The Degree to Which Public School Principals Possess Artificial Intelligence Applications in the Karbala Governorate Education Directorate

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Abstract

The study aims to identify the degree of possession of government school principals in the Karbala Governorate Education Directorate of artificial intelligence applications. The descriptive analytical approach was used. To achieve the study objectives, a questionnaire which contained (34) items was developed, divided into five dimensions. The study community was (114) male and female principals. The study sample consisted of (94) male and female managers, and the sample was selected randomly. The results of the study showed that the degree of possession of government school principals in the Karbala Governorate Education Directorate of artificial intelligence applications was average. The results of the study also showed that there were no statistically significant differences at the significance level (α=0.05) attributed to the study variables (gender, academic qualification, experience in artificial intelligence techniques). In light of the study results, the researchers recommended several recommendations, most notably: paying attention to training courses in the field of information and communications technology, especially in the subject of artificial intelligence, by organizing meetings and workshops with the aim of raising awareness among individuals and society about the importance of artificial intelligence, encouraging the Iraqi Ministry of Education to its teaching staff and providing them with incentives to employ artificial intelligence applications in their administrative and educational work, introducing artificial intelligence applications into curricula and courses and paying attention to them, and providing specialized teaching staff in this field.

Keywords: Degree of possession, artificial intelligence, public school principals.

1. Introduction

The world and the present time are witnessing qualitative and quantitative development in various fields of knowledge, and this enhanced trend requires educators and others concerned

with education to listen and adapt to modern changes, specifically in the field of artificial intelligence and supporting means in all fields. areas, including school management because the application of this technology has now become an established reality that cannot be ignored. Identifying the modern characteristics of artificial intelligence and its technologies contributes to creating the appropriate conditions necessary for the educational process. Automated intelligent systems are the new generation of technologies that have recently attracted attention in the context of education and are viewed as a useful tool for achieving better educational outcomes and improving the management of educational activities of schools. It is one of the regions that is actively developing in the field of technological advancement and the use of innovative solutions in schools. There are many issues that Iraqi universities suffer from, including: Challenges of managing and organizing information, escalating demands on resource use, and student customer satisfaction. Technological progress and the use of smart applications are also referred to as artificial progress. The use of smart applications in school management is a major advance in increasing organizational effectiveness, thus enhancing the achievement of education goals. By applying artificial intelligence applications in school management, significant improvements can be observed in these sectors and school performance can be enhanced.

In the field of education, the school administration works to motivate teachers and encourage students to use artificial intelligence-based technologies inside and outside schools to develop a culture of modern artificial intelligence technology among students so that they can face life's challenges. university; The student can employ virtual reality technology as an application of artificial intelligence to improve his skills, make the right decision, and accept responsibility for learning on his own. It is worth noting that students can resort to educational and training sites on the web to improve their skills. Therefore, for a student to be in a position to gradually use artificial intelligence, he needs to be trained in it so that he can use it efficiently (Al-Jayousi, 2023).

School administration, therefore, refers to the mechanism by which the leadership in educational system is able to structure and coordinate available resources towards the realization of the developed goals and vision. However, the requirements of school administration have been steadily shifting in the last few years. It is no longer a continuous process that never changes and follows the instructions issued by the school systems. However, We notice the development of the subject beyond these responsibilities to include students. and to deliver things necessary to foster their development besides, it assumed several responsibilities, connected with the output of the teaching staff and their training to become better for the purpose of improving the teaching-learning process in general. That is why, as (Obaid,2020) underlined, school leaders are to gain their professional knowledge degree and enhance their administrative competencies due to the progressive technological advancement. Progress, school leaders were compelled to ponder over the total transition or gradual assimilation of enhanced digital means, and strive to eradicate the traditional practice of management and opt for what is understood as electronic management (Amalia, 2020). Educational management integration of information technology is viewed as a relatively new process that has accessible solutions for institutions. Which shows shortcomings in the traditional curriculum and meets the needs of the school, obtained highest and easiest capability, saves energy cost and time Moreover, the purpose of e-management is not only to

exchange experiences and information, or to provide services quickly and at a low cost, but also to structure school administration at each educational stage.. Coordinating, assembling, executing, overseeing and assessing. AI and its related technologies are believed to bring paradigm shift within the entire process of education, since AI offers a range of solutions helping to support the school management system, Furthermore it the entire process of Education and Learning (Ahmed, K., et al., 2020).

Educational administration is process utilized by school managers that will enable them organize availably resources for the realizes of the educational systems set goals and visions. Still, the role of school management in the years that have passed changed many times.

The few prominent examples of AI in education are student enrollment, learning, and achievement analysis, grading and assessment, intelligent tutoring system, virtual Classroom; Such monotonous tasks can best be managed through the use of AI-based tools (Ahmed et al., 2022). This makes it important for the educational sector to embrace data analytics in its operation in different fields like classes, departments and even in public or private schools ; There is always ample data that can be harnessed to enhance the learning system (Ahmed, S.F., et al. 2022). Data mining helps in extensive analyses of school context as well as students and new predictive models for gaining new knowledge aiding leaders in their decision and to extract meaningful information (CHEN et al, 2020). According to the study conducted by (Karsenti ,2019), it was established that AI-based solutions offer a range of interactivity in between the stakeholders in the school by offering the likes of chat rbot which the author explained to be a program that is proficient in the detection of language from the users and simulation of the conversation as that of a human being. The function of artificial intelligence programs is critical in the gathering of information and more so in coming up with a manner in which to store this information safely. Then, synthesize and deduce the lesson learnt. Therefore, the use of AI brings general benefits to school leaders, more specifically, the administrative and ethical ones.

This research adopts a quantitative research design, and the study's objectives are to: Establish the degree of school principals' implementing Artificial intelligence applications in Karbala Governorate Education Directorate and To identify potential opportunities and barriers associated with implementing Artificial intelligence applications in schools. Hence, assessing the extent of school principals' applications of these applications and identifying factors contributing to the use of the applications by the school principals, the study can provide recommendations and directions that may clearly develop the use of technology in the schools of the Karbala Education Directorate in order to improve the educational process and the students outcome.

The study problem and its questions:

"The degree to which public school principals possess artificial intelligence applications in the Karbala Governorate Education Directorate"

After conducting an exploratory study on a group of government school principals in the Karbala Governorate Education Directorate, and because one of the researchers was a school principal, the researchers concluded that there is a large discrepancy in government school principals' possession of artificial intelligence applications, and this is due to the lack of training courses for principals in the field. Artificial intelligence, the lack of activation of this technology

in school administration, and the lack of awareness of school principals about the importance of information and communications technology and artificial intelligence in school administration. Also, government school principals rely in conducting their administrative work on routine and traditional procedures, and there is a difference in viewpoints for government school principals.

This research also addresses the problem of lack of interest and readiness to adopt artificial intelligence applications among government school principals in the Karbala Governorate Education Directorate, which reflects a deficiency in making full use of these innovative technologies, and raises implementation challenges that hinder the development of the educational process and comprehensive improvement of school performance.

This formulation expresses the gap that could be the subject of the study, and highlights the importance of research on the lack of interest and willingness to adopt artificial intelligence technologies among government Schools principals in Karbala The Directorate of Education in the province, stresses the need to study this problem in order to use intelligence technology and benefit from it in education..

Hence the problem of the study was represented by the following questions:

1-To what degree do government school principals possess artificial intelligence applications in the Karbala Governorate Education Directorate?

2- Are there statistically significant differences at the significance level ($\alpha = 0.05$) between the average scores of government school principals in Karbala Governorate to know the degree of their possession of artificial intelligence application skills in school management attributed to the variables? (gender, educational qualification, experience in artificial intelligence techniques).

The importance of studying

"The degree to which public school principals possess artificial intelligence applications in the Karbala Governorate Education Directorate" is considered of great importance for several reasons, including:

1-Raising management efficiency: Artificial intelligence applications can be used to improve management processes and improve the efficiency of government school management in the Karbala Governorate Education Directorate.

2 -Educational development: Artificial intelligence technology and its applications can contribute to improving the quality of education, improving school performance and student results, and developing government education.

3-Improving the learning experience: Artificial intelligence and technology applications can be used to customize education according to the needs of each individual student, which enhances the learning experience and increases the effectiveness of the educational process.

4- Innovation and development: Encouraging the use of artificial intelligence technology in government schools in Karbala Governorate contributes fundamentally to enhancing the culture of innovation and technical development in education and supporting the knowledge economy.

5-Level of competitiveness: By using artificial intelligence technology, government schools in Karbala Governorate Education Directorate can raise the quality of their education and increase their competitiveness in the educational market.

Objectives of the study:

The study aims to:

1-Identifying the degree to which government school principals possess artificial intelligence applications in the Karbala Governorate Education Directorate.

2-Detecting the presence of statistically significant differences at the level of significance ($\alpha = 0.05$) between the average scores of public school principals in the degree of their possession of artificial intelligence application skills in school administration due to the variables (gender, academic qualification, experience in artificial intelligence techniques), in order to Providing recommendations related to these variables.

Procedural definitions:

1- Degree of possession: This is the theoretical and practical knowledge based on the school principals' estimations of the possession they have of artificial intelligence applications. It is determined and assessed in accordance with the extent of degree he receives through his responses to the questionnaire items developed by the researchers for the purposes of the study.

2- Artificial Intelligence: It is a technology that simulates human capabilities as well as the human brain that is capable of rational thinking and lifelong learning and which encompasses the capability to interject human intelligence in activities such as speaking, interpreting language, identifying sounds or images, and undertaking other activities normally requiring human intelligence (L. Chen et al., 2020) . AI solutions are developed through the use of algorithms including machine learning, voice recognition, facial recognition, natural language processing , and decision making.

3- Public school principals: According to the Iraqi Ministry of Education (2000) "He should be a member of the teaching staff possessing the academic degree not.lower than the bachelor's degree or the equivalent professional recognition, qualified to be committed to official work, have experience in working as an assistant in schools for no more than seven years, and scientifically prepared for the educational and scientific preparation". Professionally, he was trained in the training courses related "

The limits of the study:

The study was limited to the following limits:

Spatial and human boundaries: This study was applied to a sample of public secondary school principals in the Karbala Governorate Education Directorate in Iraq.

Time limits: This study was conducted in the late second semester of school in Iraq for the 2023/2024 academic year.

Objective limitations: The study was limited to knowing the degree of possession of government school principals of artificial intelligence applications in the Karbala Governorate Education Directorate.

2. Theoretical Framework and Previous Studies

First: Theoretical Framework:

1- Educational administration:

Educational administration is the way by which officials of public and private schools coordinate and allocate resources to work towards the accomplishment of goals and visions of the education system (Hagag,2023). First of all, the position of school administration has evolved over the course of the recent years. It is not a strict framework anymore that can be seen in many schools at the present time, but rather Commitment to the school system and its instructions, and it all starts with the student and ends with the provision of what is necessary to help the student become more intelligent and moral. He also has many concerns connected with appraisal of teachers' performance to enhance the objectives of the educational process in schools.

In relation to educational administration, decision making is one of the power functions that are executed in schools by administrators on daily bases. Decision-making is another visible aspect of successful and efficient school administration by the school principals. It explains the fact that the success of the school to a great extent depends on a quick and accurate decision made by the school principal, at the same time, Principals are always expected to make good and efficient decisions, and based on the task requirement it may involve future forecasting or choosing between other options. (Amalia et al., 2019).

The decision making is of profound significance as it can uneffectively enhance or hinder the advancement and leading of the school as management is a decision making process as well as the decision making process of the education system may be significantly impacted by the competencies of educational leaders, who are expected to be professionally trained (Obid, 2020). Based on the above findings, school principals need to learn for themselves, build up their executive capacity, and have to take part in in-service staff development programmes to needs that are due to the dynamism in technology (Tyson, 2020).

School principals found themselves in a position that they began thinking of a full or gradual implementation of ICT tools and artificial intelligence to be free from old traditional administration to a new one known as the electronic administration (Amalia, 2019).

Digital transformation in school management by educational leaders is a modern trend that provides a radical solution for educational institutions that suffer from shortcomings in the traditional approach to education, and meets the needs of educational institutions, reduces costs and time, and achieves higher and easier capabilities for those institutions. E-management also aims to raise the performance of the educational school management structure at every stage, exchange experiences and information, and provide services at high speeds and at reduced prices.

E-management also requires planning, organization, implementation, evaluation, and supervision (Al-Dalalah et al., 2015).

Information and communication technology, especially AI applications, which we find to be a worthy candidate in the education sector by providing solutions that support the school management system as well as the teaching process within the school (Ahmed, K. et al., 2020). Some of the main applications and technologies used that help AI in education such as (student admission in schools, learning analytics inside and outside the institution, the use of virtual reality programs, and classification systems, as well as accomplishing such tasks effectively through the existing features of AI applications (Ahmed et al., 2022). As for the education system, there is an urgent need for data analytics at various levels such as local, regional, international, and the level of the academic district, departments, and schools. The abundance of data available for these applications can be utilized to enable the learning environment (Ahmed et al., 2022). Data mining allows for a deep understanding of school settings and students as well as extracting new knowledge through future predictive models that support school principals in making the right decision.

2. Artificial intelligence (AI) and its uses in education: Artificial intelligence uses computer programmes to simulate human behaviour in order to better understand the nature of human intellect. It attempts to store a huge quantity of information extracted from the human mind, analyse data and information, regardless of size or type, in an automated manner, and then work intelligently on the relationship between action and perception. (Iman, 2020) "A machine or computer programme that uses human intelligence to complete a specific task, through planning, learning, understanding, and problem-solving processes" is the definition of artificial intelligence.(Southgate, E., et al., 2019, p. 17).

According to Haenlein and Kaplan (2019) and Al-Mutairi (2022), Artificial intelligence is a computer that can learn from data, solve complex problems, and analyze tasks in an adaptive way. The use of AI in education may exceed expectations. At the international conference held in Beijing from May 16 to 18, 2019, representatives from governments and international organisations endorsed the Beijing Consensus Document on Intelligence. This document makes suggestions on the potential and difficulties that artificial intelligence presents in accelerating progress towards the sustainable development goals of assuring educational quality. The conference emphasised the necessity to expand artificial intelligence technology in education to improve human intellect and defend human rights.

The use of artificial intelligence in education involves promoting sustainable development through effective cooperation between humans and machines in life, work, and learning, as well as the use of smart teaching systems. This includes areas such as education management and delivery, teaching and empowering teachers, evaluating learning and teaching, developing necessary values and skills, and providing learning opportunities. For all, educational technology supported by artificial intelligence has an impact on the organisation of work in educational institutions in terms of teaching, and with the increasing steady growth in artificial intelligence technology and applications; Because of its tremendous potential in changing teaching methods and classroom workflows, and by expanding the circle from classrooms to educational administration, specifically school administration.

Artificial intelligence may be used to fulfil administrative work in a more efficient and effective manner both inside and outside of the institution. As an example, the teacher's time spent setting grades and checking them can be used for other purposes, and with artificial intelligence, students can be taught intensively without fatigue or double effort on the part of the teacher in proportion to the student's time. & Al-Nashar (2022). Artificial intelligence applications are used for more than only transferring curricular content and materials to web sites; they are also used to create interactive electronic activities.

Many of the operations that teachers conduct, such as monitoring a student's performance, offering feedback, and explaining what he is attempting to accomplish, may be performed by artificial intelligence systems (Al-Mutairi, 2022). Artificial intelligence programmes can analyse and compare non-digital symbolic data, which is what education aims to achieve in order to improve learners' learning experiences (Khalaf, 2023).

It also solves complicated issues and tests hypotheses with excellent accuracy and speed. It also generates new ideas and promotes creativity. However, the negatives of applying artificial intelligence increase, as with the introduction of these technologies, the continued development and attraction of technologies can be costly to the educational field, and it may cause the replacement of employment by machines, thus increasing unemployment in education, and every new technology makes it difficult for teachers and students to use, resulting in the need for workshops and continuous training courses for educational As well as the disadvantages of what is known as individuality in learning, the classroom environment lacks the spirit of harmony and collaboration that the instructor brings to the student or the student to a colleague. These apps may cause the student to become overly reliant on technology throughout the learning process (Khalaf, 2023), and artificial intelligence (AI) may accompany an entire generation. Students who grow up in a fast-paced digital environment. Some apps that enable artificial intelligence include Siri, Google, Assistant, and many others in a variety of industries such as health care, Education, entertainment, robotics and social media. We find that artificial intelligence is gaining a foothold in the classroom in schools and in all countries, especially in UNESCO’s intervention to introduce artificial intelligence in education, as it confirmed that artificial intelligence has the ability to confront and overcome challenges in education, and progress can be made towards improving the fourth goal of sustainable development goals, and artificial intelligence can improve and enhance the educational experience within schools.

3-AI applications in school administration:

Artificial intelligence is a valuable tool that may be utilised in several aspects of life, including education. Many scholars and researchers have highlighted how artificial intelligence applications are gaining traction in educational administration. Educational administration is utilising AI-powered smart tutoring systems, as demonstrated in several institutions . Intelligent tutoring techniques are computer programs that use artificial intelligence to provide personalized training to students. These techniques can be used to analyze data on at-risk students and provide personalized treatments for them. According to Lua (2020), “Predictive analytics can help teachers and educators identify students at risk of failing or dropping out of school.” Again, AI enables personalized learning for students by providing personalized learning to improve learning outcomes and increase student engagement (Chen et al., 2021). In other words, AI can

be used to customize learning paths for students based on their interests and tendencies. Existing AI-powered chatbots are used to provide children with immediate responses to their queries and provide assistance outside of school hours, leading to increased retention and satisfaction (Singh and Singh, 2021).

Some of applications are:

1- Self-education : By analysing students' strengths, limitations, and learning styles, artificial intelligence may generate personalised learning experiences for them.
2- Evaluation and classification: Artificial intelligence can automate the evaluation and classification processes, saving time while offering objective results.
3. Student support: AI-powered chatbots can assist students 24 hours a day, seven days a week by answering questions and offering assistance.

4. Predictive analytics: AI can analyze student data to predict performance, identify students at risk, and provide assistance.
5. Curriculum design: AI applications can be used to analyze data and learn about student performance and feedback in order to improve curriculum design in educational institutions.

6- Supporting instructors: Artificial intelligence may assist teachers with duties such as grading, lesson preparation, and feedback.

Smith (2022) finds several uses of artificial intelligence in educational administration, as follows:
• Personalised learning : Artificial intelligence can be used to develop educational paths that are specifically designed to teach students, knowing their strengths and weaknesses, learning styles, and interests.

• Intelligent teaching systems: AI-powered tutoring systems can provide students real-time feedback, adjust to their specific learning needs, and track their progress.
• Predicting student performance at school: AI systems and technologies can analyze data related to student performance, departure and attendance, and identify children at risk..
• Automated grading : AI can assess multiple-choice and short-answer questions, allowing teachers to focus on other responsibilities.

• Learning analytics: AI may assist instructors in analysing student data to detect Trends and patterns, evaluate the effectiveness of educational technologies, and make other data-driven choices.

• Chatbots and virtual assistants: AI-powered chatbots and virtual assistants may provide students rapid answers to simple queries, allowing instructors and administrators to concentrate on more complicated duties.
• Campus Safety: AI-powered monitoring systems can detect abnormal behaviour and potential threats and notify campus security officers in real time.
• Recruitment and admissions: Artificial intelligence may be used to analyse application data and predict which individuals would succeed in a certain programme.

• Monitoring and Safety on Campus: AI-powered monitoring systems can detect unwanted behavior and potential threats and notify campus security in real time.

• Recruitment and admissions: Artificial intelligence may be used to analyse application data and predict which individuals would succeed in a certain programme.

Second: Previous studies:

The research (Al-Sharari, 2021) verified "the impact of artificial intelligence on the quality of administrative decisions of secondary school leaders from their point of view in the Al-Jawf Educational Administration in Saudi Arabia." It employed a descriptive technique using a sample of (60) leaders from those schools. The study concluded that artificial intelligence and its dimensions have a highly statistically significant impact on management ability, user behaviour, training, development, and the provision of experts on the quality of administrative decisions, with no statistically significant differences attributed to gender or experience.

Al-Jayousi's study (2023), titled "The Role of School Administration in Promoting the Use of Virtual Reality Applications in Vocational Education and Training Schools in Palestine," employed a descriptive approach with a randomly selected sample of (177) male and female teachers. The study's findings revealed that the role of school administration in promoting the use of virtual reality applications was moderate, and there were no statistically significant differences based on educational region, school gender, respondent gender, field of specialisation, academic qualification, and years of experience.

Al-Azzam's (2021) study sought to determine the function of artificial intelligence in improving the effectiveness of administrative systems for human resource management at the University of Tabuk. The study used an analytical technique to perform the investigation, as the sample size was 70 employees. The questionnaire was employed as a data collection technique in the study and consisted of 36 measurement items. The findings revealed no significant differences by gender, educational level, or number of years of experience. The report advised that additional research be conducted on artificial intelligence.

Tyson and Sawyers (2021) performed a research to investigate the acceptance and deployment of artificial intelligence by school administrators in Georgia, USA. The study took a qualitative approach, conducting structured interviews with seven leaders who had implemented artificial intelligence programmes in their schools. The study's findings revealed the widespread use of artificial intelligence among school officials, as well as The findings revealed that school leaders participated in training activities on artificial intelligence programmes and their implementation, and one of the study's recommendations was for school leaders to adopt and implement artificial intelligence applications and programmes in all schools to benefit the educational process.

Al-Awadhi and Abu Latifa's (2020) study indicated the influence of using artificial intelligence to enhance administrative work in light of governance principles in Palestinian ministries in the Gaza governorates. The descriptive analytical technique was utilised in the study, and the questionnaire instrument was provided to (112) ministry workers who are responsible for administrative tasks. The results demonstrated that there were no significant differences between the sample members' average estimations of using artificial intelligence to develop administrative duties. The report also proposed that artificial intelligence applications be used more extensively to enhance administrative tasks and promote the ministry's reality. In addition to building and enhancing employees' attitudes towards.

The narrative research (2022), titled "The degree to which school principals in Mafraq Governorate, Jordan, use artificial intelligence applications from the teachers' point of view," likewise found a modest degree. The results revealed no statistically significant differences at the significance level (a<0.05) in the locations. The variable (academic qualification, gender, experience) is attributed to the measure of school principals' use of artificial intelligence applications and their fields, as well as the measure of administrative decision-making. There is a direct, statistically significant correlation between the degree of school principals' use of artificial intelligence applications and their fields and the quality of administrative decision-making.

Comment on previous studies:

This study, along with previous studies, was concerned with addressing the degree to which school principals possess artificial intelligence applications . This study was similar to the Al-Sardiya study (2022) in the degree of use of artificial intelligence. This study was also similar to the study of (Tim et al ,2022) in identifying the degree to which school principals possess The basic government and its principals in the Nablus Directorate examined the skills of employing artificial intelligence in administrative work from their points of view in terms of the degree of possession. As for the study by Tyson and Sawyers (2021), it revealed the adoption and implementation of artificial intelligence by school leaders in the state of Georgia in America. This study was also somewhat similar to A study by Al-Awadhi and Abu Latifa (2020) to reveal the impact of employing artificial intelligence on the development of administrative work in light of the principles of governance in the Palestinian ministries in the Gaza governorates. An analysis of the overall contents of these studies. It is noted that the practice and possession of artificial intelligence applications by public school principals has not reached the required level. In previous studies, this matter requires research and study to be addressed, which enhances the conduct of the current study.

3. Method and Procedures

Study Methodology:

After the researchers reviewed the research methods and previous studies, and after identifying the study problem, the descriptive survey method was adopted to conduct the study.

Study Community:

The current study community consisted of all public school principals in Karbala Governorate from the academic year 2023-2024, whose number is (114) principals, and the community consists of (94)principals.

Study Sample

The study sample consisted of (94) male and female principals who were selected by simple random method, according to the study community. According to the distribution of the study sample in Table No. (1) according to its variables.

Table(1):Distribution of study sample members according to personal and functional variables

Variable	Category	Repetition	percentage
Gender	Male	43	%46.7
	Female	49	%53.3
Education	Bachelor	60	%63.8
	Postgraduate	33	%36.2
Experience in AI Technologies	Less than 5 years	3	%3.1
	5-10 years	56	%58.1
	More than 10 years	35	%38.8
the total		100	%100

Study Tool

After reviewing the theoretical literature and previous studies, the researchers built a questionnaire to collect data in order to achieve the study objectives and answer its questions. Paragraphs were developed related to measuring the degree of possession of government school principals of artificial intelligence applications in the Directorate of Education of the Holy Karbala Governorate. The study tool in its final form consisted of two sections as follows:• The first: It included preliminary data about the study sample in light of the following variables (gender, academic qualification, (Years of experience in AI technologies).).

• Second: The questionnaire paragraphs include, according to their dimensions, (39) paragraphs distributed over five areas: efficiency and performance (10) paragraphs, meetings (5) paragraphs, school administration (6) paragraphs, support and maintenance (7) paragraphs, and managers' possession of artificial intelligence application skills (11) paragraphs.

Validity of the study tool:

To verify the validity of the questionnaire, it was presented to a number of arbitrators and experts specialized in information and communications technology and the College of Education, numbering (6) arbitrators from Iraqi universities with experience and specialization, with the aim of expressing their opinions on the accuracy and validity of the content of the tool in terms of: clarity of paragraphs, linguistic formulation, and its suitability for measuring what it was designed for. To add, modify, or delete paragraphs, (5) paragraphs were deleted, and thus the tool became composed of (34) paragraphs, namely: efficiency and performance (6) paragraphs, meetings (5) paragraphs, school administration (6) paragraphs, support and maintenance (7) paragraphs, managers' possession of artificial intelligence application skills (6) paragraphs, managers' practice of artificial intelligence applications (5) paragraphs.

Reliability of the study tool:

The reliability coefficient for internal consistency was extracted using the Cronbach's alpha equation, and the reliability coefficient for the questionnaire as a whole was (94), and the reliability coefficient was calculated for each of the five axes and ranged between (81-88). According to Table No. (2):

Table No (2):Questionnaire reliability coefficient using Cronbach's alpha

T	Topics	Stability level
1	Efficiency and performance	81
2	Meetings	86
3	School Administration	92
4	Support and Maintenance	77
5	Principals' Possession of AI Application Skills	85
Reliability of the Questionnaire as a Whole		94

Statistical treatments

After collecting the data, it was processed using appropriate statistical methods, using the statistical program (SPSS), and frequencies, arithmetic means, standard deviations, and percentages were used. And the (t) test for two independent groups, and the Cronbach's alpha reliability coefficient test, in addition to the one-way analysis of variance test.

4. Study results and discussion

This study aimed to identify the degree of possession of government school principals of artificial intelligence applications in the Directorate of Education of Karbala Governorate, This study also aims to identify the study variables. To achieve the study objective, a questionnaire was developed and its validity and reliability coefficients were verified by collecting the questionnaires, then coding them, entering them into the computer, and processing them statistically using the statistical package (SPSS). The following are the results of the study according to the sequence of its questions:

Results of the first question:

What is the degree of possession of government school principals of artificial intelligence applications in the Directorate of Education of Karbala Governorate?

To verify the study question, the arithmetic mean and percentage were calculated for each paragraph of the study areas. According to the following estimation:

(25% or less) Very low score.

(26% and up to 49%) Low score.

(50% and up to 69%) Moderate score.

(70% and up to 89%) High score.

(90% or more) Very high score.

Table (3): Averages and percentages according to each paragraph of the study to measure the degree of possession of artificial intelligence applications by government school principals in the Karbala Governorate Education Directorate

number	Paragraph	Average	deviation	P.C	Appreciation
1	Artificial intelligence can help improve administrative efficiency in schools	3.14	1.09	63%	Medium
2	Artificial intelligence applications are used in administrative decision-making processes within the school.	3.17	1.02	63%	Medium
3	Artificial intelligence applications are used to improve the administrative planning process in schools.	3.16	1.01	63%	Medium
4	Artificial intelligence applications are used in the development and continuous training of managers.	3.26	1.03	62%	Medium
5	Employing artificial intelligence applications has a positive impact on developing administrative planning strategies for schools	3.13	1.10	61%	Medium
6	Artificial intelligence applications are used to enhance the efficiency of administrative work.	3.19	1.11	65%	Medium
First field: Efficiency and performance		3.11	0.93	64%	Medium
7	Artificial intelligence applications are used to hold meetings between teaching staff and school administrations.	3.22	1.04	63%	Medium
9	Teachers rely on AI applications to communicate with students' parents	3.29	1.22	65%	Medium
10	Electronic chat is used in communication between departments and students.	2.95	1.19	56%	Medium
11	Use augmented reality as a model for training students and holding meetings between them.	2.78	1.13	54%	Medium
12	Artificial intelligence applications are used to provide essential data to teachers and students.	3.00	1.07	61%	Medium
Second field: meetings		3.11	0.86	62%	Medium
13	Provides a smart system for automatic response to calls and messages	3.13	1.07	61%	Medium
14	Organizing Finances with AI Applications for School Administrations	3.33	1.13	66%	Medium
15	The administration provides modern artificial intelligence applications to develop administrative work	3.21	1.14	62%	Medium
16	It uses modern devices to monitor and evaluate school work such as cameras	3.22	1.12	66%	Medium
17	The school administration provides smart applications for the entry and exit of teachers and employees	3.02	1.09	61%	Medium
18	Artificial intelligence applications are used to evaluate students' grades	3.82	1.14	75%	High
Third field: School administration		3.15	0.89	63%	Medium
19	The school administration responds quickly to solve any problem related to the maintenance of the requirements for employing artificial intelligence applications	3.20	1.12	64%	Medium
20	There is a technician specialized in the field of developing learning technology and artificial intelligence applications in the school	3.62	1.24	76%	High

21	The Education Directorate provides sufficient numbers of computers for its schools	3.43	1.23	69%	Medium
22	The school administration seeks to obtain modern software and keep pace with its development	3.03	1.09	61%	Medium
23	There are several computer labs in the school	3.55	1.39	71%	High
24	The Education Directorate provides the content of school books through the smart study guide that includes chapter summaries and multiple tests	3.22	1.24	64%	Medium
Fourth area: Support and maintenance		3.42	0.83	68%	Medium
25	School principals direct their teachers to use AI applications	3.10	1.03	62%	Medium
26	School principals archive records and restrictions electronically	3.10	1.24	62%	Medium
27	School principals follow up on ministerial instructions via the internet and AI programs	2.99	1.25	60%	Medium
28	School principals encourage teachers to self-learn using modern technologies	3.00	1.17	60%	Medium
29	School principals monitor classes through surveillance cameras	3.32	1.01	58%	Medium
30	School principals promote the use of artificial intelligence applications by teachers	3.26	1.16	65%	Medium
31	School principals identify new ways to use AI to refine information for students	3.02	0.91	62%	Medium
32	School principals use AI software in their work	2.66	1.10	54%	Medium
33	School principals use AI software to communicate with parents	2.32	1.52	58%	Medium
34	Principals feel the need to use AI applications	2.76	1.17	53%	Medium
Fifth area: Managers possessing AI application skills		3.06	0.93	61%	Medium
General arithmetic mean		3.01	0.52	63%	Medium

It is clear from the previous table No. (3):

The percentage of a study to measure the degree of possession of government school principals of artificial intelligence applications in the Directorate of Education of Karbala Governorate (63%) is an average percentage, and the least appreciated paragraph is "Principals feel the need to use artificial intelligence applications" and reached 53% which is average, and the highest appreciated paragraph "employs" "There is a technician specialized in the field of development of learning technology and artificial intelligence applications in the school" reached 76 which is high.

Results related to the second study question: Which states: Are there statistically significant differences at the significance level ($\alpha = 0.05$) between the average scores of government school principals in the degree of their possession of artificial intelligence application skills in school administration attributed to the variables (gender, academic qualification, experience in artificial intelligence technologies)?

The three hypotheses were examined and their results were as follows:

Results of examining the first hypothesis: Which states: There are no statistically significant differences at the significance level ($\alpha = 0.05$) A study to measure the degree of possession of

government school principals of artificial intelligence applications in the Directorate of Education of Karbala Governorate attributed to the gender variable.

To examine this hypothesis, a test was used (T) for two independent groups (Independent -t-test). The results are shown in the following table (4):

Table(4) :Results of the (t) test for two independent groups for the significance of differences in the degree of possession of government school principals of artificial intelligence application skills according to the gender variable

Gender	number	Average	deviation	Value (t)	indication*
male	44	2.89	0.71	0.872	0.364
Female	50	3.37	0.86		

*Statistically significant at level (α=0.05)

The previous table shows that there are no statistically significant differences at the significance level (α = 0.05) in a study to measure the degree of possession of government school principals in Karbala Governorate of artificial intelligence application skills attributed to the gender variable, because the significance is greater than (0.05). The reason for this result may be that principals undergo the same training courses regardless of gender, whether they are males or females, and therefore they are equally efficient in artificial intelligence. The reason may also be due to the fact that principals have average self-learning in artificial intelligence.Results of examining the second hypothesis: Which states: There are no statistically significant differences at the significance level (α = 0.05) in a study to measure the degree of possession of government school principals of artificial intelligence application skills attributed to the educational qualification variable.

To examine this hypothesis, the researchers used a (t) test for two independent groups (Independent -t- test).

The results are shown in the following table (5):

Table 5: Results of the (t) test for two independent groups for the significance of differences in the degree of possession of government school principals in Karbala Governorate of artificial intelligence application skills according to the educational qualification variable.

To test this hypothesis, the researchers used the Independent t-test for two independent groups. The results are shown in the following table (5):

Table(5): Results of the (t) test for two independent groups for the significance of differences in the degree of possession of the principals of basic government schools and their female principals of the skills of employing artificial intelligence according to the variable of educational qualification

Qualification	number	Average	deviation	Value (t)	indication*
Bachelor's	58	3.1	0.86	0.412	0.678
Postgraduate	32	3.16	0.79		

*Statistically significant at level (α=0.05)

The previous table shows that there are no statistically significant differences at the significance level (α=0.05) in a study measuring the degree of possession of government school principals of artificial intelligence application skills attributed to the variable of academic qualification, because the significance is greater than (0.05).The researchers attribute this to the fact that possession of artificial intelligence application skills in administrative work does not constitute an effect according to the academic qualification, since artificial intelligence skills are not related to the academic qualification, a principal with a bachelor's degree may be more efficient in technology than one who holds a higher degree due to self-learning, which indicates the independence of certificates and academic qualifications. This is consistent with the study of Al-Awadhi and Abu Latifa (2020), which finds that those with lower academic qualifications acquire their tendencies and trends in succession with their colleagues in order to advance education.The results of this study are consistent with the study of Al-Farajat (2019), which concluded that there are no statistically significant differences at the significance level for the role of school administration in employing technology to improve the education and teaching process attributed to the variable of academic qualification. Results of examining the third hypothesis: which states: There are no statistically significant differences at the significance level (α=0.05) in a study to measure the degree of possession of government school principals in Karbala Governorate of artificial intelligence application skills attributed to the variable of years of experience in artificial intelligence techniques. To examine this hypothesis, the researchers used the One Way ANOVA test, the results of which appear in the following tables (6,7):

Table 6: Arithmetic means according to the variable of years of experience

Years of experience in AI technologies	SMA
Less than 5	3.20
10-5	3.29
More than 10	2.88
The total	3.13

Table (7):Results of one-way ANOVA for the variable of years of experience in artificial intelligence technologies

Source of variance	sum of squares of deviation	degrees of freedom	Average deviation	Value (f)	indication *
Between groups	2.282	15	1.121	1.698	0.195
Within groups	45.380	79	0.682		
the total	47.622	94			

*Statistically significant at level (α=0.05)

It is clear from the previous table that there are no statistically significant differences at the significance level (α=0.05) in a study to measure the degree of possession of government school principals in Karbala Governorate of artificial intelligence technology skills attributed to the variable of years of experience in artificial intelligence technologies because the significance is greater than (0.05). The reason for this may be attributed to the lack of interest of the Ministry of Education in training its cadres in the field of artificial intelligence applications and its application by school principals in their administrative work, as well as the lack of inclusion of all government schools in Internet networks, which negatively affects the creation of innovative technologies that are reflected on school principals in general, in addition to the weakness of the

principals' initiative to develop their renewable technological skills in the field of artificial intelligence in an accelerated manner.

5. Recommendation

In light of the study results, the researchers recommend the following:

1- Paying attention to training courses in information and communication technology, especially on the subject of artificial intelligence, by organizing meetings and workshops with the aim of raising awareness among individuals and society about the importance of artificial intelligence.

2- Encouraging the Iraqi Ministry of Education to its teaching staff and providing them with incentives to employ artificial intelligence applications in their administrative and educational work.

3- Achieving the requirements for the transition to knowledge-based learning, information and communication technology and artificial intelligence.

4- Educating school administration to interact with artificial intelligence applications and developing the skills of using artificial intelligence techniques for managers.

5- Introducing artificial intelligence applications into curricula and courses and paying attention to them, and providing specialized teaching staff in this field.

6- Benefiting from electronic libraries and databases and developing them in the field of artificial intelligence.

7- The importance of preparing programs and training courses for school principals, teaching staff and students to develop skills in using artificial intelligence applications.

8- Working to appoint a greater number of computer teachers and technicians specialized, which reduces the occurrence of problems associated with it.

9- Providing laboratories, establishing infrastructure, support and maintenance for schools to help use artificial intelligence applications.

10- Artificial intelligence applications should be developed in a way that makes students desire and accept them with eagerness and passion, to make studying enjoyable and enjoyable.

11- Introducing automated robots in schools to help teaching staff in their work.

12- Benefit from university programs specialized in the field of artificial intelligence and review university theses on the subject of artificial intelligence and its applications and work to apply them seriously within schools.

13- Holding more scientific conferences in education directorates in each governorate to inform school principals of new.

14- The Iraqi Ministry of Education must provide an Internet network system and introduce it into schools to keep pace with developments in the field of artificial intelligence technologies..

15- Encouraging school principals and teaching staff to convert examination systems from paper to electronic.

16- The Ministry of Electricity must provide government schools with continuous electricity, as it has a positive role in developing the capabilities of principals, teaching staff and students in the field of artificial intelligence.

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