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Benefits of Meta AI in Higher Education

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Abstract
Artificial intelligence tools, particularly Meta AI, are increasingly being used in education. Understanding the potential academic advantages of such tools is important for integrating emerging technologies into modern educational practices. The study adopted a quantitative research approach and was conducted on undergraduate and postgraduate students of four universities in Lahore, Pakistan, including two public and two private institutions. The population consisted of all the students enrolled in these universities, and a sample of 400 students was selected through multi stage random sampling technique to ensure representation from different academic disciplines and levels. Data was collected using a structured questionnaire consisting of closed-ended statements measures on five point Likert type scale . The instrument was adapted from previous studies on AI use in education and modified according to the objectives of the present research. The questionnaire measured perceived academic benefits of Meta AI including learning improvement, academic performance, creativity, and time management. The reliability of the instrument was ensured through Cronbach's Alpha reliability index, which indicated acceptable internal consistency. The collected data were analyzed using IBM SPSS 24 (trial version). Both descriptive and inferential statistical techniques were applied, including frequencies, percentages, means, standard deviations, independent sample t-tests, and ANOVA to examine demographic differences. The findings revealed that students generally perceive Meta AI as a beneficial academic tool. The results indicated that Meta AI contributes to improved learning and understanding, enhanced academic performance and quality of work, increased creativity and idea generation, and better time management and efficiency. Demographic analysis showed that undergraduate students reported slightly higher perceived benefits compared to postgraduate students, while no significant difference was found based on gender. Variations were observed across age groups and departments, with younger students and students from departments such as Pharm-D and Education reporting higher perceived benefits. It is recommended that universities should guide students for the

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responsible use of AI tools, provide digital literacy training, and develop institutional policy to maximize the academic benefits of emerging AI technologies.

Keywords: Higher Education, Academic Benefits, Meta AI, Student Perceptions

Introduction

Artificial Intelligence (AI) is taking over higher education at an alarming rate by bringing in solutions that facilitate learning, research, and academic output. One of such tools, which has become a promising application, is Meta AI that helps in enhancing creativity, idea generation, personalized learning and time management. Research also shows that the integration of AI in higher education has largely grown over the recent years, especially in adaptive and personalized learning environments that enhance student interaction and academic outcomes (Bond et al., 2024).

Recent reports indicate that students and faculty members are becoming competent in employing AI to promote academic activities (Mulford, 2025). AI tools have been linked to the increased academic achievements, creativity, and organization of learning materials. In its turn, meta-AI has attracted attention as a supportive academic tool that helps students to write research papers, comprehend complex ideas, and formulate innovative ideas.

In spite of the increased adoption of AI in the higher education sector worldwide, little empirical studies have been conducted to specifically investigate how Pakistani universities view the perceived academic benefits of using Meta AI. Consequently, the research problem of this study is to explore perceived academic benefits of using Meta AI among undergraduate and postgraduate students in Lahore. The results give evidence on the extent to which Meta AI can help in learning improvement, academic performance, creativity and time efficiency in the academic set ups.

Artificial Intelligence (AI) has been applied with a comprehensive transformation of the higher education system in terms of personalized learning, academic performance, and student engagement. Adaptive learning platforms and intelligent tutoring systems are AI-based systems that offer personalized learning experiences that rely on the needs and performance trends of students (Bond et al., 2024). Such systems also allow the students to get specific feedback, work on the weak areas, and get better academic results.

The most recent trends in AI generation, especially in generative AI, have resulted in the increased use of AI in studies at higher education institutions. Meta AI is a combination of natural language processing and deep learning technology, which can be used by a student to help in research writing, idea generation, summarization, and the development of academic content (Ali et al., 2025). In contrast to standard AI systems, the Meta AI promotes the higher-order cognitive processes, including synthesis, argument building, and critical structuring of academic texts.

Research shows that AI tools have a positive impact on the motivation of students, their productivity and time management. Learning analytics based on AI are also useful to detect the patterns of learning and justify the academic decisions that rely on the data (Marin et al., 2025). Moreover, AI-driven personalization is also consistent

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with the constructivist approach to learning because it Favors active and student-oriented learning experiences.

Despite the many academic benefits of AI integration proposed in the global literature, empirical studies on the perceived benefits of Meta AI in the Pakistani higher education environment are few. Thus, the research would like to add to the current literature by exploring the perception of postgraduate and undergraduate students on the academic advantage of using Meta AI in enhancing learning, academic achievement, creativity, and efficiency.

Research Objectives

Following were the objectives of the study:

To assess the perceived academic benefits of using Meta AI tools among university students.

To analyze gender-based differences in students' perceptions of the academic benefits of Meta AI.

To compare undergraduate and postgraduate students' perceptions regarding the academic benefits of Meta AI.

To determine age-wise variations in students' perceptions of the academic benefits of Meta AI.

To investigate differences in students' perceptions regarding the academic benefits of Meta AI in different departments.

To develop a regression equation to predict academic benefits of Meta AI for university students on the basis of demographic variables (gender, age, academic level, and department).

Research Questions

Following were the research questions of the study:

What are the perceived academic benefits of using Meta AI by university students?

Is there a significant difference in students' perceptions of the academic benefits of Meta AI based on gender?

Is there a significant difference in students' perceptions of the academic benefits of Meta AI across academic levels (undergraduate and postgraduate)?

Is there a significant difference in students' perceptions of the academic benefits of Meta AI across different age groups?

Is there a significant difference in students' perceptions of the academic benefits of Meta AI across academic departments?

How to predict academic benefits of Meta AI on the basis of students' demographics (gender, age, academic level, and department)?

Research Methodology

The research methodology applied in this study was quantitative with positivist paradigm. The study used a descriptive survey research design to explore the expected academic benefits of using Meta AI among undergraduate and postgraduate students of universities.

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Population
The population of the study comprised of all the students studying in four universities in Lahore.

Sample
The sample size of 400 students was selected through multi stage sampling technique in order to have a variety of academic disciplines and levels of education represented.

Instrumentation
The main tool of data collection was a structured questionnaire. The survey questions were closed-ended and rated on a five-point Likert scale. The questionnaire employed in this study was adapted from the instrument developed by Alghazo et al. (2023). The instrument was slightly modified to align with the objectives of the present study focusing on the academic benefits of Meta AI. The Academic Benefits construct consisted of 15 items and was further divided into four sub-factors.

Academic improvement and quality enhancement
This sub-factor explored the role played by Meta AI in increasing academic performance and improving quality of academic work. It consisted of five statements (Statements 1, 5, 6, 11 and 13).

Learning support and understanding
This dimension determined how the Meta AI was useful in concept clarification, reinforcement of understanding and facilitating process of learning among students. It consisted of five statements (Statements 4, 7, 8, 9 and 15).

Creativity and idea generation
This sub-factor assessed how the Meta AI can be used in brainstorming, developing innovative ideas, and encouraging creative thought. It consisted of three statements (Statements 3, 10 and 14).

Time Management and efficiency
This aspect analysed the efficiency of Meta AI in the saving time, enhanced productivity, and efficient accomplishment of academic tasks. It was comprised of two questions (Statement 2 and Statement 12).

Pilot Testing and Reliability
The instrument was piloted on responses of 100 students to determine the clarity, relevance and appropriateness of the questions. The minor changes were made on the feedback of the participants. Cronbach's Alpha was used in establishing the internal consistency reliability of the instrument. The total coefficient of reliability was identified to be = 0.897, which means high level of internal consistency. In addition,

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the factor-wise reliability analysis revealed that all the sub-constructs had Cronbach Alpha of more than 0.80.

Data Analysis

A descriptive survey design was used, which is appropriate in ensuring that there is a systematic collection of data in the context chosen in the study and a clear picture on the perception of the students. To determine the general trends and the response pattern of the students towards the academic benefits of the Meta AI, the data was analysed by applying descriptive statistics including means scores, and percentages and inferential statistics (t-test, ANOVA and Regression).

Table 1
Descriptive Statistics of the Students' Responses

Academic Improvement and Quality Enhancement	**Mean**	**SD**
Meta AI improves the quality of my academic report.	3.58	1.01
Using Meta AI enhances my learning quality.	3.65	0.89
Meta AI is a useful tool for research.	3.81	0.94
Meta AI improves the quality of my presentations.	3.68	0.97
Meta AI helps me revise and improve my assignments.	3.62	0.97
Learning Support and Understanding		
Meta AI helps me understand complex academic topics easily.	3.59	1.10
Meta AI helps me avoid grammatical errors.	3.71	0.97
I use Meta AI to understand difficult concepts.	3.71	1.00
Meta AI helps me organize my academic content better.	3.66	1.01
Meta AI provides instant academic help when teachers are unavailable.	3.66	0.98
Creativity and Idea Generation		
Meta AI assists me in generating new ideas.	3.59	1.04
Meta AI encourages me to learn independently.	3.64	1.02
Meta AI supports collaborative learning.	3.65	0.99
Time Management and Efficiency		
Using Meta AI saves my time in completing for assignments.	3.58	1.01
I feel more confident in my academic work when I use Meta AI.	2.64	1.18

Table 1 shows the mean and standard deviation of the statements used to measure students' perceptions regarding the academic benefits of Meta AI.

Table 2
Independent Sample t-test for Mean Difference between Responses of Male and Female Students based on Academic Improvement and Quality Enhancement

Gender	N	M	SD	df.	t-value	Sig.
Male	224	18.05	3.50	397	-1.58	.115

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Female	175	18.56	3.72

Table 2 is presenting gender wise comparison on the sub-factor of Academic Improvement and Quality Enhancement under the main factor "Benefits of using Meta AI". The average female student (M = 18.56, SD = 3.72) has a slightly higher score than the male students (M = 18.05, SD = 3.50), which means that females rated the quality of academic higher when they used Meta AI. Nevertheless, the t(397) = -1.58 with the significance level of p =0.115 indicates that the difference is not significant and therefore both male and female students have the same opinion with respect to the benefits of using Meta AI in academic improvement.

Table 3
Independent Sample t-test for Mean Difference between Responses of Male and Female Students Based on Learning Support and Understanding

Gender	N	M	SD	df.	t-value	Sig.
Male	224	18.133	3.37	397	-1.396	.164
Female	175	18.594	3.12			

The gender comparison of the sub-factor of Learning Support and Understanding under the main factor Benefits of Meta AI is found in the table 3 The average female students (M = 18.59, SD = 3.12) have a slightly higher score than male students (M = 18.13, SD = 3.37), which indicates that female students perceived Meta AI to be a little more helpful in learning and academic content comprehension. The t(397)= -1.396 and significance value p = 0.164 obtained are however indicated that the difference is not significant. This means that the perceptions of both male and female learners on the learning support support and understanding advantages offered by Meta AI are almost similar.

Table 4
Independent Sample t-test for Mean Difference between Male and Female Responses Based on Creativity and Idea Generation

Gender	N	M	SD	df.	t-value	Sig.
Male	224	10.74	2.33	397	-1.37	.171
Female	175	11.03	1.81			

The sub-factor under the main factor Benefits of Meta AI titled Creativity and Idea Generation gender-wise comparison is presented in the table 4 The average score of female students (M = 11.03, SD = 1.81) is a little bigger than that of male students (M = 10.74, SD = 2.33), which means that females rated Meta AI as a little more useful in helping to be creative and generate new ideas. Nonetheless, the t(397)= -1.37 and the significance value p = 0.171 indicate that the difference between male students and female students is not significant. This implies that males and females have almost equal opinion concerning the role of Meta AI that encourages creativity and generation of ideas.
Table 5

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Independent Sample t-test for Mean Difference between Male and Female Responses Based on Time Management and Efficiency

Gender	N	M	SD	df.	t-value	Sig.
Male	224	6.16	1.44	397	-.759	.448
Female	175	6.27	1.52			

The gender comparison of the sub-factor of Benefits of Meta AI, Time Management and Efficiency, can be found in the table 5. The average score of female students (M = 6.27, SD = 1.52) is slightly better than that of male students (M = 6.16, SD = 1.44), which indicates that females found Meta AI a bit more useful in assisting them to properly organize their time and to do their tasks efficiently. t(397) =-0.759 and significance value p = 0.448 however show that this difference is not significant. This implies that both the male and female students had almost similar views about the usefulness of Meta AI in enhancing time management and efficiency.

Table 6
Independent Sample t-test for Mean Difference between Under Graduate and Post Graduate Students' Responses Based on Academic Improvement and Quality Enhancement

Academic Level	N	M	SD	df.	t-value	Sig.
Undergraduate	274	18.58	2.98	398	2.87	.004
Post Graduate	126	17.61	3.51			

Academic Improvement and Quality Enhancement are compared in terms of various academic levels as reflected in the table 6 Undergraduates (M = 18.58, SD = 2.98) scored higher than the postgraduates (M = 17.61, SD = 3.51). The t(398) = 2.87 which have significant p=0.004 indicate that difference in the two groups is statistically significant. This implies that undergraduate students consider Meta AI more helpful in enhancing the quality and performance of the academic performance than the postgraduate students.

Table 7
Independent Sample t-test for Mean Difference between Under Graduate and Post Graduate students' Responses Based on Learning Support and Understanding

Academic Level	N	M	SD	df.	t-value	Sig.
Undergraduate	274	18.52	3.16	398	1.75	.080
Post Graduate	126	17.90	3.47			

The table 7 is the comparison of Learning Support and Understanding between the undergraduate students and postgraduate students. The students of undergraduate level (M = 18.52, SD = 3.16) scored a bit higher than those of postgraduate level (M = 17.90, SD = 3.47). But t(398) = 1.75, having p = 0.080 are not significant and hence there is no significant difference between the two academic levels. This is to imply

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that both the undergraduate and the postgraduate learners find the same (Meta AI) as equally helpful in boosting their learning and comprehension.

Table 8
Independent Sample t-test for Mean Difference between Under Graduate and Post Graduate students' Responses Based on Creativity and Idea Generation

Academic Level	N	M	SD	df.	t-value	Sig.
Undergraduate	274	11.08	1.94	398	3.04	.003
Post Graduate	126	10.39	2.40			

The table 8 shows the comparison of Creativity and Idea Generation between undergraduate and postgraduate students. Undergraduate students (M = 11.08, SD = 1.94) scored higher than postgraduate students (M = 10.39, SD = 2.40). The t(398) = 3.04 with p=0.003 indicate a statistically significant difference, suggesting that undergraduate students find Meta AI more helpful in enhancing their creativity and idea generation compared to postgraduate students.

Table 9
Independent Sample t-test for mean Difference between Under Graduate and Post Graduate students' Responses Based on Time Management and Efficiency

Academic Level	N	M	SD	df.	t-value	Sig.
Undergraduate	274	6.21	1.54	398	.007	.995
Post Graduate	126	6.21	1.33			

The table 9 presents the comparison of Time Management and Efficiency between undergraduate and postgraduate students. Both groups reported almost identical mean scores (Undergraduates: M = 6.21, SD = 1.54; Postgraduates: M = 6.21, SD = 1.33). The t(398) = .007 and p=0.995 indicate no significant difference, showing that both undergraduate and postgraduate students equally perceive Meta AI as helpful in managing time and improving task efficiency.

Table 10
Independent T-test for mean Difference between Male and Female Responses Based on Benefits

Gender	N	M	SD	df.	t-value	Sig.
Male	224	53.09	8.34	397	-1.72	.085
Female	175	54.46	7.26			

Table 10 show the results of the independent sample t-test presented in the table show that there was no statistically significant difference in the perceived benefits of Meta AI between male and female students, t(397) = -1.72, p = 0.085. The mean score for female students (M = 54.46, SD = 7.26) was slightly higher than that of male students (M = 53.09, SD = 8.34), indicating that females tended to perceive Meta AI as slightly more beneficial in enhancing academic performance and learning

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quality. However, since the difference was not significant at the 0.05 level, it can be concluded that both male and female students generally shared similar positive perceptions about the academic benefits of using Meta AI.

Table 11
Independent T-test for Mean Difference between Academic level Responses Based on Benefits

ACADEMIC LEVEL	N	M	SD	df.	t-value	Sig.
Undergraduate	274	54.40	7.27	398	2.70	.007
Post Graduate	126	52.12	8.93			

The results of the independent sample t-test as seen in Table 11 indicated a statistically significant difference in the perceived benefits of Meta AI as per academic level t(398) = 2.70, p =0.007. Undergraduate students (M = 54.40, SD = 7.27) indicated more perceived benefits of using Meta AI as postgraduate students (M = 52.12, SD =8.93). This implies that undergraduate students have been more useful in achieving academic learning, quality of writing and an understanding that is superior to post graduate students in relation to Meta AI. The difference is possibly explained by the fact that undergraduates need AI tools more to provide them with basic academic support and learning boost, and postgraduate have less need to use them due to their already developed academic and research skills.

Table 12
ANOVA to Identify the Mean Difference in Responses of Participants on Perceived Benefits Based on Age

Age	N	M	SD	df.	t-value	Sig.
Below 20	3	55.66	8.96	3	2.99	.031
20-25	272	52.90	8.34	396		
26-30	117	55.47	6.61			
Above 30	8	53.75	5.57			

The table 12 indicates the comparison of the perceived benefits of using Meta AI by the respondents whose age is of various categories with the higher level of education. The findings have shown that the highest mean score (M = 55.66, SD = 8.96) was by the age group of below 20 years, and secondly, 2630 years (M = 55.47, SD = 6.61). There were slightly lower mean scores reported by respondents of age 2025 years and above 30 years (M = 52.90, SD = 8.34 and M = 53.75, SD = 5.57, respectively). The F-value of 2.99 and the significance level of 0.31 ($p < .05$) means that the differences between the age groups about their perception of the advantages of Meta AI are significant. This implies that the younger respondents more so those younger than 20 years are likely to experience more benefits of Meta AI tools than the older age brackets.

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Table 13
ANOVA to Identify the mean Difference in Responses of Participants or Perceived Benefits based on Departments

departments	N	M	SD	df.	F-value	Sig.
Philosophy	20	53.65	5.94	14	3.22	.000
Biochemistry	66	52.45	6.96	385		
Math	44	53.63	9.74	399		
Education	14	59.42	5.69			
BBA	25	53.96	6.93			
Nursing	13	53.84	10.30			
LLB	37	51.86	7.18			
Pharm-D	21	59.71	7.96			
Arabic	14	46.85	7.28			
Physics	37	53.18	7.27			
History	28	54.57	7.34			
Pol Sci	23	54.95	6.29			
English	16	49.81	4.05			
MLT	22	53.50	7.15			
Agriculture	20	56.85	10.63			

The table 13 shows the comparison of the perceptions of the students on the advantages of Meta AI in various academic departments. The results indicate a difference between the departments with the Pharm-D department recording the highest mean score (M = 59.71, SD = 7.96) then Education (M = 59.42, SD = 5.69) and Agriculture (M = 56.85, SD = 10.63), meaning that students in the three fields considered the use of Meta AI to be most useful in academics. Conversely, the Arabic department reported least overall mean score (M = 46.85, SD = 7.28) and perceiving less benefit. The F-value (3.22) and significance value (.000) ($p < .05$) indicates that the perception of the benefits of using Meta AI between the students of various departments has a statistically significant difference. This means that the field of study has an effective part in influencing the perceptions of students on the effectiveness of Meta AI in postsecondary education.

Table 14
ANOVA test to Identify the Mean Difference in Responses of Participants or Perceived Benefits Based on Age

	Age	N	M	SD	df.	F	Sig.
Benefits	Below 20	3	55.66	8.96	3	2.99	.031
	20-25	272	52.90	8.34	396		
	26-30	117	55.47	6.61			
	Above 30	8	53.75	5.57			

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The table 14 indicates the comparison of the perceived benefits of using Meta AI by the respondents whose age is of various categories with the higher level of education. The findings have shown that the highest mean score (M = 55.66, SD = 8.96) was by the age group of below 20 years, and secondly, 2630 years (M = 55.47, SD = 6.61). There were slightly lower mean scores reported by respondents of age 2025 years and above 30 years (M = 52.90, SD = 8.34 and M = 53.75, SD = 5.57, respectively). The F-value value of 2.99 and the significance level of 0.31 ($p < .05$) means that the differences between the age groups about their perception of the advantages of Meta AI are significant. This implies that the younger respondents more so those younger than 20 years are likely to experience more benefits of Meta AI tools than the older age brackets.

Table 15
ANOVA test to Identify the Mean Difference in Responses of Participants or Perceived Academic Improvement and Quality Enhancement Based on Age

	Age	N	M	SD	df.	F	Sig.
Academic improvement and quality enhancement	Below 20	3	18.00	3.60	3	1.309	.271
	20-25	272	18.11	3.42	396		
	26-30	117	18.74	2.56			
	Above 30	8	17.37	2.38			

The table 15 presents the ANOVA outcomes of the variable of academic improvement and quality enhancement among various age groups of students. The analysis shows that there is no statistically significant difference between the age groups (F = 1.309, Sig. =.271) because the value is higher than 0.05. This implies that students of various ages share the same views about the role played by AI tools in improving academic standards and quality. Despite the fact that the mean scores slightly vary with the 2630 age group, with the highest mean (M = 18.74) and the above 30 years old having the lowest mean (M = 17.37) there is also a slight difference, which is not significant to be considered. Altogether, the results can indicate that age does not have a significant effect on forming students perception regarding the potential academic value of AI tools. Despite the age of learners, it is widely accepted that AI tools can have a positive impact on the learning outcomes and the quality of education.

Table 16
ANOVA test to identify the mean difference in responses of participants or perceived learning support and understanding enhancement based on Age

	Age	N	M	SD	df.	F	Sig.
Learning support and understanding	Below 20	3	19.66	3.05	3	1.82	.142
	20-25	272	18.06	3.58	396		
	26-30	117	18.85	2.44	399		
	Above 30	8	18.32	1.64			

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The table 16 shows the ANOVA output of the variable Learning Support and Understanding in the various age groupings of students. The results of the analysis show that there is no statistically significant difference between the age groups (F = 1.82, Sig. =.142) as the value exceeds 0.05. It suggests that students of different ages do not have a significantly different view of the learning support and understanding offered by AI tools. In spite of the fact that the mean scores have small differences, i.e. below 20 years get slightly higher (M = 19.66) and 20-25 years get lower (M = 18.06), the differences between students are not statistically significant. Finally, the results indicate that the age does not have a significant influence on the student perception of the way AI tools help to learn and understand. In general, students of all ages have a consistently optimistic attitude towards the use of AI in the process of supporting learning and learning.

Table 17
ANOVA test to Identify the Mean Difference in Responses of Participants or Perceived Creativity and Idea Generation Based on Age

	Age	N	M	SD	df.	F	Sig.
Creativity and idea generation	Below 20	3	11.00	1.73	3	.910	.436
	20-25	272	10.75	2.29	396		
	26-30	117	11.13	1.69	399		
	Above 30	8	10.87	1.80			

The table 17 indicates the ANOVA results of the variable "Creativity and Idea Generation" among the students of various ages. The comparison does not indicate significant age difference between the age groups (F = 0.910, Sig. = .436) on account of the fact that the value of significance exceeds 0.05. This shows that students of different ages are not different in terms of creativity and generation of ideas. Despite this slight differences in the mean scores, where students aged 2630 scored higher (M = 11.13) and the students aged 2025 scored lower (M = 10.75) the differences in the scores are insignificant. Finally, the observations support the idea that the age does not play a significant role with respect to creativity and generation of ideas in students. On the whole, learners at any age level have a relatively equal degree of creative thinking and idea generation.

Table 18
ANOVA test to Identify the Mean Difference in Responses of Participants or Perceived time Management and Efficiency Based on Age

	Age	n	M	SD	df.	F	Sig.
Time management and efficiency	Below 20	3	7.00	1.00	3	8.15	.000
	20-25	272	5.97	1.51	396		
	26-30	117	6.73	1.26	399		
	Above 30	8	6.62	1.30			

Table 18 shows the ANOVA results of the variable of Time Management and Efficiency under various age groups of students. The analysis shows that there is

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statistically significant difference between the age groups (F = 8.15, Sig. =.000) as the significance value is lower than 0.05. It means that students in various ages have different perceptions regarding their time management and time efficiency. In the mean score, it was found that students with the age below 20 years scored the highest (M = 7.00), and the students with the age 20 25 scored the lowest (M = 5.97). Students between 26 and 30 years and more than 30 years had a moderation score (M = 6.73 and M = 6.62 respectively). To sum up, the results indicate that age plays a major role in determining the time management and efficiency of the students where young students are slightly better in managing their time management than their elder counterparts.

Regression Equations: Y = a + bx
Dependent Variable = Constant + Gradient (Independent Variable)
Benefits = 51.81 + 1.30(Gender)
Benefits = 49.38 + 1.85(Age)
Benefits = 56.69 - 2.28(Academic Level)
Benefits = 53.32 + 0.051(Faculty Department)

Discussion

The current research paper discussed the academic benefits of Meta AI in undergraduate and postgraduate students in Lahore. The results prove that the Meta AI is considered to be the effective learning support tool that increases academic productivity and learning outcomes. According to students, the Meta AI also advances understanding of learning (25%), academic performance and work quality (18.28%), and generating ideas and being creative (15%). These results suggest that Meta AI helps learners to gain deeper knowledge, enhance their academic performance, and think creatively. The findings are in line with the world studies on AI in education. Bond et al. (2024) emphasised that adaptive AI is the one that enhances student engagement and personalised learning processes. Also, Chen et al. (2020) and Luckin et al. (2016) discovered that AI-based tools promote the quality of writing and self-directed learning. According to a study carried out by Majeed et al. (2025), AI tools of generative nature enhance efficiency and creativity in academia. The fact that the current results are consistent with the findings of the international literature indicates that Meta AI can be seen as a cognitive and academic support system, but not a technological one. It helps students to plan ideas, comprehending complex ideas, and be more organized with academic work. On the whole, the results endorse the increasing popularity of the idea that AI applications, such as Meta AI, can enhance learning activities, stimulate self-regulated learning, and promote innovation in higher learning environments.

Conclusion

On the basis of the findings of the study it is concluded that Meta AI is an effective academic aid tool in higher learning. The results reveal that students think that Meta AI will support the personalization of learning, academic achievement, and creativity

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and innovation. A good number of respondents indicated that Meta AI enables them to interpret the concepts better, enhance their academic writing, spend the time studying efficiently, and come up with creative ideas. Such results indicate that Meta AI helps to enhance productivity and more effective learning of university students. The general findings support the current literature that suggests that AI technologies can be used to positively change higher education when applied as helpful learning sources. Instead of substituting human intelligence, Meta AI is an auxiliary learning tool, which reinforces the understanding, self-managed learning, and creative interaction. To sum up, Meta AI has tremendous promise to transform the learning process and academic performance in tertiary education. Its successful and well-organized integration can help to modernize the process of teaching and learning and ensure innovation and academic excellence.

Recommendation

Following recommendations were made as a result of this study:

The students need to be taught how to use Meta AI in their technical ability and how to notice ethical, social, and academic impacts, such as privacy concerns and misinformation.

Universities ought to have regular professional development trainings on AI use, especially where AI and integrity may be applied, AI in the classroom, automated assessment and AI induced learning.

The NGOs and the government should invest in upgrading of technological infrastructure like of affordable internet infrastructure, computer labs and hi-tech facilities like computers and internet.

To utilize AI as a support of the other learning tasks like reflective practice, peer discussions and human-AI projects to develop ethically acceptable and balanced utilization of AI.

To promote local innovation and sustainability, universities, and developers and research institutions should cooperate in creating AI tools that would be compatible with the cultural and linguistic context of Pakistan.

Grant scholarships, institutional funding on AI based education research, and specifically on the research exploring the impact of AI on critical thinking, teacher student interaction, and academic dishonesty.

The policy-makers, administrators and educators must make sure that the Meta AI should be used to make human intelligence more all-inclusive and not to replace them so that the educational system becomes ethical, balanced and future-oriented.

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