

Role of Artificial Intelligence on Students' Academic Performance: A Study on BBAU Students

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ABSTRACT

In the 21st century, AI brings a drastic change in all sectors. In the field of academia, it plays a very great role. Students use AI tools for different kinds of tasks in academics. This study examines the role of an AI tool on the academic performance of students at Babasaheb Bhimrao Ambedkar University (BBAU), Lucknow. Using purposive sampling, 107 students were selected across different academic backgrounds. Data were collected online and offline through a structured questionnaire providing both qualitative and quantitative data. Quantitative data were analysed using frequency percentage calculations, while qualitative data by thematic analysis. The results show that students widely use AI tools for writing, summarising, idea generation, and improving language quality. AI also supports better time management and reduces study-related stress. However, concerns such as inaccurate information, over-reliance, plagiarism risks, and data privacy issues were noted. Overall, the study concludes that AI tools positively influence academic performance when used carefully and with proper ethical guidance.

Keywords: Artificial Intelligence (AI), Academic Performance, AI Tools, Higher Education, Student Learning, Technology in Education

INTRODUCTION

Artificial Intelligence (AI) has rapidly emerged as a transformative force within higher education, reshaping instructional methods and academic practices. AI-driven technologies support adaptive learning, enabling students to access tailored content that enhances engagement and performance (Das, 2025; Vieriu&Petrea, 2025). In recent years, students have increasingly turned to AI tools as academic partners that can simplify complex topics and provide continuous academic support beyond classroom boundaries. These systems provide instant feedback, improve motivation, and streamline study processes, contributing to more effective learning outcomes (Mallillin, 2023; Mallillin&Mallillin, 2024; Louly, 2024). Additionally, AI tools such as ChatGPT, Grammarly, and QuillBot assist students in writing, researching, and idea generation, promoting efficiency and skill development in academic tasks (Karunanayaka, Weerasinghe, & Somarathna, 2025; Tamayo, Sotto, Vicente, & Lim, 2025). As a result, learners are able to enhance language accuracy, better structure academic assignments, and explore innovative solutions with improved confidence. AI has therefore become an integral element of digital learning environments, supporting both independent and collaborative learning styles.

Despite these advantages, concerns persist regarding accuracy, excessive reliance on technology, reduced critical thinking, and ethical challenges such as plagiarism and data privacy (Slimi, 2023; Bancoro, 2024; Vieriu&Petrea, 2025). Students may sometimes depend heavily on AI-generated content without verifying its credibility, which raises questions about academic integrity. Moreover, not all learners possess equal digital competencies, which can create disparities in the effective use of technology. The role of educators also continues to evolve, as AI supports teaching practices without replacing human guidance, encouraging more interactive and student-centred learning environments (Ou, 2024; Peras et al., 2023; Ward, Bhati, Neha, & Guercio, 2024). Therefore, there is an ongoing need to balance technological assistance with human engagement to maintain creativity, analytical thinking, and ethical practices in education. In the Indian context, AI integration in higher education is growing yet still developing. University students increasingly adopt AI-based platforms for writing improvement, learning support, and academic productivity, though awareness of responsible and ethical use remains limited (Akinwalere& Ivanov, 2022; Karunanayaka et al., 2025). The pace of adoption is influenced by accessibility, institutional policies, and variations in digital literacy across disciplines. While researchers emphasize that AI enhances creativity and problem-solving in education (Fitria, 2021), further evidence is required to understand its direct impact on academic performance, time management, and motivation.

Therefore, this study focuses on assessing students' experiences and perceptions related to AI tools at Babasaheb Bhimrao Ambedkar University (BBAU). By analysing how AI tools influence learning behaviours and academic outcomes, this research aims to contribute valuable insights to the emerging discourse on AI in higher education, particularly in the Indian academic landscape.

REVIEW OF LITERATURE

Artificial Intelligence (AI) is increasingly integrated into higher education, with researchers examining both its advantages and limitations in supporting learning outcomes. Studies consistently highlight AI's capacity to personalize learning experiences and enhance engagement. Das (2025), for instance, found that adaptive systems improved student participation and performance by tailoring content to individual needs. Similarly, Vieriu and Petrea (2025), in their work with engineering undergraduates in Romania, observed that AI tools supported efficient study habits and engagement, though students also expressed concerns about accuracy, over-reliance, and the weakening of critical thinking skills.

Slimi (2023) emphasized that AI is reshaping education by facilitating personalized learning, feedback, and automation of tasks, while raising questions about ethics, fairness, and data privacy. Mallillin (2023) further demonstrated AI's role in improving academic performance and motivation through early intervention and adaptive feedback. Extending this, Mallillin and Mallillin (2024) noted that AI-powered tutoring and assessment systems strengthen engagement and streamline processes, though challenges such as privacy and algorithmic bias remain.

Louly (2024) observed that personalized tutoring and adaptive testing through AI not only reduce study time but also contribute to improved grades, underscoring the efficiency of such tools. Ward, Bhati, Neha, and Guercio (2024) similarly reported improvements in study habits and outcomes, stressing the importance of ethical and balanced use of AI technologies.

At the institutional level, Karunanayaka, Weerasinghe, and Somarathna (2025) documented that students at the Open University of Sri Lanka increasingly rely on tools such as ChatGPT, Grammarly, QuillBot, and Gemini, with ChatGPT emerging as the most widely adopted. Their study highlighted efficiency gains alongside concerns about ethical use and limited awareness of risks, suggesting a need for digital literacy initiatives. Bancoro (2024), examining Business Administration students, found only moderate effects of AI on academic performance, pointing to the importance of systematic training and integration. Akinwalere and Ivanov (2022) also emphasized the need for balance, identifying both opportunities and challenges in adopting AI within academic settings.

Research has also examined the use of AI in specific tasks. Peras et al. (2023) demonstrated that plagiarism detection, paraphrasing tools, and grammar support can enhance learning by improving efficiency and engagement. Tamayo, Sotto, Vicente, and Lim (2025) further reported positive effects on performance and engagement, though these were moderate rather than strongly significant.

SIGNIFICANCE OF THE STUDY

This study explores how AI tools support students in improving their academic performance, managing time better, and staying motivated. It offers practical insights for teachers, students, and administrators on blending AI-based learning with traditional methods. By outlining both the advantages and challenges of AI use, the research helps guide responsible adoption in academic settings and provides a base for future studies on its influence on student learning.

OBJECTIVES

1. To investigate how frequently and in what ways students are utilizing AI tools for academic purposes.
2. To analyse the impact of AI on the academic performance of students.
3. To examine the role of AI in improving students' time management, motivation, and learning efficiency.
4. To identify students' perceptions, benefits, and challenges regarding the use of AI in education.

RESEARCH METHODOLOGY

This study used a mixed-method approach to understand how BBAU students use AI tools in their academic work. A total of 107 students from UG, PG, and Ph.D. programmes were selected through Convenience sampling. Data were gathered through a structured questionnaire administered both online and offline. Quantitative responses were analysed in

MS Excel using frequencies and percentages, while qualitative answers were interpreted through thematic analysis to identify key patterns and insights.

DATA ANALYSIS

The study includes 107 students from Babasaheb Bhimrao Ambedkar University. Most participants fall in the 18–22 age group (55.1%), followed by 23–27 years (32.7%), while 10.3% are between 28–32 years, and 1.9% are 33 years or above. The sample comprises 60.7% male and 39.3% female students. In terms of academic level, postgraduate students make up 45.8%, undergraduates 38.3%, Ph.D. scholars 14%, and diploma students 1.9%. Students from several Schools participated, with the School of Media and Communication showing the highest response, followed by the Ambedkar School of Social Sciences, School of Earth & Environmental Sciences, School of Management and Commerce, and UIET. Moderate participation came from Life Sciences, Legal Studies, Agriculture, Home Science, and Physical & Decision Science, while a few other Schools were represented in smaller numbers.

USE AI TOOLS FOR ACADEMIC PURPOSES

The data shows that **99.1%** of the respondents currently use AI tools for academic purposes, while only **0.9%** do not. This indicates that AI-assisted platforms are widely used among the students at present and form a regular part of their academic activities.

1) Do you use AI tools for academic purposes?
107 responses

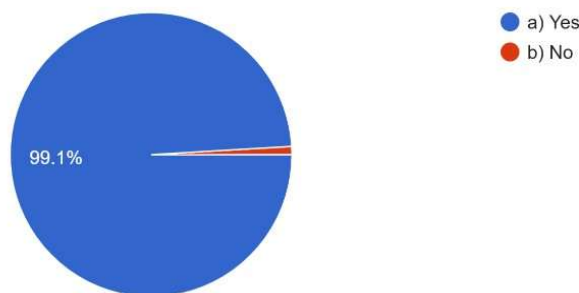


Figure 1 USE AI TOOLS FOR ACADEMIC PURPOSES

FREQUENTLY USED AI TOOLS

The data shows that ChatGPT is the most widely used AI tool, chosen by 87.9% (94 students), highlighting its dominant role in academics. Gemini AI follows with 47.7% (51 students) and Perplexity with 30.8% (33 students), indicating that many students use multiple platforms for research support. Grammarly is used by 15.9% (17 students) for writing improvement, while only a few use tools like DeepSeek (1.9%), Grok AI (0.9%), Gama AI

(0.9%), and other emerging options. Overall, students strongly prefer conversational and search-based AI tools.

2) Which AI tools do you use most frequently? (Select all that apply)

107 responses

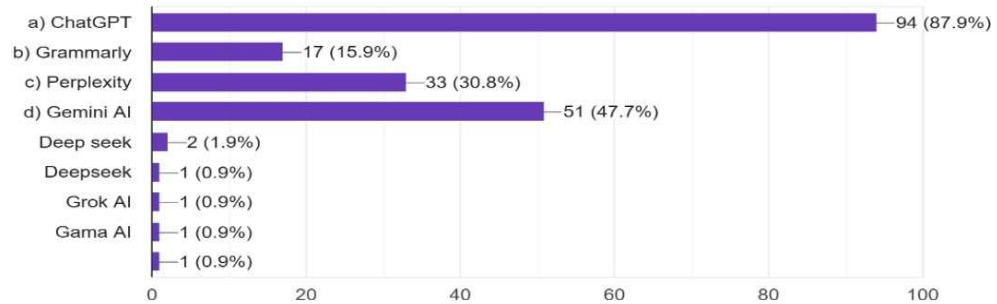


Figure 2 FREQUENTLY USED AI TOOLS

Use of Paid Subscriptions for AI Tools

The analysis shows that most students rely on free AI tools, with 76.6% not using any paid subscription. Only 21.5% reported using paid versions like ChatGPT Plus or Grammarly Premium, while 0.9% each used special free access options such as student versions of Gemini AI or free Perplexity plans. Overall, students primarily depend on free AI tools for academic work.

3) Do you use any paid subscription for AI tools (e.g., ChatGPT Plus, Grammarly Premium, Gemini ai)?

107 responses

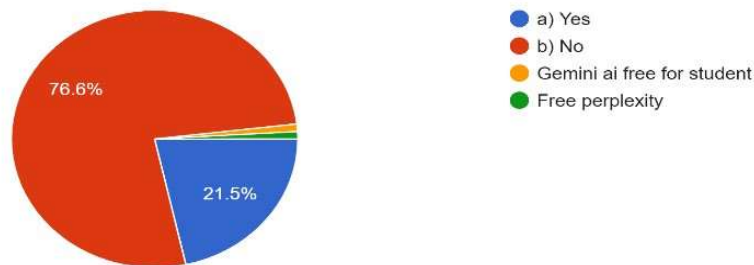


Figure 3 Use of Paid Subscriptions for AI Tools

Familiarity with AI Tools

The data shows that although students commonly use AI tools, most lack high expertise. A large share (44.9%) reported being somewhat familiar, while 35.5% said they were very familiar, indicating stronger confidence. Another 19.6% were only slightly familiar, and none selected not familiar. Overall, all students use AI tools to some extent, even if their expertise levels vary.

4) How familiar are you with AI tools and their use in academics?

107 responses



Figure 4 Familiarity with AI Tools

Frequency of AI Tool Usage for Academic Purposes

The data shows varied but frequent use of AI tools among students. Nearly half (46.7%) use AI daily, indicating strong integration in their academic routine, while 36.4% use it weekly. A smaller portion uses AI rarely (10.3%) or monthly (6.5%). Overall, most students rely on AI regularly, with daily and weekly usage being the most common patterns.

5) How often do you use AI tools for academic purposes?

107 responses

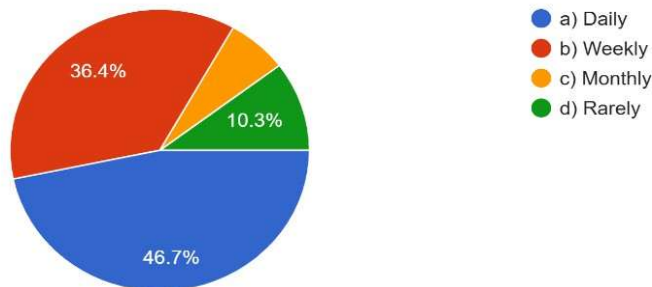


Figure 5 Frequency of AI Tool Usage for Academic Purposes

Academic Tasks for Which Students Use AI Tools

Most students use AI tools for writing assignments (57%), summarising research material (50.5%), and generating ideas or topics (50.5%). Many also use them for improving language and grammar (38.3%) and data analysis or coding (24.3%). A few students mentioned additional uses such as image generation, video editing, enhancing work, and better understanding of topics, reflecting diverse academic applications of AI.

Analysis of Changes Noticed After Using AI Tools

The open-ended responses show that students have experienced several changes in their academic work after using AI tools. Many reported that their tasks have become quicker and easier, especially writing, researching, and organising information. Students also noted better clarity in understanding difficult topics and an improvement in the overall quality of their writing. Some mentioned that AI helped them generate ideas, refine notes, and create visuals. A few students highlighted increased accuracy in their work due to quick fact-checking. However, some responses indicated growing dependence on AI and a slight decline in writing practice. Overall, students felt that AI tools helped them work more efficiently and produce better academic output, though they also became somewhat reliant on these tools.

Improvement in Overall Quality of Academic Work Through AI Tools

The findings show that most students believe AI tools enhance the quality of their academic work. Nearly half of the respondents agreed (48.6%) and 36.4% strongly agreed that AI improves assignments, projects, and presentations. Only 14% remained neutral, and very few disagreed. Overall, students widely recognize AI's positive impact on the quality, structure, and presentation of their academic outputs.

8) AI tools improve the overall quality of my academic work (e.g., assignments, projects, presentations):
107 responses

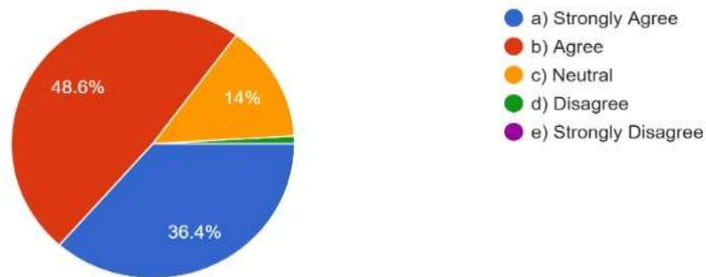


Figure 6 Improvement in Overall Quality of Academic Work Through AI Tools

AI Tools and Improvement in Academic Results

The findings show a largely positive perception of AI tools in improving academic performance. Most respondents agreed (44.9%) or strongly agreed (29.9%) that AI contributes to better grades and evaluations. About 25.2% remained neutral, and almost none disagreed. Overall, students widely view AI tools as helpful in enhancing their academic outcomes

9) AI tools help in achieve better academic results (e.g., grades, evaluations):
107 responses

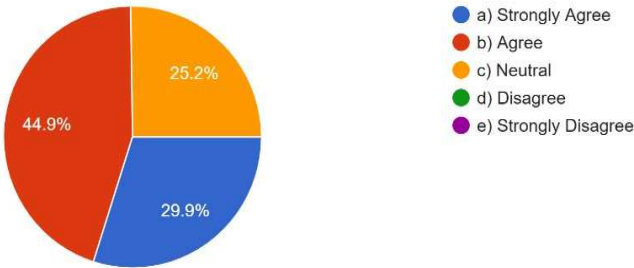


Figure 7 AI Tools and Improvement in Academic Results

Time Saved Through AI Tools on Academic Tasks

The findings show that AI tools greatly help students save time on academic tasks. Most respondents (50.5%) reported a moderate amount of time saved, while 40.2% indicated a very high amount of time saved, reflecting strong reliance on AI for quick completion of writing, summarizing, and organizing tasks. Only 9.3% noted slight time savings, and none reported no time saved. Overall, the results indicate that AI tools significantly reduce the time required for most academic activities.

10) How much time do AI tools save you on academic tasks?
107 responses

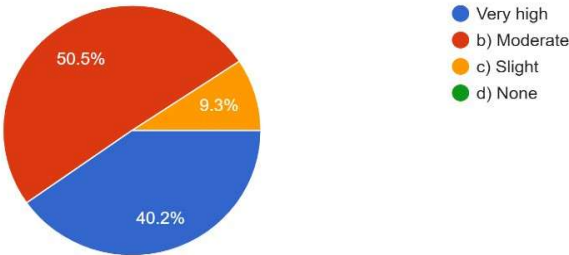


Figure 8 Time Saved Through AI Tools on Academic Tasks

AI Tools and Study Time Management Efficiency

The results show that AI tools significantly enhance students’ time management. A majority of respondents agreed (50.5%) and strongly agreed (34.6%) that AI supports faster completion of tasks such as research, summarizing, and organizing study material. Only 15% remained neutral, and none disagreed. Overall, the findings indicate that AI tools greatly streamline academic activities, helping students manage their study time more efficiently.

11) AI tools help me manage my study time more efficiently (e.g., faster research, summaries):
107 responses

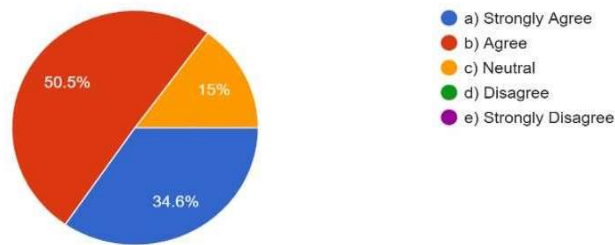


Figure 9 AI Tools and Study Time Management Efficiency

AI Tools and Student Motivation

The results show that AI tools positively influence students’ motivation. 41.1% agreed and 32.7% strongly agreed that AI helps them stay motivated, while 20.6% were neutral and only a few disagreed. Overall, students felt more motivated because AI makes learning easier, reduces stress, and provides quick academic support.

12) AI tools keep me motivated by making learning more engaging and less stressful:
107 responses

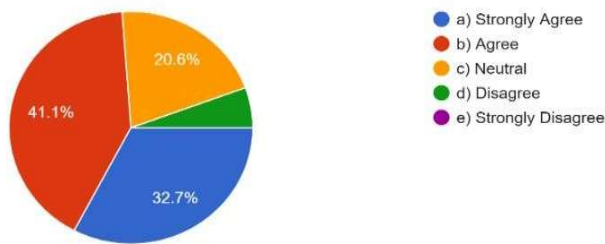


Figure 10 AI Tools and Student Motivation

AI Tools and Learning Efficiency

The findings show that AI tools significantly help students understand complex topics. 51.4% agreed and 31.8% strongly agreed that AI improves their learning efficiency, while 14% remained neutral and very few disagreed. Overall, students view AI as an effective aid for simplifying difficult concepts and supporting better academic understanding.

13) AI tools improve my learning efficiency by helping me understand complex topics more easily:
107 responses

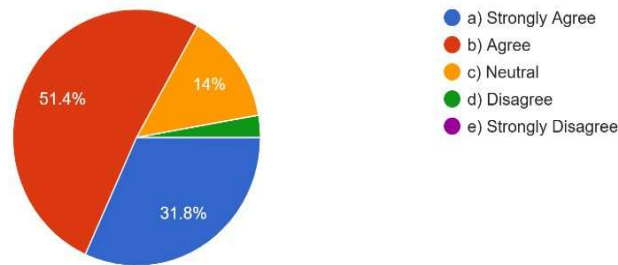


Figure 11 AI Tools and Learning Efficiency

Perceived Benefits of Using AI Tools in Academics

Students reported several benefits from using AI tools in their academic work. The most common advantage was time-saving (68.2%), followed by better understanding of concepts (59.8%) and improved academic performance (44.9%). Many also felt that AI supports critical thinking (40.2%) and increases motivation (13.1%). A few mentioned additional benefits like creativity, quick responses, image creation, and help with notes. Overall, AI tools were seen as helpful for efficiency, clarity, and academic improvement.

14) What are the main benefits of using AI tools in academics? (Select all that apply)
107 responses

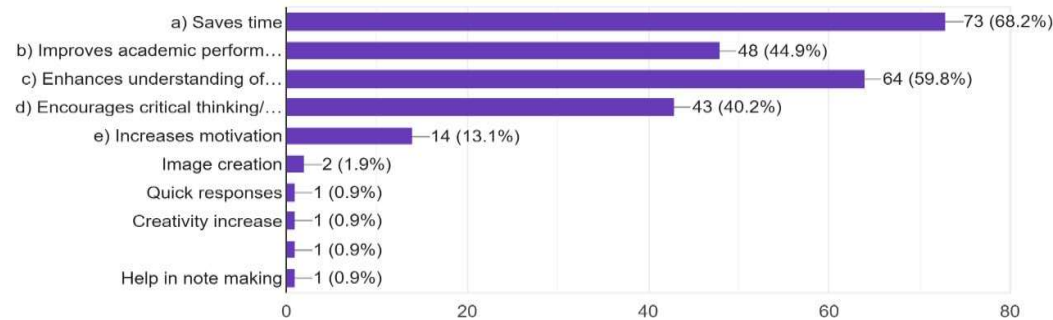


Figure 12 Perceived Benefits of Using AI Tools in Academics

Challenges Faced While Using AI Tools

Students faced several challenges while using AI tools. The most common issue was inaccurate outputs (57.9%), followed by dependence on AI (49.5%), which raised concerns about reduced self-reliance. Many also reported technical or access problems (36.4%) and a lack of training (31.8%), while a few mentioned confusing or inconsistent results. Overall, the findings show notable difficulties related to accuracy, overuse, technical limits, and insufficient guidance.

15) What challenges or difficulties have you faced while using AI tools? (Select all that apply)
107 responses

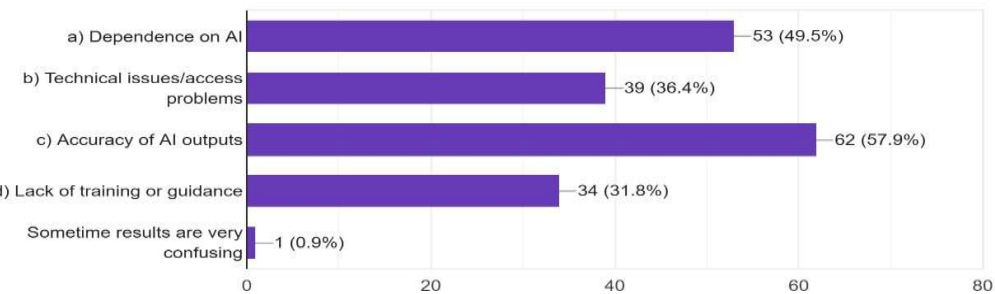


Figure 13 Challenges Faced While Using AI Tools

Ethical Concerns Regarding the Use of AI Tools

Students reported several ethical concerns while using AI tools. The most common was over-reliance (56.1%), followed by worries about data privacy (47.7%) and the accuracy of AI outputs (45.8%). Many also pointed to risks of cheating or misuse (40.2%) and plagiarism (36.4%), showing strong awareness of the ethical issues linked to AI use.

16) Do you have any ethical concerns about using AI tools? (Select all that apply)
107 responses

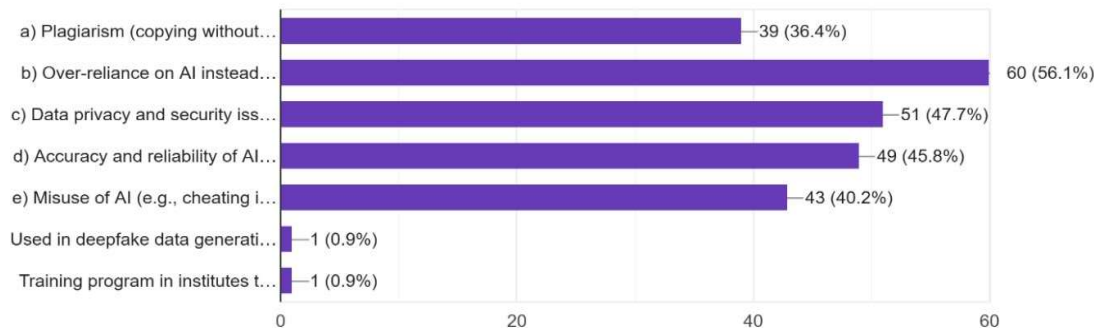


Figure 14 Ethical Concerns Regarding the Use of AI Tools

Measures to Enhance the Effective and Ethical Use of AI Tools in Academics

The open-ended responses show that students believe AI can be used effectively in academics only when proper training, clear rules, and responsible practices are in place. Many stressed the need for workshops and guidance to help them understand how to use AI correctly and ethically. They also highlighted the importance of strong institutional policies on plagiarism, transparency, and limits on overuse. Several students pointed out concerns about inaccurate outputs and data privacy, noting that reliable systems and safer handling of information are essential. Some respondents suggested a balanced approach, where AI supports learning without replacing students’ own thinking and creativity. They also recommended better

institutional support, like access to AI tools, short courses, and teacher assistance. Overall, students recognise AI's benefits but feel it must be used with proper training, ethical guidelines, and careful implementation.

Recommendation of AI Tools to Other Students

A large majority of students (83.2%) stated that they would recommend AI tools to others, indicating strong acceptance and satisfaction with their academic benefits. Only 16.8% were unsure, and none rejected them, indicating an overall positive perception of AI in academics.

FINDINGS

The study shows that AI tools are widely used by students at BBAU, with almost all respondents relying on them for academic work. Most users were young students aged 18–27 and represented various departments, with UG and PG students forming the majority. Although familiarity levels differed, most students had basic to moderate knowledge that allowed them to use AI comfortably for academic tasks.

Students used AI mainly for writing assignments, summarising material, generating ideas, improving grammar, and supporting research or coding. Many used AI daily, and most reported clearer writing, better understanding of complex topics, and improved academic performance. AI also helped them save time on tasks such as drafting, note-making, and editing, which reduced stress and increased motivation. However, students also faced several challenges. Common concerns included inaccurate outputs, dependence on AI, technical issues, and limited access to advanced features. Ethical worries such as plagiarism, data privacy, and misuse for unfair academic advantage were also reported. Students' responses highlighted the need for clear guidelines, proper training, and institutional support to ensure responsible and effective use of AI tools.

DISCUSSION

The findings of this study match well with earlier research showing how strongly AI tools are shaping higher education. Like the work of Das (2025) and Mallillin and Mallillin (2024), this study also found that students experienced better clarity, improved structure, and higher overall quality in their academic work after using AI tools. The frequent use of ChatGPT and other generative platforms reflects a wider trend in which conversational AI has become a common part of students' study routines.

The results also support Slimi's (2023) argument that AI helps students engage more deeply with their subjects by simplifying complex ideas and giving quick access to useful information. However, the concerns raised by students in responses such as becoming overly dependent on AI, worries about data privacy, and the risk of plagiarism are similar to those noted by Vieriu and Petrea (2025). These concerns show that, although AI tools can strengthen academic performance, they also require clear guidelines, ethical awareness, and careful use. Overall, the study highlights the need to balance the benefits of AI with responsible academic practices.

RECOMMENDATIONS

The findings show that students need proper guidance, awareness, and clear rules to use AI tools responsibly in academics. Universities should offer training and set clear policies to prevent misuse, protect academic integrity, and ensure AI supports learning without replacing students' own thinking. Encouraging critical evaluation of AI-generated content and maintaining data privacy can further promote ethical and effective use.

LIMITATIONS

The study's focus on a single university limits the generalizability of results. Self-reported data may include personal bias, and the rapidly evolving nature of AI, along with the lack of faculty perspectives, further restricts the study's scope.

CONCLUSION

The study concludes that AI tools have a significant and positive impact on students' academic performance at BBAU. Students widely use AI tools for writing, research, summarisation, and idea generation and believe these tools improve the quality of their academic work. They reported that AI tools help them understand complex topics, manage study time more efficiently, and reduce academic stress. However, the study also reveals important concerns regarding accuracy, overdependence, plagiarism, and data privacy. These findings highlight the need for responsible usage and appropriate institutional guidance. AI should be used as a supportive academic tool rather than a substitute for students' intellectual effort. With proper training, ethical guidelines, and awareness, AI tools can continue to support academic excellence while maintaining integrity and originality in higher education.

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