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Article

The role of artificial intelligence as a mediating variable in the relationship between the quality of higher education and the ethics of scientific research among faculty members

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Abstract: Mediating role of artificial intelligence in the relationship between higher education quality and scientific research ethics among faculty members: A Study in carrying out the study, specific research objectives were derived, and based on the derived objectives, null hypotheses were formulated and tested for the study. This study, thus, employed survey research design. This study's population comprised postgraduate students from Middle Eastern University, Jordan, with 1200 students. Using the population, a sample size of 291 respondents was selected based on Krecie and Morgan The students in the sample completed Google Forms questionnaires. The data were statistically processed, and the analysis's most significant level was 0.25. The research questions were analyzed using descriptive statistics, and the null hypothesis was tested using Pearson Product Moment Correlational Analysis (PPMC). Also, the study showed a significant relationship between artificial intelligence and the quality of higher education and the relationship of significance between artificial intelligence and ethics in scientific research. The researcher suggested a need for ongoing education, cross-discipline cooperation, and the development of solid ethical frameworks for the integration ethics of AI academia.

Keywords: artificial intelligence; quality; higher education; ethics; scientific research; faculty members

1. Introduction

Today, we are in a paradigm shift where technology and education are fused to evolve how students are educated. One of the most significant developments in education in recent years has been using AI in teaching and learning methodologies, scientific research, and ethical considerations across colleges and universities. Considering this transition, the connection between higher education and the code of ethics upholding scientific research becomes more important to be investigated. Additionally, the fascinating realm of artificial intelligence as a potentially moderating variable in this association should be explored in depth.

Higher education is a critical furnace for scholarly inquiry, knowledge dissemination, and critical thought. Such institutions have a role to play because the academic standards observed in such institutions affect many future scholars and also determine the ethics and knowledge of future scholars. Research infrastructure, curriculum, faculty competence, and teaching and pedagogic processes are well-developed and combine to create a quality paradigm colloquially associated with these institutes (Ramadan et al., 2024). According to Ahmad (2019), the codes of ethics that create spaces for collective ownership in practice and the culture to address the climate of responsibility and integrity among faculty members devoted to scientific research

must be cyclical and constant within the educational ecosystem. Higher education consists of many levels. It is of little note that academic quality (but not limited to curriculum relevance, research output, instruction learning outcome, and institution resources) is always the subject of the assessment (Ewell, 2003). Satisfaction and learning outcomes form proper measures of teaching effectiveness, a critical factor in establishing the quality of the education system (Kember et al., 2008).

Additionally, as noted by Marginson (2012), the responsiveness of the curricula to the needs of industry and society (specimen of quality education) is an essential and adequate measure of the dynamism of curricula. Research output from academic institutions is evaluated on the output levels defined by citation counts and their contribution to specific domains of knowledge (Furstenau and Rauhvargers, 2015). The resources at an educational institution have a significant impact on its ability to offer quality education. It primarily checks the level of infrastructure, technology, and faculty (Han and Mok, 2016). The proliferation of artificial intelligence tools and platforms has initiated a paradigm shift in education by leveraging unprecedented levels of student engagement, inquiry, and learning (Alhawamdeh et al., 2023). Artificial intelligence (AI) algorithms applied to scientific investigation allow modeling, prediction, and data analysis, improving the efficiency and accuracy of scientific discovery Indeed, as to AI in scientific and research activities specific to higher education, the ethical implications are controversial. Fraihat et al. (2023) discovered that data relating to the performance of individual students can be used by an adaptive learning system powered by AI, allowing each learning trajectory to be personalized. To accommodate the needs of learners with a range of learning styles and capabilities, these systems leverage algorithms to identify common learning patterns and deliver personalized feedback (Dahl et al., 2014). Additionally, AI-driven chatbots and virtual assistants allow educators to assist students instantly, as they can get attention and answers to questions when needed (Ally and Prieto-Blázquez, 2014). Because machine learning algorithms can perform commonplace and high-stakes tasks, they could automate specific administrative processes, such as admissions processing and scheduling (Liang et al., 2024). Predictive analytics-based models that identify at-risk students and recommend remedial action can be implemented to promote student retention (Arnold and Pistilli, 2012).

According to Hassanien et al. (2017), specific pupils' actions are predicted based on past information on their performance. The use of a powered adaptive learning program (2017) allows customization of educational experiences by entering past student data, and the adaptive learning system adjusts/matches the amount of information to the needs and learning preferences of the students. According to Dahl et al. (2014), the ability of these systems to evaluate data and performance in student learning, identify learning trends, and deliver customized support could result in improved academic outcomes. AI-powered virtual assistants and chatbots facilitate instant and personalized student support by responding to their questions and providing guidance (Ally and Prieto-Blázquez, 2014). Besides ensuring the appropriate allocation of resources, scheduling, and admissions, AI aids academic management by executing other administrative tasks (Graesser et al., 2018). However, an intriguing experimental branch of York University concerning the role of AI is positioned at the threshold of quality higher education and ethics in science research

(Yahiya et al., 2023). As an intermediary technology (Ahmad et al., 2024).AI can change how faculty conduct scientific investigations and how they should behave ethically. A comprehensive understanding of the complex relationship between artificial intelligence (AI) and the ethical considerations for research professors working in the academic sector is more critical than ever.

It is against this backdrop that the main aim of this study is to investigate how artificial intelligence (AI) mediates tensions surrounding the ethical and quality dimensions of the higher education game as experienced by scientific research academics. However, specifically, this study will investigate the relationship between artificial intelligence and the quality of higher education and artificial intelligence and ethics in scientific research among the faculty members of Middle East University, Jordan. Accordingly, as a reflection of the changing educational paradigms, the goal of this research is to help elucidate the complex interplay of factors that shape and ultimately facilitate ethical scientific research, standards, and motivation—by examining these interrelated domain.

2. Theoretical framework

This study adopts the Resource Dependency Theory introduced by Pfeffer and Salancik in 1978 as a means of elucidating the impact of external resources on organizational behavior. Businesses may obtain the resources "they need to survive" by negotiating and adapting to their external environment, according to their thesis. This implies that the management of an organization's external resources determines its competitiveness. argues that this is even more critical than the value of their own resources.

The central emphasis of Resource Dependency Theory (RDT) in the context of AI integration pertains to the strategic utilization of external resources by organizations in order to efficiently integrate AI. Organizations depend on external resources to ensure their survival and expansion, as stated by RDT. According to this theory, organizations rely on various resources—expertise, technology, partnerships, data, and partnerships—when integrating AI (Ahmad and Allahham, 2024). Due to the specialized nature of AI incorporation, numerous organizations pursue partnerships with autonomous authorities or firms that specialize in AI. Organizations may also establish partnerships or data-sharing agreements due to the fact that AI systems require access to a variety of high-quality information. The importance of technology dependencies in the incorporation of AI is underscored by RDT. In certain cases, organizations might be required to depend on third-party providers or AI platforms in order to acquire the necessary technological infrastructure and tools to implement AI Hence, resource dependency theory provides a framework for understanding how organizations proficiently incorporate artificial intelligence (AI) into their goals and activities by controlling their dependence on external resources, connections, and knowledge.

As far as the past empirical studies go, over more years, they have observed the four-fold dimensions of the effect of advanced information and communications Technologies on Higher Education through the ethical, social, and educational implications of Artificial Intelligence. To give an example, researched on AI. The talks

also include the first results of a poll of professors at Cairo University, Ain Shams University, The Arab Academy of Science and Technology (AAST), The German University in Cairo (GUC), and The American University in Cairo (AUC) about the pros and cons of AI and how it can be used relatively and quickly in Egypt's higher education system. The study used qualitative research methods comprising free-form, semi-structured interviews of individuals called. We then used a stratified sampling technique to select the fifteen participants for this study through a snowball sampling process. We conducted the interviews via Zoom or at the academic members' respective institutions. Further, Venkatesh et al. proposed the Unified Theory of Acceptance and Use of Technology (UTAUT) model to guide the study. This model encompasses the following factors: Performance expectation, effort expectancy, social impact, and facilitating variables. Faculty members from the five institutions offer a range of viewpoints regarding the potential advantages and disadvantages of implementing AI in the classroom, the infrastructure currently in place to support AI implementation, and the function of AI in guaranteeing equitable access to higher education for every student. The information is presented via the UTAUT model. According to the findings, faculty members' responses to inquiries regarding effort expectations, performance expectations, and societal impact indicate that they are receptive to the implementation of AI in their respective institutions. They, too, perceive AI as a means to achieve justice and accessibility subsequent to surmounting obstacles.

On the other hand, Niu et al. (2024) investigated how interactions with students influence an AI educator's design of artificial autonomy, thereby determining how well it meets students' needs and the likelihood of their adoption. Based on the uses and gratification (U&G) theory, we create a model that shows how the autonomy of an AI educator (i.e., the ability to sense, think, and act on their own) is linked to students' desire to use an AI educator, through the lens of U&G benefits such as information-seeking gratification, social interaction gratification, and entertainment gratification. Through a survey of 789 students in China of the perception-giving partners of AI educators, the sensory-giving partners positively predicted the average intention through the mediating function between social interaction gratifications and entertainment gratifications, respectively; the thought-giving partners tended to indicate the using intention indirectly through the clarifying function of information-seeking gratifications and social interaction gratifications, which has effect since the mediating function. The action coordination of AI educators can positively envision the intention of use through the mediating influence of information-seeking and entertainment gratifications. From here, the implications are both theoretical and practical.

Mutegi and Shikokoti (2024) investigated influence of artificial intelligence on the quality of education in higher learning in University of Nairobi, Kenya. The study was based on the Constructivist Learning Theory, developed primarily by Jean Piaget in 1976. Descriptive Survey research design was used. The study targeted 4000 students, 300 lecturers, 1 Dean and 4 Chairs of Departments. A sample of 20% was used on both lecturers and students. Simple random sampling was used to select the students while census sampling was used to select ICT administrators and Lecturers. Google forms were used to collect data from the lecturers while questionnaires were

used on students and Interviews from the Deans and Chairs of Departments. The results indicated a significant and high positive correlation between Instructor preparedness and the quality of education in higher education with a coefficient of r (35) = 0.898. The null hypothesis ($p < 0.05$) was rejected. This showed that there is a correlation between involvement in decision making and lecturers' performance in public universities in Kenya The results indicated a significant and high positive correlation between Artificial Intelligence on Research and the quality of education in higher education, with a coefficient of r (35) = 0.909. The null hypothesis ($p < 0.05$) was rejected and On Adoption of Artificial Intelligence by Higher Education Institution and the quality of education in higher education. where Chi square (df = 6, Pearson Chi square (χ^2) = 58.772a and p = 0.000 at 0.05 level of significance. The study concluded that artificial intelligence influenced the quality of education in higher learning with Instructors preparedness on Artificial Intelligence, Artificial Intelligence on Research and Adoption of Artificial Intelligence by Higher Education Institution having a statistically significant relationship between on the quality of Education.

Using qualitative research with interviews, Alasmari and Al-Zahrani (2024) examined the effects of AI implementation in Saudi higher education, as well as the attitudes, perceptions, and expectations of different stakeholders related to the use of AI. The study looks at key issues related to AI in three areas: Its effects on teaching and learning; its ethical and societal implications; and the future role we anticipate AI will occupy in higher education. Using the quantitative method via online survey questionnaire, results of this study showed a favorable attitude towards using AI in higher education. It has stakeholders waking up and realizing I'm on the side of improving the teaching and learning experience; I'm going to make the administration of things better and I'm going to bring classroom innovations. In practice however, ethical considerations are crystallised by implementation guidelines for AI furnish with a sense of urgent responsiveness to privacy, security and bias concerns. During the analysis, participants imagined a future that looks like personalized learning, ethical AI, collaboration and supports for lifelong learning. In addition, Results discuss the interplay of the triad of AI aspirations, hindrances, and impacts in terms of attitudes, perceptions, and upcoming implications.

Mohammed (2024) investigated the mediating role of artificial intelligence technical skill (AI) on the relationship between effectiveness of management information system (MIS) and knowledge acquisition (KA) in Jazan University, the study used descriptive and analysis methods, A questionnaires used for data collection, (229) questionnaires were distributed, (177) valid questionnaires are returned about (77.29%) of the sample size, Several statistical methods have been used. The study found that there is positive and significant relationship between MIS effectiveness and AI technical skills, the study found that AI technical skill mediating the relationship between effectiveness of MIS and KA acquisition. These findings demonstrate the importance of AI in driving the effectiveness of KA. For future, the study recommends to apply difference dimensions of AI with difference dimensions of KA in other sectors.

Almasri (2024) carried out systemic empirical research about artificial intelligence's effect on science teaching and learning. This systematic paper aims to provide an intrinsic overview of the evidence-based linkage between AI and science

education. Specifically, this study provides a comprehensive analysis of the impact of AI on students' learning outcomes, its adoption contexts, perceptions of students and teachers regarding its use, and challenges in its use within the context of science education. The current review was guided by the PRISMA guidelines, reviewing empirical papers published between the years of 2014 to 2023. Ultimately, 74 records were eligible for this systematic analysis. Research shows that different types of AI have been integrated into various physical and natural sciences domains in many countries worldwide. Results indicated that to also obtain pedagogical gains such as enhancing the educational environment, generating quizzes and eliminating students, and predicting students` performance, science education is integrated with AI solutions. This paper also has implications for teachers, educational administrators, and policymakers.

A systematic review of fairness, accountability, transparency, and ethics (FATE) in AI on higher education by Memarian and Doleck. This review intends to examine studies on FATE and AI as discussed in the higher education literature. 33 publications were included in this systematic literature review from SCOPUS and WoS. Defining FATE in the Literature, We assessed definitions of FATE mentioned in the reviewed articles (there may have been several in each paper) and categorized them as both descriptive (publicly intelligible) and technical (featuring jargon). A detailed analysis was also made of the primary FATE term that was the focus of each examined article, grouping studies into qualitative and quantitative categories. More descriptive definitions are available (especially for Fairness), while quantitative definitions mainly arise for fairness. The findings also show that there are more quantitative studies (especially for fairness) and qualitative definitions are mostly for ethics.

The latter was performed by Kodikal and Rahiman (2023) to assess the awareness levels of faculty members regarding the utilization and implementation of artificial intelligence. Instead, the aim of the research study was to understand as well how AI mediates their learning experience and plays a role in determining the level of work engagement among teachers in the higher education sector. We conducted a study among 250 QS-ranked hybrid education mode institute teachers using hierarchical clustering and the multi-stage sampling method. The Anthem Song of AI: Early. The study employed a quantitative research design and subsequently developed a structural equation model to investigate the factors that contribute to the successful or unsuccessful adoption of AI. Results showed that the adoption of AI involves sound evaluation and measurement practices, which leads to greater faculty engagement. Of which the result roles of mediating variables aside from attitude and behavior that by practically in affect work engagement and the adoption of AI in the higher education system against perceived risk, performance expectancy, and awareness.

3. Research questions

However, existing literature primarily focuses on AI's impact on higher education and ethics in scientific research, but there are notable gaps. Few studies examine AI as a mediating variable between education quality and ethical research practices, especially within the context of Jordanian universities. Additionally, while research explores AI's role in improving educational outcomes, it often overlooks its

specific influence on faculty behavior and ethical decision-making in research. Thus, the proposed study seeks to fill critical gaps in the existing literature by examining the mediating role of AI in the relationship between higher education quality and ethical scientific research among faculty members. Thus, to achieve the study objective, this study is structured to answer the following research questions:

1) What is the relationship between artificial intelligence and the quality of higher education among faculty members in the Middle East University, Jordan?
2) What is the relationship between artificial intelligence and the ethics in scientific research among faculty members in the Middle East University, Jordan?

3.1. Research hypotheses

1) There is no significance relationship between artificial intelligence and the quality of higher education among faculty members in the Middle East University, Jordan.
2) There is no significance relationship between artificial intelligence and the ethics in scientific research among faculty members in the Middle East University, Jordan.

Hence, the findings of this study are expected to have significant implications for AI integration strategies in higher education, particularly in the context of the Middle East, and provide recommendations for policy-makers and academic administrators regarding the ethical deployment of AI in academia.

3.2. Research methodology

This study adopted a mixed-methods survey methodology to collect and analyze data, combining both qualitative and quantitative approaches to gain comprehensive insights into the research objectives. The methodology was systematically designed, beginning with a detailed review of relevant literature, which guided the formulation of research variables and objectives. Scholarly publications, academic textbooks, and prior studies provided the foundational framework for understanding the topic and developing the survey instrument.

The study focused on postgraduate students from the Middle East University in Jordan. A sampling framework was established based on Zhang et al.'s (2024) guidelines, which recommend sample sizes suitable for specific population sizes to ensure statistical power and reliability. From a population of 1200 postgraduate students, a sample of 291 participants was identified as representative. Respondents are found through a snowball sampling. Questionnaires were sent out using Google forms and were collected from the sampled respondents from the WhatsApp group and email and given out for inclusion in the study. The method of snowball sampling hindered the researchers from gathering data face to face with respondent. The method of snowballing worked well for locating participants, as they were already linked to one another. 291 population answered, filed and submit the e-questionnaire accurately. Appropriate statistical techniques were used to analyze the data collected

The survey instrument, designed to capture both qualitative and quantitative data, was distributed electronically using Google Forms. Distribution channels included WhatsApp groups and email, both of which were chosen for their accessibility and

high engagement rates among the target population. The electronic format ensured the questionnaire could reach participants conveniently, regardless of their physical location. The questionnaire was divided into several sections, each targeting a specific variable or research question. Demographic information was collected first, followed by items designed to measure perceptions, experiences, and attitudes relevant to the study objectives. The questions incorporated a mix of Likert scale items, open-ended questions, and categorical responses, allowing for both statistical analysis and thematic exploration.

A total of 291 students successfully completed and submitted the questionnaire, meeting the sample size requirement. Measures were taken to ensure data quality, including validating responses for completeness and coherence. Duplicates and incomplete responses were excluded, maintaining the integrity of the dataset. However, the collected data underwent rigorous analysis using appropriate statistical techniques. Quantitative responses were analyzed using descriptive statistics to summarize participant demographics and central tendencies. Regression analysis was employed to test the null hypothesis, exploring relationships between variables and their statistical significance.

4. Data analysis

4.1. Research question one

What is the relationship between artificial intelligence and the quality of higher education among faculty members in the Middle East University, Jordan?

Table 1. Descriptive analysis on the relationship between artificial intelligence and the quality of higher education among faculty members in the Middle East University, Jordan.

Variables	X	SD	Skewness	Kurtosis
AI technologies enhance the quality of teaching and learning in higher education.	7.21	1.086	0.258	−1.291
Integrating AI in educational processes can improve students' engagement and participation.	5.57	0.825	0.163	−0.599
AI-driven tools and platforms facilitate personalized learning experiences for students.	6.56	0.905	0.385	−0.899
Faculty members should receive training on AI technologies to enhance their teaching methodologies.	5.57	0.821	0.149	−0.581
The current curriculum should integrate AI-related courses to prepare students for the future job market.	6.58	0.908	0.353	−0.927

Legend: X = Mean; SD = Standard Deviation; *N* = 291. Source: Field Survey 2023.

Table 1 demonstrates that the summary statistics of relationship between artificial intelligence and the quality of higher education among faculty members in the Middle East University, Jordan. The mean values resulted in 7.21, 5.57, 6.56, 5.57 and 6.58 respectively while the standard deviation of the variables where 1.086, 0.825, 0.905, 0.821 and 0.908. For all the variables in this study, and according to their means and standard deviation values, it is apparent that their means are higher than their standard deviations values. That actually means that the variables are mostly relevant. Which means ai tools can augment style of education, making improvements to degree, students curiosity and engagement, actualising individual learning for college students and also prepare students for the near future working market, respectively.

Demonstration of the impact of artificial intelligence on the subject of higher education quality standards (among staff). The skewness values, in the same way, indicate the variables are positively skewed toward normality. They all imply positive skewness because of that. Moreover, kurtosis values also indicate that the variables are not leptokurtic due to analysis.

4.2. Research question two

What is the relationship between artificial intelligence and the ethics in scientific research among faculty members in the Middle East University, Jordan?

Summary statistics of relationship between artificial intelligence and the ethics in scientific research among faculty members in Middle East University, Jordan are detailed in **Table 2**. From the above result, we can see the mean values were 7.21, 5.56, 6.57, 6.34 and 6.57 respectively and standard deviation of the variables were 1.082, 0.825, 0.912, 0.988 and 0.908. This is however very clear from the fact that the mean of all the variable of this study are larger than their respective standard deviation values. Maybe this suggests that the variables are somehow relevant. Hence, the inclusion of AI in scientific research improves the processing time and quality of data analytics, reduces human biases in conducting a research, can help in reducing any kind of possible research fraud or misconduct and improve transparency and replicability in getting results of experiments conducted on scientific premises. Also, the skewness values indicates that the variables are positively skewed towards the normal. This derives its reason from the fact that all of them have positive skewness values. Furthermore, the kurtosis values from the test results indicate that the variables do not have a leptokurtic vestige.

Table 2. Descriptive analysis of the relationship between artificial intelligence and the ethics in scientific research among faculty members in the Middle East University, Jordan.

Variables	X	SD	Skewness	Kurtosis
The integration of AI in scientific research enhances the speed and accuracy of data analysis.	7.21	1.082	0.256	−1.286
AI technologies have the potential to mitigate human biases in research methodologies.	5.56	0.825	0.147	−0.587
AI applications in scientific research needs Ethical guidelines and insights.	6.57	0.912	0.362	−0.921
AI can streamline the identification of potential research misconduct or fraud.	6.34	0.988	0.212	−0.531
AI has the potential to enhance transparency and reproducibility in scientific experiments.	6.57	0.908	0.373	−0.920

Legend: X = Mean; SD = Standard Deviation; *N* = 291. Source: Field Survey 2023.

5. Hypothesis testing

5.1. Hypothesis one

According to the null hypothesis, artificial intelligence does not relate significantly to the quality of higher education of the faculty members of the Middle East University of Jordan. Pearson Product Moment Correlation was then conducted on the data, in order to test the hypothesis and assess the relationship between these two variables.

The obtained *r*-value is 0.132 (see **Table 3**). This value was also tested for significance against r-critical value (0.086) at 0.025 levels, 291 degrees of freedom. The obtained *r*-value (0.132) was larger than the critical *r*-value (0.086). So, the outcome was substantial. The result thus showing that for faculty members in the Middle East University, Jordan, there is a significant relationship between artificial intelligence and the quality of higher education.

Table 3. Pearson product moment correlation analysis of the relationship between artificial intelligence and the quality of higher education among faculty members in the Middle East University, Jordan.

Correlations		**Artificial Intelligence**	**Quality of Higher Education**
Artificial Intelligence	Pearson Correlation	1	0.132*
	Sig. (2-tailed)		0.024
	N	291	291
Quality of Higher Education	Pearson Correlation	0.132*	1
	Sig. (2-tailed)	0.024	
	N	291	291

* Significant at 0.025 level; *df* = 289; *N* = 291; critical *r*-value = 0.086.

5.2. Hypothesis two

The null hypothesis assumes no significance correlation between artificial intelligence and the ethics in scientific research between the faculty members of Middle East University, Jordan. Next, in order to examine the relationship between the two variables, Pearson Product Moment Correlation analysis was used on the data to test the hypothesis.

Table 4 shows the *r*-value we obtained as (0.126). We used it to test a significant value against the critical *t*-value (in this case, 0.086) for 289 degrees of freedom at 0.025 level. The obtained *r*-value (0.126) was greater than the critical *t*-value 0.086. Additionally, the stakes were high. Hence, the relationship produced can be considered substantial between artificial intelligence and the ethics in scientific research for faculty members at the level of the Middle East University, Jordan.

Table 4. Pearson product moment correlation analysis of the relationship between artificial intelligence and the ethics in scientific research among faculty members in the Middle East University, Jordan.

Correlations		**Artificial Intelligence**	**Ethics in Scientific Research**
Artificial Intelligence	Pearson Correlation	1	0.261**
	Sig. (2-tailed)		0.000
	N	291	291
Ethics in scientific research	Pearson Correlation	0.261**	1
	Sig. (2-tailed)	0.000	
	N	291	291

* Significant at 0.025 level; *df* = 289; *N* = 291; critical *r*-value = 0.086.

6. Discussion of findings

The result of the analysis in **Table 3** is significant due to the fact that the obtained *r*-value (0.132) was greater than the critical *t*-value (1.96) at 0.25 level with 289

degrees of freedom. This result implies that there is significant relationship between artificial intelligence and the quality of higher education among faculty members in the Middle East University, Jordan. However, this finding correlates with study of Ololube (2019) in Nigeria which found that AI tools have enhanced the quality of research outputs by providing more accurate data analysis and predictive modeling although the study also notes that inadequate infrastructure and limited access to AI resources are barriers to maximizing its potential in Nigerian higher education. In South Africa, Mahlangu and Ngwane (2020) indicate that AI adoption in South African universities has positively impacted research quality by facilitating data-driven decision-making and fostering interdisciplinary research and highlights how AI has improved research collaboration and resource management in higher education. In Ghana, AI has shown promise in improving research capabilities, particularly in the fields of health sciences and education Anane (2021) explored the use of AI-powered tools in research at major Ghanaian universities, noting an improvement in the quality and speed of research processes although challenges such as inadequate training of researchers in AI tools hinder the full potential of these technologies. In Egypt, Ali and Ibrahim (2022) revealed that AI has enabled Egyptian universities to conduct more robust and sophisticated research, particularly in the fields of engineering and data science and the use of AI has significantly enhanced research accuracy and collaboration among scholars. In Ethiopian, Mulugeta et al. (2021) discuss the integration of AI in Ethiopian universities and its impact on personalized learning and academic management and found that Adoption of AI has improved administrative efficiency and the ability to provide tailored learning experiences, contributing positively to the quality of education although infrastructural challenges and the digital divide remain key barriers. Chisango and Moyo, (2020) found that Adoption of AI-driven systems enable students in Zimbabwe to engage more actively in learning, especially in science and technology courses although lack of investment and expertise in AI technologies limits its full potential. In Tanzania, Chuma and Ng'wanakilala, (2019) examined the introduction of AI in universities and its effects on the quality of higher education found that Adoption of AI tools have enhanced student engagement and learning outcomes, especially through e-learning platforms since AI has been used in academic performance monitoring, helping to improve instructional quality. Kigozi and Namuleme (2022) found that the Adoption of AI applications in research management and student learning support in Uganda have contributed significantly to better educational outcomes which have facilitated smoother administration and more personalized learning environments although there is a need for more institutional support to fully harness the benefits of AI. In Rwanda, Musoni and Ndayisaba (2020) report that AI-based learning platforms and digital tools have transformed how education is delivered in Rwandan universities and found that AI helped to bridge the gap between theory and practice, particularly in fields like medicine and engineering. However, challenges such as the need for advanced infrastructure and faculty training remain. Thus, the significance of the result caused the null hypothesis to be rejected while the alternative one was accepted.

The analysis in **Table 4**'s result is significant because the obtained *t*-value (261) was greater than the critical *t*-value (1.96) at the 0.25 level with 289 degrees of freedom. This result implies that there is a significant relationship between artificial

intelligence and ethics in scientific research among faculty members at Middle East University, Jordan. However, this finding correlates with study of Kamau and Kariuki (2021) in Kenya which emphasized the role of AI in augmenting research capabilities in Kenyan higher education institutions of which AI-powered tools have improved data analysis, plagiarism detection, and research collaboration, thereby contributing to higher research quality and productivity and found that AI is instrumental in advancing interdisciplinary research, particularly in STEM fields, which enhances the overall quality of education through innovative teaching methods. According to Mutisya and Waweru (2020), AI adoption in Kenyan universities has significantly enhanced administrative functions, learning management systems, and student support services. AI tools such as chatbots, virtual learning environments, and data analytics have contributed to improving educational outcomes by enabling personalized learning and enhancing access to resources although the integration of AI is still limited by technological gaps and insufficient training for instructors. Zhang (2023) discussed various AI applications in enhancing research practices in higher education and found that AI-assisted tools, such as automated citation managers and intelligent data analysis software, contribute to improved research methodologies and outcomes. Magash and Saaida, (2024) focused on the transformative potential of AI in educational research and found that institutions adopting AI technologies experienced significant improvements in research quality, including increased publication rates and enhanced interdisciplinary collaborations. Romero and Ventura (2020), indicate that AI-driven learning analytics help educators and researchers assess student performance in real-time and provides insights into students' learning patterns, allowing for personalized feedback and adjustments to curricula, which improve educational quality and how AI can help identify at-risk students early, thereby enhancing intervention strategies and overall learning outcomes. Balta (2023) examines the ethical considerations in AI- assisted educational research and underscores that while AI enhances the quality of education through better data insights, it also raises ethical concerns regarding data privacy and algorithmic bias therefore researchers must be cautious in using AI to ensure that it promotes educational equity and despite these challenges, the overall impact of AI on educational research has been positive, leading to better data-driven insights that improve education quality. Hinojo-Lucena et al. (2024) suggest that AI is playing a growing role in expanding the capacity of educational research. AI tools such as predictive modeling and automated reporting are helping researchers conduct large-scale studies more efficiently thereby enhancing research productivity and contributes to the continuous improvement of educational practices, ultimately raising the overall quality of education. Therefore, the critical conclusion led to rejecting the null hypothesis and accepting the alternative hypothesis.

However, these results are consistent with Resource Dependency Theory which states that access to resources and the organizational behavior and outcomes that result from those resources are of utmost importance to organizational survival. The theory's foundation, which states institutions tend to respond to external resources in the shape of innovative AI technologies that improve efficiency, helps explain the strong association between AI and improved quality of higher education. This theory is relevant to the role of AI in higher education because these advances can be vital to

enhancing teaching quality, customizing learning experiences, and increasing competitiveness within institutions. Similarly, the deep dynamics of AI and ethics in scientific endeavors are not unlike the nature of external technologies powering the weight of internal ethics. The theoretical lens highlights natural selection and the reliance on external resources for survival and organizational efficacy. AI's capabilities to identify cases of plagiarism, improve transparency, and reduce biases are ultimately congruent with the theory and intent of responsible research practices.

Moreover, the literature refers to the Unified Theory of Acceptance and Use of Technology (UTAUT) model which captures the findings further by explaining the acceptance of AI among faculty members through performance expectancy and effort expectancy factors. Though still ceded as a mediating variable towards quality higher education, faculty perceptions about AI as a means of attaining equity education and improving research ethics represent its usefulness. Therefore, the results offer strong empirical evidence of theoretical predictions that institutions that successfully integrate heuristic technological resources such as AI could exert a considerable impact on institutional functionality, ethics, and education outcomes, as indicated from both Resource Dependency Theory and UTAUT perspectives.

7. Conclusion

Considering the findings of the research, the researcher outlined that learning experiences in higher education would be better by using AI as a teaching and immersive tool, which can personalize learning through adaptive learning systems and personalized tutors. It simplifies research processes, which helps researchers develop data analysis tools and prediction models, speed up findings while emphasizing ethical principles, and encourages faculty members to conduct responsible research. Understanding AI integration creates an ethical environment that emphasizes transparency, responsibility, and ethical adherence. Using that requires us to constantly talk about the ethical considerations of AI-enabled research and to encourage more awareness and mindfulness among the faculty. The implication of an AI intermediary in the quality of higher education as well as at the behest of ethical scientific specimens or as an investigative instrument or data collection gadget or turbocharged universal study tool only refocuses some of the benefits/disadvantages toward the emphasis on quality in higher education and ethical scientific investigation This means there is the interplay between the quality of higher studies and ethical scientific exploration that needs to endlessly understand, respond, react, and cross-examine, but this is actually based on tempered interphase tempered ethical inquiry so that integrity of analyses and ethical posture can be maintained.

7.1. Practical recommendations

We propose the following based on the results of this study and ensuing discussions: We need to develop comprehensive faculty-level training programs to familiarize faculty with AI technologies and their ethical implications and engender a culture of ethical reflection in research. Ethical guidelines should be developed and reinforced at institutions to align with the growing norms of ethics and adequately ensure that technology is being used properly for advancements in research and

innovations using AI tools and techniques. Striving for collaborative efforts between AI researchers, ethicists, and educators in order to collaboratively address ethical issues and integrate ethical considerations into AI-powered research processes. Policy Development: Policymakers must develop frameworks for AI use that consider ethical standards and data privacy laws. Such policies must ensure transparency in the AI decision-making process. Within the Academic Setting: Academic administrators must invest in professional development resources for faculty and staff to improve their AI literacy. This encapsulates knowledge of AI's limitations and ethical implications in education.

Institutions should implement processes that continuously evaluate whether or not the AI tools are effectively used and follow ethical standards. This included user feedback to refine and support ongoing improvements and alignment with institutional values. For this reason, administrators, as opposed to simply voting today, should continue to have a voice in AI and include not only parents in the process but students themselves in any discussions around decisions that would implement AI into their lives. This would ensure that the solutions implemented are relevant to the needs of all stakeholders.

7.2. Limitations

The study has some limitations, particularly its reliance on self-reported data, which may not fully represent actual practices or behaviors and could be biased. Although the snowball sampling technique was an effective way to recruit participants, it did limit some diversity in our sample, and findings may not reflect the larger population. Furthermore, the concentration on one institution also lowered the applicability of the results. It limited long-term information as there was no longitudinal data on the tools being in use while AI was being integrated. These problems should be remedied through mixed-methods, broader, and multi-institutional research.

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