The Attitudes of Faculty Staff Members and Their Assistants Towards Students' Use Of AI Tools In Scientific Research

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Abstract:

The study aims to investigate how faculty staff members and their assistants perceive students' utilization of AI tools in scientific research. Identify the AI tools that staff members and their assistants see students can use in scientific research, and any other potential areas. Outline the challenges that staff members and their assistants may encounter due to students' utilization of AI tools and define their situations towards the challenges in the upcoming decade. In addition to monitor the initiatives that official institutions could implement to mitigate the possible risks of the misuse of AI tools in scientific research, as perceived by staff members and their assistants. And determine the probable scenario (optimistic, neutral, pessimistic) that may unfold if students start using AI tools in the next decade, according to staff members and their assistants. The current study adopted the method of future scenarios. A questionnaire was used to be able to answer the study Questions. The study population consists of (92) staff members and their assistants from Egypt (46 individual) and the Arab world (46 individual). A Snowball sample was taken. The study results show that the AI tools most recommended by faculty members and teaching assistants for student use in academic research are reference management tools, such as Semantic Scholar and Connected Papers. The findings highlight a significant challenge faced by faculty and teaching assistants: the need for specialized training to enhance their understanding and effective utilization of AI in teaching. This challenge is consistently rated as the foremost concern by both Egyptian and non-Egyptian respondents. The study suggests the importance of training university professors and faculty in utilizing AI tools and familiarizing them with technologies that can evaluate students' reliance on such tools, empowering them to oversee and guide students' use of AI effectively. By integrating a curriculum module that incorporates secure AI tools into academic programs focusing on scientific inquiry, students can be educated on the permitted and forbidden uses of AI tools in scientific research.

Keywords: *Staff Members - Artificial Intelligence Tools - Scientific Research - Unified Model for Technology Acceptance..*

Introduction:

Given two decades of rapid technological development, artificial intelligence (AI) has become increasingly important in various fields, including education in general, and scientific research in particular, where tools evolve and tasks it performs are varied by the day, encouraging students to use AI tools in their research.

According to statistics, 47.3% of Cambridge students used chatbots to complete their study assignments. It is expected that by 2030 AI will be utilized to evaluate 50% of university articles automatically, and almost all tests with multiple choices. The AI market in education is expected to increase from $3.99 billion in 2023 to $5.57 billion by the end of 2024, and up to 47% of learning management products will be supported by AI tools (Steven, 2024).

Western studies have shown that faculty staff members have had positive attitudes towards the use of (AI) tools in scientific research and education (Darayseh, 2023), (Khan et al., 2023), and other studies have indicated that university professors argued that artificial intelligence and expert systems can be positively employed in curricula, while enhancing students' creativity and problem-solving skills (Jarrah et al., 2023).

Furthermore, Research indicates that both staff members and students struggle to detect AI-generated writing, highlighting the potential for AI to go undetected in assignments (Hostetter et al., 2023).

Consequently, the current study aims to shed light on faculty staff members and their assistants' attitudes towards employing artificial intelligence (AI) tools in scientific research, and to investigate how these tools can enhance the quality and effectiveness of student performance, through identifying the challenges and opportunities provided in this context. Therefore, understanding the attitudes of faculty staff members and their assistants towards students' use of artificial intelligence (AI) tools in scientific research is worth studying, as it can contribute to developing educational strategies that foster the interaction between technology and scientific research in universities and educational institutions.

The Problem of the Study:

Many studies have pointed out that students leveraging artificial intelligence tools in scientific research yield diverse benefits when writing their research. AI tools can automate tasks such as data

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analysis, literature review, manuscript composition, and proofreading, thereby enhancing the overall quality and efficiency of scientific research (Ferrante & Lanera, 2023), (Yasin & AL-Hamad, 2023), (Khan, Osmonaliev, & Sarwar, 2023). Furthermore, these tools help overcome language barriers for non-proficient individuals by providing linguistic correction and grammar check (Abd-Elsalam & Abdel-Momen, 2023). However, some studies have confirmed that students should use AI tools carefully and responsibly and to critically review the content generated by these tools, to verify data and literature, to ensure the accuracy of their writing, and to consider the ethics of scientific research. (Huang & Tan, 2023). Therefore, the study problem focuses on revealing the attitudes of faculty staff members and their assistants working in Egyptian and Arab universities towards their students' use of AI tools, and highlighting the safe use controls that can be followed to ensure sober scientific writing controls.

Objectives of the Research:

the current study aims to achieve the following objectives:

1) Investigate how faculty staff members and their assistants perceive students' utilization of AI tools in scientific research.
2) Identify the AI tools that staff members and their assistants see students can use in scientific research, and any other potential areas.
3) Outline the challenges that staff members and their assistants may encounter due to students' utilization of AI tools and define their situations towards the challenges in the upcoming decade.
4) Monitor the initiatives that official institutions could implement to mitigate the possible risks of the misuse of AI tool in scientific research, as perceived by staff members and their assistants.
5) Determine the probable scenario (optimistic, neutral, pessimistic) that may unfold if students start using AI tools in the next decade, according to staff members and their assistants.

Research Questions

1) To what extents do staff members and their assistants agree on students' using of AI tools in scientific research?
2) What AI tools do staff members and their assistants think their students can use in scientific research?
3) In which areas do staff members and their assistants propose students can use AI tools?

4) What challenges might staff members and their assistants face due to students' using of AI tools?
5) To what extent will the challenges related to the use of AI tools in scientific research continue in the next decade according to staff members and their assistants?
6) What efforts can official institutions exert to address the potential dangers of AI tools' misuse in scientific research according to staff members and their assistants?
7) What are the most important scenarios that may arise regarding students' use of AI tools in the next decade according to staff members and their assistants?

Literature Review

(Xia & Li, 2022) confirmed that teaching goals and methods are constantly changing. About 85% of students believe in the development prospect of intelligent teaching. (Chan & Hu, 2023) argued that students have had a generally positive attitude towards generative AI technologies in higher education. (Hemachandran, et al., 2022) indicated that students recognized the potential benefits of AI in supporting personalized learning, writing assistance, and research capabilities, but also express concerns about AI tools' accuracy, privacy, and ethical issues.

(Hinojo-Lucena, Aznar-Díaz, Cáceres-Reche, & Romero-Rodríguez, 2019) argued that the global interest in AI in higher education and scientific production was still at an incipient stage. (Celik, Dindar, & Järvelä, 2022) stressed that AI provided opportunities for improved planning, implementation, and assessment in teaching. Teachers have various roles in the development of AI technology. While (Kim & Kim, 2022) said that STEM teachers positively experienced AI as superior scaffolding. Teachers raised concerns about their roles and transparency of AI decisions. (Iqbal, Ahmed, & Azhar, 2022) outlined that staff members had a negative perception and attitude towards using Chat GPT. Concerns about cheating and plagiarism were cited as major risks. Joshi et al. (2021) argued that AI could improve outcomes of teaching; teachers and students recommend the use of AI in education.

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Theoretical Framework:

The current study adopted the method of future scenarios, consisting of 3 scenarios: (1) The reference scenario, which indicates the stability and persistence of the situation based on what it is. This scenario presupposes the continued dominance of the current situation over the future evolution of the issue or phenomenon under consideration (Readman & Moon, 2020). (2) The optimistic scenario, which assumes that matters will be better than they are, and refers to the process of reform and positive change (Shabalin, 2023). (3) The pessimistic scenario assumes that matters will go worse than in the past, as this scenario is driven by radical shifts in the external and internal surroundings of the issue or phenomenon in question, and therefore there are bad radical changes (Scheer, 2012).

The scenario method aims to showcase alternative options and possibilities that can occur in the future according to a set of different scenarios. That method also highlights the consequences of different alternatives or options, and leads the community to consider and debate on all matters related to the issue, not to mention helping decision makers give feedback on the issue concerned, taking better decisions in the future (Neresini, Giardullo, Di Buccio, & Cammozzo, 2019).

The scenario method was employed in the current study through:

(1)   Defining the key elements that will affect the future of AI tools in scientific research according to staff members and their assistants.

(2)   Formulating different sets of scenarios, where each scenario to be evaluated to understand its potential impacts and identify coping strategies.

Utilizing Theory in the Current Study:

The model can be applied as follows:

- Assessing the perceived benefits of AI: It is important to examine how staff members and their assistants perceive the use of AI tools in scientific research.

- Evaluating the easy use of AI tools: To estimate to what extent staff members and their assistants consider that using AI tools will be easy and effective, influenced by factors such as simple interface and available training.

- Additional factors: The surrounding circumstances and socio-economic factors affecting the adoption of technology, such as actual performance, expected effort, and social impact, should also be considered.

By employing the technology acceptance model, researchers can analyse and comprehend the attitudes of staff members and their assistants towards using AI tools in scientific research, contributing to enhancing the use of technology in education.

Research Hypothesis:

H1: Statistically significant differences exist in researchers' agreement to the student's use of AI tools in scientific research based on demographic characteristics (gender, specialization, years of experience, type of university, job, country).

H2: A statistically significant correlation between researchers' agreement to the student's use of AI tools in scientific research and in addition to the following:

- The potential fields where students use AI tools in scientific research.
- The challenges faced by staff members and their assistants due to AI tools' utilization.

H3: A statistically significant correlation between the potential fields of students' using of AI tools in scientific research and the challenges faced by staff members and their assistants due to AI tools' utilization.

H4: A statistically significant correlation between the official efforts to address the potential risks of AI tools' misusing in scientific research and in addition to the following:

- Approval of students' using of AI tools in scientific research.
- The potential fields where students use AI tools in scientific research.
- The challenges faced by staff members and their assistants due to AI tools' utilization.

Research Methodology:

This research is a descriptive study that aims to describe and analyse various scientific phenomena, thereby contributing to generalizable scientific results. The study uses a mixed-method approach, combining quantitative and qualitative data to gain a deeper insight into the phenomenon under investigation. Employing a semi-closed questionnaire, the study assessed the attitudes of staff members and their assistants towards students' utilization of AI tools.

To ensure the questionnaire's validity, a group of adjudicating professors checked it using the face validity method. Their feedback led to necessary adjustments in questions and statements, either by removal or addition, to make the questionnaire suitable for final implementation.

In order to validate the questionnaire, the researchers employed two methods; (1) They retested by using the same tool on 10% of the original sample size after two weeks of the first application of the questionnaire, resulting in a correlation coefficient of 0.75, statistically

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significant at a 0.01 level that indicated the questionnaire's accuracy and reliability. (2) They used Cronbach's Alpha where the overall reliability value of the questionnaire was 0.791, which is high and statistically acceptable reliability value.

Study Population and Sample:

The study population consists of (92) staff members and their assistants from Egypt (46 individual) and the Arab world (46 individual). A Snowball sample was taken. Table 1 shows the distribution of the study sample.

Table 1

Distribution Of the Study Sample According to Gender, Experience, Type of University, Job Title & Country

Variables	Category	K	%
Gender	Male	31	33.7
	feminine	61	66.3
	Total	**92**	**100**
Experience	Less than 3 years	25	27.2
	From 4-6 years	13	14.1
	More than 6 years	54	58.7
	Total	**92**	**100**
Type of University	Public	64	69.6
	Private	24	26.1
	National	4	4.3
	Total	**92**	**100**
Specialization	Theoretical	50	54.3
	Practical	42	45.7
	Total	**92**	**100**
Job Title	Teaching Assistant	10	10.9
	assistant professor	17	18.5
	Lecturer	25	27.2
	Assistant Professor	24	26.1
	Professor	16	17.4
	Total	**92**	**100**
Country	Egyptians	46	50.0
	Non- Egyptian	46	50.0
	Total	**92**	**100**

Data presentation and Analyses

Table 2

Respondents' approval of students' use of AI tools in scientific research

Variables			Egyptians (n=46)									Non-Egyptians (n=46)						
		A	N	D	A	S	D	A	N	D	A	S	S	A	N	D	A	S	S
Students' using of AI tools in scientific research	N	36	2	8				32	3	11								
	%	78.3	4.3	17.4	2.739	0.535	High	69.6	6.5	23.9	2.630	0.609	High						

The table shows that the approval of the study sample, consisting of staff members and their staff, of students'

usage of AI tools was high. An arithmetic Average of Egyptians were (2.739) while (2.630) for Arabs, with a scale of agreement amounted (78.3%) and (69.6%) respectively".

Table 3

AI tools could be used by students in scientific research

	AI Tools	Egyptians (n=46)		Non-Egyptians (n=46)	
		K	%	K	%
1	Reference search tools, such as: (semantic schooler-conected papers, etc)	31	67.4	32	69.6
2	Language-checking tools, such as: (Grammarly, Quilpot, Nutreal, etc)	29	63.0	28	60.9
3	Tools for collecting and analyzing literature review, such as: (Elicit-Typeset, etc)	30	65.2	26	56.5
4	Reference documentation tools, such as: (Scribber, AI Chat, etc)	26	56.5	23	50.0
5	Big data analysis tools, such as: (Orange, Weika, Caht GPT4, etc)	26	56.5	20	43.5
6	Chatbots, such as: (Chat GPT - Copilot - Monica - ... etc.)	20	43.5	19	41.3
7	Tools for speaking with files, such as: (Consensus, Tabula, Chat pdf-Papder brain, etc)	18	39.1	17	37.0
8	Other	6	13.0	1	2.2

The results indicated that the most AI tools that staff members and their assistants argued that their students can use in scientific research were: reference search tools, such as: (Semantic Schooler-Conected Papers, etc); the ratio for Egyptians was about 67.4%, and for non-Egyptians about 69.6%, while the tools for speaking with files, such as: (Consensus, Tabula, Chat pdf- Papder prain, etc.) was the lowest for Egyptians at 39.1% and non-Egyptians at 37.0%

Table 4

Potential areas of students' use of AI tools

	Domains	Egyptians (n=46)				Non-Egyptians (n=46)			
		Arithmetic Average	Standard Deviation	Rank	Degree of Approval	Arithmetic Average	Standard Deviation	Rank	Degree of Approval
1	Collecting of Scientific Material	2.783	0.513	1	High	2.609	0.714	3	High
2	Collecting and Analyzing of Literature Review	2.717	0.655	3	High	2.739	0.535	1	High
3	Writing of Study Methodology	2.130	0.885	6	Medium	1.978	0.830	6	Medium
4	Identification of Study Sample	2.348	0.737	4	High	2.022	0.856	5	Medium

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		Arithmetic Average	Standard Deviation	Rank	Degree of Approval	Arithmetic Average	Standard Deviation	Rank	Degree of Approval
5	Analysis of Results	2.174	0.450	5	Medium	2.087	0.812	4	Medium
6	Writing of Recommendations	1.978	0.931	7	Medium	1.565	0.807	7	Low
7	Documentation of References	2.739	0.575	2	High	2.717	0.620	2	High
	Total	2.410	0.484		High	2.245	0.407		Medium

The results indicated that potential areas in which students could use AI tools according to staff members and their assistants were collecting of scientific material that ranked first for Egyptians with an arithmetic average of (2.783) and collecting and analyzing of Literature review ranked first for non-Egyptians with an arithmetic average of (2.739). Writing of recommendations was last ranked by both Egyptians and non-Egyptians with an arithmetic average of (1.978) and (1.565) respectively.

Table 5

Challenges faced by staff members and their assistants due to students' use of AI tools

Challenges		Egyptians (n=46)				Non-Egyptians (n=46)			
		Arithmetic Average	Standard Deviation	Rank	Degree of Approval	Arithmetic Average	Standard Deviation	Rank	Degree of Approval
1	Difficulty of ensuring to what extent students use AI tools	2.717	0.584	4	High	2.609	0.576	4	High
2	Difficulty of separating useful AI from those may harm scientific research	2.717	0.584	4	High	2.609	0.537	4	High
3	Lack of technological expertise to deal with AI tools among staff members and their assistants	2.717	0.584	4	High	2.674	0.634	3	High
4	Lack of ethical controls to punish those students who use AI tools to complete their assignments and research.	2.826	0.383	2	High	2.696	0.465	2	High
5	Member staff's need for a specialized training to improve their understanding and ability to use AI effectively in teaching process	2.978	0.147	1	High	2.826	0.383	1	High
6	AI tools may hamper members staff and their assistants' task of evaluating students' original work and distinguishing between what is done with the help of AI and what is done by students' own efforts	2.500	0.691	5	High	2.587	0.580	5	High
7	The use of AI tools in education may raise ethical issues related to fairness, transparency, and how to deal with potent	2.717	0.544	3	High	2.478	0.623	6	High

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	ial biases in AI-based syste ms.						
	Total	2.739	0.325	High	2.640	0.355	High

The results indicated that Challenges that faced by staff members and their assistants due to students' use of AI tools centered on "Member staff's need for a specialized training to improve their understanding and ability to use AI effectively in teaching process" to rank first among both Egyptians and non-Egyptians, according to an arithmetic average of (2.978) and (2.826) respectively, while "AI tools may hamper members staff and their assistants' task of evaluating students' original work and distinguishing between what is done with the help of AI and what is done by students' own efforts" ranked last for Egyptians with an arithmetic average of (0.691), and "The use of AI tools in education may raise ethical issues related to fairness, transparency, and how to deal with potential biases in AI-based systems." ranked last among non-Egyptians, with an arithmetic average of (2.478).

Table 6

Challenges related to the use of AI tools in scientific research persist over the next decade

	Challenges	Egyptians (n=46)		Non-Egyptians (n=46)	
		K	%	K	%
1	I think the challenges of using AI tools in scientific research will increase over the next decade, limiting their usage.	27	58.7	26	56.5
2	I think the challenges of using AI tools in scientific research will remain the same.	4	8.7	5	10.9
3	I think the challenges of using AI tools in scientific research will be eliminated, enhancing their uses in many fields.	15	32.6	15	32.6
	Total	46	100.0	46	100.0

The previous table showed that the majority of the study sample, which is about (58.7%) for Egyptians and (56.5%) for non-Egyptians thought that the challenges of using AI tools in scientific research will increase over the next decade, limiting their usage. The sample study equals regarding the phrase "I think the challenges of using AI tools in scientific research will be eliminated, enhancing their uses in many fields", with 32.6% for both Egyptians and non-Egyptians. The phrase "I think the challenges of using AI tools in scientific research will

remain the same" was ranked last, with a percentage of (8.7%) for Egyptians and (10.9%) for non-Egyptians.

Table 7

Efforts of official authorities to confront the potential dangers of AI tools' misuse in scientific research

	Phrases	Egyptians (n=46)				Non-Egyptians (n=46)			
		Arithmetic Average	Standard Deviation	Rank	Degree of Approval	Arithmetic Average	Standard Deviation	Rank	Degree of Approval
1	Imposing regulations to protect the intellectual property of individuals and institutions	2.935	0.450	3	High	2.717	0.544		High
2	Developing legislation that contributes to the use of AI tools to maintain scientific research	2.848	0.363	5	High	2.652	0.566		High
3	Providing students with training on the controls for using AI tools in scientific research	2.956	0.206	1	High	2.783	0.513		High
4	Providing an ethical guide that	2.935	0.327	2	High	2.826	0.485		High

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	explains what is permitted and prohibited in scientific research							
5	Creating watchdogs that can verify AI content as happens when verifying scientific theft	2.870	0.401	4	High	2.739	0.535	High
	Total	2.909	0.222		High	2.743	0.339	High

The previous table showed the high attitudes of the study sample towards the efforts of official authorities to confront the potential dangers of AI tools' misuse in scientific research, as the overall arithmetic mean for Egyptians reached about (2.909), and for non-Egyptians about (2.743) The phrase "Providing students with training on the controls for using AI tools in scientific research" was firstly selected by Egyptians with an arithmetic average of (2.956), and was secondly chosen by non-Egyptians with an arithmetic average of (2.783). The phrase "Providing an ethical guide that explains what is permitted and prohibited in scientific research" was ranked first for non-Egyptians with an arithmetic average of (2.826) and was ranked second for non-Egyptians with an arithmetic average of (2.935). The phrase "Imposing regulations to protect the intellectual property of individuals and institutions" was ranked third for both Egyptians and non-Egyptians with an arithmetic average of (2.935) and (2.717) respectively. The phrase "Creating watchdogs that can verify AI content as happens when verifying scientific theft" was ranked fourth for both Egyptians and non-Egyptians with an arithmetic average of (2.870) and (2.739) respectively. Finally, the phrase "Developing legislation that contributes to the use of AI tools to maintain scientific research" was ranked fifth for both Egyptians and non-

Egyptians with an arithmetic average of (2.848) and (2.652), respectively.

Table 8

Top scenarios to be considered concerning students' use of AI tools

The most important scenarios		Egyptians (n=46)		Non-Egyptians (n=46)	
		K	%	K	%
1	Deterioration and collapse	12	26.1	6	13.0
2	Consistency	12	26.1	11	23.9
3	Reform	22	47.8	29	63.0
Total		46	100.0	46	100.0

Staff members and their assistants chose the reform scenario to be ranked first, with a percentage of (47.8%) for Egyptians and (63%) for non-Egyptians, while consistency scenario was ranked second and the deterioration and collapse scenario was ranked third. These findings indicated that some modifications and regulations are expected to be added to control the use of AI in scientific research, and the following scenarios are reviewed in detail.

Respondents' views of students' use of AI tools in scientific research:
The study sample regarding students' use of AI tools in scientific research was divided into two groups as follows:

The first group, the majority, argued the possibility of relying on AI tools in scientific research but considering ethical controls, and establishing controls and mechanisms governing the AI use. Consequently, students' effort in the research process do not declined. They stressed the need to ensure accuracy and objectivity, and to view AI as a modern technological tool that could be used and invested to benefit faster scientific progress and improve the quality of work. They thought that the use of AI tools should be codified as an aid tool and only part of the information supply phase, and that this process should be in accordance with specific criteria and follow-up and monitoring.

Furthermore, the first group indicated that students should keep pace with the evolution of the age by capitalizing on technology; this age is called the era of artificial intelligence (AI). Hence, the use of AI tools is critical, contributing to saving time and facilitating the research process, but the validity of the information provided should be ascertained. AI tools are constantly

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evolving, ensuring that students develop and keep abreast of modern developments in their scientific research, contributing to the achievement of scientific goals, and that is of importance in enriching scientific research.

In the team's view, AI tools can help students even in statistical analysis and verification of hypotheses' validity, which has been a task endorsed by other researchers. Remarkably, a staff member stressed that the use of AI tools in scientific research was a natural right for students.

The second team includes a group of staff members and their assistants, who oppose students' use of AI tools, considering the issue as a form of fraud and theft, and where the student gets information without effort. They thought that these tools were mainly developed to help people and not to work instead, and that the use of these tools is an unaccounted-for adventure, especially since students used these tools incorrectly. Thus, these tools reduced students' level of natural intelligence, and limited the opening of prospects for sound thinking in general.

Respondents' views of top scenarios to be considered concerning students' use of AI tools:

1- Optimistic scenario:

The majority of respondents, that is, (51 individuals) from the sample, look optimistically. Although these respondents fear a deterioration that could prolong scientific research, they agreed that future AI paths would be corrected in a disciplined manner, especially since all technological developments include good and evil. They argued that each period has had difficulties, and that many useful tools in scientific research are expected to emerge in the coming period, provided that there are binding legislation and laws that limit the harms of the poor use of AI tools. Once important legislation and clear laws are in place for use, AI will be employed in a way that promotes optimism.

The optimistic scenario is that AI is one of the most crucial modern technologies that can be used in scientific research, as it has become an inevitable option. So, an individual has to adapt to this situation, try to capitalize on these advanced tools. Nevertheless, it is important to regulate the use of AI tools to benefit researchers and maintain the quality of scientific research.

AI helps the development of scientific research, by facilitating easy access to all useful information. It requires the establishment of precautionary measures to stop scientific forgery and theft, which prompts researchers to use AI more usefully. Over time and adapting to technological advances, relying on AI will be traditional, as students will rely on it more than now, so their skills will evolve further to deal with it. In response, universities should develop specific policies to positively use this technology and establish laws and penalties for those who negatively use it.

Statistical analysis applications, at the beginning of their emergence, had supporters and opponents, but became a part of the curriculum and quantitative scientific research. The optimistic scenario argues that AI applications will become part of the statistical analysis curriculum in the coming years or decades. These applications will be an essential part when performing scientific research from beginning to end, and their ability to control and achieve scientific research ethics will be increased, especially with the development of global, regional and local legislation that regulates the use of researchers.

This scenario thought that AI is created to serve humanity, so it should be leveraged. It refutes pessimism and the return to the back, especially since the world is facing many challenges, including the challenge of time and its association with performing scientific research, especially scientific journals drain researchers' time for a year until a paper is published. Therefore, the dissemination of AI tools will reduce the time needed for research.

Nevertheless, it is necessary to ascertain the information provided by AI, meaning that it is intelligence does not mean that it parallels the human mind. Therefore, there is a constant need to fine-tune it with the sensory knowledge of our mind, to perform its basic function of saving time and accelerating action.

2- Constant Scenario:

A quarter of the sample, about (23 individuals), has adopted the **constant Scenario**, considering that there is no real interest by public and private universities and educational institutions in the masterminding of AI tools to date. Conditions still indicate a reference scenario, that students will use AI tools, while there are tools and programs that can detect students' use of AI tools.

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This scenario argues that due to the rapid creation of new mechanisms and highly advanced programs, as well as openness to the world and the exchange of experiences, and the independence of the new generation of students in searching for information by AI tools, it is difficult to monitor the use of these tools among different ages, levels and specializations, although professors and supervisors are well aware of the success, benefits, and risks of these tools in scientific research.

This scenario thinks that given the Arab society's lack of digitization laws, the establishment of controls would be useless or unchecked. This means that the situation will remain the same, as there are no controls and legislation limiting negative uses of AI tools in scientific research. Accordingly, the current situation is constant, we are still at the beginning of exploring AI, and there is still no clear approach to clarify its damage.

3- Pessimistic scenario

This was the least selected scenario among the sample individuals, about (18 individual). Proponents of this scenario thought that AI was detrimental to the educational process due to the absence of conscience, and the lack of attention of educational institutions to the gravity and misuse of AI tools so far by many students.

According to this scenario, AI technologies evolve rapidly and intricately beyond humans' ability to regulate and control them. The Scenario argues that this continuous development is uncontrollable due to the lack of technological expertise of a large number of staff members and their assistants, as well as the lack of specialized watchdogs, regulations, and ethical standard, as well as the tyranny of the for-profit side and the erosion of human value, in addition to the absence of an eastern Islamic response to these tools.

The total adoption of AI also adversely affects human natural intelligence. Many staff members and students lack awareness of the importance and usage of AI, so they will use it in the wrong way, which is detrimental to the whole educational process. This requires training courses that qualify staff members and students to correctly use AI tools.

In this scenario, the evolution of AI tools facilitates researchers' access to information and capabilities, resulting in a researcher who does not know how to make research by himself, i.e. this will completely abolish one's thinking. It should be noted that the current generation of students has no stamina or interest in seeking to learn. Hence, AI will make it easier for them to finish the required assignments with minimal time and effort regardless of quality, accuracy and scientific standards.

In addition to choosing the wrong tools, the next generation has the ability to deal with AI quickly and proficiently, meaning that students' use of AI in scientific research to save time and effort will lead to a low level of scientific production and development.

Second: Results of testing the study hypotheses

H1: Statistically significant differences exist in researchers' agreement to the student's use of AI tools in scientific research based on demographic characteristics (gender, specialization, years of experience, type of university, job, country).

Table 9

Test results of differences in respondents' approval of students' use of AI tools in scientific research according to demographic characteristics

Variables			The Number	SMA	Standard Deviation	Statistical Indicators		
						The Test	Degree Of Freedom	Moral level
Students' use of AI tools in scientific research	Type	male	31	2.710	0.588	T=0.296	90	0.768
		female	61	2.672	0.569			
	Experience	Less than 3 years	25	2.680	0.557	F=0.535	2 89	0.588
		From 4-6 years	13	2.538	0.519			
		More than 6 years	54	2.722	0.596			
	Type of University	Public	64	2.672	0.565	F=0.061	2 89	0.941
		Private	24	2.708	0.624			
		National	4	2.750	0.500			
	Specialization	Theoretical	50	2.620	0.635	T=1.186	90	0.239
		practical	42	2.762	0.484			
	Job Title	Teaching Assistant	10	2.800	0.422	F=0.700	4 87	0.594
		assistant professor	17	2.765	0.437			
		Lecturer	25	2.760	0.436			
		Assistant Professor	24	2.542	0.721			

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		Professor	16	2.625	0.719			
Country		Egyptians	46	2.739	0.535	T=0.909	90	0.366
		Non-Egyptians	46	2.630	0.609			

The results of the previous table showed that there are no statistically significant differences in the respondents' approval of students' use of AI tools in scientific research as per demographic characteristics (gender - specialization - years of experience - type of university - jobs - country); This is according to the values of the statistical coefficients, all of which were not statistically significant at the significance level of (0.05).

H2: A statistically significant correlation between researchers' agreement to the student's use of AI tools in scientific research and in addition to the following :

• The potential fields where students use AI tools in scientific research.

• The challenges faced by staff members and their assistants due to AI tools' utilization.

Table 10
Testing the correlation between respondents' approval of students' use of AI tools in scientific research and (Potential fields of AI use – Challenges of AI use)

Variables	Approval of students' use of AI tools in scientific research			
	Correlation Coefficient	Direction	Power	Significance Level
The potential fields where students use AI tools in scientific research.	0.318**	Direct	Weak	0.002 Significant
The challenges faced by staff members and their assistants due to AI tools' utilization.	0.032	-	-	0.759 Non-significant

The results of the previous table showed that:
- There is a weak and statistically significant Correlation between respondents' approval of students' use of AI tools in scientific research and the potential fields where students use AI tools in scientific research, as the value of Pearson Correlation Coefficient amounted (0.318) that is of significant value at the significance level of (0.002).
- There is no statistically significant correlation between respondents' approval of students' use of AI

tools in scientific research and the challenges faced by staff members and their assistants due to AI tools' utilization, as the value of the Pearson Correlation Coefficient was (0.032), which is a non-significant value at the significance level of (0.759).

H3: A statistically significant correlation between the potential fields of students' using of AI tools in scientific research and the challenges faced by staff members and their assistants due to AI tools' utilization.

Table 11
Testing the correlation between the potential fields where students use AI tools in scientific research and the challenges faced by staff members and their assistants due to AI tools' utilization.

Variables	The challenges faced by staff members and their assistants due to AI tools' utilization.			
	Correlation Coefficient	Direction	Power	Significance Level
The potential fields where students use AI tools in scientific research	0.114	-	-	0.279 Non-significant

The results of the previous table showed that there is no statistically significant correlation between the potential fields where students use AI tools in scientific research and the challenges faced by staff members and their assistants due to AI tools' utilization, as the value of the Pearson Correlation Coefficient was (0.114), which is a non-significant value at the significance level of (0.279).

H4: A statistically significant correlation between the official efforts to address the potential risks of AI tools' misusing in scientific research and in addition to the following:

• **Approval of students' using of AI tools in scientific research.**

• **The potential fields where students use AI tools in scientific research.**

• **The challenges faced by staff members and their assistants due to AI tools' utilization.**

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Table 12

Testing the correlation between efforts to address potential risks of AI tools' misusing in scientific research and (Approval of students' using of AI tools - Potential fields of AI use – Challenges of AI use)

Variables	Addressing the Potential Risks of AI Tools' Misusing in Scientific Research			
	Correlation Coefficient	Direction	Power	Significance Level
Approval of students' using of	0.114	-	-	0.281 Non-
The potential fields where students use AI tools in scientific	0.240*	Direct	Weak	0.021 Significant
The challenges faced by staff members and their	0.406**	Direct	Medium	0.000 Significant

The results of the previous table showed that:

- There is no statistically significant correlation between the official efforts to address the potential risks of AI tools' misusing in scientific research and the approval of students' using of AI tools in scientific research, as the value of Pearson Correlation Coefficient amounted (0.114), which is a non-significant value at the significance level of (0.281).

- There is a weak and statistically significant direct correlation between the official efforts to address the potential risks of AI tools' misusing in scientific research and the potential fields where students use AI tools in scientific research, as the value of Pearson Correlation Coefficient amounted (0.240), which is a significant value at the significance level of (0.281).

- There is a direct, moderately strong, statistically significant correlation between the official efforts to address the potential risks of AI tools' misusing in scientific research and the challenges faced by staff members and their assistants due to AI tools' utilization, as the value of Pearson Correlation Coefficient amounted (0.406), which is a significant value at the significance level of (0.000).

Conclusion

In this study, the researcher reached a set of results, which are:

- The primary findings indicate that the AI tools most recommended by faculty members and teaching assistants for student use in academic research are reference management tools, such as Semantic Scholar and Connected Papers. This trend is consistent among both Egyptian and non-Egyptian respondents, aligning with

the study by. (Chan & Hu, 2023) , which suggests that students generally have a positive attitude towards generative AI technologies in higher education.

- The results suggest that the potential applications of AI tools, according to faculty members and teaching assistants, vary slightly between groups. For Egyptian respondents, the primary application is the collection of scientific materials, whereas for non-Egyptian respondents, it is the collection and analysis of previous studies.

- The findings highlight a significant challenge faced by faculty and teaching assistants: the need for specialized training to enhance their understanding and effective utilization of AI in teaching. This challenge is consistently rated as the foremost concern by both Egyptian and non-Egyptian respondents.

- It is evident that the majority of the study sample believes that the challenges associated with using AI tools in scientific research will increase over the next decade, which may limit their adoption. This finding contrasts with (Hemachandran, et al., 2022), which highlights students' recognition of the potential benefits of AI in supporting personalized learning, writing assistance, and research capabilities.

- The study reveals high levels of concern among the respondents regarding official efforts to address the potential risks of AI misuse in scientific research, in agreement with (Iqbal, Ahmed, & Azhar, 2022).

- Finally, the results indicate that the majority of the study sample favors a reformative scenario for the future use of AI in research. The status quo scenario comes in second, followed by the deterioration and collapse scenario, which is consistent with the findings of (Iqbal, Ahmed, & Azhar, 2022) regarding the latter scenario.

Recommendations:

- Training university professors and faculty members in the utilization of artificial intelligence tools and acquainting them with tools that can assess their students' dependency on such technologies, thus enabling them to effectively oversee and steer their students' utilization of AI.

- Enhancing academic curricula by integrating a module that employs secure AI tools in the realm of scientific inquiry, with a focus on

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educating students about the authorized and prohibited applications of AI tools in scientific investigations.

- Establishing dedicated AI hubs within the current scientific research facilities at universities to bolster research endeavors through the utilization of cutting-edge AI technologies.
- Requiring proficiency in AI tools as a prerequisite for attaining academic qualifications, commencing from postgraduate studies up to professorial positions, with the goal of ensuring that faculty members and auxiliary personnel are well-acquainted with the latest AI methodologies.
- Mandating familiarity with AI tools as a stipulation for colleges and universities to secure accreditation of high quality from the National Quality Assurance and Accreditation Authority.

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