IRAQI Academic Scientific Journals
العراقية المجلات الأكاديمية العلمية
University of Kut Journal
ISSN (E): 2616 - 7808 II ISSN (P): 2414 - 7419
www.kutcollegejournal.alkutcollege.edu.iq
k.u.c.j.sci@alkutcollege.edu.iq
Vol. 10 , Issue 2 , December 2025

The Impact of Adopting Generative AI Tools on Quality of Scientific Research In Iraqi Universities

Rajaa Nori Hussein [1]

Abstract

The use of generative AI tools in Iraqi universities is crucial. It helps researchers and graduate students understand the advantages and risks of using these tools in scientific research, contributing to their effective and responsible use by establishing specific policies and procedures. This study aims to explore the level of use of AI tools in research conducted by faculty members and graduate students. The study adopted a descriptive-analytical approach, and a questionnaire was used as a tool to collect data analyzed in SPSS. The study sample included 304 faculty members and graduate students at Al-Mustansiriya University. The results revealed that the ease of use of generative AI tools significantly improves the quality of scientific research, and that the study sample has (medium) awareness of generative AI. There is also a strong challenge in adhering to academic standards. The study recommended providing specialized training courses, protecting intellectual property, emphasizing academic integrity, and investing in digital infrastructure. The study revealed that adopting generative AI tools has raised the quality of scientific research in Iraqi universities and paved the way for the preparation of more advanced and innovative academic plans.

Keywords: Generative AI, Academic integrity, Research quality, Academic standards, Scientific research

Affiliation of Author
[1] Middle Technical University, Iraq, Bagdad, 10001

[1] rajaa.nori@mtu.edu.iq

[1] **Corresponding Author**

Paper Info.
Published: Dec. 2025

أثر تبني أدوات الذكاء الاصطناعي التوليدي على جودة البحث العلمي في الجامعات العراقية

رجاء نوري حسين [1]

المستخلص

يعد استخدام أدوات الذكاء الاصطناعي التوليدي في الجامعات العراقية أمرًا بالغ الأهمية. يساعد الباحثين وطلاب الدراسات العليا على فهم مزايا ومخاطر استخدام هذه الأدوات في البحث العلمي، مما يُسهم في استخدامها بشكل فعال ومسؤول من خلال وضع سياسات وإجراءات محددة . تهدف هذه الدراسة إلى استكشاف مستوى استخدام أدوات الذكاء الاصطناعي في الأبحاث التي يُجريها أعضاء هيئة التدريس وطلاب الدراسات العليا. وقد اعتمدت الدراسة المنهج الوصفي التحليلي واستُخدم الاستبيان كأداة لجمع البيانات التي تم تحليلها في (SPSS). ضمت عينة الدراسة 304 عضو هيئة التدريس وطلبة الدراسات العليا في الجامعة المستنصرية. كشفت النتائج أن سهولة استخدام أدوات الذكاء الاصطناعي التوليدي تحسن بشكل ملحوظ من جودة البحث العلمي، وأن عينة الدراسة لديها وعي (متوسط) بالذكاء الاصطناعي التوليدي ، وأيضا وجود تحدي قوي وهو الالتزام بالمعايير الاكاديمية. اوصت بتوفير دورات تدريبية متخصصة ، وحماية الملكية الفكرية وأكدت على النزاهة الاكاديمية، والاستثمار في البنية الرقمية ، وكشفت الدراسة ان تبني أدوات الذكاء الاصطناعي التوليدي رفع من جودة البحث العلمي في الجامعات العراقية ، وفتح الطريق أمام الاعداد لخطط أكاديمية أكثر تطوراً وابتكارا .

الكلمات المفتاحية: الذكاء الاصطناعي التوليدي، النزاهة الاكاديمية، جودة البحث، المعايير الأكاديمية، البحث العلمي

انتساب الباحث
[1] الجامعة التقنية الوسطى، العراق، بغداد، 10001

[1] rajaa.nori@mtu.edu.iq

[1] **المؤلف المراسل**

معلومات البحث
تأريخ النشر: كانون الاول 2025

1. Introduction

The adoption of generative AI tools in the university environment contributes to improving the quality of scientific research by accelerating information gathering processes, developing academic writing methods, and enhancing analytical and critical skills. This is achieved by

generating data from various sources (text, images, video, speech), which helps create rich and diverse content through various applications, the most important of which are Chat GPT, Bing Chat, Perplexity, and others. This adoption is not without challenges, raising questions about academic integrity, total reliance on technology without critical and creative thinking, as well as the accuracy and reliability of scientific research [1].

The adoption of generative AI tools has increased as universities seek to improve the quality of scientific research submitted by faculty members and graduate students to keep pace with global developments. At the same time, universities have faced technological and cognitive challenges in how to properly utilize this scientific field by faculty members and graduate students. A study conducted by Sultan Qaboos University confirmed that, while the availability of generative AI tools has facilitated personalized learning and time efficiency, there are significant concerns regarding academic integrity, lack of independence of effort, and weak guidance from educational institutions [2].

Here, the need for a scientific, applied study emerged to help measure the impact of adopting generative AI tools on the quality of research and graduate theses at Iraqi universities, ensuring the required ethical and academic standards.

2. Items of Research

2.1 Problem

Generative artificial intelligence (GAI) has emerged as one of the most distinct new technologies, changing fundamentally how knowledge and content can be created. As more academic institutions embrace it, fundamental questions have been raised about its influence. Because graduate students are the primary users of these tools (and are often the individuals who draft theses or dissertations), they increasingly depend on them for information access, paraphrasing, editing, and idea creation. These tools create the potential to increase productivity and reduce research-development time [3], though there are concerns that overreliance on them could suppress critical thinking and reduce the author's creativity to formulate original ideas [4]. In addition, risks of academic plagiarism, lack of originality, and effectiveness of the accuracy and reliability of the AI-generated outcomes create extra academic integrity concerns [5] .

This is especially challenging inside Iraqi universities that seek to enhance the quality of the scientific research and graduate studies in accordance with what is taking place worldwide. Thus, the research problem is formulated in the main question: what is the impact of employing generative artificial intelligence tools on the scientific research and postgraduate studies quality in Iraqi universities?

2.2 Objectives

- Determine effect of adoption rate of generative AI tools on the level of the quality of scientific research in Iraqi universities .
- To understand the contribution of the usability of generative AI tools as a condition of origin and scientific quality by promoting innovation and originality, ensuring scientific soundness, and maintaining compliance with the standards of academic research in supporting scientific research .
- Evaluating the nature of the relationship between dependency on generative AI tools and the quality of research (in the form of originality and innovation, academic rigor, and

adherence to scholarly standards) in scientific research

- Approach: Investigate the extent to which the challenges and risks posed by generative AI tools have affected the quality (in the form of originality and innovation, academic rigor, and adherence to scholarly standards) in scientific research .
- Show statistically significant differences in the degree of use of generative AI tools in scientific research based on moderators, such as university, academic status (faculty/student) and gender (male/female).

2.3 Importance

- Scientific contribution: It enriches the literature on generative AI by investigating its potential effect on the quality of research and doctoral theses in the Iraqi academic context .
- Practical implications: The study's findings can be useful to Iraqi universities to establish specific policies and procedures that could control the use of GAI-tools in graduate studies .
- Significance for students and researchers: The research will help educators and graduate students understand the possibilities of and risks involved with utilizing generative AI, allowing them to use such tools wisely.

2.4 Research Hypothetical Plan

The possible research scheme was proposed on the basis of theoretical and mental grounds of study variables. Consistent with the problem and objectives of the study, this model provides the conceptual relationship between the independent Adoption Rate of Generative AI Tools (Ease of Use, Dependence, Challenges & Risks) and the dependent variable Quality of Scientific Research (Originality & Innovation, Scientific Accuracy, Academic Standards Compliance) as shown in Figure.(1)

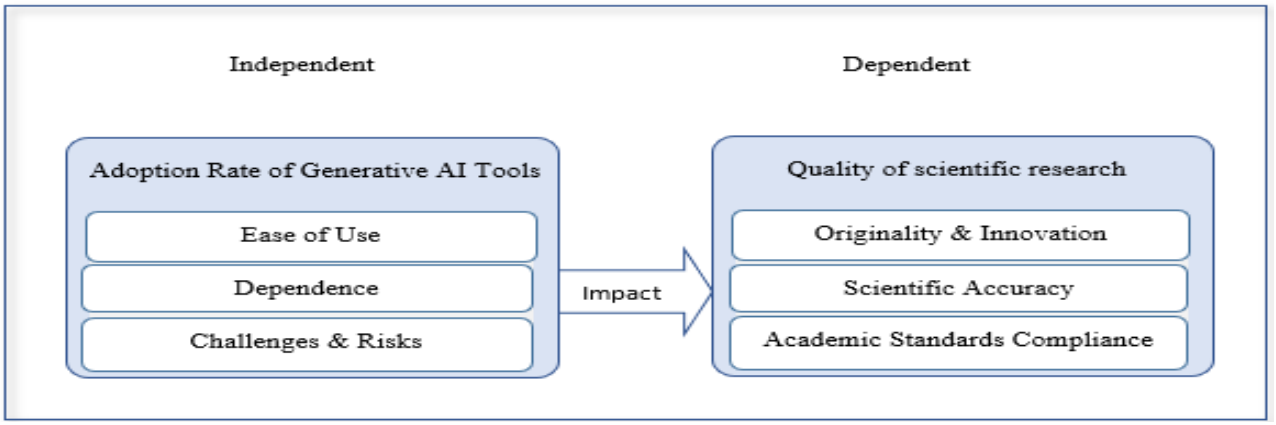

Figure (1): Hypothetical research plan

Source: Researcher's Plan

2.5 Questions

A main question was formed in order to achieve the objective of the research problem: **How much the penetration of generative AI tools will impact the quality of scientific research in Iraqi universities?**

This question is composed of sub-questions:

1. How are the generative AI tools' convenience for use facilitating support for the quality of scientific research through the enhancement of

originality and innovation of outputs, securing scientific correctness of results and enabling the researchers' compliance with recognized academic standards?

2. What is the relationship between dependence on generative AI technology and the quality of scientific research in terms of promoting (in terms of originality & innovation, scientific accuracy, and academic standards compliance)?
3. What is the relationship between challenges and risks involved in the use of generative AI tools on the one hand, and the quality of scientific research (in terms of originality & innovation, scientific accuracy, and academic standards compliance) on the other hand?
4. Is there a statistically significant difference: at (0.05) level between the mean response of the sample members due to the variables of Al-Mustansiriyah University towards adopting the generative AI tools for scientific research according to academic status (faculty/students) and gender variable (males /females) .

2.6 Methods

Descriptive analytical method is employed to investigate the influence of using GAI tools in the scientific research and postgraduate theses quality in Iraqi universities. The participants were faculty & postgraduate students at Al-Mustansiriyah University. Data were obtained through a questionnaire involving (24) items and six axes, formulated on the basis of a five-points Likert scale (strongly disagree, disagree, neutral, agree, strongly agree). Data were entered and analyzed by SPSS.

2.7: Limits

- Context: The pragmatic domain was operationalized at Iraqi universities (Al-Mustansiriyah University) due to the fact that they are two practicing and wide in terms of the number of staff and postgraduate students' parties of the universities.
- Human Resources: Faculty and graduate students at Al-Mustansiriyah University in Iraq.
- Time Frame: The study was conducted from March 4, 2025, to July 4, 2025.

2.8 Tool Validity

Feedback was obtained from four focused experts, four experienced professors, and specialized faculty in terms of wording, clarity and the relevance to the aim of the study. They put in the additions and the amendments. The reviewer was based on the comments of the reviewers and the researcher. A 5-point Likert scale was used to score the items in the questionnaire. This scale measures participants attitude and behavior by the response of the respondents in terms of their level of agreement or disagreement with the statements of the scale, from (strongly disagree) to (strongly agree) as shown in Table (1).

Table (1): Question Weights

Category	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Degree	1	2	3	4	5

Statistical test for normal distribution of data: Prior to testing for the association of the study

variables, a linearity test of the variables was performed (Kolmogorov test). This implies that data are normally distributed as shown in Table (2).

Table (2): Normal Distribution Test

Tests of Normality	Kolmogorov-Smirnov[a]	
	df	Sig.
Adoption Rate of Generative AI Tools	305	.099*
Quality of scientific research	304	.200*
*. This is a lower bound of the true significance.		

Reference: Results of program SPSS V26.

Table (2) shows that the P values for both the adoption of generative AI tools (0.099) and the quality of scientific research (0.200) were greater than 0.05, indicating that the data are normally distributed. Accordingly, parametric tests will be used to analyze the data. As shown in Figure (2) shows the normal distribution of the data, in addition to a P-P Plot showing the linearity of the data as shown in Figure (3).

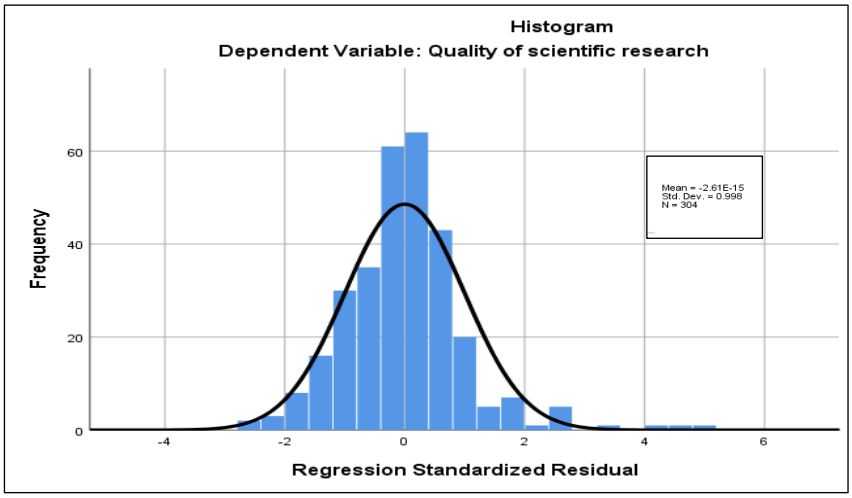

Figure (2): Histogram of Data Distribution

Reference: Results of program SPSS V26.

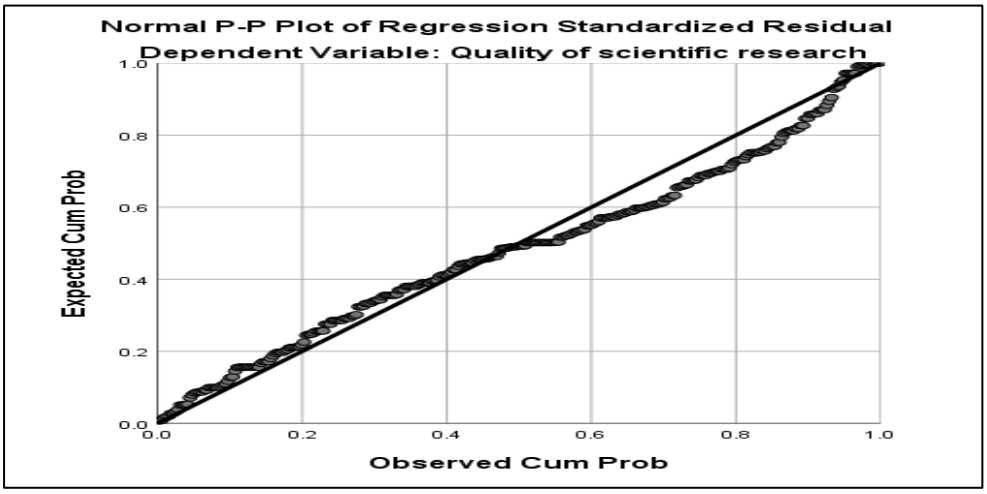

Figure (3): P-P Plot of Model Linearity

Reference: Results of program SPSS V26.

2.9 Construct Reliability

Reliability means that "all of the statements are being used on a single general dimension, and that there's a probability that if you gave the same set of statements on the second test you would get an identical result." as shown in Table (3).

Table (3): Reliability coefficients of the research measurement tool

Variables	N of Items	Cronbach's Alpha
Ease of Use	**4**	**0.85**
Dependence	**4**	**0.70**
Challenges & Risks	**4**	**0.83**
Originality & Innovation	**4**	**0.81**
Scientific Accuracy	**4**	**0.71**
Academic Standards Compliance.	**4**	**0.82**
Total	**24**	**0.96**

Reference: Results of program SPSS V26.

The reliability coefficient values (Cronbach's alpha) are displayed in table (3), which indicates the consistency of the statements for each aspect and then for the overall statement consistency. The alpha coefficient ranged from (0.933) to (0.963), a very high level indicating the confirmatory of the internal consistency for all (24) items. At the sub-dimensions level, the Ease-of-use dimension had the highest value (0.857), followed by challenges and risk (0.834) and followed by academic standards Compliance (0.823), all these values are within the high reliability level. The factors of Originality & Innovation (0.810), Scientific Accuracy (0.710) and Dependence (0.70) also reached acceptable levels of reliability. These findings validate the questionnaire and its feasibility.

3. Theoretical Part

3.1 The Idea of Artificial Intelligence Understanding Things as We Do

Generative AI is one of the most interesting advancements in artificial intelligence technology. The next generation of digital communication – the ability of machines to generate new and original content, such as text, images, video and audio – could upend the status quo in content generation and transform the dynamics of the creative industries. These models use sophisticated models like deep neural networks and transformers in order for them to generate content that seems to be similar to human imagination [6],[7]. Generative AI is used in a number of fields such as education, scientific research, design, creative industries and more -- offering assistance in accelerating creative processes, increasing productivity, and assisting in the creation of out-of-the-box, original and therefore more innovative products. It assists with the analysis of data, brings the exploration of complex relationships to light, and enhances the quality of scientific products within an academic and scholarly setting [3]. Additionally, general AI benefits applied economics, health, and society in terms of improving productivity, eliminating human errors, and addressing new challenges. It has a strategic dimension as well, in the context of sustainable

development and global challenges like cyber security and crisis management [8]. The answer to that is yes, but only as the result of very cautious usage under high ethical standards and without excess.

3.2 Top generative AI tools:

- **GPT-3**, had Chat GPT (1), created by Open AI and extracted from the GPT-3. 5 architectures, is generally excellent at natural language dialogue, question answering and content creation in multiple domains. Its educational use cases (ranging from concept explanations, problem solving to language teaching) have been further scaled with the release of models based on GPT-4, released in March 2025, e.g., Chat GPT Edu for educational contexts [9] . Released by Google in March 2023, Bard is a multilingual aware model for tasks like translation, summarization, and creative writing [10] .
- **Claude**, the model published by Anthropic in March 2023, is distinguished by its capability to digest lengthy documents and respond accurately to sophisticated questions; free and premium tier access is provided [11] .
- **Perplexity** was released in 2023 and made a name for itself as an AI search and research assistant that not only lists its sources, but actually integrates academic content through partnerships, such as this Willy partnership, making its reliable for scholarly research [12] .
- **Quill Bot** - is an innovative- plagiarism-removing software, providing professional rephrasing services for students and researchers with rephrasing tool available on word-processing platform .
- The app is available with a free and paid plan, and presents to 125 words per paraphrase when using the free plan.

3.3 The Pros and Cons of Generative AI in The Scientific Research

To learn about the advantages and disadvantages of using generative AI tools in scientific research, as shown in Table (4).

Table (4): Pros and Cons of using AI in scientific research [13],[14].

Pros	Cons
• Speed in collecting and analyzing large data sets. • Helps in reviewing scientific literature and obtaining the required information very quickly. • Discovers hidden relationships in big data. • Increases the accuracy of predictions and scientific frameworks. • Saving time and effort from routine tasks performed by researchers. • Analyzing large amounts of research helps generate new ideas. • Management decision support, which derives its power from the accuracy of automated information processing.	• Researchers lose critical thinking due to their complete reliance on generative AI tools. • Researchers constantly need to learn technical skills to use the tools efficiently. • Security and privacy are issues, especially when using sensitive and confidential data. • Human creativity is often limited compared to relying entirely on generative AI. • Interpreting models (deep neural networks) requires high-quality training and expertise. • The presence of biases in the data affects the results. Difficulty interpreting some models (especially

3.4 Challenges and Risks of Adopting Generative AI Tools in Scientific Research

1. AI hallucinations are the biggest problem, as they produce false information by convincing researchers that the content is real. Hallucination rates have exceeded 90% of literature reviews generated using modern AI tools, and this poses a real threat to the integrity of scientific research [15].
2. Ethical concerns remain a real risk, as AI models are trained on very large data sets containing significant social biases, which unintentionally seep into AI outputs, which in turn are the results of researchers.
3. Most AI systems are opaque and opaque, leaving researchers confused, as they face limited certainty about how the models' outputs are generated, as well as the difficulty of producing accurate results in scientific research [16].
4. Plagiarism: The use of generative AI tools helps raise the challenge of plagiarism, which in turn weakens the required standards and leads to questions about who the real author is, which in turn negatively impacts the integrity of scientific research [17].

4. Empirical Part

4.1 Descriptive Analysis of Demographic Variables

The presentation and description of demographic variables inform characteristics of the study sample (Academic Status, Age, Gende) in order to establish the distribution of the participants and their basic attributes. This process contributes to the demonstration of the generalizability of the data, gives a detailed analysis of how the sample reflects the research population and guarantees its homogeneity, according to what was aimed for. It also tends to make the interpretation of later statistical tical results more precise save Format and objective as well, as shown in Table (5).

Table (5): The distribution of the sample of the demographic variables

No	Variants	class	Frequency	Percent
1	Status Academic	Faculty	103	33.9
		student	201	66.1
2	Age	18-24	171	56.3
		25-31	97	31.9
		over 32	36	11.8
3	Gender	female	126	41.4
		male	178	58.6

Reference: Results of program SPSS V26.

Table (5) shows the distribution of the sample according to demographic variables. Interestingly, the number of graduate student respondents was larger (66.1%) compared to faculty members (33.9%), indicating a high level of interest in the survey among graduate students. Regarding age, the most represented group was the 18-24 age group (56.3%), followed by the 25-31 age group (31.9%), and the upper (32) age group had the lowest (11.8%), indicating the dominance of youth in the sample. Regarding gender distribution, (58.6%) were males and (41.4%) were females,

which, although relatively equal, favors males.

5. Literature Review

- **Chan, J., Bradford, S., Yeo, K., Chang, E., Hammond, L., and Cosgrove, T.(2025) [18].** This study aimed to explore the impact of doctoral students' use of artificial intelligence tools. The sample consisted of 150 doctoral students. A survey interview methodology was used. The results showed widespread and proficient use of artificial intelligence tools, with concerns about integrity. The study recommended training the study sample on the transparent use of generative artificial intelligence tools.
- **Boyd, B., and Harding, D.(2025) [19].** This study aimed to clarify the impact of genetic AI on doctoral dissertation supervision. A conceptual analysis methodology was used using generative artificial intelligence tools. The results showed that genetic AI is a third party in the supervisory triad. It recommended the development of program-level policies and the education of both supervisors and researchers on artificial intelligence tools.
- **Anani, J. E., Nyamieki, E., and Baffour-Kodwo, D.(2025) [20].** This study aimed to explore graduate students' attitudes toward artificial intelligence (AI) and its use in academic writing using TPB. The sample consisted of (339) graduate students. The study demonstrated a positive attitude and frequent use of AI tools for idea generation, grammar checking, and paraphrasing, and a lack of total machine reliance. It recommended systematic training in ethics to achieve academic benefit.

The current study is distinguished from other previous studies in that it seeks to explore the impact of adopting generative artificial intelligence tools on scientific research by faculty members and graduate students at Al-Mustansiriyah University, which is a recent topic (to the researcher's knowledge) that has not been specifically addressed.

6. Results And Discussion

Results of the main question: The extent to which faculty members and graduate students at Al-Mustansiriyah University use generative artificial intelligence tools in their scientific research. To answer this question, the data were evaluated using the arithmetic mean and standard deviation for all question phrases. The phrase score was also classified according to the arithmetic mean: 1-2.33 (low), 2.34-3.66 (medium), 3.67-5 (high). as shown in Table (6).

Table (6): Arithmetic mean, standard deviation, and level of expressions

Code	Question	Mean	Std. Deviatio	Level
A1	**I find generative AI tools easy to understand and use.**	**3.44**	**1.605**	**mediu m**
A2	**I don't require advanced technical skills to use these tools.**	**3.35**	**1.723**	**mediu m**

A3	**Generative AI tools provide convenient and simple user interfaces.**	**3.46**	**1.581**	**mediu m**
A4	**I can operate these tools efficiently without the need for advanced training.**	**3.37**	**1.713**	**mediu m**
A5	**I frequently rely on generative AI tools in preparing my research and theses.**	**3.38**	**1.706**	**mediu m**
A6	**I find it difficult to complete some research tasks without using these tools.**	**3.31**	**1.709**	**mediu m**
A7	**Generative AI tools have become an essential part of my scientific research.**	**3.45**	**1.602**	**mediu m**
A8	**I resort to these tools even for simple tasks because they improve the quality of my research and theses.**	**3.47**	**1.569**	**mediu m**
A9	**I fear that relying on generative AI will impair my critical thinking.**	**3.47**	**1.575**	**mediu m**
A10	**I believe that the outputs of these tools may sometimes lack accuracy and reliability.**	**3.50**	**1.661**	**mediu m**
A11	**I fear that the uninformed use of these tools may lead to academic plagiarism.**	**3.44**	**1.564**	**mediu m**
A12	**I perceive ethical challenges associated with the use of generative AI in research.**	**3.36**	**1.579**	**mediu m**
A13	**Using generative AI tools has helped me formulate new ideas in my research.**	**3.42**	**1.582**	**mediu m**
A14	**These tools contribute to improving my ability to produce original and unconventional research.**	**3.53**	**1.627**	**mediu m**
A15	**I believe that generative AI tools encourage me to think innovatively.**	**3.46**	**1.655**	**mediu m**
A16	**These tools enable me to develop a distinctive scientific contribution in my field of specialization.**	**3.35**	**1.664**	**mediu m**
A17	**I find that generative AI tools contribute to raising the level of accuracy in formulating information.**	**3.19**	**1.545**	**mediu m**
A18	**These tools help me reduce linguistic and scientific errors in research.**	**3.36**	**1.579**	**mediu m**
A19	**These tools make it easier for me to verify the validity of certain information and references.**	**3.42**	**1.582**	**mediu m**
A20	**I believe that generative AI increases the credibility of research results.**	**3.38**	**1.608**	**mediu m**
A21	**I find that generative AI tools contribute to raising the level of accuracy in formulating information.**	**3.44**	**1.566**	**mediu m**

A22	**These tools help me reduce linguistic and scientific errors in research.**	**3.33**	**1.595**	**mediu m**
A23	**These tools make it easier for me to verify the validity of certain information and references.**	**3.43**	**1.588**	**mediu m**
A24	**I believe that generative AI increases the credibility of research results.**	**3.53**	**1.627**	**mediu m**

Reference: Results of program SPSS V26.

From Table: (6) the overall mean responses obtained on 5-point scale ranged (3.19-3.53). This means that faculty members and graduate students agree on average that generative AI tools can indeed assist in conducting scientific research, and they have a positive view of them, but they do not have a strong orientation toward them. For "Ease of Use" (questions A1-A4), the mean scores (ranging from 3.35 to 3.46) indicates that faculty members and graduate students find these tools easy to use because they do not need a high technical expertise level and their interfaces also tend to be friendly. This shows that generative AI programs offer decent ease of use.

Averages for (questions A5 - A8), "Dependence" had a range of 3.31 to 3.47, suggesting a preference to rely on these tools for use, including everyday type research, in other words, demonstrating a greater reliance on the use of the tools as part of the research process.

Questions (A9-A12) "Challenges & Risks" were rated between 3.36 and 3.50, underlining a notable awareness of the risks, especially when it comes to concerns regarding weak critical thinking (A9) or forms of plagiarism (A11). This suggests that the tools are used by both staff and students, albeit in a critical but ethical and academic responsible way with it .

Questions (A13-A16), immediately following "Originality & Innovation", also demonstrated the range of $3.35 \leq \text{mean} \leq 3.53$ and score as some of the highest suggesting an agreement between faculty and students that generative AI also assists with the ability to generate new ideas and, in turn, enhance innovation, and offer original research in the overall .

Questions (A17-A20), "Scientific Accuracy", had mean scores of (3.19 - 3.53). A17 (3.19) also had the lowest mean with regard to improving the accuracy when preparing information. Therefore, some faculty members and students seem to have questioned it. The other two items (minimizing errors and enhancing credibility) were rated at an average degree of agreement of 3.46, and 3.72, respectively, indicating a moderate perception of the tools' contribution to improving scientific research quality and credibility .

and the SD from 1.54 to 1.72, reflecting quite a big variation among the opinions of respondents; while some of the faculty members and students consider the tools to be very useful, other are conservative and not fully convinced. The findings showed there is a slightly positive attitude of academic and graduate students towards generative AI tools in science research .

As for questions (A21-A24) "Academic Standards Compliance ", the results showed that the averages ranged between (3.33 - 3.53), which reflects an average level of appreciation. The strongest evaluation was for question (A24), as participants believe that these tools contribute to enhancing the credibility of research results (3.53), which is an

indicator of relative confidence in the value of their outputs. The weakest evaluation was for question (A22), with an average of (3.33), reflecting doubts about their full ability to reduce linguistic and scientific errors. The other items also showed that generative intelligence helps improve the accuracy of formulation and verify some references, but not in an ideal manner. The high standard deviations reveal a clear variation among sample members in the degree of confidence in these tools. Therefore, it can be said that generative intelligence represents an important aid in improving the quality of research, but its use still requires human review and conscious review to avoid risks to accuracy and reliability.

To illustrate the impact of using generative AI tools on the quality of scientific research, the researcher used the Eta and Eta Squared coefficients.as shown in Table (7).

Table (7): Power of influence of Generative AI Tools on Research Quality

Variables	Eta	Eta Squared
Ease of Use * Originality & Innovation	**.839**	**.704**
Ease of Use* Scientific Accuracy	**.844**	**.712**
Ease of Use* Academic Standards Compliance	**.934**	**.872**
Dependence * Originality & Innovation	**.798**	**.636**
Dependence * Scientific Accuracy	**.805**	**.648**
Dependence * Academic Standards Compliance	**.800**	**.640**
Challenges & Risks * Originality & Innovation	**.903**	**.815**
Challenges & Risks * Scientific Accuracy	**.877**	**.769**
Challenges & Risks * Academic Standards Compliance	**.989**	**.978**
Adoption Rate of Generative AI Tools * Quality of scientific research	**.927**	**.859**

Reference: Results of program SPSS V26.

Based on Table (7), status of the "Ease of use" was highly correlated with the quality dimensions of the scientific research. Coefficient (Eta) score increased to (0.839) for "Originality & Innovation" and (0.84) for "Scientific Accuracy" and significantly increased when based on "Academic standards Compliance" (0.93). The (Eta square) values show how much "Ease-of-use" accounts for (70.4%) of "Originality & Innovation", (71.2%) of "Scientific Accuracy" and for (87.2%) of "Academic standards Compliance". This highlights the crucial function of the ease of use of the artificial intelligence tools in the enhancement of adherence to the academic standards. The correlation strength of the tool "Dependence" variable was less than ideal compared to the "Ease-of-use" variable, as (Eta) scores varied between (0.798) and (0.805) while (Eta square) scores explained between (63.6%) to (64.8%) in the variance of "Originality & Innovation", "Scientific Accuracy", and "Academic standards Compliance". This finding suggests that the use of AI tools also has a positive impact on the quality of academic writing, though to a lesser extent than ease of use. The "Challenges and Risks" sub-scale reached very high coefficients in particular with

the regards to adhering to "Academic standards Compliance". Eta was (0.989), eta squared explained (97.8%) of the relationship, which was the highest value between variables. Explained variance of the variance was higher for "Originality & Innovation" (81.5%) than for "Scientific Accuracy" (76.9%). These findings suggest that the more researchers are aware of these difficulties or risks (e.g., plagiarism or weak critical thinking) the more they try to follow certain standards and to produce science of higher quality .

The results show how the adoption rate of generative AI tools correlates with the quality of scientific research. The eta coefficient value was 0.927, indicating that the correlation between the two variables is exceptional and almost perfect. The eta square value of 0.859 also means that the adoption of these tools explains 85.9% of the variance in scientific research quality. This demonstrates that the correlation is not only statistically significant but also has a significant impact on how scientific research is produced. as shown in Figure (4).

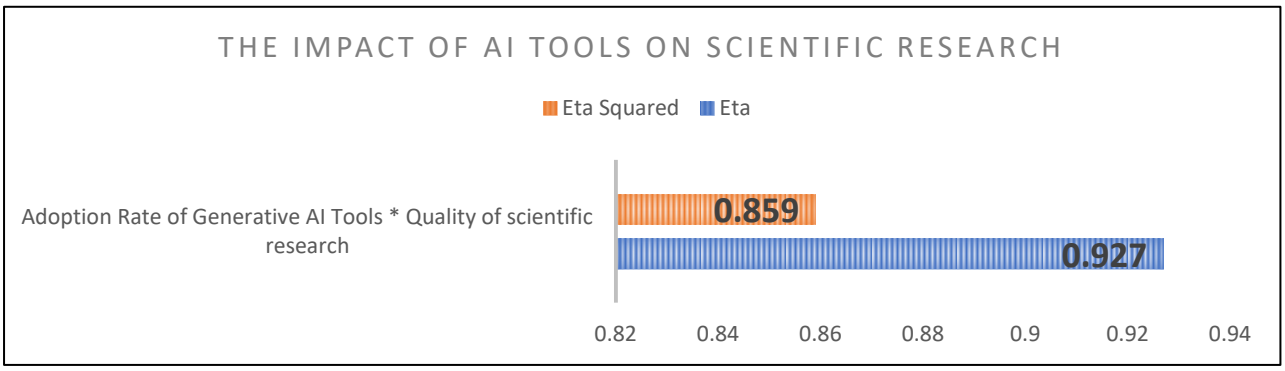

Figure (4): Association & Explain the Variation of Generative AI Adoption in Researches

Reference: Results of program SPSS V26.

Results of sub-question (1): The Ease-of-use AI-generative tools contributes minimally to the cause of reinforcing the quality of scientific research by increasing the originality and innovativeness of its outcomes, securing scientific precision in its findings, and enforcing researchers' compliance with the pre-approved academic standards as shown in Table (8).

Table (8): Ease of Use and the dimensions of scientific research

Variables		Originality & Innovation	Scientific Accuracy	Academic Standards Compliance	Quality of scientific research
Ease of Use	Pearson Correlation	.821**	.835**	.923**	.854**
	Sig. (2-tailed)	.000	.000	.000	.000
**. Correlation is significant at the 0.01 level (2-tailed).					

Reference: Results of program SPSS V26.

On the other hand, Table (8) reads that there is a significant positive correlation between (Ease of Use) and (originality, innovation, scientific accuracy and adherence to academic standards), quality of scientific research and as a whole. The coefficients of correlation between ease of use and these attributers are r= (0.821, 0.835, 0.923, 0.854) respectively, and all of them are sure from the (0.01) level of significance which suggest the more the generative artificial intelligence tools are easy to be used (by faculty members and students) the more they will be perceived as positive related to raising the research accuracy, innovation and compliance with academic standards.

Results of sub-question (2): What is the relationship between dependence on generative artificial intelligence tools and the quality of scientific research with regards to its contribution to stimulating originality and innovation, attaining scientific accuracy, and encouraging academic compliance? As shown in Table (9).

Table (9): Dependence and Research Quality Dimensions

Variables		Originality & Innovation	Scientific Accuracy	Academic Standards Compliance	Quality of scientific research
Dependence	Pearson Correlation	.778**	.786**	.782**	.785**
	Sig. (2-tailed)	.000	.000	.000	.000
**. Correlation is significant at the 0.01 level (2-tailed).					

Reference: Results of program SPSS V26.

From Table (9) It is evident that there is a strong statistically significant relationship between the Dependence variable and the Quality of Scientific Research Originality & Innovation, Scientific Accuracy, adherence Academic standards), and the quality of scientific research as a whole. The correlation coefficient Values were (.778) and (. 786), underscoring the strong influence of dependency on various aspects of research quality. We observe that the strongest correlation was with scientific rigor (. 786), suggesting that use of research tools and methods would lead to increased reliability of results and reduced error. STRONG correlation with science as a whole (0. 785), thus verifying dependability as a central driver in facilitating the efficiency of the research process and attends effects. All probability values (Sig. =. 000) that was statistically significant at (p 0.01) showing that perceptions about the relationship were reliable. This is why the more they depend on new research tools, the quality and productivity of researchers rises. Nevertheless, reliance on this aid can potentially be a hindrance to creativity and academic freedom with therefore, the need for a balance between exploiting new technology and preserving one's own research capabilities.

Results of sub-question (3): What is the associations between implication of the challenges and risk of adopting the generative artificial intelligence tools with the quality scientific research considering the effect on attaining the originality and innovation, the level of scientific accuracy and the degree of commitment of the researchers to the academic standards. As shown

in Table (10).

Table (10) Challenges & Risks and Research Quality Dimensions

Variables		Originality & Innovation	Scientific Accuracy	Academic Standards Compliance	Quality of scientific research
Challenges & Risks	Pearson Correlation	.894**	.868**	.987**	.929**
	Sig. (2-tailed)	.000	.000	.000	.000
**. Correlation is significant at the 0.01 level (2-tailed).					

Reference: Results of program SPSS V26.

From the reading of Table (10), it is understood that the relationship between challenges and risks and all dimensions are highly positively correlated. The strongest association was with adherence to academic standards (.=. 987), it implies that enhanced challenges and risks drive researchers to be more abiding the academics norms to prevent mistakes or spoil the quality of a research report. There is also a strong relationship with the Quality of scientific research (. 929), suggesting that experiencing difficulties leads to better quality research due to pushing researchers towards more carefulness in scientific work. The relations with Originality and Innovation (. 894) and scientific Accuracy (. 868) matters are highly significant as well such that challenges seem to be driving forces, in terms of creativity and critical thinking and in improving quality for the results. All probability values (Sig. =. 000) are less than (0.01), which indicates a strongly statistical correlation. The existence of challenges and risks during the research work may also be perceived as a dimension of dual effect; for one it may motive for academic quality and hard work and for the another it needs effective management so as it does not become breaking point as an obstacle to the research completion of the researchers.

Results of sub-question (4): Are there any statistically significant differences, at the significance level (0.05), between the mean respondents' ratings assigned to the variable of the Al-Mustansiriyah University as to adopting generative AI tools in scientific research based on the variable of the academic status (faculty member - student) and gender (male - female)?

1. The contrast in average degree of adoption of studied generative AI tools in scientific research of sample members was estimated for a gender variable (male is a reference category) and presented in the table below as shown in Table (11).

Table (11) Study sample according to gender variable and T-test

Gender	N	Mean	Std. Deviation	t	Df	Sig(2-tailed)
Male	178	0.51	0.289	1.196	302	.232
Female	126	0.48	0.273			

Reference: Results of program SPSS V26.

By perusing Table (11) we observe absence of sex difference in the use of generative artificial intelligence tools in research as per T-test for two independent samples. Average for males was 0.51 (SD = 0.289) and for females 0.48 (SD = 0.273). However, because the difference in averages was only slightly in favor of males, the value (t = 1.196) with a significance level of (Sig = 0.232) to the effect > (0.05), (no significant differences that are considered as a factor).

2. The mean gap of the adoption degree of generative artificial intelligence tools between faculty and graduate students was estimated using the academic status variable (Faculty - student) as shown in Table (12).

Table (12): Study sample according to the academic type variable and T-test

Academic-title	N	Mean	Std. Deviation	T	df	Sig(2-tailed)
Faculty	**103**	**0.49**	**0.282**	**0.586**	**302**	**0.558**
Student	**201**	**0.51**	**0.284**			

Reference: Results of program SPSS V26.

As we can see from the table (12), we don't have a significant difference of average adoption on AI tools in scientific research between faculty and student. The mean of faculty members was (0.49) (SD = 0.282) and that of students was (0.51) (SD = 0.284). (Alarming differences in averages) and the (t) test result was (0.586 with Sig = 0.558) > (0.05) which means that there are no significant differences between the two groups.

7. Conclusions

1. The average responses of faculty members and graduate students regarding the use of generative AI tools, ranged between 3.19 and 3.53, mean they all agreed that these tools contribute to improving the quality of scientific research.
2. There is a statistically significant correlation between the use of generative AI tools and the quality of scientific research, with an eta coefficient of 0.927, indicating a very strong correlation.
3. The study variables (gender: mean for males 0.51, standard deviation 0.289; for females 0.48, standard deviation 0.273; academic rank: mean for faculty members 0.49, standard deviation 0.282; for students 0.51, standard deviation 0.284) showed no statistically significant differences in the average use of generative AI tools in scientific research between faculty members and graduate students.
4. There are big problems with using generative AI tools in scientific research because they have to follow academic standards. There was a 0.987 correlation between the use of AI tools and following academic standards. This means that researchers are very interested in following these standards to avoid mistakes or make their work better.
5. These tools have greatly facilitated and accelerated access to scientific resources.

8. Recommendations

1. Put more focus on hands-on training through workshops and classes, and update scientific

curricula to incorporate how to use generative AI technologies to make scientific research better.

2. Make sure that everyone can see the rules on how to utilize generative AI tools fairly so that everyone has the same chance to acquire training and help.
3. Make standards about how to utilize generative AI in a moral way, and follow the rules of academic integrity so that it does not get used freely and without control.
4. Make platforms easy to use by offering them simple interfaces and letting people use their own languages. This will make it easier for people to use them without having any concerns with technology.
5. Work on combining generative AI technologies with global databases to make it easier to find information and speed up the research process. Focus on university libraries and research institutes.

9. References

[1.] Contractor, Z., & Reyes, G. (2025). Generative AI in higher education: Evidence from an elite college. arXiv preprint arXiv:2508.00717. https://arxiv.org/abs/2508.00717.

[2.] Education Sciences, 15(4), 501. https://doi.org/10.3390/educsci15040501.

[3.] Dwivedi, Y. K., Hughes, L., Baabdullah, A. M., Ribeiro-Navarrete, S., Giannakis, M., Al-Debei, M. M., & Dennehy, D. (2023). The impact of generative artificial intelligence on academia and society: Disruption, challenges, and opportunities. International Journal of Information Management, 71, 102642. https://doi.org/10.1016/j.ijinfomgt.2023.102642.

[4.] Perkins, M., & Roe, J. (2024). Generative AI tools in academic research: Applications and implications for qualitative and quantitative research methodologies. arXiv preprint arXiv:2408.06872. https://arxiv.org/abs/2408.06872.

[5.] Alshamy, A., Al-Harthi, A. S. A., & Abdullah, S. (2025). Pe rceptions of generative AI tools in higher education: Insights from students and academics at Sultan Qaboos University.

[6.] Brown, T. B., Mann, B., Ryder, N., Subbiah, M., Kaplan, J., Dhariwal, P., ... & Amodei, D. (2020). Language models are few-shot learners. Advances in Neural Information Processing Systems, 33, 1877–1901.

[7.] Kalyan, K. S., & Sangeetha, S. (2021). A review of deep learning approaches for natural language processing. Journal of Artificial Intelligence Research, 70, 345–397. https://doi.org/10.1613/jair.1.12345

[8.] Vinuesa, R., Azizpour, H., Leite, I., Balaam, M., Dignum, V., Domisch, S., ... & Nerini, F. F. (2020). The role of artificial intelligence in achieving the Sustainable Development Goals. Nature Communications, 11(1), 233. https://doi.org/10.1038/s41467-019-14108-y

[9.] OpenAI. (2025). Introducing ChatGPT Edu for academic institutions. OpenAI.

[10.] Business Insider. (2023). Google's Bard: Launch details and capabilities

[11.] Anthropic. (2023). Claude: High-capacity generative AI for long document understanding.

[12.] Perplexity AI & Wiley. (2025). Integration of Wiley scholarly content into Perplexity's Enterprise Pro AI search.

[13.] He, Shijun / Yang, Fan / Zuo, Jian-Ping / Lin, Ze-Min: ChatGPT for scientific paper writing—promises and perils. In: Innovation (Camb) 4 (2023), Art. 100524. DOI: 10.1016/j.xinn.2023.100524.

[14.] Chauhan, Chhavi / Currie, George: The Impact of Generative Artificial Intelligence on Research Integrity in Scholarly Publishing. In: The American Journal of Pathology 194 (2024), H. 12, S. 2234–2238. DOI: 10.1016/j.ajpath.2024.10.001

[15.] Fui-Hoon Nah, A., et al. (2025). Can generative AI reliably synthesise literature? Exploring hallucination issues in ChatGPT. AI & Society. https://link.springer.com/article/10.1007/s00146-025-02406-7

[16.] Bjelobaba, S., Waddington, L., Perkins, M., Foltýnek, T., Bhattacharyya, S., & Weber-Wulff, D. (2024). *Research Integrity and GenAI: A Systematic Analysis of Ethical Challenges Across Research Phases*. arXiv. arXiv . https://arxiv.org/abs/2412.10134

[17.] Elali, Faisal R. / Rachid, Leena N.: AI-generated research paper fabrication and plagiarism in the scientific community. In: Patterns 4 (2023), Art. 100706. DOI: 10.1016/j.patter.2023.100706.

[18.] Chan, J., Bradford, S., Yiu, K., Zhang, E., Hammond, L., & Cosgrove, T. (2025). Mapping PhD students' use of AI tools: Usage patterns, impacts, and ethical considerations.

[19.] Boyd, P., & Harding, D. (2025). Generative AI as a third participant in doctoral supervision: Implications for practice and policy.

[20.] Anani, G. E., Nyamekye, E., & Bafour-Koduah, D. (2025). Postgraduate students' attitudes and use of AI for academic writing: A theory of planned behavior approach.