



Challenges of Using Meta AI in Higher Education

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ABSTRACT

Despite many advantages, the use of Meta AI also creates several practical and academic challenges that may affect students' learning processes. This study aimed to explore the challenges associated with the use of Meta AI among students in higher education institutions. The population of the study consisted of undergraduate and postgraduate students enrolled the universities of Lahore. A sample of 400 students was selected using a multi stage sampling technique to ensure representation from different academic backgrounds. Data were collected through a structured questionnaire adapted from Alghazo et al. (2025). The instrument included closed-ended items measured on a five-point Likert scale ranging from Strongly Disagree (1) to Strongly Agree (5). The reliability of the instrument was confirmed through Cronbach's Alpha = .87. Quantitative data analysis was conducted using IBM SPSS, where descriptive statistics such as mean and percentages and inferential statistics including independent sample t-test and ANOVA were applied. The findings revealed that students experience several challenges while using Meta AI in their academic activities. The major challenges reported included over-dependence on artificial intelligence tools, concerns about the accuracy and reliability of AI-generated information, technological limitations and accessibility issues, and lack of institutional guidelines or policy frameworks regarding the responsible use of AI. The results also indicated variations in perceived challenges across different age groups and academic departments. On the basis of the results it is concluded that although Meta AI provides valuable academic support, its use also raises important practical challenges that require careful attention. It is recommended that higher education institutions develop clear policies, provide digital literacy training, and guide students in the responsible and effective use of AI technologies to minimize the potential challenges associated with Meta AI in educational settings.



Introduction

Artificial Intelligence (AI) is rapidly transforming higher education by introducing advanced technological tools that support learning, research, and academic productivity. Among these technologies, Meta AI has emerged as a powerful digital tool that assists students in academic tasks, information retrieval, and problem-solving. Studies indicate that the integration of AI technologies in higher education has increased significantly in recent years, particularly through adaptive systems and personalized learning experiences that enhance student engagement and academic outcomes (Bond et al., 2024).

Despite these potential advantages, the use of AI technologies such as Meta AI also introduces several challenges that may influence students' academic practices and learning behaviours. One of the major concerns associated with AI tools is the risk of overdependence on technology, where students may rely excessively on AI-generated content instead of developing their own analytical and critical thinking skills. Additionally, questions regarding the accuracy and reliability of AI-generated information remain a significant challenge for students using these tools in academic work (Vieriu, 2025).

Another important challenge is related to technological accessibility and infrastructure limitations. In many educational contexts, particularly in developing countries, unequal access to digital resources and technological infrastructure can create barriers for students attempting to utilize AI tools effectively (Caja et al., 2025). Similarly, the lack of institutional policies and clear guidelines regarding the responsible use of AI technologies further complicates the integration of these tools into academic environments.

Furthermore, recent surveys summarized by Mulford (2025) indicate that although AI adoption among students and faculty members is increasing, many users remain concerned about practical difficulties such as technical limitations, insufficient training, and uncertainty regarding the appropriate academic use of AI tools. These challenges highlight the need for deeper investigation into students' experiences with AI technologies in higher education.

Although the adoption of AI technologies is growing globally, research focusing on the challenges associated with Meta AI in Pakistani higher education remains limited. Therefore, this study aims to explore the key challenges experienced by undergraduate and postgraduate students while using Meta AI in higher education institutions. Understanding these challenges can help educational institutions develop effective policies, provide appropriate training, and promote responsible and effective use of AI technologies in academic environments.

The integration of Artificial Intelligence (AI) in higher education has introduced innovative tools that support teaching, learning, and academic research. However, along with these technological advancements, several challenges have emerged that influence how students and institutions adopt AI technologies. Scholars have highlighted that while AI tools improve efficiency and access to information, they also create new academic, technological, and ethical difficulties for educational systems (Bond et al., 2024).

One of the most frequently discussed challenges in the literature is students' overdependence on AI tools. Researchers argue that excessive reliance on AI-generated content may reduce students' critical thinking, problem-solving abilities, and independent learning skills. According to Vieriu and Petrea (2025), although AI systems support academic productivity, uncontrolled dependence on these technologies may weaken students' cognitive engagement and creativity.

Another important challenge relates to the accuracy and reliability of AI-generated information. AI systems rely on large datasets and algorithms to generate responses; however, these outputs may

sometimes contain incomplete or misleading information. Such inaccuracies can negatively affect students' academic work and research quality if the information is used without verification (Vieriu & Petrea, 2025).

Technological and infrastructural limitations also represent a major challenge in the adoption of AI in higher education. In many developing countries, including Pakistan, limited access to digital infrastructure, stable internet connectivity, and modern technological devices restrict students' ability to fully utilize AI tools for academic purposes (Majeed et al., 2025). This digital divide can lead to unequal learning opportunities among students from different socioeconomic and geographical backgrounds.

Institutional and policy-related issues further complicate the integration of AI technologies in educational environments. Many universities still lack clear policies and guidelines regarding the responsible use of AI tools in academic work. According to Marin et al. (2025), the absence of structured institutional frameworks may create confusion among students and educators regarding appropriate AI usage in research, assignments, and assessments.

Similarly, technological readiness and digital literacy among students and educators remain significant concerns. Research indicates that many students possess limited understanding of how AI systems function, which may affect their ability to use these technologies effectively and responsibly (Long & Magerko, 2020). Without adequate training and AI literacy programs, the benefits of AI integration may not be fully realized in higher education institutions.

Overall, on the basis of the literature above it is suggested that although AI technologies such as Meta AI offer significant opportunities for improving education, several practical challenges—including technological limitations, information reliability, overdependence, and lack of institutional guidance—must be addressed to ensure their effective and responsible use in higher education.

Research Objectives

The research was conducted to attain the following objectives:

1. To identify the major challenges students face while using Meta AI tools in higher education.
2. To analyse gender-based differences in students' perceptions regarding the challenges of using Meta AI.
3. To compare students' perceptions regarding the challenges of using Meta AI across academic levels (undergraduate and postgraduate).
4. To determine age-wise variations in students' perceptions regarding the challenges of using Meta AI.
5. To investigate departmental differences in students' perceptions regarding the challenges of using Meta AI.

Research Questions

Following research questions were developed to conduct the study:

1. What are the major challenges faced by university students while using Meta AI tools in higher education?
2. Is there any significant difference in students' perceptions of Meta AI challenges based on gender?
3. Is there any significant difference in students' perceptions of Meta AI challenges based on academic level (undergraduate and postgraduate)?

4. Do students' perceptions of Meta AI challenges differ according to age groups?
5. Are there any departmental differences in students' perceptions regarding the challenges of using Meta AI?

Methodology

The quantitative research approach was followed and a descriptive survey design was used to find out the perceived challenges of using Meta AI among undergraduate and postgraduate students in higher education institutions.

Population

The population consisted of students enrolled in all universities in Lahore.

Sample

A sample of 400 students was selected through multi stage sampling technique to ensure representation from different academic disciplines and educational levels.

Instrumentation

Data were collected through a structured questionnaire consisting of closed-ended statements measured on a five-point Likert scale ranging from Strongly Disagree (1) to Strongly Agree (5). The instrument was designed to measure students' perceptions regarding challenges associated with Meta AI use in higher education. These Challenges were assessed through 15 items comprising four sub-factors:

Overreliance and Dependency on Meta AI

This sub-factor examined the extent to which students depend excessively on Meta AI, which may reduce independent thinking, critical analysis, and academic autonomy. (It included Items: 16, 19, 25, 28)

Accuracy and Information Issues

This dimension assessed concerns related to the reliability, relevance, validity, and correctness of AI-generated information. (It included Items: 17, 20, 27, 30)

Technical and Accessibility Challenges

This sub-factor explored technological barriers such as internet dependency, limited digital infrastructure, lack of access to devices, and unequal technological resources. (It included Items: 21, 23, 26)

Ethical and Policy Uncertainty

This dimension evaluated issues related to plagiarism, academic dishonesty, lack of institutional guidelines, absence of ethical policies, data privacy concerns, and regulatory gaps. (It included Items: 18, 22, 24, 29)

Pilot Testing and Reliability

The instrument was pilot-tested on 100 students to check clarity and relevance. Necessary modifications were made based on feedback. Cronbach's Alpha was used to measure internal consistency reliability. The overall reliability coefficient was found to be 0.87, indicating high reliability. Factor-wise reliability values for all sub-constructs were above 0.70, confirming strong

internal consistency. After expert review and reliability analysis, the final questionnaire was considered valid and reliable for main data collection.

Data Analysis

The study employed descriptive statistics, including mean scores and percentages, to identify patterns in students' responses regarding challenges of Meta AI usage.

Table 1: Descriptive Statistics of the Students' Responses

Overreliance and Dependency on Meta AI	Mean	SD
I really too much on Meta Ai instead of thinking.	3.42	1.087
I am worried about being dependent on Meta Ai.	3.53	1.047
I worry that my classmates might outperform me by using Meta Ai.	3.50	1.053
Using Meta Ai reduces my own creativity.	3.59	1.046
Accuracy and Information Issues		
Meta Ai gives incorrect or misleading information.	3.50	1.057
Meta Ai gives content that is more confusing.	3.25	1.123
I am not sure if the information from Meta Ai is original.	3.66	1.015
I feel confused when Meta Ai gives different Answers to the same question.	3.51	1.023
Technical and Accessibility Challenges		
I face internet issues while accessing Meta Ai.	3.25	1.126
Teachers do not clearly explain the rules for using Ai tools.	3.47	1.028
There is a lack of proper training on how to use Meta Ai effectively	3.55	1.100
Ethical and Policy Uncertainty		
I find it difficult when to use Meta Ai.	3.54	1.054
I feel unsure whether using Meta Ai is acceptable in all Academic tasks	3.46	1.047
Meta Ai content does not match the teacher's academic acceptations.	3.46	1.078
There is no clear guidance for the ethical use of Meta Ai	3.66	.983

Table 2: Independent t-test for Mean Difference between Male and Female Students' Responses on the Basis of Challenges they Face while Using AI

Gender	N	M	SD	df.	t-value	sig.
M	124	52.09	9.11	397	-.639	.523
F	175	52.66	8.50			

Table 2 shows the results of the independent sample t-test indicate that there was no statistically significant difference between male and female students regarding the challenges faced while using Meta AI, $t(397) = -0.639$, $p = 0.523$. The mean score for female students ($M = 52.66$, $SD = 8.50$) was slightly higher than that of male students ($M = 52.09$, $SD = 9.11$), suggesting that females reported facing marginally more challenges; however, this difference was not statistically meaningful. This implies that both male and female students encountered similar levels of technical, accessibility, and usability challenges when using Meta AI in their academic tasks.

Table 3: Independent t-test for Mean Difference in Students' Responses on Challenges faced by them while Using AI on the Basis of Academic Level

ACADEMIC LEVEL	N	M	SD	Df	t-value	sig.
Undergraduate	274	53.93	7.96	398	5.50	.000
Post Graduate	126	48.88	9.64			

According to the results of table 3 the independent sample t-test, there was a significant difference in the perceived problems of using Meta AI between the undergraduate and postgraduate students, $t(398) = 5.50, p = < 0.001$. Undergraduate students ($M = 53.93, SD = 7.96$) had more problems in comparison to postgraduate students ($M = 48.88, SD = 9.64$). This indicates that undergraduates have had more technical, accessibility and overreliance problems when using Meta AI in their studies. It could be explained by the fact that postgraduate students will be more digital-literate and better at critical thinking, which will enable them to apply AI tools more effectively and responsibility. Contrarily, undergraduates, who are yet to acquire academic and technological skills, might not grasp AI-generated content, or how to manage its appropriate use, and thus they might encounter more perceived challenges.

Table 4: Independent t-test for Mean Difference in Students' Responses on Challenges Faced by them while Using AI on the Basis of Gender

<i>Gender</i>	<i>N</i>	<i>M</i>	<i>SD</i>	<i>df</i>	<i>t-value</i>	<i>sig.</i>
M	224	13.98	2.72	397	-.436	.663
F	175	14.09	2.45			

The table 4 shows the gender-wise comparison for the sub-factor “*Overreliance and Development on Meta AI*” under the main factor *Challenges of Meta AI*. The mean score of female students ($M = 14.09, SD = 2.45$) is slightly higher than that of male students ($M = 13.98, SD = 2.72$), indicating that females reported a marginally greater tendency toward dependence on Meta AI for academic purposes. However, the obtained $t(397) = (-0.442)$ and significance level $p = 0.659$ show that this difference is not statistically significant. This implies that both male and female students experienced nearly the same level of overreliance and development issues while using Meta AI.

Table 5: Independent Sample T-Test for Mean Difference Between Responses of Male and Female Students Based on Challenges Accuracy and Information Issues

<i>Gender</i>	<i>N</i>	<i>M</i>	<i>SD</i>	<i>df</i>	<i>t-value</i>	<i>sig.</i>
M	224	13.80	2.85	397	-.862	.389
F	175	14.05	2.72			

The table 5 presents the gender-based comparison for the sub-factor “*Accuracy and Information Issues*” under the main factor *Challenges of Meta AI*. The mean score for female students ($M = 14.05, SD = 2.72$) is slightly higher than that of male students ($M = 13.80, SD = 2.85$), showing that females faced a somewhat greater level of concern regarding the accuracy and reliability of Meta AI-generated information. However, the $t(397) = (-0.867)$ and the significance level $p = 0.386$ indicate that the difference between male and female students is not statistically significant. This means that both genders had similar perceptions about the accuracy and informational reliability challenges of Meta AI.

Table 6: Independent sample t-test for mean difference between male and female responses based on challenges technical and accessibility challenges.

<i>Gender</i>	<i>N</i>	<i>M</i>	<i>SD</i>	<i>df.</i>	<i>t-value</i>	<i>sig.</i>
M	224	10.11	2.29	397	-1.54	.124
F	175	10.46	2.22			

The table 6 shows the gender-based comparison for the sub-factor “*Technical and Accessibility Challenges*” under the main factor *Challenges of Meta AI*. The mean score of female students (M

= 10.46, $SD = 2.22$) is slightly higher than that of male students ($M = 10.11$, $SD = 2.29$), indicating that females experienced marginally more technical or accessibility issues while using Meta AI. However, the $t(397) = (-1.54)$ and significance level $p = 0.122$ reveal that this difference is not statistically significant. Therefore, both male and female students reported nearly similar experiences regarding the technical and accessibility-related challenges of Meta AI in higher education.

Table 7: Independent sample t-test for mean difference between male and female responses based on challenges ethical and policy uncertainty.

<i>Gender</i>	<i>N</i>	<i>M</i>	<i>SD</i>	<i>df</i>	<i>t-value</i>	<i>sig.</i>
M	224	14.19	2.73	397	.513	.157
F	175	14.05	2.69			

The table 7 presents gender-based differences for the sub-factor “*Ethical and Policy Uncertainty*” under the main factor *Ethical Concerns of Meta AI*. The mean score of male students ($M = 14.19$, $SD = 2.73$) is slightly higher than that of female students ($M = 14.05$, $SD = 2.69$), showing that males reported marginally greater uncertainty regarding the ethical and policy-related use of Meta AI. However, the $t(397) = (.513)$ and significance level $p = 0.145$ indicate that this difference is not statistically significant. This means both male and female students expressed almost similar perceptions about the ethical and policy uncertainty associated with Meta AI usage in academics.

Table 8: Independent sample t-test for mean difference between undergraduate and post under graduate students’ responses based on overreliance and development on Meta Ai.

<i>Academic Level</i>	<i>N</i>	<i>M</i>	<i>SD</i>	<i>df</i>	<i>t-value</i>	<i>sig.</i>
U	274	14.41	2.41	398	4.421	.00
P	126	13.20	2.81			

The Table 8 comparison of Overreliance and Development on Meta AI between postgraduate and undergraduate students is presented in the table. The mean score ($M = 14.41$, $SD = 2.41$) was higher among the undergraduates ($M = 13.20$, $SD = 2.81$) compared to their postgraduate counterparts. The $t(398) = (4.42)$ and $p = 0.000$ value shows that the difference between undergraduate and postgraduate students is statistically significant, and undergraduate students are more likely to use Meta AI to complete their academic assignments than their postgraduate counterparts.

Table 9: Independent sample t-test for mean difference between undergraduate and post graduate students’ responses based on accuracy and information issues.

<i>Academic Level</i>	<i>N</i>	<i>M</i>	<i>SD</i>	<i>df</i>	<i>t-value</i>	<i>sig.</i>
U	274	14.33	2.67	398	4.41	.00
P	126	13.03	2.85			

The table 9 shows the Discussion of Accuracy and Information Issues between postgraduate and undergraduate learners. The mean score ($M = 14.33$, $SD = 2.67$) of undergraduate students is higher than the mean score of postgraduate students ($M = 13.03$, $SD = 2.85$). The difference is statistically significant, as $t(398) = 4.41$ and $p = 0.000$, which reveals that undergraduates have more problems with the accuracy and reliability of the information offered by Meta AI as compared to postgraduates.

Table 10: Independent sample t-test for mean difference between undergraduate and post graduate students' responses based technical and accessibility challenges.

<i>Academic Level</i>	<i>N</i>	<i>M</i>	<i>SD</i>	<i>df</i>	<i>t-value</i>	<i>sig.</i>
U	274	10.54	2.15	398	3.63	.000
P	126	9.66	2.40			

The Table 10 show that there is a big gap between postgraduate and undergraduate students in the domain of Technical and Accessibility Challenges in using Meta AI. The overall mean scores were higher among the undergraduate students ($M = 10.54$, $SD = 2.15$) than the postgraduates ($M = 9.66$, $SD = 2.40$). The $t(398) = 3.63$ with a $p = 0.000$ indicates that this difference is statistically significant and that undergraduates have more technical and accessibility-related problems when using Meta AI compared to postgraduate students.

Table 11: Independent sample t-test for mean difference between undergraduate and post graduate student's responses based on ethical and policy uncertainty.

<i>Academic Level</i>	<i>N</i>	<i>M</i>	<i>SD</i>	<i>df</i>	<i>t-value</i>	<i>sig.</i>
U	274	14.64	2.53	398	5.92	.000
P	126	12.98	2.76			

The table 11 demonstrate that there is a big variation between undergraduate and postgraduate students in terms of Ethical and Policy Uncertainty in the application of Meta AI.

Undergraduate students have a better score ($M = 14.64$, $SD = 2.53$) in comparison to postgraduate students ($M = 12.98$, $SD = 2.76$). The $t(398) = 5.92$ with $p = 0.000$ demonstrates that this difference is very significant as undergraduates are more likely to be uncertain and confused about ethical rules and institutional policies concerning Meta AI than postgraduates are.

Table 12: ANOVA test to identify the mean difference in responses of participants or perceived challenges based on Age.

<i>Age</i>	<i>N</i>	<i>M</i>	<i>SD</i>	<i>df.</i>	<i>f</i>	<i>Sig.</i>
Below 20	3	57.00	9.16	3	4.93	.002
20-25	272	51.34	9.12	396		
26-30	117	54.78	7.56			
Above 30	8	49.00	9.53			

The table 12 shows the comparison between the perception of the respondents on the challenges of using Meta AI of various age groups. The results indicate that the respondents under the age of 20 years had the highest mean score ($M = 57.00$, $SD = 9.16$), and therefore went through or perceived more challenges than the other groups. Similarly, the mean of respondents aged 26-30 years ($M = 54.78$, $SD = 7.56$), respondents aged 20-25 years ($M = 51.34$, $SD = 9.12$) and the respondents aged above 30 years ($M = 49.00$, $SD = 9.53$) were relatively high. The F -value (4.93) was found to be statistically significant ($0.002 = p < .05$). This indicates that younger respondents especially those who are below 20 years of age experience more difficulties when using the Meta AI tools compared to older respondents.

Table 13: ANOVA test to identify the mean difference in responses of participants or perceived challenges based on departments.

<i>departments</i>	<i>N</i>	<i>M</i>	<i>std</i>	<i>df</i>	<i>F</i>	<i>Sig.</i>
Philosophy	20	51.30	6.92	14	3.00	.000
Biochemistry	66	53.66	6.40	385		
Math	44	49.79	12.62	399		
Education	14	52.78	10.48			
BBA	25	54.76	5.11			
Nursing	13	48.69	6.07			
LLB	37	49.67	8.57			
Pharm-D	21	50.47	15.75			
Arabic	14	46.50	7.46			
Physics	37	56.16	8.22			
History	28	55.00	5.29			
Pol Sci	23	56.65	5.48			
English	16	50.81	4.49			
MLT	22	53.72	7.48			
Agriculture	20	48.70	8.82			

The comparison of the perceptions of the students about the issues of using the Meta AI in various academic departments is given in the table 13. The findings demonstrate that there is appreciable interdepartmental variation. The Political Science department students registered the highest mean score ($M = 56.65$, $SD = 5.48$), then Physics ($M = 56.16$, $SD = 8.22$) and History ($M = 55.00$, $SD = 5.29$), which proves that the learners in these fields had more difficulties in using the Meta AI tools. As a different comparison, the Arabic ($M = 46.50$, $SD = 7.46$) and Nursing ($M = 48.69$, $SD = 6.07$) departments showed the lowest mean scores, indicating that the students in those institutions had fewer perceived challenges.

The F-value (3.00) and its significance of (.000) ($p < .05$) suggest that there is statistically significant difference in the issues that students in different departments encountered. This demonstrates that the challenges related to the application of Meta AI vary significantly according to the academic field of study, which might be explained by the subject needs, AI experience, and educational settings.

Table 14: ANOVA test to identify the mean difference in responses of participants or perceived overreliance and dependency on Meta AI based on Age.

<i>Age</i>	<i>N</i>	<i>m</i>	<i>std</i>	<i>df.</i>	<i>F</i>	<i>Sig.</i>
Below 20	3	15.33	2.51	3	2.463	.062
20-25	272	13.84	2.71	396		
26-30	117	14.51	2.28	399		
Above 30	8	13.00	2.44			

Table 14 displays the ANOVA of the variable of over reliance and dependency on meta AI with various age groups of students. The analysis demonstrates that there was no statistically significant difference in the age groups ($F = 2.463$, $Sig. = .062$) since the significance value is more than 0.05. It means that students of various ages tend to demonstrate the same rates of reliance and dependency on Meta AI. Even though there are slight differences in the mean scores (with the younger students (under 20) taking a slight point higher ($M = 15.33$) and the older ones taking a

slight point lower ($M = 13.00$) they do not have statistical significance. Finally, the results indicate that age is not a significant factor in influencing over reliance on or dependency on Meta AI and no significant difference was observed in the use and dependency between the students of different age groups.

Table 15: ANOVA test to identify the mean difference in responses of participants or perceived accuracy and information issues based on Age.

<i>Age</i>	<i>N</i>	<i>m</i>	<i>std</i>	<i>df.</i>	<i>F</i>	<i>Sig.</i>
Below 20	3	14.33	1.73	3	5.871	.001
20-25	272	13.57	2.29	396		
26-30	117	14.79	1.69	399		
Above 30	8	12.75	1.80			

The table 15 shows the results of ANOVA of the variable of Accuracy and Information Issues among the various age group of students. The fact that the significance of difference between the age groups is statistically significant ($F = 5.871$, $Sig. = .001$) is due to the difference between the significance value that is below 0.05. This means that the students of various ages view the accuracy and information issues in Meta AI differently. The average scores indicate that the highest scores were recorded in the category of students aged between 26 and 30 ($M = 14.79$), and the lowest in the over 30 category ($M = 12.75$). There was a moderate score of below 20 and 20-25 ($M = 14.33$ and $M = 13.57$, respectively).

To summarize, the results indicate that age has a strong influence on such perceptions of students on the issue of accuracy and information in Meta AI where younger and middle-aged students showed a little bit more concerns with the reliability of information than older students.

Table 16: ANOVA test to identify the mean difference in responses of participants or perceived technical and accessibility challenges based on Age.

<i>Age</i>	<i>N</i>	<i>m</i>	<i>std</i>	<i>df.</i>	<i>F</i>	<i>Sig.</i>
Below 20	3	11.66	1.15	3	5.176	.002
20-25	272	9.99	2.38	396		
26-30	117	10.90	1.82	399		
Above 30	8	9.62	2.55			

The results of the ANOVA of the variable, the Technical and Accessibility Challenges, among various age groups of students are as given in the table 16. According to the analysis, the age groups show statistically significant difference ($F = 5.176$, $Sig. = .002$) since the significance value is below 0.05. It means that the students of various ages have a different experience of technical and accessibility issues with Meta AI. The average scores indicate a high score of students who are below 20 years ($M = 11.66$), and the lowest score of 9.62 is achieved by students who are older than 30 years (M). The results of students aged 20-25 and 26-30 were mediocre ($M = 9.99$ and $M = 10.90$, respectively). To sum up, the results indicate that the age has a significant influence on the experiences of students regarding technical and accessibility issues, with younger students having slightly more issues than older ones.

Table 17: ANOVA test to identify the mean difference in responses of participants or perceived ethical and policy uncertainty based on Age.

<i>Age</i>	<i>N</i>	<i>M</i>	<i>std</i>	<i>df.</i>	<i>F</i>	<i>Sig.</i>
Below 20	3	15.66	3.05	3	1.971	.118
20-25	272	13.92	2.87	396		
26-30	117	14.57	2.24	399		
Above 30	8	13.62	2.72			

Table 17 shows the ANOVA outcome of the variable of Ethical and Policy Uncertainty at the various age groups of students. In the analysis, there is no statistically significant difference in the age groups ($F = 1.971$, $Sig. = .118$) since the significance value is more than 0.05. This implies that the perception of ethical and policy ambiguities in Meta AI is similar among students of various ages. Even though there are slight differences between the mean scores, with the students under 20 years obtaining a higher score ($M = 15.66$) and students 20-25 obtaining a lower score ($M = 13.92$), they are not statistically significant. Finally, the results indicate that age is not a major determinant in terms of perceptions towards ethical and policy uncertainties related to Meta AI as well as that students of all ages have quite a similar perception of the issues.

Regression equation: $Y = a + bx$

Dependent Variable = Constant + Gradient (Challenges)

- Challenges = $51.52 + 0.551(\text{Gender})$
- Challenges = $47.73 + 1.98(\text{Age})$
- Challenges = $58.98 - 5.04(\text{Academic Level})$
- Challenges = $51.84 + 0.071(\text{Faculty Department})$

Discussion

The purpose of this study was to examine the major challenges faced by university students while using Meta AI tools in higher education. The findings revealed that although Meta AI offers several academic advantages, students also encounter multiple practical and technological challenges that influence its effective use. The results indicated that the most commonly reported challenges included overreliance on AI tools, concerns about information accuracy, and technological and accessibility limitations. So, it is suggested that while Meta AI can assist students in completing academic tasks, excessive dependence on AI tools may reduce students' critical thinking and independent problem-solving abilities. These results are consistent with previous studies in the field of artificial intelligence in education. For instance, Hwang et al. (2020); and Holmes and Tuomi (2022) reported that excessive reliance on AI-based tools may negatively influence students' analytical thinking and cognitive engagement in learning tasks. Similarly, Bozkurt et al. (2024) highlighted that technological accessibility and data reliability remain major barriers in the effective implementation of AI technologies in educational institutions, particularly in developing countries. The accessibility issues identified in the present study also support the findings of Caja et al. (2025), who emphasized that digital infrastructure, technological resources, and institutional readiness play a crucial role in the successful integration of AI tools in higher education. Without proper infrastructure and technical support, the educational potential of AI technologies cannot be fully utilized. Overall, the findings indicate that despite the innovative capabilities of Meta AI, several practical challenges still exist in its implementation within higher education institutions. Addressing issues related to technological

accessibility, information reliability, and responsible use of AI tools is essential to ensure that students benefit from AI technologies without compromising their learning autonomy and critical thinking skills.

Conclusion

In the light of the results of the study it is concluded that although Meta AI is increasingly used by university students, several challenges affect its effective integration in higher education. The findings revealed that students face difficulties such as overdependence on AI tools, concerns about the accuracy of information, and lack of stable internet access and technological resources. These challenges particularly affect students in disadvantaged or rural areas and reflect the existing digital divide within the education system of Pakistan. The study also highlighted important ethical concerns, including the absence of clear institutional guidelines regarding the responsible use of AI. The lack of ethical awareness and policy frameworks may lead to misuse of AI tools, plagiarism, and threats to academic integrity.

Overall, the findings suggest that while AI technologies such as Meta AI offer promising opportunities in education, their effective use requires proper technological infrastructure, ethical guidelines, and institutional support. Universities must develop clear policies and awareness programs to ensure the responsible and balanced use of AI tools in academic activities.

Recommendations

Following recommendations are made in the light of the results of the study:

1. Academic institutions should develop clear guidelines for the responsible use of AI, with special focus on academic honesty, originality, and data privacy.
2. Standardized ethical codes should be implemented by relevant authorities and integrated into curricula as mandatory courses or training programs.
3. Students should be trained to use Meta AI ethically, including awareness of privacy risks, misinformation, and academic consequences.
4. Universities should organize regular workshops on ethical AI use, classroom integration, and responsible academic applications.
5. Government and NGOs should improve technological infrastructure, including affordable internet access, computer labs, and digital resources.
6. Monitoring systems should be implemented to detect plagiarism, prevent excessive AI dependence, and ensure responsible use through periodic audits.
7. Strong cybersecurity measures and privacy policies should be adopted, and IT staff should be trained to manage AI-generated data safely.
8. Policymakers and educators should ensure that AI supports human intelligence rather than replacing it, maintaining a balanced and ethical educational system.

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