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# Navigating Stakeholders Perspectives on Artificial Intelligence in Higher Education

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**Abstract:** As artificial intelligence (AI) becomes increasingly integrated into higher education, understanding perceptions across different demographic groups is essential for its effective implementation. This study examines attitudes toward AI among students, lecturers, and academic staff, considering factors such as gender, age, occupation, academic discipline, ethical concerns, and experience level. The findings indicate that while overall perceptions of AI in education are positive, concerns about ethics and uncertainty regarding its role persist. Gender and age differences in AI perceptions are minimal, though female students, educators, and individual in humanities disciplines express slightly higher ethical concerns. Teachers exhibit greater skepticism, emphasizing the need for transparency, ethical guidelines, and training to build trust. The study also highlights the influence of AI experience and perceptions. Frequent users tend to have a more positive outlook, whereas those with advance expertise engage with AI more selectively, suggesting a shift toward intentional and strategic use.

**Keywords:** artificial intelligence; higher education; ethics; emerging technologies; awareness; stakeholders' perception



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## 1. Introduction

Artificial intelligence (AI) technologies are rapidly transforming the landscape of higher education, offering innovative learning opportunities and enhancing institutional operations through intelligent systems. When integrated thoughtfully, AI can enrich educational experiences while preserving the human connections vital to emotional and social development [1–3]. However, responsible implementation requires institutions to evaluate not only technical and administrative readiness but also the perceptions and concerns of the people affected, students, educators, and academic staff [4,5].

Existing literature has examined the ethical, pedagogical, and social implications of AI in education [6,7]. Studies have reported both enthusiasm and hesitation toward AI, citing issues such as data privacy, loss of human interaction, and the uncertainty of algorithmic systems [7,8]. Yet, many of these studies focus on either students or educators in isolation, without accounting for how factors like academic discipline, professional role, and AI experience level interact to shape attitudes. Moreover, research has primarily been concentrated in well-resourced or Anglophone contexts, leaving a gap in understanding how AI is perceived in diverse institutional and cultural environments.

This study addresses these gaps by examining the perceptions of AI across three key stakeholder groups, students, educators, and administrative staff, within a Latin America higher education institution, Universidad Latina. It considers how demographic variables (age, gender and discipline), professional roles, and AI experience influence attitudes and ethical concerns. It also distinguishes between frequent users and advanced experts of AI tools, revealing important patterns in how experience shapes engagement and trust. By offering a holistic, contextually grounded perspective, this study contributes to the design of equitable and ethically sound AI strategies for higher education. The study seeks to answer the following research questions:

1. What are the attitudes and perceptions of participants regarding the implementation of AI in higher education?
2. What are the ethical and social implications of implementing AI in higher education?
3. How do participants'demographic characteristics influence their perception on AI implementation?

*Background Literature*

The integration of artificial intelligence (AI) into higher education today explores its transformative potential, encompassing its applications in teaching, learning, and administrative processes, while addressing the ethical implications [9]. Contemporary definitions positions AI as the simulation of human cognitive functions by machines [10], with generative AI (GenAI) tools capable of producing original content from user prompts, becoming increasingly prevalent across disciplines [9,11]. These technologies promise personalization, efficiency, and innovation but simultaneously raise urgent concerns regarding ethics, equity, and the redefinition of pedagogical roles [12–14].

Studies by Al-Badi [15] and Al-Zahrani [3] have explored the dual nature of AI's potential in education, highlighting both its benefits and inherent limitation. Several studies report positive attitudes among students and faculty toward AI's capacity to enhance educational outcomes, promote accessibility, and support engagement and streamlining institutional processes [16–19]. Yet optimism is tempered by caution, issues such as data privacy, algorithmic opacity, threats to academic integrity, and the erosion of human-centered teaching practices continue as dominant themes in the literature [13,20]. These ethical and philosophical concerns have led to calls for greater transparency, clear regulatory frameworks, and professional development initiatives focused on algorithmic literacy [21].

Despite the growing body of research, several gaps remain. First, many studies are limited to either the student or faculty perspective, neglecting administrative staff and the institutional dimensions of AI integration. Second, demographic factors, such as age, gender, and academic discipline, are often considered in isolation rather than in intersectional terms. Furthermore, studies examined how a user's prior experience with AI influences not only their acceptance of the technology but also their ethical instance and trust in its application. Existing research also tends to reflect global North or Anglophone contexts, underrepresenting higher education institutions in Latin America, where infrastructural, cultural, and pedagogical variables may shape AI perceptions differently [22–26].

Transparency and explainability are crucial for responsible AI implementation [27]. This is, to have clear documentation of data collection, labels, and algorithms to ensure traceability, identify errors, and prevent future mistakes.

AI decisions impacting human lives must be communicated effectively, ensuring that all stakeholders fully understand them [28]. Autonomy in academic decision-making is key, emphasizing the need for AI-influenced decisions to be transparent, understandable, and fair. This transparency is essential for fostering trust in the educational system [29].

This study addresses these limitations by providing a multidimensional analysis of AI perceptions across three stakeholder groups, students, educators, and administrative staff, within a Latin American university context. By integrating demographic variables (age, gender and discipline) occupational roles, and AI experience levels, the research offers a holistic view of how attitudes, expectations, and ethical concerns converge in shaping AI's role in higher education. In doing so, it contributes to a more significant understanding of user diversity, intentionally in AI adoption, and the ethical frameworks necessary to support inclusive and sensitive technology integration.

## 2. Methods

In this study, a quantitative methodology was employed using a survey questionnaire to examine the implications for AI on higher education. The data collection regarding attitudes, perceptions, and experiences of students, educators, and administrative staff about AI in higher education used an online survey questionnaire.

The questionnaire developed by Al-Zahrani and Alasmari [3] was designed to examine various aspects of AI in higher education, with a strong Cronbach's alpha value of $\alpha = 0.96$. It was validated by educational technology experts in Saudi Arabia and subsequently reviewed by other professionals in technology education from Spain. Validation results in Costa Rica are presented in the Section 3.

The questionnaire's first section focused on participant demographics, including age, gender, occupation, education level, AI expertise, AI tools and services used, frequency of use, and purposed for using AI (Appendix A.1). The second section contained 32 items that asked participants' perspective on AI in higher education (Appendix A.2). These items explored attitudes and perceptions, AI's role in teaching and learning, ethical and social implications, and the future role.

Data was analyzed using SPSS software version 27, which includes Cronbach's alpha reliability to assess internal consistency. A descriptive analysis was implemented for various subscales. An independent sample *t*-test was also conducted to determine gender differences across the various subscales, as well as an ANOVA test to determine differences in perceptions of AI use in higher education based on participants' age group, current occupation, and disciplinary area. Reliability analyses were conducted for the subscales of the questionnaire on perceptions of AI use in higher education. The analyses indicate good levels of reliability, as shown in Table 1.

**Table 1.** Reliability statistics of the questionnaire on perceptions of AI use in higher education (N = 430).

| Subscale | $\alpha$ De Cronbach |
|---|---|
| Attitudes and perceptions | 0.89 |
| Role of AI in the teaching-learning process | 0.88 |
| Ethical and social implications | 0.84 |
| Future role of AI | 0.79 |
| Total scale | 0.93 |

*Participants*

The study involved 430 participants, randomly selected to ensure a representative sample from three distinct groups: students, teachers and administrative staff). The sampling strategy was intentionally designed to encompass individuals from diverse disciplines, providing a comprehensive range of perspectives and experiences related to the impact of AI in higher education.

The random sampling ensured that all participants were chosen entirely by chance, giving every individual in the population an equal opportunity to be selected. Its purpose was to minimize bias and provide a representative sample of the population. By including participants from varied roles within the institution, the study aimed to capture the multifaceted nature of attitudes and perceptions toward AI.

The questionnaire included a consent form, and participants clicked on the "accept" button to proceed with completing the instrument. A description and objective were presented at the beginning of the questionnaire, emphasizing the anonymity of the responses. Participants were also informed that the results would be used in general form and that their individual responses would remain confidential. The main sociodemographic characteristics of the sample, reflecting this diversity, are detailed in Table 2.

**Table 2.** Sample description.

| Characteristics | Students | | Teachers | | Administratives | | Total Sample | |
|---|---|---|---|---|---|---|---|---|
| | n | % | n | % | n | % | n | % |
| **Gender** | | | | | | | | |
| Male | 137 | 31.9 | 37 | 8.6 | 26 | 6 | 200 | 46.5 |
| Female | 161 | 37.4 | 44 | 10.2 | 25 | 5.8 | 230 | 53.5 |
| **Age** | | | | | | | | |
| Less than 25 | 177 | 41.2 | 1 | 0.2 | 0 | 0 | 178 | 41.4 |
| 25 to 34 | 74 | 17.2 | 13 | 3 | 10 | 2.3 | 97 | 22.6 |
| 35 to 44 | 35 | 8.1 | 17 | 4 | 10 | 2.3 | 62 | 14.4 |
| 45 to 54 | 10 | 2.3 | 32 | 7.4 | 17 | 4 | 59 | 13.7 |
| 55 or older | 2 | 0.5 | 18 | 4.2 | 14 | 3.3 | 34 | 7.9 |
| **Academic level** | | | | | | | | |
| Bachelor | 194 | 45.1 | 4 | 0.9 | 13 | 3 | 211 | 49.1 |
| Licenciatura | 98 | 22.8 | 32 | 7.4 | 13 | 3 | 143 | 33.3 |
| Master | 6 | 1.4 | 40 | 9.3 | 22 | 5.1 | 68 | 15.8 |
| Doctorate | 0 | 0 | 5 | 1.2 | 3 | 0.7 | 8 | 1.9 |
| **Disciplinary area** | | | | | | | | |
| Art, Design & Communication | 56 | 13 | 6 | 1.4 | 4 | 0.9 | 66 | 15.3 |
| Health Sciences | 77 | 17.9 | 30 | 4.7 | 4 | 0.9 | 101 | 23.5 |
| Business and Hospitality | 47 | 10.9 | 10 | 3 | 11 | 2.6 | 68 | 15.8 |
| Social Sciences | 39 | 9.1 | 35 | 8.1 | 19 | 4.4 | 93 | 21.6 |
| Engineering and Information Technology | 79 | 18.4 | 10 | 2.3 | 13 | 3 | 102 | 23.7 |

## 3. Results

The results of the study offer a comprehensive analysis of participants' perceptions, attitudes, and experiences regarding the integration of AI in higher education. By examining various dimensions, including the role of AI in teaching and learning, its ethical implications and stakeholders' expectations for its future use, the finding provide a deeper understanding of AI's potential impact on academic settings.

Table 3 presents a descriptive analysis of different subscales related to perceptions of AI in higher education. The four subscales measure different aspects on how AI is viewed in this context.

The lowest mean score (3.65) for AI's role in the teaching-learning process suggests that there is some hesitation about how well AI can support education, which could be due to concerns about loss of human interactions, AI's effectiveness, or potential biases in AI tools.

A comparison between male and female respondents was performed with independent samples *t*-tests across various subscales. The analysis revealed no significant differences [12,16] in any of the subscales ($p > 0.05$). In all subscales, the $p$ values were greater

than 0.05, meaning that any differences between males and females were likely due to random variation rather than meaningful distinctions, as shown in Table 4.

**Table 3.** Descriptive analysis of subscales on perceptions of AI in higher education.

| | M | DE | Min | Max |
|---|---|---|---|---|
| Attitudes and perceptions | 3.86 | 0.806 | 1.00 | 5.00 |
| Role of AI in the teaching-learning process | 3.65 | 0.771 | 1.00 | 5.00 |
| Ethical and social implications | 4.23 | 0.615 | 1.13 | 5.00 |
| Future role of AI | 4.10 | 0.573 | 1.25 | 5.00 |

**Table 4.** Gender differences in subscales on perceptions of AI in higher education.

| Subscale | Male | | Female | | T (428) | *p* | d |
|---|---|---|---|---|---|---|---|
| | M | DE | M | DE | | | |
| Attitudes and perceptions | 3.89 | 0.928 | 3.83 | 0.68 | 0.86 | 0.389 | 0.08 |
| Role of AI in the teaching-learning process | 3.70 | 0.822 | 3.61 | 0.72 | 1.25 | 0.212 | 0.12 |
| Ethical and social implications | 4.18 | 0.645 | 4.26 | 0.59 | −1.30 | 0.193 | –0.13 |
| Future role of AI | 4.11 | 0.593 | 4.08 | 0.56 | 0.58 | 0.562 | 0.06 |

Additionally, several one-way ANOVA tests were conducted to examine differences in perceptions of AI use in higher education based on participants' age group, current occupation, and disciplinary area. Regarding age group (Table 5), the analyses revealed no significant differences across any of the subscales (F4425 = 1.81, $p = 0.127$ for the attitudes and perceptions subscale; F4425 = 0.40, $p = 0.81$ for the role of AI in the teaching-learning process; F4425 = 1.82, $p = 0.124$ for ethical and social implications, and F4425 = 0.65, $p = 0.625$ for the role of AI in the future).

**Table 5.** Differences in perceptions of AI use in higher education by age group.

| Subscale | Less than 25 | | 25–34 | | 35–44 | | 45–54 | | Más de 55 | | F(2,4) | *p* | η2 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | M | DE | M | DE | M | DE | M | DE | M | DE | | | |
| Attitudes and perceptions | 3.94 | 0.81 | 3.80 | 0.73 | 3.95 | 0.85 | 3.70 | 0.95 | 3.69 | 0.58 | 1.81 | 0.127 | 0.017 |
| Role of AI in the teaching-learning process | 3.69 | 0.82 | 3.64 | 0.68 | 3.61 | 0.79 | 3.65 | 0.81 | 3.52 | 0.63 | 0.40 | 0.809 | 0.004 |
| Ethical and social implications | 4.16 | 0.63 | 4.21 | 0.62 | 4.38 | 0.53 | 4.25 | 0.72 | 4.34 | 0.40 | 1.82 | 0.124 | 0.017 |
| Future role of AI | 4.12 | 0.54 | 4.06 | 0.58 | 4.14 | 0.63 | 4.11 | 0.65 | 3.97 | 0.48 | 0.65 | 0.625 | 0.006 |

For subscale attitudes and perceptions toward AI the means range from 3.69 (55+) to 3.95 (35–44), suggesting a slightly more positive attitude among younger age groups (especially under 25 and 35–44). The small effect size ($\eta^2 = 0.017$) indicates that age does not strongly influence general attitudes toward AI. Although younger individuals (under 25 and 35–44) seem slightly more optimistic about AI, the difference are not meaningful in a statistical sense.

At the role of AI in the teaching-learning process subscale, the means are fairly consistent across age groups, ranging from 3.52 (55+) to 3.69 (under 25). The smallest effect size in the table (($\eta^2 = 0.004$) suggests that age has almost no impact on views about AI's role in education. All age groups hold similar opinions on AI's role in teaching and learning with no strong generational divide.

For the ethical and social implications of AI subscale, the highest scores were from 35–44 (M = 4.38) and 55+ (M = 4.34), indicating that older individuals may be slightly more concerned about ethics than younger groups. While older respondents may place slightly more importance on ethical concerns, the difference in not significant enough to suggest a generational divide.

In the future role of AI subscale, scores are fairly high across all age groups, ranging from 3.97 (55+) to 4.14 (35–44). All age groups believe AI will play an important role in the future, with no major differences in optimism across generations.

Table 6 presents comparisons between students, educators, and administrative staff regarding their perceptions of AI in higher education. There are significant differences in the attitudes and perceptions subscale (F2427 = 3.87, $p = 0.022$). Post hoc analyses with Bonferroni corrections revealed that students (M = 3.92, SD = 0.78) scored significantly higher than faculty members (M = 3.65, SD = 0.79, $p = 0.019$), indicating that students hold more positive attitudes and perceptions toward AI compared to faculty. However, no significant differences were found between students and administrative staff (M = 3.81, SD = 0.91, $p = 0.624$) or between administrative staff and faculty ($p = 0.490$).

**Table 6.** Differences in perceptions of AI use in higher education by current occupation.

| Subscale | Students | | Teachers | | Administratives | | F(2427) | *p* | $\eta^2$ |
|---|---|---|---|---|---|---|---|---|---|
| | M | DE | M | DE | M | DE | | | |
| Attitudes and perceptions | 3.92 [a] | 0.78 | 3.65 [a] | 0.79 | 3.81 | 0.91 | 3.87 | 0.022 * | 0.018 |
| Role of AI in the teaching-learning process | 3.67 | 0.79 | 3.50 | 0.70 | 3.78 | 0.73 | 2.47 | 0.086 | 0.011 |
| Ethical and social implications | 4.18 | 0.60 | 4.35 | 0.64 | 4.31 | 0.61 | 2.90 | 0.056 | 0.013 |
| Future role of AI | 4.11 | 0.55 | 4.08 | 0.56 | 4.14 | 4.05 | 0.712 | 0.755 | 0.001 |

Note. * $p < 0.05$, measures sharing [a] supscript indicate significant differences.

For the other subscales, no significant differences were observed; (F4427 = 2.47, $p = 0.86$ for the role of AI in the teaching-learning process; F4427 = 2.90, $p = 0.056$ for ethical and social implications; and (F4427 = 0.28, $p = 0.755$ for the role of AI in the future).

Regarding the disciplinary area (Table 7), the analyses revealed no significant differences across any of the subscales (F4425 = 1.02, $p = 0.397$ for the attitudes and perceptions subscale; F4425 = 0.85, $p = 0.49$ for the role of AI in the teaching-learning process; F4425 = 2.19, $p = 0.069$ for the ethical and social implications; and F4425 = 1.05. $p = 0.383$ for the role of AI in the future).

**Table 7.** Differences in perceptions of AI use in higher education by disciplinary area.

| Subscale | Art, Design & Communication | | Health Sciences | | Business and Hospitality | | Social Sciences | | Engineering and Information Technology | | F(2425) | *p* | $\eta^2$ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | M | DE | M | DE | M | DE | M | DE | M | DE | | | |
| Attitudes and perceptions | 3.93 | 0.70 | 3.86 | 0.73 | 3.86 | 0.83 | 3.72 | 0.80 | 3.94 | 0.92 | 1.02 | 0.397 | 0.009 |
| Role of AI in the teaching-learning process | 3.56 | 0.79 | 3.65 | 0.72 | 3.67 | 0.77 | 3.59 | 0.77 | 3.75 | 0.80 | 0.85 | 0.495 | 0.008 |
| Ethical and social implications | 4.37 | 0.61 | 4.20 | 0.59 | 4.20 | 0.51 | 4.30 | 0.61 | 4.11 | 0.70 | 2.19 | 0.069 | 0.020 |
| Future role of AI | 4.11 | 0.51 | 4.13 | 0.53 | 4.09 | 0.57 | 3.99 | 0.62 | 4.15 | 0.61 | 1.05 | 0.383 | 0.010 |

Finally, a bivariate correlation analysis was conducted between the subscales of perceptions of AI use in higher education and variables such as age, frequency or AI use, and AI experience. The analysis revealed significant relationships between age and both attitudes

and perceptions (r = −0.10, $p = 0.4$) and ethical and social implications (r = −0.10, $p = 0.03$), indicating that higher scores on these subscales are associated with younger participants.

Significant correlations were also found between AI experience and the subscales of attitudes and perceptions (r = 0.31; $p < 0.001$), the role of AI in the teaching-learning process (r = 0.26, $p < 0.001$), and the role of AI in the future (r = 0.19, $p < 0.001$), showing that greater experience with AI is linked to higher scores on these subscales. Additionally, a negative relationship was observed between AI experience and age (r = −0.20, $p < 0.001$), indicating that younger participants tend to have more AI experience.

The frequency of AI use was positively correlated with attitudes and perceptions (r = 0.40, $p < 0.001$), the role or AI in the teaching-learning process (r = 0.35, $p < 0.001$), and the role of AI in the future (r = 0.31, $p < 0.001$), suggesting that higher scores on these subscales are associated with more frequent AI use. However, a negative correlation was found between AI experience and frequency of use (r = −0.60, $p < 0.001$), indicating that greater AI experience is associated with less frequent use of AI.

## 4. Discussion

Overall, participants have positive perceptions of AI in higher education [3,12], as all mean values are above 3.5. However, the variability in responses (as reflected in the standard deviation) suggests that not everyone agrees on AI's role, especially in teaching and learning. Besides, the highest mean score (4.23) for ethical and social implications shows that issues like fairness, bias, and data privacy are important factors in AI adoption. This finding highlights the need for responsible AI policies that ensure equity and transparency in AI-driven education. To provide a comprehensive interpretation, the results should be discussed in relation to previous studies and the study's working hypotheses. Additionally, the broader implications of these findings warrant further exploration, including potential directions for future research.

Regarding AI's future role, the relatively high mean score (4.10) suggests that most respondents expect AI to become increasingly integrated into education, aligning with Mujtaba's [18] findings. However, the presence of lower minimum values indicates that not all participants share this optimism, with some expressing concern about the challenges AI may introduce. This variation in perspectives suggests that while AI's expansion in education is widely anticipated, skepticism remains regarding its implications.

Since gender differences are not significant [1,3], AI-related policies and educational strategies can be designed without major gender-based distinctions. Meanwhile, age appears to have a weak but notable relationship with AI perceptions. Younger individuals generally exhibit more positive attitudes toward AI, yet they also express significantly greater concerns regarding its ethical and social implications. This generational difference may reflect varying levels of awareness or differing perspectives on AI's social impact. Despite this, age does not strongly influence overall AI perceptions, although younger individuals 'critical stance of AI's ethical dimensions are worth further investigation.

Experience with AI emerges as a key factor of positive attitudes toward its role in higher education. Participants with more AI experience are more likely to recognize its value in learning and its future importance. Additionally, younger individuals tend to have greater AI exposure, which may contribute to their overall more favorable perceptions. Interestingly, while frequent AI users tend to have more positive attitudes toward AI in education and its future significance, those with greater AI experience report using it less frequently. This suggest that expertise may lead to more strategic or efficient AI usage rather than habitual reliance.

These findings contribute to the broader discourse of AI adoption in education, emphasizing the importance of ethical considerations, experience-driven perceptions, and

demographic influences. Future research should further explore these dimensions, particularly the nuanced relationship between AI familiarity, critical awareness, and usage patterns, to inform more effective AI integration strategies in higher education.

## 5. Conclusions

As artificial intelligence continues to transform higher education, understanding how different groups perceive its role is essential for effective implementation. This study examined attitudes and perceptions toward AI across various demographics, including gender, age, occupation, and academic discipline, while also considering ethical concerns and experience levels.

Answering the first research question, findings indicate that while overall attitudes toward AI in higher education are generally positive, ethical concerns and uncertainty about its role in teaching and learning remain. The study highlights the complex relationship between age, experience, and AI perceptions. Younger individuals tend to be more critical of AI's ethical and social implications, as noted by Tamanna & Sinha [26]. However, their greater exposure to AI also cultivates a more positive outlook on its potential. Additionally, frequent AI users generally perceive AI more favorably, though those with advanced expertise tend to use it less frequently, suggesting that deeper knowledge leads to more deliberate and strategic utilization.

The second question refers to the ethical and social implications of AI implementation, the study suggests that AI policies in higher education can be designed without major gender or age-based distinctions. However, ethical concerns, especially among female students and educators in humanities disciplines, should be addressed. Teachers show more skepticism toward AI, emphasizing the need for transparency, ethical guidelines, and training to build trust and facilitate adoption. In line with Khatri & Karki [13], higher-education institutions should actively promote and enforce academic integrity policies to address stakeholders' concerns and ensure the responsible use of AI in classrooms.

While no significant differences were found across academic disciplines, humanities-based fields demonstrated slightly ethical and social concerns, whereas Engineering and IT students showed greater acceptance of AI in education than other occupation groups, but no significant differences exist in their perceptions of AI's role or future potential. Across academic disciplines, no statistically significant variations were found (all $p$-values $> 0.05$). However, humanities-based fields show a slightly higher level of ethical concern, while students in Engineering and IT exhibit greater acceptance of AI in education.

Regarding the last question regarding how demographic characteristics of participants influence their perception on AI, results show that gender differences in AI perceptions are minimal. While females exhibit slightly greater concern for ethical and social implications, and males show marginally higher confidence in AI's role and future potential, these differences are too small to be meaningful [13]. Similarly, age does not significantly influence perceptions of AI in higher education. Though older respondents (35–44 and 55+) express slightly greater ethical and social concerns, and younger participants (under 25 and 35–44) are marginally more optimistic about AI's educational role, these differences are statistically insignificant.

These findings emphasize the need for informed, balanced engagement with AI technologies across all demographics, ensuring ethical and social considerations. AI adoption in higher education institutions should be prioritized by having clear ethical guidelines and transparency to build trust and acceptance among stakeholders.

## 6. Limitations

As artificial intelligence continues to shape the landscape of higher education, it is essential to recognize the limitations of this study to ensure its ethical and effective integration into teaching and learning environments. This research primarily focuses on attitudes and perceptions, rather than actual outcomes of AI implementation in higher education. Consequently, it does not assess real-world effects of AI on the learning process.

Another limitation is that while the study explores faculty attitudes, it does not deeply examine how AI influences instructional design, pedagogical strategies, or faculty workload. Additionally, the research does not measure whether AI exposure correlates with improvements in academic performance, critical thinking, or student engagement, important variables that warrant further investigation.

## 7. Implications

Despite the valuable insights gained from this study, there are several implications that should be considered, which may affect the generalizability of the findings. For instance, higher education institutions should establish clear ethical guidelines for AI integration, addressing critical concerns such as fairness, bias, and data privacy in order to build institutional trust.

AI adoption should be discipline-sensitive, ensuring that its use aligns with subject-specific needs, particularly addressing ethical concerns raised by participants of this study. Furthermore, the study suggests a gap in AI experience, with younger and more experienced AI users exhibiting greater optimism. This points to the need for targeted AI training programs for older faculty members and students with less exposure to AI technologies.

The findings of this study open several avenues for future research, particularly in terms of pedagogical transformation and ethical practices. Future studies should track the long-term effects of AI adoption on teaching methodologies, student engagement, and academic outcomes to better understand its evolving role in education.

In closing, future research will be pivotal in exploring the complex interrelationship between AI, pedagogy, and ethical concerns. It is necessary to ensure that AI adoption in higher education is both effective and equitable, fostering environments that benefit all stakeholders.

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## Appendix A

*Appendix A.1*

Instrument "Exploring the Impact of Artificial Intelligence on Higher Education: The Dynamics of Ethical, Social, and Educational Implications".

**Table A1.** Section 1: Demographic Characteristic.

| | |
|---|---|
| **Age** | 1. 24 or less<br>2. 25 to 34<br>3. 35 to 44<br>4. 45 or more |
| **Gender** | 1. Male<br>2. Female |
| **Current Occupation** | 1. Student<br>2. Faculty<br>3. Administrator |
| **Education Level** | 1. Bachelor<br>2. Master<br>3. Ph.D. |
| **Major** | 1. Medicine, engineering, or computer science<br>2. Literary, humanities, or education<br>3. Business, commerce, or law |
| **Subjective AI Expertise** | 1. Low perceived expertise<br>2. Medium perceived expertise<br>3. High perceived expertise |
| **Frequency of Usage** | 1. Rarely<br>2. Monthly<br>3. Weekly<br>4. Daily |
| **AI Tools and Services**<br>*5 points Likert scale* | 1. Face-recognition services used in mobile phones and some security cameras<br>2. Speech recognition such as Google Speech-to-Text and Microsoft Azure<br>3. AI-Chatting and research tools such as ChatGPT-4, Chatbots, Bing Chat<br>4. Google AI services including Google Cloud AI Platform and Products<br>5. AI-powered design and creativity tools such as Adobe Sensei, Adobe Lightroom, Luminar AI |
| **Purpose of Usage**<br>*5 points Likert scale* | 1. General Purposes<br>2. Entertainment Purposes<br>3. Educational Purposes<br>4. Research Purposes<br>5. Commercial purposes<br>6. e-Government Purposes |
| **Negative Experiences**<br>*5 points Likert scale* | 1. Technical issues during installation<br>2. Technical issues during usage<br>3. Usage difficulties<br>4. Financial costs<br>5. Privacy and security issues |

*Appendix A.2*

**Table A2.** Section 2: Please indicate your level of agreement or disagreement with the following statements: 5 points Likert scale.

| **A: Attitudes and Perceptions towards the Use of AI in Higher Education** |
|---|
| 1. The use of AI in higher education has the potential to enhance the learning experience. |
| 2. Integrating AI technologies in higher education can improve student outcomes. |
| 3. AI technologies should be integrated into the curriculum to prepare students for the future workforce. |
| 4. AI can assist in providing personalized feedback to students. |
| 5. AI can improve access to educational resources and materials. |
| 6. AI can help identify areas where students may need additional support. |
| 7. AI has the potential to revolutionize the way higher education institutions operate. |
| 8. AI technologies can help optimize administrative processes in higher education institutions. |
| **B: Impact of AI on Teaching and Learning in Higher Education** |
| 9. AI technologies have positively influenced the teaching methods employed by faculty. |
| 10. The use of AI in higher education has improved student engagement and participation. |
| 11. AI technologies have facilitated personalized learning experiences for students. |
| 12. AI can help automate administrative tasks, allowing faculty to focus more on teaching. |
| 13. AI can provide real-time insights into student performance, allowing for timely interventions. |
| 14. AI can help create adaptive learning environments tailored to individual student needs. |
| 15. AI has the potential to improve the accessibility of higher education for diverse learners. |
| 16. AI can support the development of critical thinking and problem-solving skills in students. |
| **C: Ethical and Social Implications of AI in Higher Education** |
| 17. There are concerns about data privacy and security when using AI technologies in higher education. |
| 18. The use of AI in higher education should be transparent and accountable. |
| 19. AI algorithms should be designed to address potential biases and ensure fairness in higher education. |
| 20. Ethical guidelines and regulations should be established to govern the use of AI in higher education. |
| 21. AI should not replace human interaction and support in the educational process. |
| 22. AI should be used responsibly to avoid exacerbating societal inequalities. |
| 23. The use of AI in higher education should prioritize the ethical collection and use of student data. |
| 24. AI technologies should be developed and used in a manner that respects student autonomy and agency. |
| **D: Envisioning the Future Role of AI in Higher Education** |
| 25. AI will play a significant role in transforming teaching and learning in higher education in the future. |
| 26. The future integration of AI in higher education should prioritize ethical considerations and human values. |
| 27. AI technologies will create new opportunities for collaboration and interdisciplinary research in higher education. |
| 28. AI can assist in developing personalized learning pathways for students. |
| 29. AI can help predict and address students' individual learning needs. |
| 30. AI can contribute to the development of intelligent tutoring systems. |
| 31. AI has the potential to enhance the assessment and evaluation processes in higher education. |
| 32. AI can support the development of lifelong learning skills in students. |

## References

1. Algahtani, T.; Badreldin, H.; Alrahed, M.; Alshaya, A.; Alghamdi, S.; Sleh, K.; Alowais, S.; Alshaya, O.; Rahman, I.; Al Yami, M.; et al. The emergent role of artificial intelligence, natural learning processing, and large language models in higher education and research. *Res. Soc. Adm. Pharm.* **2023**, *19*, 1236–1242. [CrossRef]
2. López-Villanueva, D.; Santiago, R.; Palau, R. Flipped Learning and Artificial Intelligence. *Electronics* **2024**, *13*, 3424. [CrossRef]
3. Al-Zahrani, A.; Alasmari, T. Exploring the impact of artificial intelligence on higher education: The dynamic of ethical, social and educational implications. *Humanit. Soc. Sci. Commun.* **2024**, *11*, 2–20. [CrossRef]
4. Babu, G.; Wooden, O. Strategic Transformation of Higher Education through Artificial Intelligence. *Adm. Sci.* **2023**, *13*, 2–20. [CrossRef]

5. Kuleto, V. Exploring Opportunities and Challenges of Artificial Intelligence and Machine Learning in Higher Education Institutions. *Sustainability* **2021**, *13*, 10424. [CrossRef]
6. Mouta, A.; Torrecilla-Sánchez, E.M.; Pinto-Llorente, A.M. Design of a future scenarios tookit for an ethical implementation of artificial intelligence in education. *Educ. Inf. Technol.* **2023**, *29*, 10473–10498. [CrossRef]
7. Holmes, W.; Iniesto, F.; Anastopoulou, S.; Boticario, J. Stakeholder Perspectives on the Ethics of AI in Distancie-Based Higher Education. *Int. Rev. Res. Open Distrib. Learn.* **2023**, *24*, 96–117. [CrossRef]
8. Manoj, N. Analyzing Stakeholder Feedback Using AI, Harrisburg University Dissertation and These. 2024. Available online: https://digitalcommons.harrisburgu.edu/dandt/8 (accessed on 25 February 2025).
9. McKinsey & Company. *How Technology Is Shaping Learning in Higher Education*; McKinsey & Company: Zurich, Switzerland, 2022.
10. Coursera. What is Artificial Intelligence? Definition, Uses, and Types. 2024. Available online: https://www.coursera.org/articles/what-is-artificial-intelligence (accessed on 11 December 2024).
11. Eke, D.O. ChatGPT and the rise of GenAI: Treat to academic integrity? *J. Responsible Technol.* **2023**, *13*, 100060. [CrossRef]
12. Haleem, A.; Javaid, M.; Singh, R.P. An era of ChatGPT as a significant futuristic support tool: A study on features, abilities and challenges. *BenchCouncil Trans. Benchmarks Stand. Eval.* **2022**, *2*, 100089. [CrossRef]
13. Khatri, B.B.; Karki, P.D. Artificial intelligence (AI) in higher education: Growing academic integrity and ethical concerns. *Nepal. J. Dev. Rural. Stud.* **2023**, *20*, 1–7. [CrossRef]
14. Popenici, S. The critique of AI as a foundation for judicious use in higher education. *J. Appl. Learn. Teach.* **2023**, *6*, 1–7. [CrossRef]
15. Al-Badi, A.; Khan, A.; Alotaibi, E. Perceptions of Learners and Instructors toward Artificial Intelligence in Personalized Learning. *Procedia Comput. Sci.* **2022**, *201*, 445–451. [CrossRef]
16. Jensen, L.; Buhl, A.; Sharma, A.; Bearman, M. Generative AI and higher education: A review of claims from the first months of ChatGPT. *Higher Education* **2025**, *89*, 1145–1161. [CrossRef]
17. Khan, S.; Mazhar, T.; Shahzad, T.; Khan, M.A.; Rehman, A.U.; Saeed, M.M.; Haman, H. Harnessing AI for sustainable higher education: Ethical considerations, operational efficiency, and future directions. *Discov. Sustain.* **2025**, *6*, 23. [CrossRef]
18. Mujtaba, B. Clarifying Ethical Dilemmas in Sharpening Students 'Artificial Intelligence Proficiency: Dispelling Myths about using AI tools in Higher Education. *Bus. Ethics Leadersh.* **2024**, *8*, 2520–6761. [CrossRef]
19. Omar, A.; Shaqour, A.Z.; Khlaif, Z.N. Attitudes of faculty members in Palestinian universities toward employing artificial intelligence applications in higher education: Opportunities and challenges. *Front. Educ.* **2024**, *9*, 1414606. [CrossRef]
20. Leoste, J.; Jogi, L.; Oun, T.; Pastor, I.; San Martín López, J.; Grauberg, I. Perceptions about the Future of Integrating Emerging Technologies into Higher Education—The Case of Robotics with Artificial Intelligence. *Computers* **2021**, *10*, 110. [CrossRef]
21. Lee, D.; Arnold, M.; Srivastava, A.; Plastow, K.; Strelan, P.; Ploeckl, F.; Lekkas, D.; Palmer, E. The impact of generative AI on higher education learning and teaching: A study of educators 'perspectives. *Comput. Educ. Artif. Intell.* **2024**, *6*, 100221. [CrossRef]
22. Bobrytska, V. Artificial intelligence (AI) in Ukrainian Higher Education: A Comprehensive Study of Stakeholder Attitudes, Expectations and Concerns. *Int. J. Learn. Teach. Educ. Res.* **2024**, *23*, 400–426. [CrossRef]
23. Chan, C.; Hu, W. Students 'voices on generative AI: Perceptions, benefits, and challenges in higher education. *Int. J. Educ. Technol. High. Educ.* **2023**, *20*, 4–15. [CrossRef]
24. García-Peñalvo, F. Inteligencia Artificial Generativa en la Educación Superior: Una Perspectiva de 360°. In *IFE Conference*; Universidad de Salamanca: Salamanca, Spain, 2024.
25. Jianzheng, S.; Xuwei, Z. Integration of AI with Higher Education Innovation: Reforming Future Educational Directions. *Int. J. Sci. Res.* **2024**, *12*, 1727–1731. [CrossRef]
26. Tamanna, M.; Sinha, B. A conceptual analysis of artificial intelligence (AI) on academic opportunities and challenges: A case study based on higher educational institutions in Bangladesh. *Qual. Assur. Educ.* **2025**, *33*, 218–236. [CrossRef]
27. Williams, R.T. The ethical implications of using generative chatbots in higher education. *Front. Educ.* **2024**, *8*, 1331607. [CrossRef]
28. Slimi, Z.; Carballido, B. Navigating the Ethical Challenges of Artificial Intelligence in Higher Education: An Analysis of Seven Global AI Ethics Policies. *TEM J.* **2023**, *12*, 590–602. [CrossRef]
29. Acuña, E.G. Fortalecimiento de la integridad académica a través de la IA. Estrategias de prevención del plagio en la Era Digital. *Areté Rev. Digit. Dr. Educ.* **2024**, *10*, 49–67. [CrossRef]