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ORIGINAL ARTICLE

Youth Engagement with Artificial Intelligence in Higher Education

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ABSTRACT

Purpose: This study examines students' levels of awareness, engagement, perceptions, and ethical concerns regarding the use of Artificial Intelligence (AI) in higher education. It investigates whether differences in awareness and engagement influence perception and ethical concerns. It further explores the relationship between perception of ai usefulness and ethical concerns.

Design/methodology/approach: The study is based on primary data collected from 195 students enrolled at I.K.G. Punjab Technical University, Punjab. A structured questionnaire was developed by authors to measure awareness, engagement, perceptions, and ethical concerns related to AI usage. The data were analysed through SPSS, using descriptive statistics, one-way ANOVA, and Pearson correlation.

Findings: The results indicate that a majority of students were aware of Artificial Intelligence and actively engaged with Artificial intelligence tools for academic purposes. Students perceived AI as useful in enhancing learning, efficiency, accessibility, and academic support. Students also reported concerns regarding overdependence, plagiarism, reduced creativity, and potential ethical misuse.

Practical implications: The findings suggest that students' perceptions and ethical concerns remain fairly similar across different levels of AI awareness and engagement. This implies that greater exposure to AI alone may not be enough to shape attitudes. Instead, the results point to the need for responsible and balanced use of AI in higher education.

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Originality/value: This study adds to the growing literature on AI adoption in higher education by examining student awareness, engagement, and ethical concerns together. It also offers a questionnaire designed from the literature and the local context, making it useful for understanding region-specific views of AI among young people.

KEYWORDS:

• Artificial Intelligence • Higher Education • Youth • Awareness • Perception • Engagement • Ethical Concerns

INTRODUCTION

In the 21st century, the internet has become an essential part of our daily lives, and now Artificial Intelligence (AI) is taking an even more important place in society. Artificial intelligence (AI) is defined as "a system's ability to interpret external data correctly, to learn from such data, and to use those learnings to achieve specific goals and tasks through flexible adaptation" (Haenlein and Kaplan, 2019). In addition, AI refers to technology that analyses data, solves problems, makes predictions, takes decisions, remembers language, and learns patterns similar to how humans think and process information (Fetzer & Fetzer, 1990). Over time, AI has developed into a powerful technology influencing various sectors (Makridakis, 2017). AI is no longer limited to technical fields, it is present in education, healthcare, business, entertainment, and almost every sector of modern life. At every level, AI tools help people perform tasks faster, solve complex problems, and make everyday life easier. Moreover, from virtual assistants and automated systems to predictive software and smart devices, AI is gradually transforming the way we live, work, and learn. Its influence is growing rapidly, and understanding AI has become increasingly important, especially for young people who are preparing for higher education and future careers.

Artificial intelligence (AI) and information technology (IT) are increasingly becoming part of our daily lives. Their adoption has increased, and young people are often early adopters of technology. This is because they are more familiar with digital technologies and possess greater flexibility and adaptability. The youth period is critical for developing values and life meaning. This is the stage of their development which can influence life satisfaction, self-determination, and overall psychological well-being (Nikolenko *et al.,* 2020). Young people today are increasingly surrounded by artificial intelligence (AI) across many areas of life, including education (Ali *et al.,* 2024; Sidoti *et al.,* 2025; Williams *et al.,* 2024), mental-health support (Maples *et al.,* 2024), entertainment, and social media platforms (Hasse *et al.,* 2019). As AI is used most in these areas, it influences how individuals look for help, communicate and share their feelings, and develop relationships (Boyd & Holton, 2018), and it ultimately reshapes broader patterns of social behaviour.

In higher education, AI is playing a significant role in enhancing learning, research, and overall academic efficiency. AI helps students learn better through personalized learning, assessments, and tutoring (Chen *et al.,* 2020a). Many colleges and universities have started using AIsupported tools and applications that provide personalized learning experiences, instant feedback, and guidance according to each student's need. As a result, smart classrooms, digital devices, and even robotic teaching systems are becoming more common, which makes learning interactive and engaging. There are many AI tools like ChatGPT, Gemini, Microsoft Copilot, Socratic, and Perplexity that help students understand difficult concepts, practice problem solving, and manage their academic tasks effectively. In addition, it provides help in reducing repetitive work and offering easy access to resources. Therefore, AI allows students to focus more on understanding concepts, improving skills, and exploring innovative ideas. AI tools are increasingly used by students for academic purposes such as assignments, research, and skill development.

The COVID-19 pandemic further accelerated the adoption of AI in education. With colleges and schools moving to online learning, students increasingly relied on AI-powered

platforms, digital learning apps, and virtual coaching programs. Consequently, this shift highlighted the potential benefits of AI as well as the challenges of AI usage. Some students are confident in using AI tools, but others have limited awareness, and some students do not have sufficient resources, which is creating a knowledge gap. Therefore, it becomes essential to increase awareness among youth so that they know how to use AI responsibly. This helps to enhance their learning experiences and prepares them for a future where AI will be a core part of every profession. Moreover, awareness of AI also encourages ethical usage, which prevents misuse such as plagiarism, and equips students with important skills for lifelong learning and problem solving in a digital world.

At the same time, the growing use of AI has raised several ethical concerns. Issues such as plagiarism, overdependence on technology, data privacy, and reduced creativity have become important areas of discussion. Youth may experience various challenges while interacting with digital technologies, which can affect their perceptions and overall adoption behaviour (Kaur & Kaur, 2024). However, it is also important to study that even there is rising adoption of AI, how youth interact with these AI systems and what are the consequences of dependence on these system (Brandtzaeg *et al.,* 2025). Thus, understanding these aspects is important to ensure that AI contributes positively to learning outcomes. Students may rely on AI tools without fully understanding their implications, which can affect academic integrity and learning outcomes. Therefore, it is important to promote responsible and ethical use of AI among youth.

In India, AI is viewed as a tool that can fast-track development, as it helps the country overcome long-standing challenges such as weak infrastructure and administrative delays. AI applications are emerging across multiple sectors, including finance, healthcare, agriculture, transportation, and public services. Recognizing this potential, the Government of India has also set up dedicated task forces to explore AI opportunities and shape national policy (Ministry of Commerce & Industry, 2017). One of India's biggest strengths is its large and youthful population, which adopts technology very fast, and when combined with a strong IT sector, democratic setup, and fast-growing economy, these factors make India an ideal environment for AI development (Solanki & Sinha, 2017; Rao *et al.,* 2022). As India becomes more influential internationally, it is important to examine how it manages its energy sector and climate policies (Sokołowski, 2019). The Indian government has already taken some big steps in this direction; for example, in 2018, NITI Aayog released the National Strategy for Artificial Intelligence (#AIForAll), which focuses on priority sectors like education, healthcare, agriculture, smart cities, and energy (NITI Aayog, 2018), and this plan was further updated in 2021 to include new advancements and policies (NITI Aayog, 2021). Similarly, a report by NASSCOM estimated that by 2025, AI could add around $50–55 billion to India's energy and industrial sectors (NASSCOM, 2021). India has shown growing interest in adopting AI within its higher education sector. Universities and colleges have started integrating AI-based tools for teaching, learning, and administration. But, the success of these technologies largely depends on students that how they understand and accept these changes. In this context, examining the level of awareness and use of AI among youth in higher education becomes very much important. Such an understanding can help assess how effectively AI driven initiatives can be implemented at the regional level.

LITERATURE REVIEW

1. Artificial Intelligence (AI)

Artificial Intelligence (AI) has been widely examined across various domains. Its growing significance is influencing user behaviour and organisational processes. Prior studies indicate that factors such as perceived usefulness, ease of use, and awareness play a crucial role in shaping AI adoption (Chatterjee *et al.,* 2020; Flavián *et al.,* 2021). In educational contexts, students generally recognise the importance of AI, but they often lack structured training and formal learning opportunities (Sit *et al.,* 2020). Research in organisational settings suggests that while AI enhances efficiency and productivity. It also raises concerns related to job security, ethical issues, and evolving skill requirements (Vrontis, 2022; Olaniyi *et al.,* 2024). These findings collectively suggest that awareness and positive perceptions are key determinants of AI acceptance and usage.

Recent literature emphasises the psychological and ethical dimensions of AI usage. Studies reveal that individuals may develop overdependence on AI systems and perceive them as human-like despite their limitations in emotional and moral reasoning (Zimmerman *et al.,* 2023). Concerns related to data privacy, fairness, transparency, and algorithmic bias are also widely discussed (Du, 2024; Chowdhury *et al.,* 2024). Across both organisational and educational contexts, lack of awareness and insufficient training remain major barriers to effective AI utilisation (Okatta *et al.,* 2024; Malin *et al.,* 2024). Additionally, emerging research on generative AI tools highlights their potential to enhance learning and research, while simultaneously raising concerns regarding academic integrity and overreliance (Samala *et al.,* 2025; Dimri *et al.,* 2025). Overall, the literature indicates that the benefits of AI are closely linked to users' awareness, engagement, and ethical understanding.

2. AI and Higher Education

Artificial Intelligence is increasingly being integrated into higher education, offering both opportunities and challenges. Studies suggest that AI supports institutions in managing academic and administrative workloads, but its adoption is largely influenced by perceived usefulness and ease of use (Chatterjee & Bhattacharjee, 2020). However, the effective implementation of AI remains constrained by factors such as high financial investment and a shortage of adequately trained faculty (Bates *et al.,* 2020). Student acceptance of AI-based learning systems is similarly shaped by attitudes, perceived usefulness, and ease of use, rather than demographic or geographical factors (Bag *et al.,* 2022). Also limited digital literacy among students can restrict their effective engagement with advanced technologies such as artificial intelligence. Therefore, developing digital skills and incorporating them into the educational curriculum is essential for meaningful adoption (Kaur *et al.,* 2024)

A growing body of research highlights that the effectiveness of AI in education depends on how it is used. Interactive technologies can enhance knowledge acquisition and skill development. Excessive reliance on generative AI tools may reduce critical thinking and independent learning (Robayo-Pinzón *et al.,* 2023; Michel-Villarreal *et al.,* 2023). Systematic reviews indicate a rapid expansion of AI research in higher education, particularly among undergraduate students, while also identifying gaps in understanding emerging AI applications (Crompton and Burke, 2023). From a faculty perspective, lack of institutional support and insufficient professional training remain key barriers to effective AI integration (McGrath *et al.,* 2023).

Recent studies also emphasise ethical concerns and the need for responsible AI adoption. While AI enhances teaching, assessment, and research capabilities, it simultaneously raises challenges related to ethical risks, skill gaps, and resistance to change (Jafari & Keykha, 2023). There is increasing recognition of the need to incorporate ethical principles such as fairness, privacy, and transparency into AI education (Tubella *et al.,* 2024). Research further suggests that guided and structured use of AI tools can improve students' AI literacy and understanding of their limitations (Tzirides *et al.,* 2024). As AI supports personalised learning, it cannot replace human educators and may lead to overdependence if not appropriately regulated (Davis, 2024). Overall, the literature highlights the importance of strategic and responsible AI integration in higher education.

3. Literature Related to AI and Youth

Existing studies indicate that youth generally acknowledge the importance of AI but often lack adequate training and preparedness (Sit *et al.,* 2020). Research on student attitudes shows a combination of positive perceptions, such as usefulness and interest, with concerns including fear, confusion, and uncertainty (Suh & Ahn, 2022; Grassini, 2023). Compared to older populations, younger individuals tend to exhibit more favourable attitudes toward AI, although concerns regarding overdependence remain significant (Nikolenko & Astapenko, 2023). Empirical findings suggest that students are more likely to adopt AI tools when they perceive them as useful, easy to use, and beneficial for academic tasks (Strzelecki, 2024; Yurt & Kaşarcı, 2024). However, perceived risks, particularly related to academic integrity and reduced critical thinking, may limit adoption (Acosta-Enriquez *et al.,* 2024; Malik *et al.,* 2024).

Recent research also highlights broader challenges, including inequality in access, lack of institutional policies, and ethical

concerns associated with AI usage (Pham, 2025). Involving youth in AI design and decision-making processes has been suggested as a means to improve fairness and effectiveness (Chang & Tissenbaum *et al.,* 2025). Despite these contributions, existing studies largely focus on isolated dimensions such as attitudes, usage, or specific tools.

There remains limited empirical research that simultaneously examines awareness, engagement, perception, and ethical concerns, particularly within the context of developing countries such as India.

Accordingly, there is a need for a comprehensive investigation that integrates these dimensions to better understand students' interaction with AI in higher education. Addressing this gap, the present study examines AI awareness, engagement, perception, and ethical concerns among students at I.K.G Punjab Technical University, providing context-specific insights into AI adoption among youth in higher education.

Research Objectives

Objective 1: To examine the levels of AI awareness and youth engagement with AI among students in higher education.

Objective 2: To analyse students' perception of AI usefulness and their associated ethical concerns in higher education.

Objective 3: To examine differences in students' perception of AI usefulness and ethical concerns across different levels of AI awareness and frequencies of engagement.

Objective 4: To examine the relationship between students' perception of AI usefulness and ethical concerns in higher education.

RESEARCH HYPOTHESES

H_{01}: There is no significant difference in the perception of AI usefulness across different levels of AI awareness.

H_{02}: There is no significant difference in ethical concerns across different levels of AI awareness.

H_{03}: There is no significant difference in the perception of AI usefulness across different frequencies of youth engagement with AI.

H_{04}: There is no significant difference in ethical concerns across different frequencies of youth engagement with AI.

H_{05}: There is no significant relationship between students' perception of AI usefulness and ethical concerns in higher education.

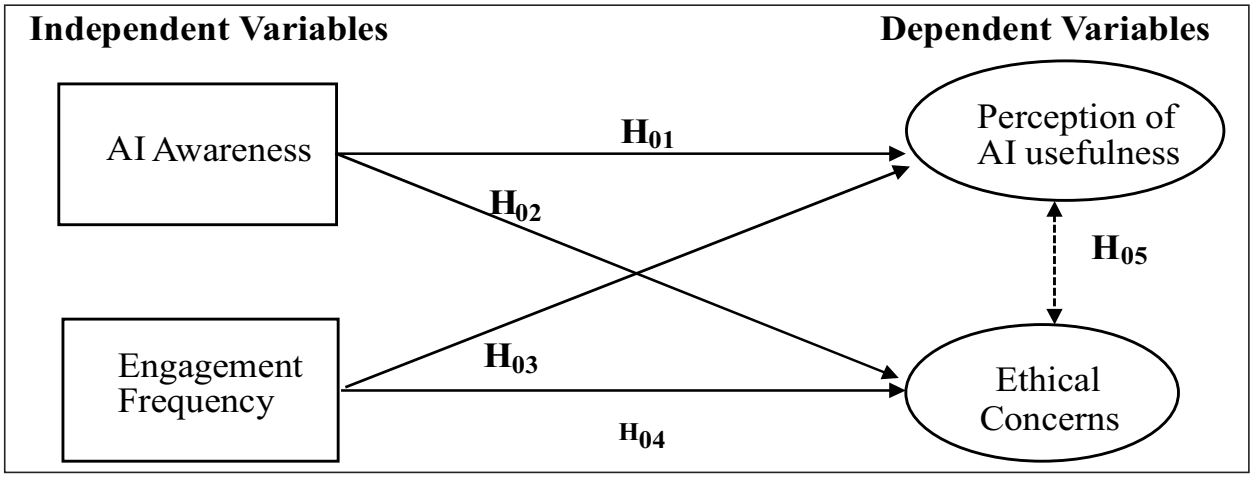


Figure 1: Conceptual framework (***Source:*** Self-created by author)

METHODOLOGY

This study adopts an empirical and descriptive research design based on primary data. The purpose is to examine students' views on Artificial Intelligence (AI) in higher education and to analyse the relationships among the selected variables. The questionnaire was self-developed based on a review of relevant literature. Key constructs and themes such as awareness of AI tools, usage patterns, perceived challenges toward AI were informed by prior study (Tamanna

& Sinha, 2025). However, all items were independently reworded and tailored to the context of the present study, and no previously validated scale was directly adopted.

The data were collected using a structured questionnaire comprising multiple sections. Although the questionnaire consisted of several items, only selected variables which are relevant to the study objectives such as AI awareness, engagement frequency, perception of AI usefulness, and ethical concerns were used for hypothesis testing. The remaining items were analysed descriptively to provide additional insights into students' interaction with AI. The study was conducted among higher education students, and the sample was selected using a convenience sampling technique.

1. Sample and Data Collection

Data were collected from undergraduate, postgraduate students, and from research scholars of I.K.G Punjab Technical University through a online questionnaire. A total of 300 questionnaires were distributed, out of which 215 were received; after removing incomplete responses, 195 were retained for final analysis. The study used a convenience sampling technique based on respondents' availability and willingness.

2. Measurement Instrument and Pilot Study

The questionnaire employed nominal and ordinal scales for demographic and multiple-choice items. Perception and ethical concerns were measured using self-developed statements on a five-point Likert scale. A pilot study was conducted with 50 respondents to assess the reliability of the instrument using Cronbach's alpha. The ethical concerns scale demonstrated good reliability ($\alpha = 0.852$). Initial reliability analysis for the five-item perception scale yielded a Cronbach's alpha of 0.65. Examination of the 'Cronbach's Alpha if Item Deleted' column indicated that removing the first statement "AI makes learning easier and faster" would significantly improve the scale's reliability. After removing this item, the reliability for the remaining four items improved to ($\alpha = 0.899$), which is considered excellent. These values indicate satisfactory internal consistency of the constructs. Content validity was ensured through alignment with existing literature and the study objectives.

3. Data Analysis Techniques

The data were analysed using SPSS software. Descriptive statistics such as frequency, percentage, mean, and standard deviation were used to summarise the responses. Reliability of the multi-item constructs was assessed using Cronbach's Alpha. One-way Analysis of Variance (ANOVA) was applied to examine differences in students' perception of AI usefulness and ethical concerns across different levels of AI awareness and frequency of engagement. Additionally, Pearson correlation analysis was used to examine the relationship between perception of AI usefulness and ethical concerns.

INTERPRETATION OF RESULTS

Table 1: Demographic Profile of Respondents

Variable	Frequency	Percentage
Gender		
Male	129	66.2
Female	66	33.8
Total	**195**	**100.0**
Age Group		
17-19 years	47	24.1
20-22 years	138	70.8
23-25 years	4	2.1
Above 25 years	6	3.1
Total	**195**	**100.0**
Level of Study		
Undergraduate	184	94.4
Postgraduate	5	2.6
Ph.D/ Research Scholar	5	2.6
Other	1	5
Total	**195**	**100.0**
Field of Study		
STEM	176	90.3
Humanities	1	0.5
Management	18	9.2
Total	**195**	**100.0**

The demographic profile (Table 1) shows that the majority of respondents were male (66.2%), while females were 33.8%. Most participants belonged to the 20–22 years age group (70.8%), followed by 17–19 years (24.1%). The sample was largely composed of undergraduate students (94.4%), with very few postgraduate and research scholars. In terms of field of study,

most respondents were from STEM disciplines (90.3%), followed by management (9.2%), with minimal representation from humanities.

District-wise, the majority of respondents were from Kapurthala (39%) and Jalandhar (30.8%), which was followed by Hoshiarpur (10.8%) and Ludhiana (7.7%). A smaller proportion belonged to Gurdaspur (2.6%) and other districts (9.2%). Other districts included Mansa, Ferozepur, Fazilka, Barnala, Pathankot, Amritsar, SAS Nagar (Mohali), Rupnagar, Tarn Taran, and Muktsar.

The present study examines students' awareness, engagement, perception of AI usefulness, and associated ethical concerns in higher education. The descriptive findings indicate that awareness of artificial intelligence among students (Table 2) is remarkably high, with 96.9% of respondents reporting that they have heard about AI. In terms of awareness levels, most students fall within the moderate to high categories, with the largest proportion reporting a moderate level of awareness (30.8%). The mean awareness score (M = 3.29, SD = 1.30) further supports this observation, that students generally possess a reasonable understanding of AI, with a tendency towards higher awareness (Table 4). With regard to AI tools, chat-based tools are the most recognized and used (96.9%), then presentation tools (45.9%) and writing tools (37.6%), indicating that students primarily engage with AI for academic assistance and content generation.

Table 2: AI Awareness

Component	Frequency	Percentage
Heard about AI		
Yes	189	96.9%
No	6	3.1%
Level of Awareness		
Very High	48	24.6%
High	35	17.9%
Moderate	60	30.8%
Low	30	15.4%
Very Low	22	11.3%
AI Tools Awareness		
Chat Tools	188	96.9%
Writing & Grammer Tools	73	37.6%
Presentation Tools	89	45.9%
Language Tools	59	30.4%
Research Tools	31	16%

The findings also reveal a high level of engagement with AI tools (Table 3) in academic contexts. A majority of respondents (68.2%) reported daily usage, while smaller proportions reported weekly (18.5%) and occasional (11.8%) use. AI tools are predominantly used for doubt solving (82.6%), learning new skills (77.9%), assignments (73.8%), and note preparation (70.8%). The mean engagement related confidence score (M = 3.74, SD = 1.21) indicates a moderate to high level of confidence among students in using AI tools (Table 4). Also 73.3% of respondents expressed readiness to use AI responsibly, and the high mean score regarding the future role of AI (M = 4.08, SD = 1.24) reflects a strong positive orientation towards its continued integration in higher education (Table 4).

Variable Category Frequency Percentage (%)

Table 3: Level of Engagement with AI Tools

Frequency of AI Use	**Daily**	**133**	**68.2**
	Weekly	36	18.5
	Occasionally	23	11.8
	Never	3	1.5
Purpose of AI Use	Assignments	144	73.8
	Notes Preparation	138	70.8
	Research Work	111	56.9
	Doubt Solving	161	82.6
	Learning New Skills	152	77.9
	Never Used AI	8	4.1
Confidence in Using AI	Strongly Disagree	15	7.7
	Disagree	16	8.2
	Neutral	37	19.0
	Agree	62	31.8
	Strongly Agree	65	33.3
Preparedness for Responsible AI Use	Yes	143	73.3
	Somewhat	44	22.6
	No	8	4.1

In terms of perception, students exhibit a moderate to highly positive attitude towards the usefulness of AI in higher education. The composite mean score of 3.91 (SD = 0.9257) (Table 4) suggests general agreement that AI contributes positively to exam preparation, assignment quality, curriculum enhancement, and career development. However, comparatively lower agreement was observed regarding AI making learning easier, indicating some degree of critical evaluation among students. At the same time,

students also demonstrate moderate level of concern with a tendency towards agreement with ethical concern related to AI usage. The mean score for ethical concerns (M = 3.41, SD = .8306) (Table 4) indicates that respondents are aware of potential issues such as data privacy, academic dishonesty, reduced critical thinking, job displacement, and changes in the teacher–student relationship. The relatively consistent responses suggest a shared concern among students regarding these challenges.

Table 4: Descriptive Statistics Mean and Standard Deviation

AI Awareness					
Variable	**N**	**Minimum**	**Maximum**	**Mean**	**Std. Deviation**
AI Awareness	195	1.00	5.00	3.29	1.30
Confidence in using AI					
Confidence in using AI	195	1.00	5.00	3.74	1.21
Future role of AI					
Future role of AI	195	1.00	5.00	4.08	1.24
Perception usefulness of AI					
Perception	195	1.00	5.00	3.91	0.9257
Ethical Concerns					
Ethical Concerns	195	1.00	5.00	3.41	.8306

A series of inferential statistical analyses were conducted to test the proposed hypotheses and examine both group differences and relationships among key study variables. To test hypotheses H_{01} to H_{04}, one-way Analysis of Variance (ANOVA) was employed to assess whether AI awareness levels and engagement frequency significantly influence students' perceived usefulness of AI and their ethical concerns. The results presented in Table 5. The ANOVA findings consistently revealed no statistically significant differences across all tested group comparisons. Specifically, AI awareness levels did not significantly influence perceived usefulness ($F = 0.818$, $p = 0.515$) or ethical concerns ($F = 0.395$, $p = 0.812$), indicating that H_{01} and H_{02} are not rejected. Similarly, engagement frequency showed no significant effect on perceived usefulness ($F = 1.911$, $p = 0.129$) or ethical concerns ($F = 2.088$, $p = 0.103$), suggesting that H_{03} and H_{04} are also not rejected.

This consistent lack of statistical significance across all group-based hypotheses reveals a meaningful and theoretically important pattern. The results suggest that students in higher education exhibit a highly uniform perception of artificial intelligence. Differences in awareness levels or frequency of use do not create variation in how students evaluate AI. Instead, AI appears to be normalized within the academic environment, where its usefulness is widely accepted and its ethical implications are broadly understood across the entire student population. To test H_{05} and address the final research objective, a Pearson correlation analysis (Table 6) was conducted to examine the relationship between perceived AI usefulness and ethical concerns. The results revealed a statistically significant moderate positive relationship ($r = 0.401$, $p < 0.001$), leading to the rejection of H_{05}. This indicates that students who perceive AI as more useful are also more likely to express stronger ethical concerns.

In addition to the quantitative analysis, an open-ended question was included to capture students' views on the influence of Artificial Intelligence on their learning experience. The responses indicate that students generally perceive AI as a useful tool that enhances learning efficiency, simplifies complex concepts, and provides continuous academic support. At the same time, concerns related to overdependence, reduced critical thinking, and potential misuse in academic work were also highlighted by several respondents. These responses reflect both the positive and critical perspectives of students toward AI usage in higher education.

Taken together, these findings highlight a critical pattern aligned with the study's

central objective. While external factors such as awareness and usage do not differentiate students' perceptions, a strong internal relationship exists between perceived usefulness and ethical concern. This reflects a "dual-awareness" mindset among students, where increased recognition of AI's academic benefits is accompanied by heightened sensitivity to its ethical risks. Overall, the results demonstrate that artificial intelligence does not create divisions among students based on awareness or usage, it also fosters a shared and homogeneous perspective. At the same time, students exhibit a sophisticated and balanced understanding, simultaneously embracing AI's utility while remaining critically aware of its potential challenges within higher education.

This section examines differences in students' perception of AI usefulness and ethical concerns across levels of AI awareness and engagement frequency using one-way ANOVA.

Table 5: ANOVA Values

Sources of variation	Sum of Squares	df	Mean Square	F	P-value	Statistically significant?
ANOVA: AI Awareness Levels and Perception						
Between Groups	2.813	4	.703	.515	.515	No
Within Groups	163.436	190	.860			
Total	166.249	194				
ANOVA: AI Awareness Levels and Ethical Concerns						
Between Groups	1.103	4	.276	.395	.812	No
Within Groups	132.751	190	.699			
Total	133.854	194				
ANOVA: Engagement Frequency and Perception						
Between Groups	4.845	3	1.615	1.911	.129	No
Within Groups	161.404	191	.845			
Total	166.249	164				
ANOVA: Engagement Frequency and Ethical Concerns						
Between Groups	4.250	3	1.417	2.088	.103	No
Within Groups	129.604	191	.679			
Total	133.854	194				

Table 6: Correlation between students' perception of AI usefulness and ethical concerns

Correlation			
		Perception	Ethical concerns
Perception	Pearson Correlation	1	.401**
	Sig. (2-tailed)		.000
	N	195	195
Ethical concerns	Pearson Correlation	.401**	1
	Sig. (2-tailed)	.000	
	N	195	195

**Correlation is significant at the 0.01 level (2-tailed).

DISCUSSION AND CONCLUSION

1. Discussion

The present study examined students' awareness, engagement, perceptions, and ethical concerns related to Artificial Intelligence (AI) in higher education. The findings show that students are generally aware of AI and actively use AI tools in their academic work. It reflects how deeply AI has become part of the learning environment. Overall, students view AI positively, especially because it helps them learn faster, understand content more easily, and complete academic tasks more efficiently. At the same time, they also expressed ethical concerns, particularly about data privacy, academic integrity, and overdependence on AI. This suggests that students do not see AI in a purely positive or negative way, but rather hold a balanced view of its role in education.

The ANOVA results show that students' perceptions and ethical concerns do not differ significantly across levels of AI awareness or engagement. In other words, students tend to think about AI in a similar way regardless of how aware they are of it or how frequently they use it. This may be because AI tools are now widely available and familiar to most students,

which creates a shared understanding of both their benefits and risks. In contrast, the correlation analysis for H05 shows a significant relationship between perception and ethical concerns. This means that students who see AI as useful are also more likely to think carefully about its ethical implications. Students not treat AI as a one-sided tool, they appear to evaluate both its academic value and its possible risks at the same time.

The qualitative responses support this pattern. Many students mentioned that AI helps them understand difficult concepts, save time, and receive learning support when needed. At the same time, several respondents raised concerns about over-reliance, reduced critical thinking, and misuse in academic work. These qualitative responses support the quantitative findings and show that students' views on AI are shaped by both its practical benefits and its ethical challenges.

Overall, the study suggests that students' attitudes toward AI are fairly consistent across different levels of awareness and engagement. At the same time, their responses show a clear awareness of both the advantages and the risks associated with AI use in higher education.

2. Conclusion

The study shows that AI has become an important part of students' learning experience in higher education. Students generally view AI positively, but they are also aware of the ethical issues linked to its use.

The findings also suggest that awareness and engagement do not significantly change students' perceptions or ethical concerns, which points to a fairly similar outlook across the sample. At the same time, the significant relationship between perception and ethical concerns shows that students who see AI as useful are also more thoughtful about using it responsibly. Overall, students appear to accept AI as a helpful tool while still looking at it critically. It highlights the need for balanced and ethical use in education.

3. Practical Implications

The findings show that students' perceptions and ethical concerns are fairly similar across different levels of AI awareness and engagement. This suggests that simply increasing students' exposure to AI may not be enough to change their attitudes. What matters more is how they actually use AI in their studies. The results also show that students understand both the advantages and the risks of AI. For this reason, institutions should focus not only on promoting AI but also on encouraging its responsible use.

There is also a need to discuss ethical use, academic integrity, and critical thinking as part of the learning process. Students should be guided to use AI as a support tool rather than depending on it entirely. Some responses also pointed to concerns about overdependence, reduced creativity, and misuse in assignments. Overall, the findings suggest that AI should be used in a balanced way so that it supports learning without weakening students' independent and critical thinking abilities.

4. Limitations

A limitation of this study is the exploratory nature of the self-developed survey instrument, which was not derived from a pre-existing legacy theoretical framework. However, this approach allowed for a highly flexible and contextual assessment of student mindsets regarding AI. Future studies are recommended to validate these scales across larger and more diverse student populations. Despite its contributions, this study is limited to a single university, which may restrict the generalizability of the findings. Additionally, the cross-sectional design captures responses at one point in time and does not reflect changes over time. Future research can include multiple institutions and diverse regions to enhance generalizability. Longitudinal studies can provide insights into how students' perceptions evolve with increasing exposure to AI.

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