

The role of artificial intelligence in increasing the cognitive leverage of some sports institutions

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Introduction to research

The world is witnessing great progress in all fields thanks to smart computers, so to speak, as they play a growing role in the lives of institutions, and are expected to reach a great deal in preserving human expertise and transferring it to machines, and contributing to making complex administrative decisions through Programs have the ability to process large amounts of data and information. (Muhammad Abu al-Qasim al-Ritaimi 2018: 32).

The great development that artificial intelligence has brought to administrative systems leaves no room for doubt that a set of new methods will be launched in the programming of accounting systems, which can be used to develop systems that simulate some elements of human intelligence, which allow them to carry out deductive operations about facts and laws that are represented in the computer memory. (Amera Haqqi Ghouli 2013: 71).

Artificial intelligence has several types, including neural networks, also called artificial neural networks, that try to simulate the way the human brain works. (Kenjl 2013:25).

This is done by processing information in a way that resembles a system of nerves arranged in the form of levels forming a large network, and this system has the property of learning and deriving meanings from complex data and setting models that are difficult to observe, whether by humans or ordinary computers. Yaris, Ahmed (2014: 5).

Genetic algorithms are a type of artificial intelligence, a system that tries to find a combination of inputs that gives the best results for making decisions in environments with hundreds of possible solutions that it finds and evaluates with multiple capabilities faster than a human. (Baltzan, phillips 2008: 6)

One type of AI is also expert systems, a knowledge-based information system that uses its knowledge about special and complex applications to

serve as an end-user consultant. The main purpose of the expertise systems is to assist and not to provide information to people in thinking processes. (Jone 2007: 11)

Intelligent agents are another type of artificial intelligence that relies on knowledge embedded in computerized information systems to make them smarter to perform tasks and make decisions in a way that achieves user goals. Microsoft Office and other programs that create files, draw diagrams, and browse the Internet for data and information. (Balzan, Philips 2008: 46)

In recent times, institutions are working on acquiring knowledge to meet the challenges that have emerged in all fields of business, which are taking place at an accelerating pace. Intangible resources have become the basis of competition, and the success of institutions is measured by their knowledge resources.

In the knowledge economy, knowledge leverage is of great importance in the performance and effectiveness of enterprises. It collects and identifies knowledge efficiently and manages and applies the information base to ensure excellence, superiority and competition. Today, enterprises' capital is the knowledge resource they capture from their internal and external environment, which they transform through technological innovation and knowledge management functions and processes. (Lamia Suleiman al-Zubaidi, Samah Muwadi 2016:169)

The knowledge leverage contributes to improving the performance of institutions, helping to innovate and develop business management activities, and support the competitive position of local and global institutions. It also contributes to keeping pace with the continuous renewal that increases investment and economic growth. (Mohammed Rushdi Sultani 2013: 7)

The knowledge leverage has three dimensions, including the requirements for knowledge raising, which means providing the basic components of knowledge through a widespread cultural base within institutions, sharing knowledge, achieving strength that supports existing experiences, and defining the philosophical directions of management. (Samaha Muayyad al-Mawla 2014: 113)

Knowledge leverage functions depend on the establishment's organizational dimension. These functions are knowledge generation, the innovation, discovery, acquisition and development of knowledge and then the storage of knowledge known as retention, savings and accessibility through systems that collect knowledge of organizational memory in the form of

written documents or electronic databases. (Ali Abdullah, Boshara Nazir 2015:8)

In order to raise knowledge assets to understand their value, they must be transferred, disseminated and exchanged, which is the institution's knowledge structure and the proceeds of expertise, information and long studies, while linking them to new additional information. (Samira Solah 2013:17)

The Ministry of Youth and Sports and the Directorate of Youth and Sports and Sports Clubs have great importance in forming the integrated personality of young people from the social, health, physical, psychological, intellectual and recreational aspects by spreading physical and social education and spreading the national spirit among members, developing their various abilities and creating the necessary means to occupy their spare time. The sports specialists in these institutions are responsible for: Achieving the goals of the club and managing sports activities. (Resolution No. 85 - 2008).

Research problem

Modern technical and cognitive advances are a key drive for sports institutions to move rapidly towards transformation into institutions that embrace technical developments as the latest management pattern and making use of this technology in the practical framework of their functions and roles and contributing to the survival and competitiveness of these institutions, In the forefront of these technologies are AI systems that require a huge increase in information and the need to master these systems of information systems, neural networks, expert systems and smart agent state of the art ", bearing in mind that any institution that is ambitious towards re-knowledge will not succeed if it is not accompanied by a process of control over these modern systems.

The Knowledge leverage is currently receiving great attention from various institutions as an important element in the development and growth of institutions in the achievement of quality, excellence, creativity, development of competencies and empowerment, and the impact of both the Internet and information and communication technology on the participation of workers such as Susan Al Mahdi (2019), Beqat Hussein (2021), Hind Khalifa (2020), Naima Boudiyya (2019), Ben bar (2021), Ismail Shwahi (2018).

Given the lack of technological capacity of sports institutions, Knowledge leverage remains difficult. Sports institutions are required to disseminate Knowledge leverage, which has a strong impact on sustainable

development in order to prepare a generation of creative workers who can find traditional solutions to problems facing development.

In view of the fact that the use of information technology and artificial intelligence systems is no longer optional, it has become an urgent and indispensable necessity.

Our sports institutions, such as the Ministry of Youth and Sports, the Directorate of Youth and Sports, and the sports clubs in question, are not active in isolation from this reality, but are obliged to use this technology to share, exchange and impart existing knowledge and expertise and access new knowledge?

The two researchers therefore saw the need to recognize the reality of artificial intelligence (genetic algorithms - expert systems - smart agents) as well as the reality of knowledge leverage (cognitive leverage requirements - functions (neural networks - cognitive leverage - raising knowledge assets to recognize its value) from the point of view of sports specialists working in the Ministry of Youth and Sports, the Youth and Sports Directorate and some sports clubs.

Based on the above, the problem of research has evolved to recognize the role of AI in enhancing knowledge leverage in some sports institutions.

The importance of research:

- **Scientific significance:**

- 1- Enrichment of libraries with a study on artificial intelligence and the lever of knowledge of sports institutions in research.
- 2- Open new research perspectives for AI researchers in sports institutions.
- 3- Compatibility with current trends in management in general and sports management in particular.

- **Applicable significance:**

The applicable significance of the current research is to provide leaders and employees of the Ministry of Youth and Sports, sports clubs and the Directorate of Youth and Sports with the following:

- 1- Artificial intelligence (neural networks - genetic algorithms - expert systems - smart agents) in sports institutions.
- 2- Knowledge leverage (cognitive leverage requirements - cognitive leverage functions - raising knowledge assets to recognize their value).
- 3- Knowledge of the relationship between artificial intelligence and the knowledge leverage of sports institutions

- 4- AI's contribution to enhancing knowledge leverage in sports institutions.

Research terms:

Artificial Intelligence

Abdullah Al Saif (2017) called it "a branch of computer science that aims to design intelligent systems that give the same characteristics known as intelligence in human behavior". The two researchers define AI as "a technological science through which computers are used and acquired intelligent behaviors that resemble human behavior and includes (neural networks - genetic algorithms - expert systems - intelligent agents) to help keep up. with accelerated developments and achieving the goals of sports institutions (procedural definition).

the cognitive leverage

Mamdouh Mustafa Halawa (2019) identified it as "the availability of knowledge and information for the maximum benefit for the organization, without neglecting the standard of quality and efficiency of the technological product".

The two researchers define the cognitive leverage as "the sharing, exchanging, and transfer of knowledge among the staff of sports institutions, taking into account, the provision of cognitive leverage requirements and recognizing their value and importance in achieving the objectives. (Procedural definition)

Research objective

The research aims to realize the role of artificial intelligence in improving the knowledge leverage of certain sports institutions by identifying:

1. The reality of artificial intelligence (neural networks- genetic algorithms- expert systems- smart agents) in certain sports institutions.
2. The reality of knowledge leverage (cognitive leverage requirements- cognitive leverage functions- raising knowledge assets to recognize their value) in certain sports institutions.
3. The relationship between artificial intelligence (neural networks- genetic algorithms- expert systems- smart agents) and cognitive leverage (cognitive uplift requirements - cognitive uplift functions- raising cognitive assets to recognize their value) of some sports institutions.

4. AI's contribution to enhancing cognitive leverage in certain sports institutions.

Research questions

1. What is the reality of artificial intelligence (neural networks- genetic algorithms- expert systems- smart agents) in certain sports institutions?
2. What is the reality of knowledge leverage (cognitive leverage requirements- cognitive leverage functions- raising knowledge assets to recognize their value) in certain sports institutions?
3. What is the relationship between artificial intelligence (neural networks- genetic algorithms- expert systems- smart agents) and cognitive leverage (cognitive uplift requirements - cognitive uplift functions- raising cognitive assets to recognize their value) of some sports institutions?
4. What is the AI's contribution to enhancing cognitive leverage in certain sports institutions?

Research Methodology

The two researchers used the descriptive methodology in the survey and analytical method, which is the most appropriate methodology for the nature of this research, its variables, and the achievement of its objectives.

Research Community

The research community included sports specialists in the three sports institutions under consideration, namely, the Ministry of Youth and Sports - the Directorate of Youth and Sports in Cairo - some sports clubs (Al-Ahly Club, Maadi Club, Nasr City Club, Heliopolis Club, Zamalek Club, Shooting Club in Dokki and Kattameya, Al-Zohour Club, Club Al Jazeera, and Al Shams Club)

Research Sample

The research sample included (88) sports specialists in the Ministry of Youth and Sports, (98) sports specialists in the Directorate of Youth and Sports in Cairo, and (108) sports specialists from the sports clubs under investigation with a total of (294) administratively divided into the following:

First, The exploratory sample

It was randomly selected from the research community and outside the main research sample, which included (12) sports specialists in the Ministry of Youth and Sports, (18) sports specialists in the Directorate of Youth and Sports in Cairo, and (15) sports specialists from some sports clubs.

Second: The basic research sample

It was randomly selected from the research community, which included (76) sports specialists in the Ministry of Youth and Sports, (98) sports specialists in the Directorate of Youth and Sports in Cairo, and (108) sports specialists from some sports clubs in Cairo.

The following table shows the description of the exploratory and basic research sample:

Table (1)
Description of the exploratory and basic research samples

Ser.	institution sample	Ministry of Youth and Sports	Directorate of Youth and Sports	Sports Clubs	total
1	The exploratory sample	12	18	15	45
2	The basic sample	76	80	93	249
3	Total	88	98	108	294

Data collecting tools

Documents and records:

The two researchers reviewed the scientific references, studies and previous research related to artificial intelligence and knowledge leverage in sports institutions and other institutions.

Personal Interview

The two researchers conducted an unregulated personal interview with some leaders of sports specialists in the sports institutions under study in order to get to know the research community and identify the basic and exploratory sample.

Questionnaire

The two researchers designed a questionnaire (Artificial Intelligence - Cognitive Leverage).

First, the first questionnaire

It is concerned with the reality of artificial intelligence in some sports institutions. The questionnaire included (4) axes as follows:

The first axis: (Neural Networks) and includes (7) phrases

The second axis: (Genetic Algorithms) and includes (8) phrases

The third axis: (Expert Systems) and includes (12) phrases

The fourth axis: (Smart Agents) and includes (6) phrases.

Second, the first questionnaire

It is concerned with the reality of the cognitive leverage, and the questionnaire included (3) axes as follows:

The first axis: (Cognitive Leverage Requirements) and includes (7) phrases

The second axis: (Cognitive Leverage Functions) opportunities and threats and includes (6) phrases

The third axis: (Raising the Cognitive Assets to realize their value) and includes (9) phrases.

Steps for designing the two questionnaires

- Reviewing theoretical frameworks and previous studies related to artificial intelligence and knowledge leverage in the field of management, sports management and information systems.
- Reviewing lists and measures of artificial intelligence and cognitive leverage that were previously prepared.
- Presenting the proposed topics to (5) experts in the field of sports management, information systems and artificial intelligence.
- Suggesting phrases for each axis of the two questionnaires in the light of the understanding and analysis of each axis.
- Presenting the two questionnaires in their initial form to experts and specialists to express their opinion on the adequacy and suitability of the axes and phrases for the purpose of the research in preparation for the exploratory study.

The Exploratory Study

The exploratory study was conducted on a sample of (45) sports specialists working in the Ministry of Youth and Sports, the Directorate of Youth and Sports in Cairo Governorate, and some sports clubs. (14/5/2022) to (20/5/2022).

1- Calculating the scientific parameters of the questionnaire

First: Authenticity Coefficient Calculating:

(A) The veracity of the arbitrators:

The two researchers presented the first (artificial intelligence) and second (cognitive lever) questionnaires in their initial form (Attachment 2) to a group of experts specialized in the field of sports management consisting of (5) experts (Attachment 1) in order to express their opinion on the suitability of the two questionnaires in what was set for it, whether In terms of the axes and phrases for each questionnaire, the percentage of experts' opinions ranged between (80%: 100%), and this percentage is higher than the 75% that the researcher agreed to accept the phrases, except for phrase No. (2) on the axis of genetic algorithms and phrase No. (6) on the axis The expert systems were therefore deleted, thus making the number of the first questionnaire phrases (31) instead of (33) and the number of the second questionnaire phrases (22) without deleting or adding with the modification in the formulation of some phrases.

(B) The validity of the internal consistency:

The two researchers tested the validity of the questionnaire by finding the correlation coefficient between the degree of each phrase and the total sum of the axis to which it belongs by applying the two questionnaires to (45) sports specialists working in some private clubs in Cairo Governorate, the Directorate of Youth and Sports, and the Ministry of Youth and Sports Table (2) illustrates this.

Table (2)
Correlation coefficients between the score of each phrase
and the total score of the axis to which it belongs in the
artificial intelligence questionnaire (n = 45)

The first axis: neural networks		The second axis: genetic algorithms		The third axis: expert systems		Fourth Axis: Smart Agents	
Ser.	correlation coefficient	Ser	correlation coefficient	Ser.	correlation coefficient	Ser.	correlation coefficient
1	*0.792	1	*0.700	1	*0.700	1	*0.676
2	*0.885	2	*0.721	2	*0.582	2	*0.681
3	*0.835	3	*0.839	3	*0.900	3	*0.860
4	*0.886	4	*0.872	4	*0.823	4	*0.965
5	*0.933	5	*0.720	5	*0.528	5	*0.740

6	*0.520	6	*0.962	6	*0.470	6	*0.726
7	*0.630	7	*0.731	7	*0.754		
				8	*0.786		
				9	*0.560		
				10	*0.686		
				11	*0.763		

* Tabular value (t) at the level of 0.05 = (0.236)

Table (2) shows that the values of the correlation coefficients between the axes and phrases of the artificial intelligence questionnaire are all statistically significant at the level (0.05), which indicates that the questionnaire has an acceptable degree of validity. Thus, the number of phrases for the AI questionnaire as a whole (31 phrases) is the same without deletion.

Table (3)
Correlation coefficients between the score of each axis and the total score of the artificial intelligence questionnaire. (n = 45)

Axes	correlation coefficient
The first axis: (neural networks)	*0.928
The second axis: (genetic algorithms)	*0.827
The third axis: (expert systems)	*0.795
Fourth Axis: (Smart Agents)	*0.959

* Tabular value (t) at the level of 0.05 = (0.236)

Table (3) shows that the values of the correlation coefficients between the axis of the artificial intelligence questionnaire and the total score of the questionnaire are all statistically significant at the level (0.05), which indicates that the questionnaire has an acceptable degree of validity.

Table (4)
Correlation coefficients between the degree of each phrase and the total degree of the axis to which it belongs to the questionnaire of cognitive leverage. (n = 45)

The first axis: (Cognitive Leverage Requirements)		The second axis: (Cognitive Leverage Functions)		The third axis: (Raising the Cognitive Assets to realize their value)	
Ser.	correlation coefficient	Ser.	correlation coefficient	Ser.	correlation coefficient
1	*0.931	1	*0.735	1	*0.687

2	*0.763	2	*0.976	2	*0.730
3	*0.625	3	*0.943	3	*0.983
4	*0.730	4	*.0860	4	*0.914
5	*0.667	5	*0.736	5	*0.738
6	*0.583	6	*0.659	6	*0.963
7	*0.689			7	*0.978
				8	*0.705
				9	*0.913

* Tabular value (t) at the level of 0.05 = (0.236)

Table (4) shows that the values of the correlation coefficients between the axis and phrases of the questionnaire are all statistically significant at the level (0.05), which indicates that the questionnaire has an acceptable degree of validity.

Thus, the number of phrases of the cognitive lever questionnaire as a whole (22 phrases) became the same without deleting.

Table (5)
Correlation coefficients between the degree of each axis and the total score of the cognitive leverage questionnaire. (n = 45)

Axis	correlation coefficient
The first axis: (Cognitive Leverage Requirements)	*0.989
The second axis: (Cognitive Leverage Functions)	*0.854
The third axis: (Raising the Cognitive Assets to realize their value)	*0.907

* Tabular value (t) at the level of 0.05 = (0.236)

Table (5) shows that the values of the correlation coefficients between the axis of the cognitive leverage questionnaire and the total score of the questionnaire are all statistically significant at the level (0.05), which indicates that the questionnaire has an acceptable degree of validity.

Second: Calculate the stability coefficient

The two researchers calculated the stability of two questionnaires (artificial intelligence - cognitive leverage) using the (Lava Cronbach coefficient) and the result of calculating the stability coefficients was as follows:

Table (6)
Cronbach's alpha values for AI questionnaire axis. (n = 45)

Axis	Axis Name	Value of ALPHA
The first	Neural Networks	0.920
The second	Genetic Algorithms	0.732
The third	Expert Systems	0.956
The fourth	Smart Agents	0.853

* Tabular value (t) at the level of 0.05 = (0.236)

Table (6) shows that the coefficient values for stability in the alpha method range between (0.732, 0.956), which indicates that the artificial intelligence questionnaire has an acceptable degree of stability and is valid for application.

Table (7)
Cronbach's alpha values for the axes of the cognitive leverage questionnaire. (n = 45)

Axis	Axis name	Value of ALPHA
The first	Cognitive Leverage Requirements	0.829
The second	Cognitive Leverage Functions	0.938
The third	Raising the Cognitive Assets to realize their value	0.753

* Tabular value (t) at the level of 0.05 = (0.236)

Table (7) shows that the values of the coefficients for the stability in the alpha method range between (0.753, 0.938), which indicates that the cognitive leverage questionnaire has an acceptable degree of stability and is valid for application.

The basic study

The two researchers applied the two forms of the questionnaire under consideration in their final form (Annex 3) on the basic research sample, which consisted of (249) sports specialists from some civil clubs in Cairo Governorate, the Directorate of Youth and Sports, and the Ministry of Youth and Sports in the period from (21/5/2022) to (6/11/2022).

After collecting the two questionnaires, they were unloaded with a triple scale of expressions so that the response takes (agree) (3) degrees, the response (to some extent) (2) two marks, and the response (disagree) (1) one degree

Statistical treatments:

Descriptive statistics- Pearson correlation values- Cronbach's alpha- Frequency and percentages- Estimated score, and relative weight.

Presentation and discussion of results

The two researchers adopted the relative weight of the responses of the research sample 75% or more to accept the phrases that indicate or give an indication that artificial intelligence and cognitive leverage from the viewpoint of workers in the sports institutions under study are available at a high degree, and from (60 to less than 75%) an indicator of the availability of artificial intelligence and cognitive leverage with a high degree. Medium, less than 60% is an indicator of the availability of artificial intelligence and cognitive leverage to a small degree.

- **First: Presentation and discussion of the results of the first question (What is the reality of artificial intelligence in certain sports institutions?)**

Table (8)
Frequencies, estimated score, relative weight, and order of phrases for sample responses to first axis phrases, the reality of neural networks.
n = (249)

Ser	Phrases	Agree		To some extent		Disagree		Estimat ed. score	Relative. weight	F
		T	%	T	%	T	%			
I, as a sports specialist in a sports institution, see those neural networks										
1	It helps to load and process a large amount of information within an organization.	122	48.9	67	26.9	60	24.0	560	79.9	3
2	Provides the organization with multiple options as a result of its high ability to analyze information.	108	43.3	92	36.5	49	19.6	557	74.5	5
3	It mimics the way the human brain works to make decisions in an organization.	130	52.2	61	24.4	58	23.2	570	76.3	1
4	It processes information in a way similar to the human nervous system to solve problems.	125	50.2	65	26.1	59	23.6	564	75.0	7
5	It relies on the property of learning	103	41.3	85	32.9	45	21.6	557	74.6	5

	and deriving meanings from complex data.									
6	Provides us with various projects by giving answers to questions about the basics of working in the organization.	113	45.3	82	32.9	45	21.6	556	74.5	5
7	It is characterized by the development of complex models and trends that are difficult to notice, whether by humans or ordinary computers.	107	42.9	95	38.1	47	18.8	558	74.6	4
TOTAL								3904	74.6	1

It is evident from Table (8) that:

The relative weight of the sample responses to the first axis phrases (the reality of neural networks) ranged between (75.0%, 76.3%).

The relative weight of the two phrases (3 and 4) was more than 75%, which means the availability of neural networks in what these two phrases contain, and the relative weight of the rest of the axis statements ranged between 60% to less than 75%, which means that these statements included in the axis are available It has neural networks to a medium degree, and there are no phrases with a relative weight of less than 60%.

The relative weight of the responses of the research sample was on the axis as a whole (64.6%), which indicates the availability of neural networks to a medium degree within the artificial intelligence.

The two researchers attribute that phrase No. (3) ranked first, which states (simulates the way the human brain works for decision-making in the organization) with a relative weight of (76.3%) to the fact that neural networks as a dimension of artificial intelligence are the basic core of all electronic administrative systems and play a growing role to achieve the objectives of the institution and to make complex management decisions.

This result is consistent with the result of the study of Faten Abdullah Ibrahim (2009) (24), which concluded that there is a statistically significant relationship between the use of neural networks as a method of artificial intelligence and the quality of decisions.

The two researchers also attribute that phrase No. (4) ranked second, which states (information is processed in a way similar to the human nervous system to solve problems) with a relative weight of (75.5%) to the fact that neural networks reflect the behavior of the human mind and are considered as the expert in the category of information that Analyze and manipulate them,

allowing computer programs to recognize patterns and solve common problems in artificial intelligence.

This result is consistent with the result of the study of Hassanein Emad Abdel-Samad (2017) (7), whose results showed that decision centers have a great degree of awareness of the importance of simulation systems for neural networks in providing solutions to administrative problems due to the savings of time, effort and money in addition to the accuracy of the results.

The two researchers also attribute that phrase No. (1) ranked third, which states (helps to download and process a large amount of information within the organization) with a relative weight of (74.9%) to those neural networks simulate the information processing structure in the human nervous system, which contains: Too many neurons.

This result is consistent with the result of Khaled Abd elhameed (2011) study (44), which concluded that artificial neural networks are an important software technology designed to process information that the human mind performs a specific task through a distributed parallel processing system.

Table (9)
Frequencies, estimated score, relative weight, and order of phrases
for sample responses to statements of the second axis,
the reality of genetic algorithms. n = (249)

S er	Phrases	Agree		To some extent		Disagree		Estimate d. score	Relative . weight	F
		T	%	T	%	T	%			
I, as a sports specialist in a sports organization, see that genetic algorithms										
1	Help create customized solutions using methods that are compatible with the organization's changing work environment.	95	38.1	100	40.1	54	21.6	539	72.1	5
2	Use it to access options for non-numeric issues.	83	33.3	107	42.9	59	33.6	522	69.8	6
3	Simulates advanced procedures to produce better solutions to problems within the organization.	93	37.3	110	44.1	46	18.4	545	72.9	2
4	As a system you try to find a	86	34.5	99	39.7	64	25.7	520	69.6	7

	combination of inputs that gives the best results.									
5	Contribute to decision-making in environments with hundreds of possible solutions in the organization.	97	38.9	101	4.05	51	20.4	544	72.8	3
6	Evaluate possible solutions with multiple capabilities faster than a human.	100	40.1	95	38.1	54	21.6	544	72.8	3
7	It is used in operations that require a long period of time to be resolved.	99	39.7	99	39.7	51	20.4	546	73.0	1
Total								3671	71.8	4

Table (9) shows that:

The relative weight of the sample responses to the second axis phrases (genetic algorithms) ranged between (69.6%, 73.0%).

There are no phrases with a relative weight of more than 75%, and the relative weight of all axis phrases ranged between 60% to less than 75%, which means that these phrases included in the axis have genetic algorithms available to a moderate degree, and there are no phrases with a relative weight of less than 60%.

The relative weight of the responses of the research sample on the axis as a whole (71.8%), which indicates the availability of genetic algorithms to a medium degree within the artificial intelligence.

The two researchers attribute that statement No. (7) ranked first, which states (used in operations that require a long period of time) with a relative weight of (73.0%) to those genetic algorithms are distinguished by their superior ability to create quick solutions, especially in works that need a long period.

Muhammad Hassan Donia (2018) (32) indicates the tendency of many major investment companies and institutions to expand their reliance on artificial intelligence and its multiple methods such as expert systems and genetic algorithms in many public jobs that require long periods of time in which humans are unable to continue for long hours, which Many major companies and institutions in the world pushed to replace humankind with robotic workers in order to keep pace with the rapid changes of the era and to accomplish what was going on in long months in a very short time and more efficiently than humans.

This result is consistent with the result of the study of Raafat Al-Awadi, Dima Abu Latifa (2020) (9), whose results found that there is an effect of employing artificial intelligence methods (neural networks - genetic algorithms - expert systems - intelligent agents) on developing administrative work using methods compatible with The changing working environment is faster than human.

The two researchers also attribute that statement No. (3) ranked second, which states (simulates advanced procedures to produce better solutions to problems within the organization) with a relative weight of (72.9%) to the fact that artificial intelligence methods, including genetic algorithms, contribute significantly to solving problems according to the software used. .

This result is consistent with the result of the study of Muhammad Abbas Kazem (2009) (35), whose results found the effectiveness of artificial intelligence methods and its ability to extract knowledge and transform it into facts and rules for solving problems.

The two researchers also attribute that phrase No. (5) ranked third, which states (contributes to decision-making in environments with hundreds of possible solutions in the institution) with a relative weight of (72.8%), and phrase No. (6) is also ranked third, which states (Evaluation of Possible solutions with multiple capabilities faster than a human) with a relative weight of capacity (72.8%) indicates that the applications of artificial intelligence of all kinds have been resorted to and used to complete work as quickly as possible and take appropriate decisions from several available alternatives according to the rapid changes in our time.

This result is consistent with the result of the study of Ali Salah Ibrahim (2018) (20), which found that the higher management supports artificial intelligence systems and their ability to improve the quality of administrative decisions.

This result is also consistent with the result of the study of Raafat Al-Awadi, Dima Abu Latifa (2020) (9), which found that there is an effect of employing artificial intelligence methods (neural networks - genetic algorithms - expert systems - smart agents) on the development of administrative work using compatible methods. With the changing working environment faster than human.

Table (10)
Frequencies, estimated degree, relative weight and order of phrases for the sample responses to the phrases of the third axis, the reality of expert systems. n = (249)

Ser	Phrases	Agree		To some extent		Disagree		Estimated score	Relative weight	F
		T	%	T	%	T	%			
I, as a sports specialist in a sports organization, see those Expert Systems										
1	The organization's management assists in the thought processes necessary for professional performance and governance development.	103	41.3	121	48.5	25	10.0	547	77.1	3
2	It acts as a consultant to users and provides them with information and data inside and outside the organization.	101	40.5	91	36.5	57	22.8	542	72.5	8
3	Supports the capabilities of the organization's leaders by providing them with knowledge and information.	112	44.9	101	40.5	36	14.4	574	76.8	4
4	Relies on rare experience in solving enterprise problems.	99	39.7	95	38.1	55	22.0	542	72.5	8
5	Contribute effectively to making decisions and accomplishing tasks in the organization.	120	49.1	129	51.8	-	-	618	82.7	1
6	It works to transfer knowledge to any place no matter how far away.	115	46.1	95	38.1	39	15.6	579	77.5	2
7	It operates faster than the human element without errors that can befall employees of the organization.	98	39.3	91	36.5	60	24.0	536	71.7	10
8	It is characterized by the stability and stability of the results that it gives, which saves time and effort.	104	48.1	92	36.9	53	21.2	549	73.7	5
9	It enhances the quality of service provided within the organization.	100	40.1	99	39.7	50	20.0	548	73.3	7
10	Working on tight control of	90	36.1	99	39.7	60	24.0		70.6	11

	difficult situations in the institution.							528		
11	It is an alternative tool for the expert human being that the employees of the organization rely on.	100	40.1	100	40.1	49	19.6	549	73.7	5
Total								5961	74.1	۳

Table (10) shows that:

The relative weight of the sample's responses to the third axis phrases (expert systems) ranged between (70.6%, 82.7%).

The relative weight of the phrases (1, 3, 7, 8) was more than 75%, which means the availability of expert systems for what these phrases contain in a high degree, and the relative weight of the rest of the axis phrases ranged between 60% to less than 75%, which means that these phrases that It is included in the axis in which expert systems are available to a medium degree, and there are no phrases with a relative weight of less than 60%.

The relative weight of the responses of the research sample on the axis as a whole (74.1%), which indicates the availability of expert systems to a medium degree within the artificial intelligence.

The two researchers attribute that phrase No. (5) ranked first, which states (it contributes effectively to decision-making and task completion in the institution.) with a relative weight of (82.7%) to the fact that the amount of success achieved by institutions depends to a large extent on the effectiveness and efficiency of the decisions they take. Which is the result of using modern and advanced methods such as expert systems.

This result is consistent with the result of the study of Ali Salah Ibrahim (2018) (20), which found a significant effect of all the material, software, human and organizational requirements available for expert systems, as well as the interest and support of the senior management of these systems to improve the quality of administrative decisions.

This result is also consistent with the result of the study of Ali Abdel Rahman Abu Zayed (2017) (19), which found a direct relationship between expert systems and the quality of administrative decisions.

The two researchers attribute the occurrence of phrase No. (6) in the second order, which states (transfers knowledge to any place, no matter how far away) with a relative weight of (77.5%) to the fact that all electronic systems have a trait that crosses the barrier of distance, place and distances, which has characterized our current era with speed. Everyone could obtain knowledge at any time and from anywhere.

This result is consistent with the result of the study of Mohamed Turki Al-Batayneh (2019) (30), which concluded that there is a statistically significant effect of expert systems on the acquisition, generation, storage and transfer of knowledge.

The two researchers also attribute that statement No. (1) ranked third, which states (it helps the organization's management in the thinking processes necessary for professional performance and governance development) with a relative weight of (77.5%) to that governance is a modern aspect of improvement and development in the field of management, which requires thought Distinguished and unique, using modern technological methods to keep pace with the changes of the times, such as artificial intelligence systems and its multiple applications.

This result is consistent with the result of the study of Mohamed Saeed Zuhdi, Mohamed Imad Barakat, Ahmed Hani Al-Bazji (2021) (34), whose results found a statistically significant correlation between expert systems and the development of governance in the Ministry of Communications.

Table (11)
Frequencies, estimated score, relative weight, and order of phrases
for the sample responses to the fourth axis phrases,
the reality of smart agents. n = (249)

Ser	Phrases	Agree		To some extent		Disagree		Estimat ed. score	Relative. weight	F
		T	%	T	%	T	%			
I, as a sports specialist in a sports organization, see that, smart agents										
1	It helps in making decisions based on the stored data base.	113	45.9	90	36.1	46	18.4	565	75.6	2
2	Reduce the time used by the concerned individuals to reach the desired goals.	102	40.9	89	35.7	58	32.2	542	72.5	6
3	It is used as an alternative to human agents, which reduces the cost of projects in the organization.	98	39.3	100	40.1	51	20.4	545	72.9	5
4	Its programs help create files to download data and information in a professional manner.	99	39.7	103	41.3	47	18.8	550	83.6	4
5	It carries many applications in operating activities such as e-mail systems, cell phone	199	79.9	50	20.0	-	-	397	79.9	1

	programs, Microsoft Office programs... which contributes to improve the quality of performance.									
6	Check the user for more interaction in his browsing within the World Wide Web to search for the required data and information.	106	42.3	93	37.3	50	20.0	554	74.1	3
Total								3153	74.4	۲

Table (11) shows that:

The relative weight of the sample's responses to the fourth axis phrases (smart agents) ranged between (72.5%, 97.9%).

The relative weight of the phrases (3, 5, and 6) was more than 75%, which means the availability of smart agents in what these phrases contain to a high degree, and the relative weight of the rest of the axis phrases ranged between 60% to less than 75%, which means that these phrases included in the axis There are moderately intelligent agents, and there are no phrases with a relative weight of less than 60%.

The relative weight of the responses of the research sample on the axis as a whole (74.4%), which indicates the availability of intelligent agents with a medium degree within the artificial intelligence.

The two researchers attribute the phrase No. (5) to the first order, which states (it bears many applications in operating activities such as e-mail systems - cell phone programs - Microsoft Office programs and others, which contributes to improve the quality of performance) with a relative weight of (79.9%) to that electronic work requires many systems to collect relevant information in order to reach the highest degree of performance to achieve the desired goals.

This result is consistent with the result of the study of Sujood Ahmed Mahmoud (2021) (10), whose results found a statistically significant correlation between the degree of employment of artificial intelligence methods (neural networks - genetic algorithms - expert systems - smart agents) and the quality of performance in Jordanian universities from the point of the faculty members.

Also, this result is consistent with the result of the study of Grzonka et al. (2018 Grzonka at all) (42) whose results concluded that the use of multi-agent systems in an artificial intelligence environment to standardize performance improvement has great effectiveness in implementing performance support, task grouping security, control and scheduling.

This result agrees with the result of (2017 Lowe at all) study (46), the results of which found the effectiveness of using the decentralized multi-intelligent agent pattern (actor-critic) in competitive environments in the performance of skills.

The two researchers attribute that phrase No. (1) ranked second, which states (helps make decisions based on the stored data base) with a relative weight of (75.6%) to that the smart agent system works through a software package that implements specific tasks to support a business activity. Or other software applications and benefit from them in making some important decisions through the sensors owned by the smart agent system.

This result is consistent with the result of the study of Mohamed Abbas Kazem (2009) (35), whose results reached to the effectiveness of the intelligent agent and his ability to extract knowledge and transform it into facts and rules for solving problems.

The two researchers attribute that phrase No. (6) ranked third, which states (the user achieved more interaction in his browse within the Internet to search for the required data and information.) with a relative weight of (74.1%) to that the smart agent is one of the applications of data mining and search. From the Internet that the beneficiary deals with and interacts with directly to obtain it.

This result is consistent with the result of the study (2017 Wang and Tan) (48), which concluded that the smart agent in electronic environments increases interactivity as it helps users and answers their inquiries.

From the tables (8, 9, 10, 11), it is clear that the order of the axes of the artificial intelligence questionnaire according to the relative weight was as follows:

- The axis of the reality of neural networks came in the first place with a relative weight of 74.6%
- The axis of the reality of smart agents came in second place, with a relative weight of 74.4%
- The axis of the reality of expert systems came in the third rank, with a relative weight of 74.1%
- The focus of the reality of genetic algorithms came in the fourth and last place, with a relative weight of 71.8%.

The researcher attributes the fact that the axis (the reality of neural networks) ranked first with a relative weight of (74.6%) to the fact that neural networks are based on data bases distributed over a package of systems and programs that work through a large number of processors, and the level of any

system is always measured in terms of size and the quality of the data base it contains.

This result is consistent with the result of the study of Al-Hadi Raba'a (2015) (), which concluded that the huge increase in information requires the use of information systems and neural networks, and that any ambitious institution towards re-knowledge will not succeed if it is not accompanied by a process of controlling information systems through Possession of knowledge - data base - means of inference.

With the sum of the relative weight of the axes, the total relative weight of the questionnaire as a whole becomes (73.7%), and this indicates the availability of the reality of artificial intelligence to a medium degree.

The two researchers attribute this to the fact that artificial intelligence applications require large financial costs, trained experts in the field, and the willingness and acceptance of workers for such an application.

This result is consistent with the result of Samah Halawa (2020) (11) study, which concluded that one of the challenges facing the application of artificial intelligence is to qualify workers and develop their traditional skills to fit with learning techniques and computer use.

This result is consistent with the result of Lugar (2008) study (47), which concluded that the application and training of artificial intelligence requires high costs.

This result differs with the result of Sabah Eid Raja' study (2008) (15), which found that the use of artificial intelligence applications by Najran University faculty members was low.

This result differs with the result of the study of Ghazi Mohamed Ali, Khalil Suleiman Mohamed (2021) (23) whose results found that the high level of application of expert systems and neural networks for artificial intelligence in Jordanian commercial banks.

Table (12)
Frequencies, estimated degree, relative weight, and order of phrases
for the sample responses to the first axis phrases, the reality of
the requirements for cognitive leverage. n = (249)

Ser	Phrases	Agree		To some extent		Disagree		Estimated score	Relative weight	F
		T	%	T	%	T	%			
I, as one of the sports specialists in one of the sports institutions, see that the requirements for cognitive leverage are...										
1	Providing the necessary infrastructure to enhance the energies and knowledge capabilities of the institution.	118	47.3	80	32.1	51	20.4	565	75.6	4
2	Sharing knowledge and achieving strength that supports the existing expertise in the institution.	123	49.3	97	38.9	29	11.6	592	79.2	1
3	Determining the philosophical orientations of the management of the institution, which leads to the enhancement of knowledge.	111	44.5	67	26.9	71	28.5	537	72.0	7
4	Establishing a widespread cultural base within the institution to support development processes.	120	48.1	99	39.7	30	12.0	588	78.7	2
5	Forming one idea about the cognitive processes that take place in the external environment.	108	43.3	87	34.9	45	21.6	552	73.8	6
6	Providing all modern technologies to support cooperation and teamwork in the institution.	119	47.7	89	35.7	41	16.4	576	77.1	3
7	Enhancing the skills and behaviors of employees to develop knowledge within the organization.	107	42.9	93	37.3	49	19.6	556	74.4	5
Total								3967	75.8	٢

Table (12) shows that:

The relative weight of the sample's responses to the first axis phrases (the requirements of cognitive leverage) ranged between (74.4%, and 79.2%)

The relative weight of the phrases (1, 2, 4, 6) was more than 75%, which means the availability of the requirements for cognitive leverage in what these phrases contain in a high degree, and the relative weight of the rest of the axis phrases ranged between 60% to less than 75%, which means that these phrases Those included in the axis have the requirements of cognitive leverage to a moderate degree, and there are no phrases with a relative weight of less than 60%.

Also, the relative weight of the responses of the research sample on the axis as a whole (75.8%), indicates the availability of the requirements of cognitive leverage to a high degree within the cognitive leverage.

The two researchers attribute that phrase No. (2) ranked first, which states (sharing knowledge and achieving strength that supports the experiences in the institution) with a relative weight of (79.2%) to the fact that our reality today requires us to increase communication between institutions to build a knowledge-sharing mechanism, exchange experiences and raise efficiency the performance.

This result is in agreement with the result of the study of Emad Abdel Latif Mahmoud (2021) (22), which concluded that there is a fertile institutional environment for knowledge sharing among faculty members, which confirms their efficiency, competence and desire to progress and raise the level of the university through knowledge sharing.

This result differs from the result of the study of Khalsa bint Abdullah, Mohamed bin Nasser Al-Saqri (2014) (8), which found the absence of awareness among many enterprise managers of the concept of knowledge sharing, and the absence of an interactive environment for knowledge sharing.

The two researchers attribute that phrase No. (4) ranked second, which states (establishing a widespread cultural base within the institution to support development processes) with a relative weight of (78.7%) that one of the most important requirements for knowledge raising is spreading awareness and forming a clear cultural idea about cognitive processes. that occur in the organization up to the satisfaction of knowledge for development and modernization.

This result is consistent with the result of the study of Hana Jassim Mohamed Al-Askari (2013) (39), which found a correlation between the dimensions of organizational culture and knowledge sharing.

This result is also consistent with the result of the study of Jahid Bou Taleb, Issa Najimi (2020) (6), whose results found a high level of both the culture of knowledge sharing and administrative creativity.

The two researchers attribute that phrase No. (6) ranked third, which states (providing all modern technologies to support cooperation and teamwork in the institution) with a relative weight of (77.1%) to the fact that in order to keep pace with the rapid changes that characterize the current era, all capabilities and technologies must be available. To contribute to the development and achievement of the objectives of the institution.

This result is consistent with the result of the study of Mohamed Jad Hussein, Khaledin Muhammad Al-Osaimi (2019) (31) whose results concluded that technological capabilities contribute to increasing knowledge sharing and contributing to the development of individuals' capabilities and upgrading their performance and that the availability of effective information technology achieves a higher level of knowledge sharing.

This result is also in agreement with the result of the study of Emad Abdel Latif Mahmoud (2021) (22), which concluded that the availability of information and communication technology is high, which means that the services provided are characterized by quality and quality.

This result differs from the result of the study by Khalsa bin Al-Bar Musa, Atallah Yassin, and Sherid Omar (2021) (8), which concluded that there is a very weak relationship between the uses of the Internet and the knowledge-sharing process of the respondents at Lafarge Foundation in Msila.

This result also differs from the result of the study by Naima Boweideh (2019) (37), which concluded that there is a medium effect of information and communication technology on knowledge sharing, which is one of the most important requirements for raising.

Table (13)
Frequencies, estimated degree, relative weight, and order of phrases for the sample responses to the second axis phrases and cognitive leverage functions. N= (249)

Ser	Phrases	Agree		To some extent		Disagree		Estim ated. score	Relative. weight	F
		T	%	T	%	T	%			
I, as one of the sports specialists in one of the sports institutions, see that the cognitive leverage functions are...										
1	Participation of supporting work teams to generate new knowledge capital in the institution..	110	44.1	91	36.5	48	19.2	560	74.9	3
2	Obtaining the well-established	121	48.5	77	3.9	51	20.4	568	76.0	1

	knowledge in the minds and intellects of the creators of the institution.									
3	Creating new non-reproducible knowledge to ensure uniqueness and distinction between different institutions.	113	45.3	90	36.1	46	18.4	565	75.6	2
4	Paying attention to organizational memory to preserve knowledge from loss, whatever the reasons.	109	43.7	84	33.7	56	22.4	551	73.7	4
5	Saving information in regular files or a computer network to be available to every individual in the institution.	103	41.3	88	35.3	85	23.2	543	72.6	5
6	Using contracts of use or direct purchase to obtain various information.	100	40.1	93	37.3	56	22.4	542	72.5	6
Total								3329	74.2	۳

Table (13) shows that:

The relative weight of the sample's responses to the second axis phrases (cognitive raising functions) ranged between (76.0%, and 72.5%). The relative weight of the two phrases (2 and 3) was more than 75%, which means the availability of cognitive lifting functions in what these two phrases contain to a high degree, and the relative weight of the rest of the axis phrases ranged between 60% to less than 75%, which means that these phrases included in the axis are available It has moderate cognitive functions, and there are no phrases with a relative weight of less than 60%.

The relative weight of the responses of the research sample on the axis as a whole (74.2%), indicates the availability of cognitive lifting functions to a moderate degree within the cognitive leverage.

The two researchers attribute the occurrence of phrase No. (2) on the first order, which states (obtaining well-established knowledge in the minds and minds of the creators in the institution) with a relative weight of (76.0%) and phrase No. (3) on the second order, which states (creating new, non-reproducible knowledge to ensure Uniqueness and distinction between different institutions) with a relative weight of (75.6%) that creativity is an important requirement to achieve uniqueness and excellence and then achieve the goals of the institution.

This result is consistent with the result of Lee (2018) (45) study, which concluded that cognitive leverage and its sharing have many effects, including improving performance, achieving creativity, excellence and uniqueness.

This result is also consistent with the result of the study of Jahid Abu Talib, Issa Najimi (2020) (45), whose results concluded that there is a high level of participation, knowledge raising, and administrative creativity, which has a positive impact on administrative creativity.

The two researchers also attribute that statement No. (1) ranked third, which states (the participation of work teams supporting the generation of new knowledge capital in the institution) with a relative weight of (74.6%) that as long as the process of knowledge sharing continues, learning and benefiting continue as well, which increases the knowledge received and supports teamwork in a way that enriches performance and achieves goals.

This result is consistent with the result of the study of Susan Muhammad Al-Mahdi (2020) (14), whose results concluded that the process of knowledge sharing as a function of knowledge raising has an important role in achieving quality and excellence, as it adds new knowledge to achieve sustainable development.

This result is also consistent with the result of Lee (2018) (45) study, which found a relationship between knowledge sharing and improving organizational teamwork.

Table (14)
Frequencies, estimated degree, relative weight, and order of phrases for the sample responses to the third axis phrases Raising the Cognitive Assets to realize their value N= (249)

Ser	Phrases	Agree		To some extent		Disagree		Estima ted. score	Relative. weight	F
		T	%	T	%	T	%			
I, as one of the sports specialists in one of the sports institutions, see that Raising the Cognitive Assets to realize their value are...										
1	Sharing knowledge and exchanging ideas and experiences among individuals within the organization.	130	52.2	83	33.3	36	14.4	592	79.2	6
2	Encouraging the dissemination of knowledge and the exchange of trust among the various work teams under the supervision of experienced trainers in the	141	56.6	76	30.5	32	12.8	607	71.2	3

	institution.									
3	The use of the information network (the Internet) to enhance the knowledge structure of the institution.	138	55.4	96	38.5	15	6.0	621	83.1	2
4	Providing systems that allow employees of the organization to share their knowledge	114	45.7	77	30.9	58	23.2	554	74.1	9
5	Formation of a unit that includes experienced workers for specialized consultations to develop the work of the institution.	138	55.4	96	38.5	15	6.0	621	83.1	2
6	Continuous application of knowledge-related programs to facilitate work between different departments	140	56.2	69	27.7	40	16.0	598	80.0	5
7	Develop a plan to objectively identify and fill the existing gaps in knowledge.	129	51.7	73	29.3	47	18.8	580	77.6	7
8	Providing education and training opportunities to enable the institution's employees to access information easily.	145	58.2	99	39.7	5	2.0	638	85.4	1
9	Entering new information, updating the database and excluding the obsolete on a continuous basis to improve the organizational performance of the organization	135	54.2	80	32.1	34	13.6	599	80.1	4
Total								5360	79.6	1

Table (14 shows that:

The relative weight of the sample's responses to the third axis phrases (raising cognitive assets to realize their value) ranged between (74.1%, to 85.4%).

The relative weight of all axis phrases was more than 75%, and this means the availability of raising the cognitive assets to realize their value to a high degree. With the exception of the two phrases (2, 4), their relative weight ranged between 60% to less than 75%, which means the availability of raising the cognitive assets to realize their value in what these two phrases contain to a moderate degree, and there are no phrases with a relative weight of less than 60%.

The relative weight of the responses of the research sample on the axis as a whole (79.6%), which indicates the availability of raising the cognitive assets to realize their value to a high degree within the cognitive leverage.

The two researchers attribute that phrase No. (8) ranked first, which states (providing education and training opportunities to enable the institution's employees to access information easily and smoothly) with a relative weight of (85.4%) to the fact that empowering workers and providing them with the opportunity to express opinions and participate in decision-making helps to Good performance of job duties and this can only be achieved through training to find out everything that is new and provide them with knowledge and share it among themselves.

This result is consistent with the result of the study of Al-Majdoub Nasser Miftah (2013) (2), whose results found a correlation between knowledge participation and employee empowerment.

The researchers also attribute that phrase No. (3) ranked second, which states (the use of the information network (the Internet) to enhance the knowledge structure of the institution) with a relative weight of (83.1%) to the fact that the Internet is rich in endless information that helps to increase the knowledge obtained its users.

This result differs with the result of the study of Khalsa bin Al-Bar Musa, Atallah Yassin, Sherid Omar (2021) (8), which found a very weak relationship between the use of the Internet and the knowledge-sharing process of the respondents at Lafarge Foundation in Msila.

The two researchers also attribute that statement No. (2) ranked third, which states (encouraging the dissemination of knowledge and the exchange of trust among the various work teams under the supervision of experienced trainers in the institution) with a relative weight of (71.2%) to that support and motivation have a significant impact on the willingness and acceptance of workers To share knowledge based on mutual trust among them, and this requires leadership that is aware of the importance of training employees.

This result is in agreement with the result of the study of Fawzia Bint Dhafer Ali (2017) (25), whose results found the importance of the cultural and motivational role of academic leadership in the development of knowledge sharing.

This result is also in agreement with the result of the study of Hind Khalifa Al-Suwaimi (2020) (40), which concluded that there is an effect of trust among workers on sharing knowledge and realizing its value.

This result differs with the result of the study of Ismail Shwehi, Khaled Rawaski (2018) (1), whose results found that there was no statistically significant effect between trust between partners and knowledge sharing.

From the tables (12, 13, 14) it is clear that the order of the axes of the cognitive leverage questionnaire according to the relative weight was as follows:

- The axis of raising knowledge assets to realize their value came in the first place, with a relative weight of 79.6%.
- The axis of cognitive lifting requirements came in second place, with a relative weight of 75.8%.
- The axis of cognitive upgrading functions came in third place, with a relative weight of 74.2%.

The two researchers attribute the axis (Raising the knowledge assets to realize their value) in the first place with a relative weight of (79.6%) to the fact that there is no value for any knowledge without its dissemination, exchange and sharing, as it is the outcome of thought, information and long experiences that must be used to develop competencies.

This result is consistent with the result of the study of Suzanne Muhammad Al-Mahdi (2019) (14), whose results found a statistically significant effect of knowledge sharing in developing collective competencies.

With the sum of the relative weight of the axes, the total relative weight of the questionnaire as a whole becomes (76.5%), and this indicates the availability of the cognitive leverage in a relatively high degree.

The researchers attribute this to the fact that cognitive leverage is of great importance in improving the performance of institutions, supporting their competitive position, and innovation, and keeping pace with the changes of the times.

This result is consistent with the result of Lee (2018) (45) study, which concluded that cognitive leverage and sharing have many effects, including improving performance, achieving creativity, excellence and uniqueness.

This result is consistent with the result of Lugar (2008) study (47), which concluded that the application and training of artificial intelligence require high costs.

This result is consistent with the result of the study of Naji Abdel-Sattar Mahmoud (2020) (38), whose results concluded that the awareness of academic leaders in Iraqi universities of the importance of knowledge leverage was high.

Third: Presentation and discussion of the results of the third question (What is the correlation between artificial intelligence and the cognitive leverage in certain sports institutions?)

Table (15)
Correlation values between artificial intelligence and cognitive leverage in certain sports institutions. (n = 249)

Ser.	Cognitive leverage Artificial intelligence	Cognitive leverage requirements	Cognitive leverage functions	Raising the Cognitive Assets to realize their value	total
1	Neural Networks	*0.501	*0.471	*0.532	*0.469
2	Genetic Algorithms	*0.411	*0.480	*0.458	*0.532
3	Expert Systems	*0.462	*0.592	*0.462	*0.387
4	Smart Agents	*0.567	*0.451	*0.531	*0.580
	Total	*0.398	*0.420	*0.470	*0.470

* Tabular value (t) at the level of 0.05 = (0.236)

Table (15) shows:

- There is a positive, statistically significant correlation between each of the axis of neural networks' genetic algorithms, expert systems, intelligent agents and axes (cognitive raising requirements, cognitive raising functions, raising cognitive assets to realize their value, the grand total) in the sports institutions in question.

Finally, there is a positive, statistically significant correlation between each of the total sum of the artificial intelligence questionnaire and the total sum of the cognitive leverage questionnaire in the sports institutions in question.

Fourth: Presentation and discussion of the results of the third question (What is the percentage of artificial intelligence's contribution to enhancing the knowledge leverage in some sports institutions?)

table (16)
The percentage of the contribution of artificial intelligence axes in enhancing the requirements of cognitive leverage in some sports institutions.

Steps	fixed amount	standard error	Contributing axes to enhance the requirements of cognitive leverage					%
			C. L	Neural Networks	Genetic Algorithms	Expert Systems	Smart Agents	
1	40.05	1.40	1456.51	-191	-----	-----	-----	91.0
2	42.81	.741	1236.60	-1.40	-.868	-----	-----	95.2
3	56.62	.632	1021.70	-852	-.879	-1.78	-----	97.3
4	32.80	.722	769.10	-2.31	-.420	-3.22	.203	98.0

Table (16) shows that:

Neural networks occupied the first place in enhancing the requirements of cognitive leverage by (91.0%), followed by genetic algorithms by (4.2%), then expert systems by (2.1%), and finally smart agents by (0.7%), which raised the percentages of contribution of artificial intelligence axes to (98.0%).

Therefore, it is possible to deduce the following prediction equation:
 Neural networks occupied the first place in enhancing the requirements of knowledge raising by (91.0%), followed by genetic algorithms by (4.2%), then expert systems by (2.1%), and finally smart agents by (0.7%), which raised the percentages of contribution of artificial intelligence axes to (98.0%).

Therefore, it is possible to deduce the following prediction equation:

$$Y = a + b_1X_1 + b_2X_2 + b_3X_3 + b_4X_4$$

Cognitive leverage requirements = 32.80 - (2.31 neural networks) - (420. x genetic algorithms) - (3.22 x expert systems) + (293. x smart agents).

Table (17)
The percentage of the contribution of artificial intelligence axes to enhancing the functions of knowledge raising in some sports institutions

Steps	Fixed amount	Slandered error	Contributing axes to enhance the of cognitive leverage functions				%
			C. L	Neural Networks	Genetic Algorithms	Expert Systems	
1	40.00	3.41	120.41	-1.30	-----	-----	83.5
2	3.19	2.70	141.90	-2.90	3.48	-----	84.5
3	4.80	2.23	158.53	-3.31	4.45	3.02	87.0

Table (17) shows:

Neural networks occupied the first proportion in enhancing cognitive leverage functions (82.5%), followed by genetic algorithms (2%) and finally expert systems (2.5%), which raised the percentage of contribution of artificial intelligence axes to (87.0%).

Therefore, the following prediction equation can be deduced:

$$Y = a + b_1 X_1 + b_2 X_2 + b_3 X_3$$

Cognitive leverage Functions = 4.80 – (3.31 x Neural Networks) + (4.45 x Genetic Algorithms) + (3.02 x Expert Systems).

Table (18)
The percentage of the contribution of artificial intelligence axes to enhancing the raising of knowledge assets to realize their value in some sports institutions

Steps	Fixed amount	Slandered error	Contributing axes to axes contributing to the development of empathy service				%
			C. L	Neural Networks	Expert Systems	Smart agents	
1	33.00	3.70	113.40	-1.39	-----	-----	85.2
2	4.12	2.99	155.80	-2.88	3.15	-----	88.6
3	7.12	2.23	158.53	-3.86	3.26	3.10	92.7

Table (18) shows:

Neural networks occupied the first percentage of contribution to promoting the raising of cognitive assets to realize their value by (85.2%), followed by expert systems by (3.4%) and finally smart agents by (4.1%), which raised the percentage of contribution of artificial intelligence axes to (92.7%).

Therefore, the following prediction equation can be deduced:

$$Y = a + b_1 X_1 + b_2 X_2 + b_3 X_3$$

Raising the cognitive assets to realize their value = 7.12 - (3.86 neural networks) + (3.26 x expert systems) + (3.10 x smart agents).

Through the previous presentation to calculate the forecast and the percentage of the contribution, it is clear from the tables numbers (17,16,18) that:

Neural networks occupied the first percentage of contribution to the promotion of both

- Cognitive leverage requirements by (91%)
- Cognitive leverage functions by (82.5%)
- - Raising knowledge assets to realize their value by (85.2%)

The two researchers attribute this result to the fact that neural networks reflect the behavior of the human mind and are considered an expert in the category of information that they analyze, allowing computer programs to recognize patterns and solve common problems in the field of artificial intelligence.

This result is consistent with the result of the study of Hassanein Emad Abdel-Samad (2017) (7), whose results revealed that decision centers have largely realized the importance of simulation systems for neural networks in providing solutions to administrative problems due to the savings of time, effort and money in addition to the accuracy of the results.

Conclusions :

In light of the research objective and its questions, statistical treatments and results of the research, the two researchers reached the following conclusions:

First: Regarding the reality of artificial intelligence

A - The first axis (neural networks). The availability of neural networks in sports environments studied to a moderate extent is represented by the following.

- Helps to make decisions based on the archived knowledge base.
- Contains many applications in operational tasks such as e-mail systems, mobile phone programs, Microsoft Office programs ... which helps to improve the quality of performance.
- The user achieves more interaction in his journey within the World Wide Web to search for the required data and information.

By relative weight, the neural network axis came in first with a rate of 95.07 percent within the axes of the artificial intelligence questionnaire.

B - The second axis (genetic algorithms).

Genetic algorithms are available in the mathematical institutions under study to a moderate degree, and they are as follows.

- Simulate advanced procedures to produce better solutions to problems within the organization.
- Contribute to decision-making in environments with hundreds of possible solutions in the organization.
- Evaluate possible solutions with multiple capabilities faster than a human being
- It is used in operations that require a long period of time to be resolved.

According to the relative weight, the axis of genetic algorithms came in fourth place with a rate of 71.8% within the axes of the artificial intelligence questionnaire.

C- The third axis (expert systems).

Expert systems are available in the sports institutions under study to a moderate degree, and they are as follows:

- The management of the organization assists in the thought processes necessary for professional performance and governance development.
- Actively contribute to making decisions and accomplishing tasks in the organization.
- Knowledge can be transferred anywhere, no matter how far away.

According to the relative weight, the axis of expert systems came in third place with a rate of 74.1% within the axes of the artificial intelligence questionnaire.

D- Fourth Axis (Smart Agents).

Intelligent agents are available in sports institutions to a moderate degree, and they are as follows.

- Helps make decisions based on the stored knowledge base.
- It carries a lot of applications in operating activities such as e-mail systems, cell phone programs, Microsoft Office programs...which contributes to improving the quality of performance
- The user achieves more interaction in his journey within the World Wide Web to search for the required data and information.

According to the relative weight, the axis of intelligent agents came in second place with a rate of 74.4% within the axes of the artificial intelligence questionnaire.

Second: With regard to the Cognitive Leverage in sports institutions.

A - The first axis (the requirements of knowledge raising).

The requirements for Cognitive Leverage are available in the sports institutions under consideration to a relatively high degree, and they are as follows:

- Sharing knowledge and achieving strength that supports the expertise in the organization
- Establishing a widespread cultural base within the institution to support development processes.

- Providing all modern technologies to support cooperation and teamwork in the institution.

According to the relative weight, the axis of Cognitive Leverage requirements came in second place with a rate of 75.8% within the axes of the questionnaire of knowledge leverage.

C - The second axis (raising assets to realize their value).

It is available to raise the assets to realize their value in the sports institutions under consideration to a high degree, and they are represented in the following.

- Participation of supporting work teams to generate new knowledge capital in the institution.
- Obtaining the well-established knowledge in the minds and intellects of the creators of the institution.
- Creating new non-reproducible knowledge to ensure uniqueness and distinction between different institutions.

According to the relative weight, the axis of raising assets to realize their value came first with a rate of 79.6% within the axes of the cognitive leverage questionnaire.

Third: With regard to the relationship between artificial intelligence and knowledge leverage in sports institutions.

- There is a positive, statistically significant correlation between the total sum of the artificial intelligence questionnaire and the total sum of the cognitive leverage questionnaire in the sports institutions in question.

Fourth: With regard to the percentage of artificial intelligence's contribution to enhancing the knowledge leverage in some sports institutions.

Neural networks occupied the first proportion of the contribution to the promotion of both

- Cognitive Leverage requirements by (91%)
- Cognitive Leverage functions by (82.5%)
- Cognitive Leverage assets to realize their value by (85.2%)

Muhammad Abu al-Qasim (2012) (29) indicates that artificial neural networks, which are used to obtain knowledge and inference, and which provide operating capabilities that imitate certain operating capabilities of the human mind, and the formation of results representing knowledge in an

intense parallel manner, and retrieval and uploading of a large amount of information.

Recommendations :

In light of the results and conclusions that have been reached, the researchers recommend the necessity of...

1. Equip sports facilities with neural networks for their ability to analysis high data.
2. Use genetic algorithms to find more inputs that provide the best results to solve problems in sports institutions.
3. The use of expert systems and their various programs to master difficult situations in sports institutions.
4. Adopting the smart agents system as an alternative to human agents in sports institutions, which reduces time, effort and cost.
5. Provision of cognitive-leverage prerequisites to support development processes in sports institutions and expand knowledge.
6. Use direct purchase contracts to obtain various information in sports institutions.
7. Provide systems that allow employees of sports institutions to share their knowledge.

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