# An Empirical Study on Students' Perception of Generative Artificial Intelligence Technologies in Higher Education

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## ABSTRACT:

The rapid evolution of Generative AI technologies is transforming the educational landscape, demanding a timely exploration of students' perspectives on their adoption and use. This study explores students' perspectives on the adoption and use of Generative Artificial Intelligence (GAI) in higher education within Coimbatore city. Employing a descriptive and analytical approach, primary data was collected through structured questionnaires from 70 students, and analysed using factor analysis. The research identified key factors influencing GAI adoption, with "perceived usefulness" emerging as the most significant. Findings reveal that students value GAI for its potential to enhance academic performance and streamline tasks, though concerns regarding ethical implications and the need for clear institutional guidelines persist. The study underscores the importance of universities balancing innovation with academic integrity to effectively integrate GAI into educational practices.

**Keywords:** Generative AI, Student Adoption, Higher Education, Perceived Usefulness, Academic Integrity

## Introduction

Generative Artificial Intelligence (GAI) technologies are revolutionizing higher education, offering students new ways to enhance learning, research and productivity. AI-powered tools such as ChatGPT, Bard and DALL·E provide assistance in writing, brainstorming, coding, and even content creation, making academic tasks more efficient. Many students appreciate the accessibility of these technologies, as they help in generating ideas, summarizing complex information, and improving overall comprehension. However, concerns arise regarding ethical implications, overreliance, and the potential decline in critical thinking and originality. Some students worry that the ease of AI-generated content may lead to academic dishonesty and a lack of deep engagement with course material. Moreover, universities and educators are still exploring policies on AI usage, striving to strike a balance between innovation and academic integrity. Understanding students' perspectives on GAI is essential for shaping responsible guidelines and fostering an educational environment that benefits from AI while preserving essential learning skills.

## Review of Literature

Das, S. R. & J. V., M. (2024) conducted a study on "Perceptions of Higher Education Students towards ChatGPT Usage". The aim of the study is to explore how higher education students perceive the use of Chat GPT in academics, examining factors influencing its acceptance, as well as its benefits, limitations, and ethical concerns. The method of sampling was convenience sampling. The tool taken for this study was descriptive analysis, samples t-test, one way ANOVA. The sampling size of the study was 162 respondents. The findings of the study provides valuable insight about the

perception of higher education students towards the use of ChatGPT in terms of their academic usage, benefits, limitations, factors of acceptance and ethical concerns.

Vigneshkumar Chellappa, (2024) examined a study on "Understanding the perception of design students towards ChatGPT". The aim of the study is to investigate about the product design (PD) and user Experience design (UXD) students" views on ChatGPT and focused on an Indian university. The method of sampling was convenience sampling. The tool taken for this study was descriptive analysis one way ANOVA. The sampling size of the study was 149 respondents. The findings of the study indicated that PD and UXD students found ChatGPT interesting and easy to use and were amazed by ChatGPT"s capabilities.

IrenaValova, (2024) organized a study on "Students' Perception of ChatGPT Usage in Education". The aim of the study is to investigate the possibilities and extent of the use of Chatgpt by university students and final-year High-school students in the process of their education. The method of sampling was convenience sampling. The tool taken for this study was descriptive analysis. The sampling size of the study was 102 respondents. The findings of the study concluded the importance of guiding students in understanding the ethical implications of relying on AI tools.

### Statement of the Problem
The increasing use of Generative Artificial Intelligence (GAI) in higher education presents both opportunities and challenges, raising questions about its impact on students' learning experiences. While AI tools enhance productivity, assist in research, and support idea generation, concerns exist regarding academic integrity, overreliance, and reduced critical thinking skills. Many students appreciate the accessibility and efficiency of AI, yet others worry about its ethical implications and the potential for plagiarism. The lack of clear institutional policies further complicates the responsible use of AI in academic settings. Understanding students perspective crucial to balancing innovation with academic integrity. This study aims to explore students' views on GAI, identifying its benefits, challenges, and the need for clear guidelines in higher education.

### Objectives of the study:
➢ To identify the key factors influencing students' adoption and use of Generative Artificial Intelligence (GAI) technologies in higher education.

### Research Methodology
The study is descriptive and analytical in nature. The Coimbatore city is selected as the location of the study. The study is based on both primary and secondary data, with primary data collected through a structured questionnaire from 70 key personnel's of varied students in Coimbatore city through structured questionnaire, and the Secondary data were collected from various books, journals, articles, and websites. Convenience sampling method was adopted in the study. The collected data were analyzed using factor analysis.

### Factors influencing students' adoption and use of Generative Artificial Intelligence (GAI) technologies in higher education:
In order to have a thorough knowledge about the factors influencing student's adoption and use of Generative Artificial Intelligence (GAI) technologies in higher education, the respondent's intention were gathered through five-point Likert scale. The variables used for factor analysis were analyzed and presented in table 2. In order to bring out the underlying factors, Varimax Rotation was used. The principal component analysis was used for extraction purpose. The criterion for selecting number of factors was based on Eigen value. All these factors which have Eigen value more than one were

included. The KMO and Bartlett's test bring out the sample adequacy and are highly significant as shown in **TABLE1.**

| TABLE1 | |
|---|---|
| **KMO and Bartlett's Test** | |
| Kaiser-Meyer-Olkin Measure of Sampling Adequacy. | **.747** |
| Bartlett's Test of Sphericity | Approx.Chi-Square | 1.244E3 |
| | df | 136 |
| | Sig. | .000 |

Source: Computed Data

Factors influencing students' adoption and use of Generative Artificial Intelligence (GAI) technologies in higher education.

**TABLE2**

| Variables | Factor1 | Factor2 | Factor3 | Factor4 | Factor5 | Communalities |
|---|---|---|---|---|---|---|
| Perceived Usefulness | .011 | .082 | -.021 | **.818** | .071 | **.682** |
| Trust and Credibility | .179 | .207 | .165 | **.686** | .052 | .576 |
| Perceived Ease of Use | .314 | .164 | .588 | -.118 | -.011 | .486 |
| Technological Literacy | .400 | .395 | .346 | -.447 | .101 | **.646** |
| Language and Communication Skills | .568 | .303 | .272 | -.346 | .054 | **.611** |
| Speed of Response | **.739** | .153 | -.034 | .037 | .101 | .583 |
| Perceived Accuracy | .553 | -.207 | -.002 | .279 | .332 | .537 |
| Content Variety | -.041 | -.233 | .462 | .409 | .499 | **.686** |
| Academic Performance | -.191 | .211 | **.763** | .157 | .241 | **.746** |
| Enhancement Training and Support | -.069 | **.714** | .253 | .062 | .017 | .583 |
| Perceived Flexibility | .458 | **.643** | -.084 | .038 | -.128 | **.649** |
| Transparency and Explain ability | **.761** | .192 | .096 | .062 | -.072 | **.634** |
| Social Influence | **.634** | -.207 | .314 | .039 | .237 | **.601** |
| Availability of Offline Features | .269 | -.105 | .061 | -.027 | **.767** | **.677** |
| Customization Features | -.028 | .409 | -.006 | .095 | **.758** | **.751** |
| Assessment Practices | .124 | **.641** | .295 | .147 | .132 | .552 |
| Time Efficiency | .347 | .280 | **.602** | .055 | -.155 | .588 |
| **Eigen value** | 2.909 | 2.160 | 1.997 | 1.791 | 1.731 | |
| **Variance (%)** | 17.109 | 17.109 | 17.109 | 17.109 | 17.109 | |
| **Cumulative Variance%** | 17.109 | 29.817 | 41.567 | 52.103 | **62.283** | |

Source: Computed Data

The factor analysis of students' adoption and use of Generative Artificial Intelligence (GAI) technologies in higher education revealed five key factors that influence their engagement with these tools. Factor 1 (System Efficiency and Trust) includes variables such as Transparency and Explain ability (.761), Speed of Response (.739), Social Influence (.634), and Perceived Accuracy (.553), indicating that students' adoption of GAI is significantly influenced by how transparent, fast, socially

accepted, and reliable they perceive these technologies to be. Factor 2 (Institutional Support and Flexibility) captures the role of Training and Support (.714), Perceived Flexibility (.643), and Assessment Practices (.641), highlighting the importance of universities providing adequate training and flexible learning environments for students to effectively use GAI. Factor 3 (Academic and Usability Benefits) is primarily represented by Academic Performance Enhancement (.763),Perceived Ease of Use (.588), and Time Efficiency (.602), suggesting that students value GAI for its ability to enhance learning, simplify academic tasks, and save time. Factor 4 (Perceived Usefulness and Credibility) is driven by Perceived Usefulness (.818) and Trust and Credibility (.686), reinforcing that students are more likely to adopt GAI when they perceive it as useful and trustworthy. Lastly, Factor 5 (Customization and Accessibility) includes Availability of Offline Features (.767) and Customization Features (.758), demonstrating that personalized experiences and offline accessibility playacrucialroleinadoption.Thesefindingssuggestthatuniversitiesanddevelopers should focus on enhancing trust, usability, institutional support, and customization to encourage widespread adoption of GAI technologies among students.

## SUGGESTION
- Universities should enhance transparency, speed and accuracy of GAI technologies to build student trust and encourage adoption.
- Institutional support through training programs and flexible academic policies is crucial for effective GAI integration in higher education.
- Personalization and accessibility, including customization features and offline capabilities, should be improved to enhance user experience.

## CONCLUSION
This study effectively identified key factors influencing students' adoption of Generative AI in higher education, primarily highlighting the significance of perceived usefulness and technological utility. Factor analysis revealed that students prioritize AI tools that enhance their academic performance and offer practical benefits. However, ethical considerations and the need for clear institutional guidelines remain crucial. Universities should focus on providing adequate training and support, fostering transparency, and addressing concerns related to overreliance and academic integrity. By balancing innovation with ethical responsibility, educational institutions can effectively integrate GAI to enhance student learning experiences.

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