

Original Research Article

A Study on the Adoption and Responsible Use of Generative AI Tools for Sustainable Learning among Undergraduate Students

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Abstract

Generative Artificial Intelligence (GenAI) has emerged as a transformative technology in higher education, significantly influencing the way students learn, access information, complete academic tasks, and develop professional skills. Tools such as ChatGPT, Google Gemini, Microsoft Copilot, and Canva AI have become increasingly popular among commerce students for assignments, presentations, exam preparation, and concept clarification. While these technologies offer opportunities for personalized and efficient learning, their growing use also raises concerns regarding academic integrity, ethical practices, critical thinking, and dependency on AI-generated content.

This study aims to examine the adoption and responsible use of Generative AI tools among commerce students in higher education and to evaluate their contribution towards sustainable learning. The research adopts a descriptive and analytical research design using primary data collected through a structured questionnaire administered to commerce students. The study focuses on students' awareness of GenAI tools, frequency and purpose of usage, responsible AI practices, AI dependency, and the perceived impact of AI on academic productivity and sustainable learning outcomes.

The study is expected to provide insights into how commerce students integrate Generative AI into their academic learning and whether they use these tools responsibly by verifying information, avoiding plagiarism, and using AI as a learning aid rather than a substitute for independent thinking. It also explores the relationship between AI adoption, ethical usage, and sustainable learning practices in the context of higher education.

The findings of this research are expected to assist educators, higher education institutions, and policymakers in designing AI literacy initiatives, promoting responsible AI usage, and developing pedagogical practices aligned with the objectives of sustainable and inclusive education. The study contributes to the growing body of literature on Artificial Intelligence in commerce education by emphasizing the importance of balancing technological innovation with ethical responsibility and lifelong learning in higher education.

Keywords: Generative Artificial Intelligence (GenAI), Responsible AI, Sustainable Learning, Commerce Students, Higher Education, AI Ethics, Academic Productivity, Digital Literacy.

Introduction

Artificial Intelligence (AI) has become one of the most significant technological advancements transforming education in the 21st century. Among its recent developments, Generative Artificial Intelligence (GenAI) has emerged as a powerful educational tool capable of generating text, explanations, presentations, images, summaries, and analytical content within seconds. Applications such as ChatGPT, Google Gemini, Microsoft Copilot, Canva AI, Claude, and Perplexity AI are increasingly being used by students and educators to support teaching, learning, research, and academic productivity.

The rapid integration of Generative AI into higher education has changed the learning experiences of students across disciplines. Students, in particular, are using AI tools for preparing assignments, understanding accounting and finance concepts, solving taxation problems, creating presentations, summarising study material, and preparing for examinations. These tools provide instant access to information and personalised academic assistance, making learning more flexible, interactive, and accessible.

The National Education Policy (NEP) 2020 encourages the integration of digital technologies and innovative pedagogical practices to develop critical thinking, problem-solving abilities, and lifelong learning skills among students. In this context, Generative AI has the potential to enhance student engagement and improve learning outcomes when used appropriately. It supports personalised learning by adapting explanations to the learner's needs and helping students explore complex concepts in a simplified manner.

Therefore, this study examines the adoption and responsible use of Generative AI tools among undergraduate students and analyses their role in promoting sustainable learning in higher education. The findings are expected to provide valuable insights for educators, institutions, and policymakers in designing strategies that encourage ethical AI usage while improving academic productivity and lifelong learning skills.

Objectives

- To examine the awareness and adoption of Generative AI tools among undergraduate students in higher education.
- To identify the academic purposes for which commerce students use Generative AI tools in their learning activities.

- To analyse the impact of Generative AI tools on students' learning behaviour, academic productivity, and conceptual understanding.
- To examine the relationship between Generative AI usage and AI dependency among undergraduate students.
- To recommend strategies for promoting sustainable and responsible use of Generative AI in undergraduate education students.

Research Methodology

The present study adopts a descriptive and analytical research design to examine the adoption and responsible use of Generative Artificial Intelligence (GenAI) tools among commerce students in higher education. The descriptive approach helps identify students' awareness, usage patterns, and perceptions regarding AI tools, while the analytical approach evaluates the relationship between AI adoption, responsible AI practices, and sustainable learning outcomes.

Nature of the Study

The study is quantitative in nature and is based on primary data collected through a structured questionnaire. Secondary data from research articles, reports, books, and policy documents is used to support the theoretical framework and literature review.

Population of the Study

The population comprises undergraduate students enrolled in higher education institutions in Mumbai, including students pursuing B.Com, BAF, BFM, BBI and BMS programmes.

Literature Review

- UNESCO (2023)

Guidance on Generative AI in Education: AI should be integrated responsibly while maintaining human-centred learning and ethical practices.

- OECD (2024)

AI in Higher Education: AI enhances personalised learning but institutions require governance frameworks and AI literacy initiatives.

- Kasneci et al. (2024)

ChatGPT in Education: ChatGPT supports student engagement and learning but requires responsible use and teacher supervision.

- Tlili et al. (2024)

Ethical AI in Education: Students require AI literacy skills to evaluate AI-generated information critically.

- Indian Higher Education Studies (2025)

AI Usage among University Students: Students widely use AI for assignments and exam preparation, with varying awareness of plagiarism issues.

Analysis & Interpretation

The study included 382 students, of whom 53.7% were male and 46.3% were female. The responses indicate a balanced representation of both genders, making the dataset suitable for analysing students' perceptions regarding Generative AI tools.

Around 70.7% of respondents either agreed or strongly agreed that they are aware of various Generative AI tools such as ChatGPT, Gemini, Copilot, and Canva AI. This indicates a high level of awareness among commerce students regarding AI-powered educational technologies.

Approximately 66.8% of students use Generative AI for preparing assignments, presentations, and academic reports. The findings show that AI has become an important academic support tool for coursework and project preparation.

About 65% of respondents agreed that educational institutions should establish clear guidelines for the responsible use of Generative AI in academic work. This reflects students' recognition of the importance of ethical AI practices.

The findings indicate that Generative AI positively influences students' learning behaviour by improving conceptual understanding, simplifying difficult topics, and encouraging self-learning.

About 36.4% agreed that they find it difficult to complete academic tasks without AI, while 31.4% disagreed and 32.2% remained neutral. The results indicate that some students have developed dependence on AI, although dependency is not universal.

ChatGPT is the most preferred Generative AI tool among commerce students, used by more than 72% of respondents. Google Gemini ranks second, while other AI tools have comparatively lower usage.

Conclusion

The study examined the adoption and responsible use of Generative Artificial Intelligence tools among students in higher education based on responses from 382 undergraduate students. The findings indicate that Generative AI has become an integral part of students' academic learning. Most respondents are familiar with AI tools such as ChatGPT, Google Gemini, and Microsoft Copilot, and regularly use them for understanding difficult concepts, preparing assignments, presentations, reports, and examination preparation.

The study reveals that Generative AI contributes positively to academic productivity by reducing the time required to complete learning tasks and improving conceptual understanding. Students perceive AI as a useful learning assistant that supports independent learning and enhances their academic experience. ChatGPT emerged as the most frequently used AI tool among respondents, highlighting its popularity in commerce education.

Another important finding is that students strongly support the introduction of responsible AI guidelines and ethics training in colleges. The majority believe that educational institutions should promote AI literacy, verification of AI-generated information, and ethical use of AI to prevent plagiarism and misuse. Therefore, sustainable learning in higher education depends not only on adopting AI technologies but also on using them responsibly, ethically, and critically.

Overall, the study concludes that Generative AI has substantial potential to transform commerce education when integrated with ethical practices, institutional support, and digital literacy initiatives.

Suggestions

- Use Generative AI as a learning assistant rather than a replacement for independent thinking.
- Verify AI-generated information using textbooks, journals, and reliable academic sources.
- Avoid plagiarism by editing, citing, and critically evaluating AI-generated content before submission.
- Develop prompt-writing and AI literacy skills to use AI tools more effectively.
- Organise workshops and seminars on responsible and ethical use of Generative AI tools.
- Develop institutional policies and guidelines for AI usage in assignments and academic work.
- Introduce AI literacy modules within commerce and management curricula.
- Encourage responsible AI practices through curriculum development and faculty training.

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