

The Use of Artificial Intelligence Techniques and Their Impact on Improving the Higher Education Outcomes of Business Administrative Colleges in Palestinian Universities

Khalid Abdel fattah Tawfiq Atieh¹, Ghadir Mohammad Said Ali Ahmad², Mays Ala'din Qasem Awwad³, Mazen J. Al Shobaki⁴

^{1,3}Arab American University, Palestine.

²Bank of Jordan, Amman, Jordan.

⁴Israa University – Gaza, Palestine.

¹Khalid.atieh@aaup.edu, ²Ghador77@gmail.com, ³Mays.awwad@aaup.edu, ⁴mazen.alshobaki@gmail.com

Abstract: *The study aims to identify the impact of the use of artificial intelligence techniques in improving the outputs of higher education in Business Administrative Colleges in the universities under study that formed the research community. As for the sample, it consisted of (130) academic respondents in these universities under study. The research concluded that there is a statistically significant effect of using artificial intelligence techniques (expert systems, neural networks) in improving the outputs of higher education in Business Administrative Colleges under study. It was found that artificial intelligence technologies contribute to finding graduates who are able to carry out the process of modernization and professional development in various fields of work. These technologies also contribute to improving and developing the skills of graduates in the labor market and providing them with new skills and characteristics to perform their duties. The research recommended increasing interest in the expert systems technology by the universities under study because of its scientific importance in improving the outputs of higher education by reformulating them in the form of programs embraced by computers.*

Keywords: Artificial Intelligence Techniques, Education Higher Outcomes, Business Administrative Colleges, Palestinian Universities

Introduction

Knowledge developments in the work of business organizations have led to the emergence of the need to provide tools and means that help them improve the operations they perform, so it has been started to use artificial intelligence techniques as a new developed method and method to reduce errors, and helps to reach a high degree of accuracy and quality in reaching Better decisions by using accurate information based on information management systems and technology to collect, store and analyze data.

Industrial intelligence is one of the latest innovations discovered by the human mind, as a global field suitable for all trends, as it is based on studying how to direct the computer to perform things that a person performs better through many applications of general purposes such as perception and logical explanation, or through applications for tasks of special purposes Such as chess or medical diagnosis, etc.

Artificial intelligence aims for the computer to simulate the intelligence processes that occur within the human mind so that the computer has the ability to solve problems and make decisions in a logical and orderly manner in the same way as the human mind thinks, and to represent accounting programs and improve the basic relationship between its elements.

As a result, the need to increase interest and focus on quality-related concepts emerged to keep pace with the data of this age and modern trends in measuring and managing quality based on avoiding tightness and working to measure university education outputs of the availability of directional, cognitive, skill and behavioral properties not only in graduates, but also extends the measurement of quality The

service to the quality of the elements of providing educational service at the level of educational institutions.

Therefore, reaching outstanding levels of quality in education for Business Administrative Colleges in Palestinian universities requires concerted efforts made by all workers at the university, and active participation by students and on the part of the graduates, the labor market and society, yet it can be said that the university with its administrative and academic cadres play an effective role In the completion of the quality of higher education, the efforts of workers at the university should join in order to achieve this quality in education.

Problem Statement

The increase in the diversity and complexity of educational processes, especially in light of the great expansion of the activities practiced by organizations, including universities, has led to increased pressure on them to adopt methods and tools that include the use of curricula to achieve high performance levels, and because achieving this requires these universities to monitor and control their performance, This requires universities to use artificial intelligence techniques to improve higher education outcomes.

And since the academic programs and specializations presented by Business Administrative Colleges in Palestinian universities are considered one of the most important programs that need to ensure quality and continuous development in order to improve them, because of their special importance in the progress of Palestinian society and increasing its growth, as the application of artificial intelligence technologies leads to strengthening Future

planning for the educational process outputs, contributes to supporting and deepening its positive aspects and avoiding its negatives.

Although the technological development in the areas of higher education in Business Administrative Colleges in Palestinian universities, there is still a failure to use artificial intelligence systems and their applications such as expert systems and nervous networks, as the absence of technical knowledge and sufficient experience using the computer in implementing the task of education makes it From the use of modern technologies in carrying out this task is difficult and complex.

Research Questions

The problem of the study was to answer the following questions:

Q1-: What is the level of perceptions of the study sample personnel to use artificial intelligence techniques in Business Administrative Colleges from the point of view of academics in universities under study?

Q2-: What is the level of perceptions of the study sample of higher education outcomes in Business Administrative Colleges from the point of view of academics in universities under study?

Q3-: What is the effect of the use of artificial intelligence techniques in improving the outcomes of higher education in Business Administrative Colleges from the point of view of academics in universities under study?

Research Objectives

Based on the established research questions, this study aims to achieve the following objectives:

1. Identify the impact of the use of artificial intelligence techniques in improving the outcomes of higher education in Business Administrative Colleges in universities under study.
2. Identify the level of the perceptions of the study sample personnel to use artificial intelligence techniques and higher education outcomes in Business Administrative Colleges from the point of view of academics in universities under study.

Research Importance

The importance of the study is shown by the benefit that will be given to:

Scientific (Theoretical) Importance: The theoretical importance arises from the theoretical and intellectual enrichment in which it may contribute by tracking theoretical literature and previous studies of the main variables related to the techniques of artificial intelligence, which are the following variables: (expert systems, nervous networks) in Palestinian universities and in a way that is an integrated conceptual framework on these concepts and the methodology of their study.

Practical (Applied) Importance: The researchers hope that the results of the research and its recommendations will be a reference for Palestinian and Arab universities to benefit from them in improving the outputs of administrative science colleges in universities as academic institutions that need an

environment that helps them to think and strategic planning and determine the clear vision to improve the quality of their services and outputs because this contributes to improving the level of the university.

Research hypothesis

The researchers relied on the following main hypothesis:

Ho1: There is no statistically significant effect on the use of artificial intelligence techniques (expert systems, nervous networks) in improving higher education outcomes in Business Administrative Colleges from the point of view of academics in Palestinian universities.

The following hypotheses:

Ho1.1: There is no statistically significant impact on the use of expert systems technology in improving higher education outcomes in Business Administrative Colleges from the point of view of academics in Palestinian universities.

Ho1.2: There is no statistically significant effect on the use of nervous network technology in improving higher education outcomes in Business Administrative Colleges from the point of view of academics in Palestinian universities.

Limitations of and Directions for Research

The scope of the study shall be as follows:

1. **Objective limits:** The study focused on the Use of Artificial Intelligence Techniques and Their Impact on Improving the Higher Education Outcomes of Business Administrative Colleges in Palestinian Universities.
2. **Human Limit:** Academic staff of Business Administrative Colleges in Palestinian universities.
3. **Institutional limitation:** The study was limited to Palestinian universities (Arab American University, An-Najah National University, Al-Quds Open University, Hebron University, and Bethlehem University).
4. **Time Limits:** This study was implemented in 2022 and therefore represents the reality at this time.

Literature Reviews

- A study of (Zarrouqi and Falta, 2020) that dealt with the role of artificial intelligence in improving the quality of higher education, and its results showed that academic programs that rely on artificial intelligence increase opportunities for self-education for students, and make them more effective in the educational process and not just be recipients of information From the professor in the lecture given in the traditional classes.
- A study of (Anbar and Muhammad, 2016), which aimed to demonstrate the role of artificial intelligence technology in improving the performance of audit work and its documentation, in a way that positively affects the audit profession, and to determine the expected impact based on artificial intelligence technology in improving audit quality. The basic idea of this study was based on doing preparing an electronic program that carries out the electronic audit work, starting from the planning process, passing through the collection and selection of samples, and ending with obtaining the draft report and the report related to evaluating the performance of the audit work.

- Study of (Al-Bashtawi and Al-Baqmi, 2015), which aimed to clarify the impact of applying expert systems on electronic audit procedures and to indicate their role in increasing the efficiency of electronic audit procedures, and concluded that one of the requirements for applying expert systems in commercial banks is the need to maintain their assets and files. They contain information and data of the bank's work, and reduce the human and material risks associated with the procedures for providing services.
- Study of (Al-Sarhani, 2013), which aimed to identify international and international standards for total quality and their impact on achieving excellence for Arab universities, including universities in the Kingdom of Saudi Arabia; The results of the study showed that Saudi universities obtain academic accreditation through their application of comprehensive quality standards that enable them to reach distinguished academic outputs capable of meeting the needs and requirements of the Saudi community and the local market.
- A study of (Helmy, 2012) aimed at examining the effect of applying artificial neural networks in discovering fundamental errors in the financial statements of industrial companies registered in the stock exchange. Financial data.

It is also important that there be a driving force towards technical developments to move and motivate the individual and the worker to accomplish the tasks in the best way by meeting the needs and securing material and moral desires (Hodgetts, R., 1980, 30)

Current Study Features

Through the researchers' review of previous studies that dealt with the subject of the current study, it becomes clear from the background of research and previous research the importance of revealing the impact of the use of artificial intelligence techniques in improving the outcomes of higher education in Business Administrative Colleges in Palestinian universities, and the need to research it, as it turns out that studies all revolve around the subject of artificial intelligence techniques or quality standards and academic accreditation in general and its importance and the impact on other research changes, as it becomes clear that studies have focused their topics on determining the importance of these technologies and standards from the point of view of the sample and reflected in their quality direct interest in the two variables both separately and try to define destinations. The sample discussed around it, as this research took on the two variables together artificial intelligence techniques and improving higher education outcomes.

Conceptual Frameworks

First- Artificial Intelligence

Artificial intelligence is one of the modern cognitive sciences that emerged in the last years of the last twentieth century and the beginning of the twenty-first century, and the roots of research related to artificial intelligence go back to the forties with the spread and use of computers and the focus of

attention in the fifties on neural networks, and in the sixties, research activities began to be directed towards systems. It is based on knowledge representation that continued in the seventies, and with the beginning of the eighties and after the announcement of the Japanese project that adopted the fifth generation of computers, there was a big boom in artificial intelligence research (Yassin, 2016).

The science of artificial intelligence is used in controlling business, developing medical research, and in providing ideal solutions in criminal, security, and other issues. The need for it, depending on the simulation method, and it has been reached to find a coherent software structure consisting of some software commands and mathematical matrices called artificial neural networks that make the machine act intelligently on behalf of the human being effectively, and in order for these networks to do their work you need to have the idea of supervision by the human. Who provides the examples to the machine and only once, so that it saves these examples and when needed, the machine retrieves them. Also, these networks learn without a supervisor by providing similar models on the basis of which any new model is presented to them (Abdul Majeed, 2009).

The science of artificial intelligence is based on the development of modern systems through which data is stored in the computer to form a main database for this science, in the same way that it is stored in the human mind based on learning and experience gained daily, after which special programs are developed that allow the computer. Using it while dealing with this data logically in the face of decision-making problems, and from artificial intelligence models, robots and personal computers that conduct dialogues with humans and implement voice commands and other applications (Al-Sayed, 2014).

The science of artificial intelligence is one of the ways of thinking (algorithms) that make the computer able to solve problems, by relying on smart computer programs and systems that are programmed in one of the languages used in programming that are represented in the computer's memory and are able to simulate human intelligence. Most of them write data and represent it, then the language performs the search operations, and the most famous of these languages: Prolog and Lisp (Al-Husseini, 2018).

The researchers believe that artificial intelligence is one of the branches of computer science that is based on the design of smart systems capable of performing the works that humans perform in a lower way and give almost the same characteristics known in intelligence in human behavior, and the principle of work in artificial intelligence depends on the matching in the formations that it can be done by describing things, events and processes using their qualities and their logical and accounting relationship. For current study, artificial intelligence was measured through expert systems and nerve networks, and the following is a brief about it:

First: Expert Systems: Expert systems are considered one of the most important contributions of artificial intelligence and are distinguished as the field in which knowledge is represented and controlled in research within knowledge

bases. In transferring these experiences to other people, in addition to his ability to solve problems faster than the human expert, if the expert is able to give advice and make the right decisions, because he has special knowledge, then computers can behave similarly if provided with this knowledge by extracting special knowledge from Experts and reformulating them in the form of programs embraced by computers, and then obtaining expert computers in specific fields (Bilal, 2011). Expert systems are specialized computer systems developed in application software. They are built on knowledge bases in a specific field of expertise. They are used in designing various projects, allocating resources to operations, scheduling customer orders, and controlling operations. Their importance comes through their ability to extract human experiences and store them in a program. He imitates the expert in his work at the same level (Al-Hubaidi, 2014).

Second: Neural Networks: Neural networks are one of the most important applications of artificial intelligence, and they represent one of the good and appropriate tools for solving problems related to distinguishing and classifying patterns. The process is in links, connections, and processing units that form computational elements called nodes or neurons, and have a neuronal characteristic in order to make information available to users (Yassin, 2016).

These networks consist of a number of nodes that collectively perform special types of calculations, where each of these nodes is considered as a small arithmetic standard unit that works in parallel depending on the existence of some kind of interactions between them. The networks are mathematical models that are formulated in the form of diagrams or a simple entity of Algorithms mimic the features found in computer systems that process information and provide solutions to complex problems in a parallel manner composed of simple components called neurons (Al-Bakri and Ismail, 2010).

Second- Improving the Outputs of Business Administrative Colleges

Caring for and developing the human element is one of the important and fundamental issues that business organizations live by. Investing in human resources is also one of the priorities of successful organizations, since the human element is the main driver of all its activities and an important source of its effectiveness and increased productivity, especially when it is characterized by the quality of skills, knowledge, capabilities and activities that are compatible with the nature of the work it practices in the organization (Al-Sawalha, 2009).

The outputs of Business Administrative Colleges are the product of the interactions that occur between the inputs of the university educational system and the fusion of these outputs and their transformation into forms and meanings of value and meaning. Necessary to perform the work in a distinctive way that achieves customer satisfaction, and thus achieving the equation of linking the organization's work to the customer's needs, focusing effort towards the required work, and thus saving expenses in the educational field,

increasing the return from education and achieving goals (Al-Samarrai, 2010).

Based on the foregoing, it has become necessary to link the outputs of Business Administrative Colleges to the interests and daily needs of the community, and this requires a review of the functions performed by these faculties and planning to provide appropriate outputs for the labor market and emphasizing the importance of linking the improvement and development of their level of performance and in line with developments in society on Considering that he is the first beneficiary of the education service, and obtaining high levels of community satisfaction requires knowing the needs of its members, adhering to them and striving to find graduates of high levels (Al-Masharawi, 2014).

The researchers believe that the importance of improving the outputs of Business Administrative Colleges in the universities under study reflects positively on societies in increasing organizational effectiveness and satisfying the needs of individuals. The outputs of Business Administrative Colleges are that both the goals of the university and the needs of individuals complement each other and are not at the expense of one of them.

Methodology and Procedures:

This research is considered a descriptive analytical research, where the researchers used the descriptive method to describe the concepts related to artificial intelligence technologies and the improvement of higher education outcomes, in addition to analyzing the variables on which the research structure was built in Business Administrative Colleges in Palestinian Universities.

Society and Research Sample

The research community consists of five Palestinian universities to distribute the questionnaire in it, namely: (The Arab American University, An -Najah National University, Al -Quds Open University, Hebron University, Bethlehem University), while the sample consisted of (130) respondents from academics in these five universities.

Data Collection, Validity and Reliability Tool

A questionnaire was used on the five -year -old Laker scale (very ok, ok, somewhat agreed, not approved, not approved), and its sincerity and stability were confirmed through Cronbach's Alpha coefficient for internal consistency, reaching (91 %).

Data Collection Sources

The researchers relied on two types of information sources:

- A. **Secondary Sources**, such as management books, scientific materials, bulletins, and specialized periodicals that research artificial intelligence techniques and improve higher education outcomes.
- B. **Primary Sources** by designing a questionnaire whose validity and ability to measure the research variables were confirmed.

Statistical Methods Used In the Study.

The researchers used statistical methods within the statistical package of social sciences (SPSS in data analysis, where the researchers used mathematical averages and standard

deviation, and the multiple linear and simple slope analysis was used to test the hypotheses.

Data Analysis and Hypothesis Testing

First: The Results of Descriptive Statistics: the arithmetic means and standard deviations of the study variables were

extracted, and the following tables show the results that were reached from the point of view of the study sample, and they were as follows:

1. Arithmetic means and standard deviations for the expert systems technique

Table 1: means and normative deviations

#	Statement	SMA	Standard Deviation	Priority Level	Rank
1.	Application software is used in higher education that builds on knowledge bases in a specific area of expertise	3.776	.7299	High	4
2.	Expert systems are used in education by reformulating them in the form of programs embraced by computers	3.564	.6804	Medium	8
3.	Expert systems are used to extract knowledge to solve problems related to higher education	3.905	.6835	High	2
4.	Advanced programming languages are used to improve higher education outcomes	3.670	.8221	Medium	7
5.	Expert systems are used because they are able to give advice and make the right decisions related to higher education	3.917	.6212	High	1
6.	Knowledge and control are represented in the search for the educational process within the databases	3.694	.6730	High	6
7.	The expert system is used in the form of a hierarchical framework that expresses the set of accounting knowledge related to the educational process	3.858	.6006	High	3
8.	The expert system is used in the educational process to be coded into a program and stored in the knowledge base of the system	3.752	.7385	High	5
Expert Systems Technology		3.767		High	

Table (1) indicates that the mathematical averages of expert systems technology came at a high level and reached (3.767), and their mathematical averages reached (3,917-3.564).

The paragraph, which states, "expert systems are used as being able to express consultations and give the correct decisions related to higher education" with an average of my account (3.917), while the paragraph came "expert systems are used in education by reformulating them in the form of

programs embraced by computers" in the last rank and arithmetic mean reached (3.564).

As for the standard deviations of the expressions included in this variable, they indicate the extent to which the values of this variable are dispersed from the arithmetic mean of all the paragraphs.

2. Arithmetic Means And Standard Deviations Of Neural Network Technology

Table 2: Means and deviations for the neural network technique

#	Statement	SMA	Standard Deviation	Priority Level	Rank
9.	Neural network technology is used to complete the educational process in an integrated electronic way and to implement it in practice	3.835	.6874	High	3
10.	Neural networks are used to store information about the educational process in links and connections	3.729	.6967	High	4
11.	There are electronic processing units for the educational process in the form of neurons that make information available to users	3.588	.8351	Medium	7
12.	Neural networks are used within mathematical models of the educational process formulated in the form of diagrams that simulate the characteristics of computer systems	3.564	.6804	Medium	8
13.	Neural networks are used to process information related to the educational process and provide solutions to complex problems in parallel	3.905	.6835	High	2
14.	Neural networks contribute to providing solutions and recommendations to the user in a clear and adequate picture of the educational process	3.670	.8221	Medium	6
15.	Neural networks allow the user to enter instructions and information related to the educational process to obtain information	3.917	.6212	High	1

#	Statement	SMA	Standard Deviation	Priority Level	Rank
16.	Neural networks enable explaining the steps of the educational process to reach the solution and the reasons behind this solution	3.705	.6870	High	5
Neural Network Technology		3.739		High	

Table (2) indicates that the arithmetic averages for the neural network technology were at a high level, amounting to (3.739), and the arithmetic averages ranged between (3.917-3.564).

The paragraph stating "Neural networks allow the user to enter instructions and information related to the educational process to obtain information" came with an arithmetic average of (3.917), while the paragraph stated "Neural networks are used within mathematical models of the educational process formulated in the form of diagrams that

Table 2: Means and Deviations for the Dependent Variable: Improving Higher Education Outcomes

#	Statement	SMA	Standard Deviation	Priority Level	Rank
Artificial intelligence technologies contribute to:					
17.	Finding graduates who are able to carry out the process of modernization and professional development in various fields of work	4.000	.7303	High	1
18.	Giving graduates new skills and characteristics to perform their duties	3.960	.6416	High	3
19.	Improving and developing the skills of graduates in the labor market	4.000	.7831	High	1
20.	Making graduates able to apply new methods of work to solve any problem they face	3.631	.8301	Medium	7
21.	Making graduates able to use new methods or introduce new developments to work	3.565	.8380	Medium	8
22.	Arouse the feelings of the graduates towards the institution in which they work	3.552	.8229	Medium	9
23.	Influencing graduates' psychological attitudes and modifying their thoughts and behaviors towards work	3.684	.7157	High	6
24.	Making graduates able to keep pace with scientific and technical development and progress	3.855	.7607	High	5
25.	Motivating graduates to improve their performance levels in the labor market	3.881	.8321	High	4
Dependent variable: improving higher education outcomes		3.790		High	

Table (3) indicates that the arithmetic averages for the dependent variable: improving higher education outcomes in Business Administrative Colleges in the universities under study, were at a high level and amounted to (3.790), and their arithmetic averages ranged between (4.000-3.552).

Paragraphs with numbers (17) and (19) were the highest among the response averages. Paragraph (17) states that "artificial intelligence technologies contribute to creating graduates who are able to carry out the process of modernization and professional development in various fields of work." Paragraph (19) states that "artificial intelligence technologies contribute to improving and developing the skills of graduates in the labor market", with an average of (4,000), and their relative importance was (high).

The results also indicate that phrase no. (22), which states that "artificial intelligence technologies contribute to raising graduates' feelings about the institution in which they work,"

simulate the characteristics found in computer systems" in The last place with an average of (3.564).

As for the standard deviations of the expressions included in this variable, they indicate the extent to which the values of this variable are dispersed from the arithmetic mean of all the paragraphs.

3. Arithmetic means and standard deviations of the dependent variable: improving higher education outcomes in Business Administrative Colleges in the universities under study.

is the least among the response averages, with an arithmetic mean of (3.552), and the relative importance of this paragraph was (moderate).

As for the standard deviations of the expressions included in the dependent variable, which indicate the extent of the dispersion of the values of these variables from the arithmetic mean, it is noted that they are low and indicate that the answers of the study sample are close and similar to a large extent.

Second: Testing the Study Hypotheses

Ho₁: There is no statistically significant effect on the use of artificial intelligence techniques (expert systems, nervous networks) in improving higher education outcomes in Business Administrative Colleges from the point of view of academics in Palestinian universities.

To test the hypothesis, simple and multiple linear regression analysis was used. Table (3) shows this:

Table 3: The results of the simple and multiple linear regression test of the effect of using artificial intelligence techniques in improving the outcomes of higher education in Business Administrative Colleges

Correlation coefficient (R) = .515, coefficient of determination (R ²) = .265, adjusted coefficient of determination (Adj R ²) = .177					
(ANOVA) Analysis					
Sample	Squares	Degrees Of Freedom	Square Averages	(F) Value Calculated	Significance Sig.
Regression	9.554	2	4.777	4.119	0.000*
Residual Value	26.504	397	.066		
The Total	36.058	399			
Coefficient Analysis					
Sample	Standard Error	Standard coefficients (Beta)	(T) Value Calculated	Significance Sig.	
Hard Limit (.789)		4.832	6.121	.000	
Expert Systems	.305	.697	.9733	.000	
Neural Networks	.365	.505	3.942	.000	

* It is statistically significant at the level of significance ($\alpha \leq 0.05$).

It is clear from Table (3) that the use of artificial intelligence techniques (expert systems, nervous networks) as independent variables (R) explains its percentage. Where the value of the average determination (ADJ. R²) (265%).

Depending on the value of (F) of the model, which amounted to (4.119), and the level of moral significance (P) that reached (.000).

It turns out that the impact of these technologies on improving the outcomes of higher education in Business Administrative Colleges is statistically significant.

It was found through the values of normative transactions (Beta) shown in Table No. (3) that expert systems technology was the most influential in improving higher education outcomes, as the value of the standard laboratory (β) has reached (.697), which is a statistically sign.

Where the value of (T) was less than the level of significance (0.05), then the nerve network technology came, and the value of the standard laboratory less than the level of significance (0.05).

Accordingly, the main nihilistic hypothesis rejects the study, and accepts the alternative hypothesis that provides for

H₀: There is no statistically significant effect on the use of artificial intelligence techniques (expert systems, nervous networks) in improving higher education outcomes in Business Administrative Colleges from the point of view of academics in Palestinian universities.

As for the hypotheses emanating from it, the first hypothesis is rejected, and the alternative hypothesis is accepted, which states that: There is a statistically significant effect of the use of expert systems technology in improving the outputs of higher education in Business Administrative Colleges from the point of view of academics in the universities under study. Where the significant (t) value (Sig) was less than the significance level (0.05),

The second is rejected, and the alternative hypothesis is accepted, which states that:

There is a statistically significant effect of using neural network technology in improving the outputs of higher education in Business Administrative Colleges from the point of view of academics in the universities under study.

Where the significant (t) value (Sig) was less than the significance level (0.05).

Discuss the Results

The opinions of the study sample of academics in universities in question agreed on the presence of a statistically significant effect of the use of artificial intelligence techniques (expert systems, nervous networks) in improving higher education outcomes in Business Administrative Colleges. It turns out that artificial intelligence techniques contribute to finding graduates who are able to conduct the process of modernization and professional development in the various fields of work, and these technologies also contribute to improving and developing graduates' skills in the labor market and providing them with new skills and characteristics to perform their duties, in addition to the contribution of these technologies to motivate graduates to improve levels Their performance in the labor market and make them able to keep pace with the development and scientific and technical progress. This result is consistent with the outcome of the study (Zarrouqi and Falta, 2020) that showed that academic programs that depend on artificial intelligence increase self - education opportunities for students, and make them more effective in the educational process.

The results also showed the following:

First: It was found that there is an effect of the use of expert systems technology in improving the outputs of higher education in Business Administrative Colleges from the point of view of academics in universities under study.

It turns out that the mathematical averages of expert systems technology came at the high level, and show the importance of the use of expert systems because they are able to express consultations and give the correct decisions related to higher education, and it is also used to extract knowledge to solve

problems related to higher education in the form of a hierarchical framework that expresses the accounting knowledge group related to the process Educational, in addition to showing the importance of using applications in higher education based on the rules of knowledge in the field of specific experience. This result is consistent with the outcome of the study (Helmy, 2012), which concluded that there is importance for implementing there is importance for the application of artificial neural networks in the audit in general, and in the issue of discovering fundamental errors when checking the financial statements in particular.

Second: It was found that there is an effect of the use of difficult network technology in improving the outputs of higher education in Business Administrative Colleges from the point of view of academics in universities under study.

It turns out that the mathematical averages of difficult network technology came at the high level, and it turns out that nerve networks allow the user to enter the instructions and information related to the educational process to obtain information, and they are used to process information related to the educational process and provide solutions to complex problems in parallel and in the completion of the educational process in an electronic manner and implement it in a way My work, in addition to that it has been shown that nerve networks are used to store information about the educational process in links and communications. This result is consistent with the outcome of the study (Al-Bashtawi and Al-BAQMI, 2015), which concluded that it is the requirements for the application of expert systems in commercial banks the necessity of maintaining their assets and files that contain the information and data of the bank's work, and reduce human and material risks associated with the procedures for submitting Services.

The researchers explain the results that were reached that universities under study are aware of the developments that took place in their educational work and functions, as there was a great need to provide methods and means of those they wanted to help universities to improve higher education outcomes, so it started using new methods and methods based mainly To reduce errors and problems and works to provide the best educational services to the beneficiaries of them, so its use of these new methods and advanced and advanced methods came to reduce the percentage of error, and among these technologies is what is known as industrial intelligence, a method that helps in reaching high degrees of accuracy and quality in providing education services

Recommendations

- Increasing interest in the expert systems technology by the Palestinian universities under study because of its scientific importance in improving the outputs of higher education by reformulating them in the form of programs embraced by computers.
- Emphasizing the necessity of using advanced programming languages, encoding them in a program and storing them in the knowledge base of the expert system to improve the outputs of higher education.

- Emphasizing the importance of using neural networks within mathematical models of the educational process formulated in the form of diagrams that simulate the characteristics of computer systems.
- The need for the Palestinian universities under study to provide electronic processing units for the educational process in the form of neurons that make information available to users.
- Focusing on training academics to keep abreast of technological developments in expert systems in the educational process, knowledge representation and control in searching for these evidences within databases.
- The importance of relying on the use of smart programs to develop the educational process and reformulate it in the form of programs embraced by computers for its role in improving the quality of higher education outputs.
- Make better use of neural networks, especially with regard to providing solutions, the reasons behind this solution, and recommendations to the user in a clear and adequate way about the educational process.
- Paying more attention to giving academics many opportunities to develop and practice the application of artificial intelligence methods due to their importance in improving the quality of higher education outputs.

Acknowledgment

The authors extend their sincere thanks and appreciation to all who enriched the current study with valuable information, without which the study would not have appeared in its present elegant form.

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