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Awareness and Use of Artificial Intelligence Tools among Postgraduate Students: A Study of Fakir Mohan University

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Abstract

The study looked into the level of understanding and use of Artificial Intelligence (AI) tools by postgraduate students at Fakir Mohan University and examined how this understanding and use varied according to the students' age and academic discipline. A descriptive survey method was employed, collecting data from 139 postgraduate students studying either Arts or Science through the use of a questionnaire. The data gathered were analysed using the t-test, one-way analysis of variance (ANOVA), and Tukey's HSD post-hoc test. The findings showed that there were no statistically significant differences in awareness of AI tools when comparing the different age groups or between students from the Arts and Science disciplines. Likewise, no significant differences were found in the extent of AI tool usage between students from the two academic fields. Nevertheless, a statistically significant difference in usage was observed among the various age groups, and the post-hoc analysis revealed that there were differences in usage among certain age groups. The results show that awareness of AI tools is widespread among postgraduate students, although their actual use varies with age. The study highlights the importance of providing practical AI training and making sure that all academic disciplines have equal access to AI resources if AI tools are to be effectively incorporated into higher education.

Keywords: Artificial Intelligence, AI Tools, Awareness, Utilisation, Postgraduate Students, Higher Education

1. Introduction

The present study is in the area of awareness and use of Artificial Intelligence tools among Post Graduate students of Fakir Mohan University. Further, the investigation tried to bring out the various Artificial Intelligence tools used by Higher education students in their teaching learning process and research work. In today's world, Artificial Intelligence (AI) is transforming nearly every aspect of life including how we learn. Once considered a futuristic idea, AI is now part of our daily routines, even in classrooms and lecture halls (Russell & Norvig, 2021). It can mimic human abilities like learning, thinking, and solving problems, making it especially useful in higher education, where students face intense academic demands. AI tools help by organizing reading materials, highlighting key information, checking grammar, analysing data, and even generating initial drafts (Chen, Xie, Zou, & Hwang, 2020). However, the integration of AI in education raises concerns. Some educators and scholars worry that students might rely too heavily on these tools, leading to a decline in critical thinking and independent learning (Singh & Rao, 2021).

In India, AI is gradually making its way into higher education. Government initiatives like Digital India and SWAYAM are encouraging this transformation (Ministry of Education, 2022). Many universities are beginning to adopt AI tools to support both teaching and learning. The existing studies in India have primarily concentrated on AI chatbots like ChatGPT. This concentration on a single aspect of AI tools neglects the broader landscape of AI technology and its applications. Despite the prevalence of AI tools and their increasing importance in various fields, there is a lack of comprehensive research on university students' awareness regarding AI tools. The

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majority of existing studies in this area have been qualitative, which might not provide a comprehensive view of the extent of awareness among university students. Quantitative research is essential to gather statistical data that can offer a more precise understanding of the current awareness levels, potentially identifying areas of improvement. The study aims to investigate the level of awareness and use of Artificial Intelligence (AI) tools among PG students at FM University.

Objectives:

1. To study the level of awareness among Post Graduate students regarding Artificial Intelligence (AI) tools, with Reference to age.
2. To study the level of awareness among Post Graduate students regarding Artificial Intelligence (AI) tools, with Reference to stream.
3. To study the extent of utilisation among Post graduate students regarding Artificial Intelligence (AI) tools, with Reference to age.
4. To Study the extent of utilisation among post graduate students regarding Artificial Intelligence (AI) tools, with Reference to stream.

Research Gap

As understood from the review of related literature there are few quantitative study in india and in abroad. All the quantitative studies reviewed in India were focused around AI chatbots (Chat Gpt). The Author couldn't find any study focused study extensively conducted on Awareness of AI tools among university students that is the research gap. Another gap is that majority researchers conducted qualitative study in this particular area. The Author was focused to conduct quantitative study among university students and their awareness regarding AI tools not only AI Chatbots /ChatGPT.

Rationale

The existing studies in India have primarily concentrated on AI chatbots like ChatGPT. This concentration on a single aspect of AI tools neglects the broader landscape of AI technology and its applications. Despite the prevalence of AI tools and their increasing importance in various fields, there is a lack of comprehensive research on university students' awareness regarding AI tools. Understanding their knowledge and familiarity with AI is crucial, as it has implications for education, employability, and future workforce readiness. The majority of existing studies in this area have been qualitative, which might not provide a comprehensive view of the extent of awareness among university students. Quantitative research is essential to gather statistical data that can offer a more precise understanding of the current awareness levels, potentially identifying areas of improvement. The research gap also encompasses the need to explore AI tools beyond chatbots like ChatGPT. A comprehensive study should encompass the awareness of a broader range of AI tools. Given the potential impact of AI on future careers and society, understanding the level of awareness among university students is vital for educators, policymakers, and businesses.

Hypothesis:

- **H01)** There is a no significant difference in the level of awareness among post graduate students belonging to age Group 20-22, 23-25, 25-above.

- **H02)** There is a no significant difference in the level of awareness among post graduate students belonging to Arts and science stream.
- **H03)** There is a no significant difference in the extent of utilisation among post graduate students belonging to age Group 20-22, 23-25, 25-above.
- **H04)** There is a no significant difference in the extent of utilisation among post graduate students belonging to Arts and science stream.

Design of the study: This research adopts a survey method to collect data from postgraduate students enrolled in various academic programs across multiple institutions

Population: Post graduate students of arts and science academic streams of Fakir Mohan University.

Sample: A stratified random sampling technique was employed to ensure representation from different age Groups and academic streams. The total number of samples is 139.

Tools for Data Collection:

The researcher developed a self-made questionnaire AI Awareness tool and AI Utilisation tool. This tool consisted of both open ended and close ended questions in Part-A and Part-B which was meant to gather Answers for the stated objectives. A five-point Likert scale (Strongly Agree, Agree, Neutral, Disagree, Strongly Disagree) consist of total 10 questions which includes check list, multiple choice questions and likert type statements.

Scoring Procedure

The responses of the students were scored by using 5-point scale. The student has to select one out of those five, putting a tick mark. The scale was scored as following mark.

- A 5-point Likert scale is a common survey tool used to measure attitudes, opinions, or perceptions by asking respondents to rate their level of agreement with a statement across five ordered response options.
- A 5-point Likert scale presents a statement and asks respondents to select one of five options, typically: “Strongly Disagree,” “Disagree,” “Neutral,” “Agree,” and “Strongly Agree.” Each point on the scale represents a gradation of agreement or sentiment, allowing researchers to convert subjective responses into quantifiable data for analysis (Koo & Yang, 2025; Sullivan & Artino, 2013).

Scoring Procedure – Section A (Awareness Tool)

The table below explains the scoring procedure used for Section A – Awareness Tool in a structured format:

Component	Details
Purpose	To measure awareness of AI tools across different domains
No. of Questions	6
Options per Question	4 fixed options + 1 "Other" option (not counted in scoring)
Scoring Criteria	1 point for each known tool among the 4 fixed options
Score for "Other"	0 (Even if filled, it is not considered for scoring)
Minimum Score per Item	0
Maximum Score per Item	4
Total Maximum Score	24 (6 questions × 4 points each)
Total Minimum Score	0

Scoring Procedure – Section B (Usage Tool)

The table below presents the scoring procedure used for Section B – Usage Tool in a structured format:

Component	Details
Purpose	To measure the frequency of AI tool usage across various domains
No. of Questions	6
Options per Question	Daily, Weekly, Monthly, Rarely, Never
Scoring Criteria	Each option is assigned a score: Daily = 5, Weekly = 4, Monthly = 3, Rarely = 2, Never = 1
Minimum Score per Item	1 (if the respondent selects 'Never')
Maximum Score per Item	5 (if the respondent selects 'Daily')
Total Maximum Score	30 (6 questions × 5 points each)
Total Minimum Score	6 (6 questions × 1 point each)

Data Collection Procedure

The collected data for the research on students of Fakir Mohan University in Balasore District can be shorted and categorized based on three key variables: such as age group 20-22,23-25,25-above and stream (Arts and science), allowing for a more nuanced analysis of differences and patterns within the data. For the variable age the researcher applied various statistical techniques like one way ANOVA and post hoc tukey analysis for comparing the awareness and usage level of Post Graduate students of Fakir Mohan University. For the variable stream (Arts and Science) the researcher used Mean, S.D and t-values for comparing the awareness and usage level of Post Graduate students of Fakir Mohan University.

ANALYSIS AND INTERPRETATION

Data Analysis and Statistical Methods

The present study employed a comprehensive statistical approach to analyse the collected data, utilizing both descriptive and inferential statistical methods to derive meaningful insights and draw robust conclusions. The statistical analysis was conducted through MS Excel to systematically examine the research hypotheses and provide a rigorous interpretation of the study's findings.

Significance and Interpretation

Statistical significance was determined based on the p-value, with a threshold of $p < 0.05$ considered statistically significant. Effect sizes were also calculated to provide context to the statistical findings, ensuring a comprehensive understanding of the research outcomes beyond mere statistical significance.

The level of awareness among Post Graduate students regarding Artificial Intelligence (AI) tools, with reference to their age

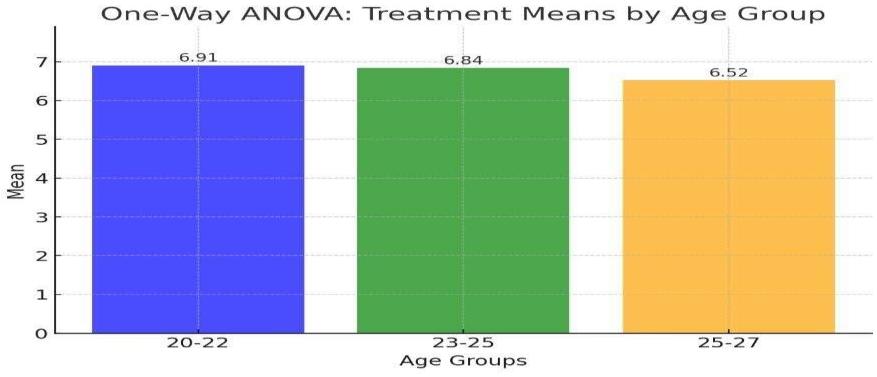
The objective was to study the level of awareness among Post Graduate students regarding Artificial Intelligence (AI) tools, with reference to age. Students were divided into three age group such as 20-22, 23-25, and 25-27. The null hypothesis stated that there is a no significant difference in the level of awareness among post graduate student's belonging to age group 20-22, 23-25, 25- above. For testing the hypothesis, A one-way ANOVA was used to analyse the data and the results are given in the table- 4.1.

Table 4.1-: One -way ANOVA analysis among age group of 20-22, 23-25, 25-27

Summary of data				
	Treatments			
	1	**2**	**3**	**Total**
N	76	38	25	**139**
∑X	525	260	163	**948**
Mean	6.9079	6.8421	6.52	**6.82**
ΣX²	4023	2028	1095	**7146**
Std.Dev.	2.2989	2.5944	1.159	**2.2206**

Result details				
Source	**SS**	**df**	**MS**	
Between treatments	2.8557	2	1.4279	**F=0.28656**
Within treatments	677.6479	136	4.9827	
Total	**680.5038**	**138**		

From Table **4.1**, it is evident that the F-Value is 0.28656 which is not significant at 0.05 level with df=2/136.It shows that the means scores of awareness levels of post graduate students of age groups 20-22,22-25 & 25-27 does not differ significantly. Thus, the null hypothesis that there is a no significant difference in the level of awareness among post graduate students belonging to age Group 20-22, 23-25, 25-27 is not rejected. It may therefore, be said that level of Awareness of post graduate students was found to be independent of different age groups of students.



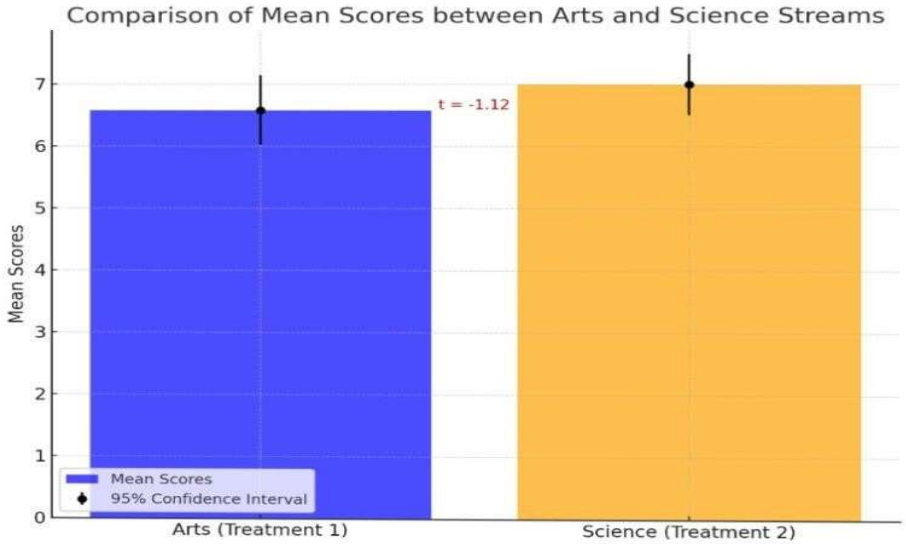
The level of awareness among Post Graduate students regarding Artificial Intelligence (AI) tools, with reference to their stream

The objective was to study the level of awareness regarding Artificial Intelligence (AI) tools among postgraduate students with reference to their streams with specifically comparing students from arts and science streams. The null hypothesis stated that there is no significant difference in the level of awareness about AI tools between postgraduate students belonging to arts and science streams. For testing the hypothesis, a two-tailed t-test was conducted at a 0.05 level of significance to determine if there is a significant difference between the two groups and the results are given in the table 4.2

Table 4.2-: Mean, S. Ds and t-values among arts and science streams

Variable	Group	Sample	Mean	S.D.	t-value	Remark
Level of Awareness	Arts Students	60	6.47	2.08	-1.09	**Not significant at 0.05 level**
	Science Students	79	7	2.31		

It is apparent from the table 4.2 that the mean score of awareness level of arts and science post graduate students is **6.47** and **2.31** with S.D.'s **2.08** and **2.31** respectively. The t-value came out from the above two group is **-1.09** which is not significant at 0.05 level with df 137 It means there is no significant difference in level of awareness of arts and science post graduate students. Further Mean score of arts students is lower than science Students. It indicates that science students had more level of awareness than the arts students. It may therefore, be said that level of Awareness of post graduate students was found to be independent of streams of students.



The extent of use among Post graduate students regarding Artificial Intelligence (AI) tools, with Reference to age

The objective was to study the extent of use among Post Graduate students regarding Artificial Intelligence (AI) tools, with reference to age. Students were divided into three age group such as 20-22, 23-25, and 25-27. The null hypothesis (H_0) stated that there is no significant difference in the extent of use among these age groups. The analysis was performed at a 0.05 level of significance. A one-way ANOVA test was conducted to compare the extent of AI tool use across three age groups: 20-22, 23-25, and 25-above.

Table 4.3-: One -way Anova analysis among age group of 20-22,23-25, 25-27

Summary of data				
	Treatments			
	1	2	3	Total
N	76	38	25	**139**
∑X	1552	655	466	**2613**
Mean	20.4211	17.2368	18.64	**19.23**
ΣX^2	34618	12219	9364	**56201**
Std.Dev.	6.2445	5.0104	5.3141	**5.8968**

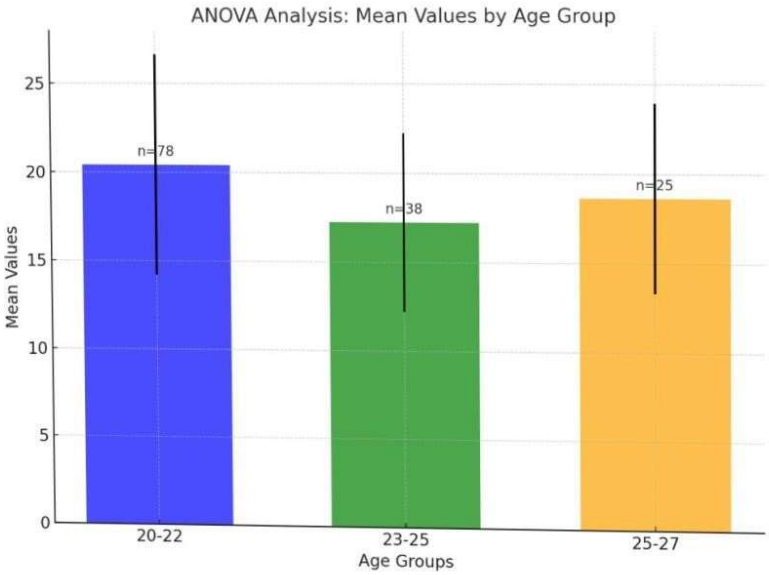
Result details				
Source	SS	df	MS	
Between treatments	267.4784	2	133.7392	**F=4.0141**
Within treatments	4531.1547	136	33.3173	
Total	**4798.6331**	**138**		

From Table **4.3**, it is evident that the F-Value is **4.0141** which is significant at 0.05 level with df=**2/136.**It shows that the mean scores of extent of use of post graduate students of age groups 20-22, 23-25,25-27 differ significantly .Thus , the null hypothesis that there is a no significant difference in the extent of use among post graduate students belonging to age Group 20-22,23-25,25-above is rejected . In order to know which type of age group, students had significantly higher mean score of extent of use, the data were further analysed with the help of Post Hoc Tukey HSD (beta) and the results are given in Table **4.4.**

From Table **4.4,** it can be seen that mean scores of extents of use of post graduate students of age group 20-22 & 23-25 differ significantly. The mean score of extent of use of age group 20-22 is **20.42** which is significantly higher than those of age group 23-25 whose mean is **17.24.** It may therefore be said that students of age group 20-22 were had higher extent of use of artificial intelligence tools than the students of age group 23-25.

The mean scores of extents of use of post graduate students' pair of age group 20-22 & 25-above also 23-25 & 25-above group did not differ significantly (Vide **Table 4.4).** It may therefore be said that students

Pairwise Comparisons		$HSD_{.05}$ = 3.1484 $HSD_{.01}$ = 3.9368	$Q_{.05}$ = 3.3512 $Q_{.01}$ = 4.1904
T_1:T_2	M_1 = 20.42 M_2 = 17.24	3.18	Q = 3.39 (p = .04678)
T_1:T_3	M_1 = 20.42 M_3 = 18.64	1.78	Q = 1.90 (p = .37530)
T_2:T_3	M_2 = 17.24 M_3 = 18.64	1.40	Q = 1.49 (p = .54293)



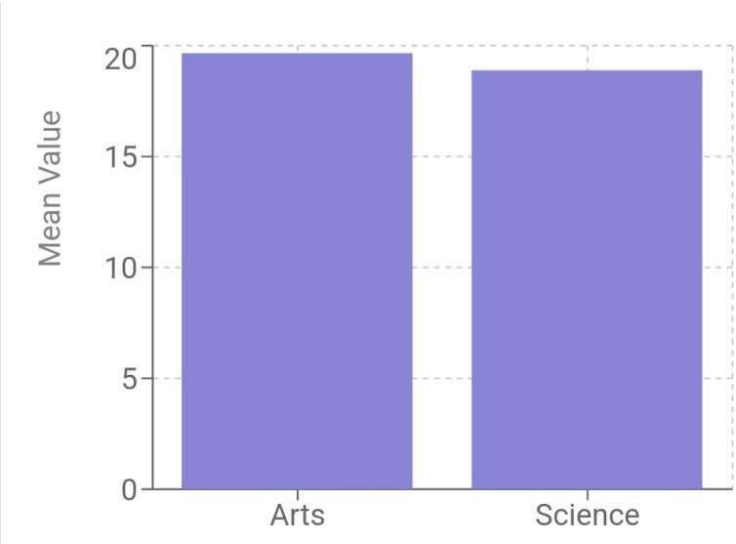
The extent of use among post graduate students regarding Artificial Intelligence (AI) tools, with Reference to stream

The objective of the study is to analyse the extent of use of Artificial Intelligence (AI) tools among postgraduate students in arts and science streams. The null hypothesis stated that There is a no significant difference in the extent of utilisation among post graduate students belonging to Arts and science stream. A two-tailed t-test was conducted at a 0.05 level of significance to determine if there is a significant difference between the two groups in their use of AI tools

Table 4.5-: Mean, S. Ds and t-values among arts and science streams

Variable	Group	Sample	Mean	S.D.	t-value	Remark
Extent of Use	Arts	60	19.66	5.56	**0.75**	**Not Significant at 0.05 level**
	Science	79	18.89	2.82		

It is apparent from the table 4.2 that the mean score of extent of use of arts and science post graduate students is **19.66** and **18.89** with S.D.'s **5.56** and **2.82** respectively. The t-value came out from the above two group is **0.75** which is not significant at 0.05 level with df 137. It means there is no significant difference in extent if use of arts and science post graduate students. Further Mean score of science students is lower than arts Students. It indicates that arts students had more extent of use than the science students. It may therefore, be said that extent of use of post graduate students was found to be independent of streams of students.



Major Findings

The major findings of the study, aligned with the research objectives, are presented below:

The level of awareness among Post Graduate students regarding Artificial Intelligence (AI) tools, with reference to age

The findings revealed that there is **no significant difference** in the level of awareness of AI tools among postgraduate students across different age groups (20–22, 23–25, and 25 and above). This was confirmed by a one-way ANOVA where the calculated F value (0.28) was not statistically significant at the 0.05 level. Hence, the null hypothesis was accepted. This suggests that **awareness of AI tools is not influenced by age** among the sampled students.

The level of awareness among Post Graduate students regarding Artificial Intelligence (AI) tools, with reference to stream

The results indicated that there is **no significant difference** in awareness levels between students of arts and science streams. The t-test yielded a p-value of 0.274779, which exceeds the 0.05 threshold. Therefore, the null hypothesis was accepted, implying that **students from both streams are similarly aware of AI tools**.

The extent of utilisation among Post graduate students regarding Artificial Intelligence (AI) tools, with Reference to age

The one-way ANOVA showed a **significant difference** in the extent of AI tool utilization across different age groups (F = 4.0141, p = 0.02024). Thus, the null hypothesis was rejected. Post Hoc Tukey HSD analysis further

revealed that the **age group 25 and above demonstrated significantly greater utilization of AI tools** compared to the younger age groups.

The extent of utilisation among post graduate students regarding Artificial Intelligence (AI) tools, with Reference to stream

Findings indicated **no significant difference** in AI tool utilization between arts and science stream students, as the calculated t-value (0.0856) and p-value (0.9319) were not significant at the 0.05 level. Therefore, the null hypothesis was accepted, suggesting that **academic stream does not influence the extent of AI usage**.

DISCUSSION OF THE FINDINGS

The results from this study show some interesting points about how postgraduate students understand and use Artificial Intelligence (AI) tools. When we compare these results with past research, we find both similarities and differences. First, this study found that age does not affect how much students know about AI tools (Objective 1). This means students from different age groups whether 20–22, 23–25, or 25 and above have a similar level of awareness. This finding is different from what *Harris et al. (2023)* found. They said that younger people usually know more about AI than older adults. However, their study looked at the general public, not just students, which may explain the difference. Second, this study found that students from both arts and science streams know about AI tools at the same level (Objective 2).

This supports the idea that awareness of AI is spreading across all kinds of academic fields, not just in science. It adds to the findings of *Kuleto, Ilić et al.* (2021) who said students across higher education recognize the importance of AI, though they also pointed out some challenges. Third, when looking at how much students actually use AI tools, the study found that older students (25 and above) use AI more than younger ones (Objective 3). This matches with the idea that older students might be more focused on research or jobs and use AI tools more for practical reasons. *Bhari & Jetawat (2017)* also showed that students like using AI when it helps with learning and gives real-time feedback. So, students who are older and possibly more serious about their studies may use AI more often. Lastly, the study showed that the academic stream (arts or science) does not affect how much AI is used (Objective 4). This finding goes along with the idea shared by *Kumar (2020) and Vazhayil, Shetty et al. (2019)* that AI has the potential to be used across all kinds of learning, as long as there is motivation and proper support. In summary, this study shows that while age and stream do not affect AI awareness, age does affect how much AI is used older students use it more. This adds new understanding to previous studies and supports the idea that awareness is growing across all student groups, but actual use may depend on experience, needs, and maturity.

Implication of the study

Awareness efforts can be broad and inclusive: Since students of all age groups know about AI tools at the same level, there is no need to create different awareness programs for different ages. One common awareness plan can work well for everyone. Equal exposure to AI should be given early in postgraduate studies: Although all students are aware of AI, younger students are using the tools less. This means colleges should encourage AI use from the beginning of postgraduate studies to build early habits and confidence.

Practical training can boost AI usage among younger students: Younger students might not use AI much because they don't have enough hands-on experience. Colleges can help by giving more projects, tasks, and workshops that involve real use of AI tools. Curriculum development should integrate AI across all fields: Because both arts and science students showed equal awareness and use of AI tools, AI education should not be limited to technical subjects. It can be included in all areas of study. Policy makers should promote equal access to AI tools and training: The results suggest that AI learning opportunities should be made equally available to all postgraduate students, no matter their age or academic background. Fair access will help more students benefit from AI in education**.**

Suggestions for further research

Explore factors influencing AI tool usage among younger students. Since younger students showed lower usage despite similar awareness, future studies can look into what barriers such as lack of motivation, confidence, or training are preventing them from using AI tools more often. Study the role of faculty support and institutional infrastructure. Research can investigate how much teacher guidance, availability of AI resources, and technical support within institutions affect student usage of AI tools. Compare AI awareness and usage across different academic levels.

Future research could explore how undergraduate, postgraduate, and doctoral students' awareness and use of AI tools vary with academic experience. It could also investigate differences in AI awareness and usage between genders. Adding gender as a variable could provide insights into whether male and female students differ in how they perceive, access, or use AI tools. Conduct longitudinal studies to track changes over time.

A long-term study could explore how awareness and usage of AI tools develop as student's progress through their academic programs. Assess the impact of AI training programs on student outcomes. Future research could evaluate how structured training in AI tools affects student performance, research quality, and employability. Research could explore the psychological factors that impact AI adoption, examining how attitudes, motivation, tech anxiety, and trust in AI affect its use, particularly in education.

Conclusion

This study examined postgraduate students' awareness and use of AI tools across age groups and academic streams. The results showed no significant difference in awareness based on age or stream, indicating widespread familiarity with AI. However, older students (25 and above) were found to use AI tools significantly more than younger ones, while stream had no impact on usage. These findings suggest that while AI awareness is consistent, actual usage depends more on age and academic experience. The study highlights the need for early practical training and equal access to AI resources, contributing useful insights for improving AI integration in higher education.

Delimitations of the Study:

1. The delimitations of this research focus specifically on Fakir Mohan University and its postgraduate Students.
2. Furthermore, the study is restricted to individuals within the age range of 20 to 25 years. This targeted Approach ensures a focused examination of the selected population, providing insights relevant to this specific Demographic within the university.

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