These strategies play a pivotal role due to several factors, the most important being the development of technical skills by training employees in the use of electronic management tools and applications. This enhances their technical competencies and efficiency in performing various tasks, reduces the time needed to complete administrative duties, and improves work quality, thereby increasing overall institutional productivity.

Additionally, the use of modern communication technologies facilitates interactions among employees and the exchange of ideas and knowledge, improving coordination among teams. These practices also enable sports institutions to keep pace with the latest developments in IT and its applications in electronic management, adapt to rapid technological changes, and effectively adopt new tools and applications. This contributes to excellence in service delivery and sports activity management, enhances the institution's capacity for innovation, and allows for the application of innovative problem-solving approaches—all of which demonstrate that training and development strategies help achieve strategic institutional goals.

This aligns with the studies by Hana Muhelska & Marcela Sokolova (2014), and Devi Handaya et al. (2024).

3. General Conclusion:

The analysis and discussion of the questionnaire results led us to several findings:

On-the-job training strategy is an effective tool that significantly contributes to the development of IT applications in modern sports institutions by offering opportunities to learn new skills and concepts directly through practical application, improving understanding and real-world application.

Individual training plans are essential tools for achieving tangible improvements in the development of IT applications in Algerian sports institutions, as they allow for identifying each employee's needs and tailoring training programs accordingly.

Project-Based Learning (PBL) strategy is one of the most impactful strategies for developing IT applications in Algerian sports institutions, due to its emphasis on hands-on, practical learning that allows participants to apply theoretical knowledge in real-life projects, enhancing concept and technology comprehension.

Training and development strategies are vital tools for advancing electronic management applications in modern sports institutions in Algeria. They improve technical skills, boost interaction and communication, support innovation and creativity, and enhance competitiveness. These strategies can lead to significant improvements in overall performance and the effectiveness and efficiency of sports institutions.

Conclusion:

Employee training and development strategies play a vital role in developing electronic management applications in modern Algerian sports institutions. These strategies contribute significantly to improving performance, productivity, and internal communication through a focus on technical skill development and continuous knowledge updating. Employees gain new experiences and knowledge that enable them to use technological tools more effectively.

Among the core factors that training strategies rely on are:

✓ Improving efficiency and productivity: By training staff to use electronic applications and technological tools, they enhance their technical skills, which improves task performance. Training also reduces the time required to complete administrative tasks, thereby increasing productivity and quality of work.

✓ Keeping up with technological developments: Continuous training allows staff to stay updated on the latest IT developments and applications in electronic management. It enhances their ability to adapt to rapid technological changes and adopt new tools effectively.

✓ Enhancing interaction and communication: Modern communication tools facilitate employee interaction, improve team coordination, and foster knowledge-sharing within the institution, supporting the adoption of innovations more effectively.

✓ Supporting innovation and creativity: Encouraging creative thinking and developing innovative solutions to challenges allows employees to contribute to the improvement of electronic management applications in alignment with institutional needs, strengthening innovation capacity.

✓ Enhancing institutional competitiveness: By improving overall performance and strengthening the institution's position in the sports market.

Employee training and development strategies are a decisive factor in achieving success and progress in modern Algerian sports institutions. By investing in skill development and improving employee efficiency, these institutions can achieve strategic goals, compete effectively in a challenging sports market, and advance in adopting modern technologies and electronic management practices, which are key tools for enhancing performance and fostering sustainable innovation.

Recommendations:

Sports institutions should focus on:

- Improving efficiency and productivity by developing employees' technical and administrative skills, increasing productivity, and reducing errors.

- Enhancing communication and interaction through the effective use of modern communication technologies and promoting team knowledge exchange.

- Keeping pace with technological developments by continuously updating employee knowledge and skills and enhancing their adaptability to rapid tech changes.

- Boosting competitiveness through performance improvement and excellence in service delivery and sports activity management.

- Supporting innovation and creativity by encouraging creative thinking and innovative problem-solving, In line with the institution's needs.

- Improving the work environment: by creating a motivating and encouraging workplace for learning and development and providing the necessary resources and tools to effectively apply the acquired knowledge.

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