

Adoption Of Genai (Generative Artificial Intelligence) In Higher Education: An Empirical Study Of Faculty Members

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Abstract

The use of Generative Artificial Intelligence (GenAI) in higher education has been a topic of discussion since the release of ChatGPT in late 2022. Artificial Intelligence (AI) is bringing about a new wave of change across various sectors, particularly in educational and communication technologies, through tools such as ChatGPT and other generative AI (GenAI) applications. The present research acknowledges its potential benefits, despite concerns among educators about how it might impact student assessments and the development of critical thinking skills. This study also examines the advantages and challenges involved in incorporating generative artificial intelligence (AI) into higher education. Such findings are drawn from an asynchronous focus group study, which involves doctoral students who take on dual roles as both teachers and learners. While identifying the key factors that shape their acceptance or resistance towards adoption of such technologies, this research work also uses the Technology Acceptance Model (TAM) and Social Cognitive Theory (SCT) as guiding schemas to examine how higher education faculty perceive, feel about, use, and are motivated toward GenAI tools. The variables impacting the adoption of GenAI (Generative Artificial Intelligence) in higher education are Personalised Learning, Curriculum Designing, Administrative Efficiency and Assessment and Feedback.

Keywords: Generative Artificial Intelligence, Communication technologies, Higher education, Critical thinking, Asynchronous.

Introduction

Generative Artificial Intelligence, or GenAI, is a form of AI that is designed to produce original content, such as text, images, music, or code, based on the instructions or prompts provided by users. GenAI functions through models that are developed using massive datasets to recognise patterns and produce new, human-like results. Such technologies can generate conversational text, create visual designs, and support activities such as programming and data analysis. Following the launch of ChatGPT, Generative AI has gained rapid global attention, which is a chatbot built on OpenAI's GPT-3.5 neural network model, released on November 30, 2022. Therefore, the term GPT stands for "generative pretrained transformer", which refers to the neural network structure that powers the model. Beginning with ELIZA, developed at the Massachusetts Institute of Technology during the mid-1960s, various conventional chatbots have also existed for a long time. However, various earlier chatbots like ELIZA were rule-based, primarily systems, which meant they had limited or no ability to understand context. Their responses were restricted to the fixed rules and preset patterns. According to Bandi et.al. (2023), thus, in contrast, generative AI models operate

without such limitations, through generating responses dynamically rather than relying on predefined templates. Descriptively speaking, they primarily function like blank, undeveloped brains (neural networks) that learn by being trained on vast amounts of real-world data. Through such a process, they build their own form of intelligence, which is a conceptual model of how the world operates, which they use to compose new content in response to user prompts. Recent research work also suggests that Baig & Yadegaridehkordi. (2025), mentioned that Generative Artificial Intelligence (GenAI) has gained significant importance in higher education. Studies also show that 45% of adults between the ages of 18 and 29 are using ChatGPT, an increase from 35% in just nine months prior. Faculty members and students of higher education are experiencing a fast-evolving classroom environment as these popular, multimodal tools introduce us to a range of new opportunities and challenges. Some instances of interactive text-based GenAI tools are: OpenAI's ChatGPT, Google's Gemini, Anthropic's Claude, as well as Meta.AI. Therefore, additionally, multimodal GenAI technologies are rapidly expanding and transforming how educational media is created and used. Nikolopoulou. (2024) stated that Generative AI facilitates numerous possibilities in post-secondary education by enabling more and more personalised learning experiences, strengthening student support services, and increasing administrative efficiency for educators. Major usages of GenAI include developing personalised learning pathways, offering round-the-clock student support through chatbots, automating repetitive administrative duties, and helping educators with content development and evaluation. Through the incorporation of GenAI, institutions are able to streamline operations and deliver more customised and engaging learning experiences. For students of higher standard, it can serve as a resource to enhance their abilities, such as in research, writing, and critical thinking, by offering instant, personalised feedback. AI-driven tools also support asynchronous and flexible learning, helping to make education more accessible. The present research work will let us understand how GenAI will simplify routine administrative duties like drafting reports, handling communications, and summarising information, allowing more time to focus on strategic and high-value tasks. By responding to frequently asked questions, virtual assistance can deliver round-the-clock support and assist students with guidance, as well as connecting them to mental health resources. While highlighting the importance of a thorough understanding to boost efficiency and prepare for professional practice, the adoption of GenAI also offers direction to educators on how these tools function and can be integrated into higher education environments.

Literature Review

According to Kuleto et.al. (2021), Artificial Intelligence or AI is not a recent development; therefore, its use in higher education has been explored and researched for several years. Artificial Intelligence or AI refers towards the broader idea of creating machines that can mimic human behaviour and thinking. They encompass a wide range of technologies, from virtual assistants like Alexa and chatbots to image generators, robotic vacuum cleaners, and autonomous vehicles. Sengar et.al. (2025) mentioned that Generative AI can be identified as a specialised branch of Artificial Intelligence that focuses towards producing original and meaningful content intelligently. Generative artificial intelligence, or GenAI, is considered a form of AI which are capable of producing original content and ideas such as dialogues, stories, images, videos, and music. Whether human, programming or symbolic, it can understand and learn various forms of language as well as complex fields like art, chemistry, and biology. Although earlier forms of generative AI (GenAI) appeared as far back as the 1950s, the advanced versions available today began emerging in the 2010s. This modern

phase was driven by major advancements in deep learning and significantly boosted by the development of new model architectures. Recent progress has been made in the field of technology that powers AI applications, which has greatly enhanced their overall capabilities. Such developments have also brought about a range of new opportunities and challenges for faculty members in higher education. Academic responsibilities like teaching, research, and service are all influenced by GenAI. Initial studies using GenAI for tasks such as giving or writing feedback have shown that it still performs below the level of human evaluators. Sahu & Sahu. (2024), asserted that with the adoption of Generative AI (GenAI), it offers immense potential to reshape higher education in India by expanding access, enabling learning experiences, and simplifying administrative processes. In higher education, GenAI is applied towards content development and curriculum design by automating material creation, customising learning experiences, incorporating new and relevant topics into the curriculum, and supporting administrative activities such as lesson planning and assignment preparation. While also fostering students' critical thinking and understanding of AI, it supports educators towards creating content as well as designing more engaging and interactive learning activities. According to Khlaif et.al. (2024), adoption of Generative AI in higher education can efficiently generate initial drafts of lesson plans, assignments, grading rubrics, and summaries of key information, which faculty members can later review and improve. Through enhancing both engagement and understanding, GenAI can adaptively generate content customised to each student's abilities, strengths, and areas for improvement. They can help educators examine existing curriculum to suggest or propose modifications, highlight new and relevant subject matter, and suggest possibilities for cross-disciplinary study. Assistance towards the formulation and adoption of advanced pedagogical approaches, including flipped classrooms or gaming learning, and in the development of collaborative, group-oriented activities. Zawacki-Richter et.al. (2019) mentioned educational programs are being revised to integrate or include modules on the functioning of AI, its limitations, and their implications on society. This helps students to equip a good grasp of AI and the ethical consciousness required in a world dominated by GenAI. Generative AI can translate educational material into multiple regional languages to bridge the language gap and promote inclusivity. Thus, secondly, AI-powered tools may help educators to assist students with disabilities by providing text-to-speech and speech-to-text functionality. Whether through video conferencing or in the form of automated customer support chatbots, GenAI systems can rapidly translate and transcribe verbal and written materials. Bellary et.al. (2025) stated that acceptance of GenAI in higher education can greatly simplify and speed up the process of content creation for international campaigns, where GenAI can create content in several languages simultaneously from a single prompt. This transforms written text into realistic, human-like audio, making online documents, websites, and e-learning resources more accessible for students or individuals with reading challenges. AI can interpret images and automatically create descriptive alternative text, helping users understand visual content more effectively, especially for users with visual impairments who depend on screen readers. Wattanakasiwich et.al. (2025) mentioned that Generative AI may be used by teachers and distance educators to automate the creation of courses, like lesson plans, quizzes, and multimedia materials, so that they can have more time to engage with and guide students. Essays and multiple-choice exams included, AI-based tools can effectively mark assignments, providing timely and uniform feedback to students while reducing grading pressure on instructors. Assist researchers amongst educators in summarising academic journals, literature review, and data analysis, thus saving time and enhancing the overall quality of research work. Several GenAI tools, such as ChatGPT, Jasper.ai, and Writesonic, can help

non-native English-speaking researchers or faculty members overcome language barriers while writing for academic journals, thereby enhancing their chances of getting published in international journals. AI-powered software, such as Grammarly and ProWritingAid, checks text for grammar, spelling, and punctuation errors. These software programs also offer suggestions to improve clarity, tone, and overall consistency in a document. Adaptation of AI can contribute to assistance in assessing a student's skills, interests, and academic background in order to provide individualised career counselling in line with prevailing industry trends and requirements for faculty members. The above-mentioned factors are contributing towards a favourable environment for the expansion of GenAI in India's higher education system. According to Issa et.al. (2024), with numerous innovative startups and established companies, India's EdTech sector is rapidly growing through incorporating Generative AI into their learning solutions. Indian AI models, which are developed at top renowned institutes like IIT Madras, are being created in several regional languages, which are playing a vital role by making GenAI more accessible to a wider and more diverse group of students. The present study indicates that many higher educational institutions (HEIs) in India have either already adopted AI policies or are currently working towards developing them. Wang & Wang. (2025), mentioned that individuals who are deaf or have a problem related to hearing, GenAI can be used by educators automatically to create text transcripts and closed captions for video and audio materials. Artificial intelligence can examine images and automatically produce descriptive alt text for users with visual impairments who depend on screen reading, helping them better comprehend visual content. This technology can also customise content according to an individual's accessibility requirements through modifying font size, colour contrast, or spacing to enhance readability. GenAI can also be instructed to simplify complex academic language or technical jargon by making the text clearer and easier to understand for a wider audience. Mohamed et.al. (2025) asserted that virtual teachers powered by GenAI or generative AI can deliver personalised support to the students of higher education by addressing their questions and helping them in areas of difficulty. By making learning more engaging and more effective, these advanced systems can replicate one-on-one tutoring experiences. AI-based tutoring platforms are increasingly being used in several educational institutions to aid teachers by providing them with extra support to students who require additional help throughout subjects such as mathematics and science. Research suggests that many Higher educational institutions have already introduced or are currently formulating AI-related policies. Although McDonald et.al. (2025) stated that Generative AI offers tremendous potential, its adoption in the higher education sector encounters several ethical issues surrounding the use of GenAI in higher education, which involves concerns related to data privacy, algorithmic bias that may reinforce inequality, as well as the risk of spreading misinformation. Integration of GenAI in higher education may generate misleading or biased information for students, which might sometimes be mistakenly believed to be accurate. Implementation of GenAI also raises one major issue, which is algorithmic transparency, since faculty members of rural areas often lack understanding of how such models process and produce information, which can reduce trust in their outputs. Therefore, these factors together highlight the need for well-defined policies and ethical standards that guide the responsible use of Generative AI amongst faculty members. Another major concern is academic plagiarism, as "Generative AI generative content could make it easier for students to engage in dishonest practices, obscuring the line between genuine work and machine-produced material." Lastly, lack of digital literacy amongst educators may also result towards the improper use or misunderstanding of GenAI's functions and boundaries. According to Đerić et.al. (2025), adoption of GenAI in higher education must also consider some issues

related to trust in technology, institutional responsibility, and the ethics surrounding misinformation. Confidence towards integration of technology diminishes when users are uncertain about the accuracy or reliability of AI-generated content, increasing the risk of spreading false information.

Objective

To ascertain “Factors influencing the adoption of GenAI (Generative Artificial Intelligence) in Higher Education”

Methodology

313 participants were surveyed from different institute types. The method of sampling was “Random sampling” for the collection of data, and the examination was done by "Explanatory Factor Analysis" for the results.

Findings

Table 1 demonstrates demographic details, which show that 61.66% are Male, 38.34% are female. Looking at the age, 35.14% are between 20 and 22 years of age, 31.63% are between 22 and 25 years of age, and 33.23% are above 25 years of age. With regards to Institute type, 35.46% are Government institutes, 32.91% are private institutes, and 31.63% are Professional Institutes.

Table 1: Respondents' Details

Variables	Participants	Percentage
Gender		
Male	193	61.66%
Female	120	38.34%
Total	313	100
Ages in years		
20 to 22	110	35.14%
22 to 25	99	31.63%
Above 25	104	33.23%
Total	313	100
Institute type		
Government institutes	111	35.46%
Private institutes	103	32.91%
Professional Institutes	99	31.63%
Total	313	100

“Factor Analysis”

“KMO and Bartlett's Test”

Table 2: Kaiser-Meyer-Olkin Measure of Sampling Adequacy”

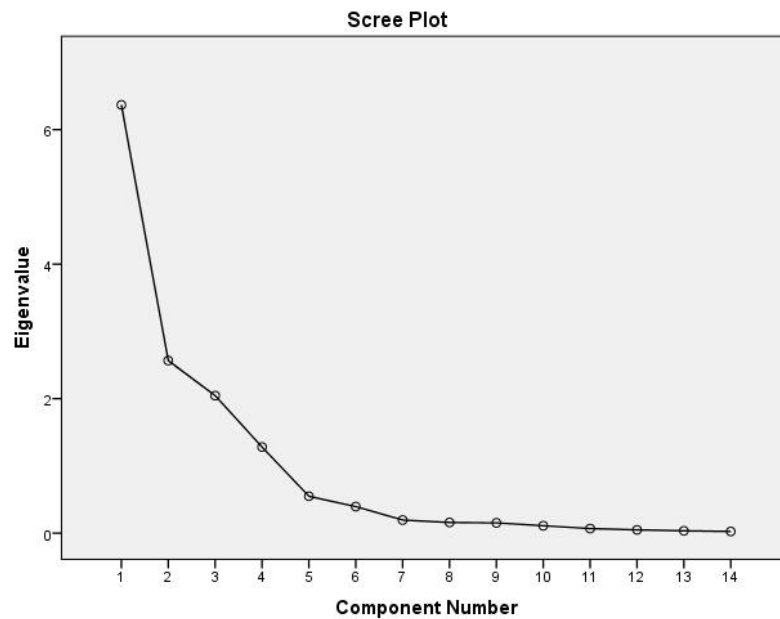
“Kaiser-Meyer-Olkin Measure of Sampling Adequacy”		.762
“Bartlett's Test of Sphericity”	“Approx. Chi-Square”	5533.589
	df	91
	Significance	.000

“KMO and Bartlett's Test”, value of KMO is .762 (Table 2).

Table 3: “Total Variance Explained”

“Component”	“Initial Eigenvalues”			“Rotation Sums of Squared Loadings”		
	“Total”	“% Of Variance”	“Cumulative %”	“Total”	“% Of Variance”	“Cumulative %”
1.	6.368	45.488	45.488	3.871	27.650	27.650
2.	2.567	18.332	63.821	3.633	25.948	53.599
3.	2.045	14.606	78.427	2.416	17.257	70.856
4.	1.282	9.155	87.582	2.342	16.726	87.582
5.	.549	3.920	91.502			
6.	.395	2.821	94.323			
7.	.195	1.395	95.718			
8.	.158	1.132	96.849			
9.	.153	1.091	97.940			
10.	.110	.786	98.726			
11.	.069	.492	99.218			
12.	.049	.352	99.570			
13.	.035	.250	99.821			
14.	.025	.179	100.000			

The four factors contribute towards explaining a total of 87.582% of the variance. Variance explained by Personalised Learning is 27.650%, Curriculum Designing is 25.948%, Administrative Efficiency is 17.257%, and Assessment and Feedback is 16.726%. (Table 3).

**“Scree Plot”****Table 4 “Rotated Component Matrix”**

“S. No.”	“Statements”	“Factor Loading”	“Factor Reliability”
	Personalised Learning		.949
1.	AI tutors make adjustments in explanations based on students' responses	.953	
2.	Students receive real-time and individualised feedback	.908	
3.	Individual feedback improves engagement and autonomy	.847	
4.	Educators can design AI-driven learning materials tailored for diverse learners	.837	
	Curriculum Designing		.961
1.	Faculty can use GenAI to create quizzes, case studies, and learning activities	.962	
2.	It reduces the time spent on administrative activities	.903	
3.	Reduced time on repetitive activities allows more focus on mentorship	.896	
4.	Promote flipped classrooms and project-based learning supported by GenAI	.871	

	Administrative Efficiency		.868
1.	Automates administrative functions like report writing, scheduling, correspondence, etc.	.916	
2.	Supports decision-making through predictive analytics	.857	
3.	Improves academic integrity and plagiarism detection	.742	
	Assessment and Feedback		.840
1.	Assist in automated grading, formative assessments, and rubric generation	.930	
2.	Facilitates instant feedback loops and improves continuous learning	.929	
3.	Raises questions of academic integrity, requiring the redesign of the assessment system	.662	

Factors of the study and its related variables

The first factor showing the adoption of GenAI in the higher education system is Personalised Learning. The variables it includes are AI tutors making adjustments in explanations based on students' responses, Students receiving real-time and individualised feedback, Individual feedback improving engagement and autonomy, and Educators can design AI-driven learning materials tailored for diverse learners. Curriculum Designing is the key factor; the variables it includes are that the Faculty can use GenAI to create quizzes, case studies, and learning activities. It reduces the time spent on administrative activities, reduces time on repetitive activities, allows more focus on mentorship, and promotes flipped classrooms and project-based learning supported by GenAI. The third factor is Administrative Efficiency, its variables are Automates administrative functions like report writing, scheduling, correspondence, etc., Supports decision-making through predictive analytics, and Improves academic integrity and plagiarism detection, last and fourth factor is Assessment and Feedback, its variables are Assist in automated grading, formative assessments, and rubric generation, Facilitates instant feedback loops, and improves continuous learning and Raises questions of academic integrity, requiring redesigning assessment system.

Table 5 “Reliability Statistics”

“Cronbach's Alpha”	“Number of Items”
.896	14

Total reliability of 14 items that include variables for Factors influencing the adoption of GenAI (Generative Artificial Intelligence) in Higher Education, 0.896 (Table 5).

Conclusion

Integration of Generative AI within higher education entails beyond just simply adopting new technologies, it also raises complex disputes associated towards ethics, regulation, and the true meaning of quality education. Overall, higher education faculty members consider Generative AI tools to be helpful towards enhancing accessibility and effectiveness, by appreciating their ease of use, time-saving benefits, and capacity for giving instant feedback. The present research work concludes that institutions using AI systems must guarantee that data collected is utilised only for their intended purposes, because adoption of GenAI in higher education may involve gathering and analysing sensitive personal information, including students' academic records and behavioural data. The above-mentioned insights underline the expanding influence of GenAI towards assisting activities while also stressing the importance of promoting AI literacy and accessibility through ensuring that all faculty members of higher education are equipped to make enlightened alternatives about how to use it effectively. Nevertheless, although they recognised GenAI as a helpful resource, many individuals still remain uncertain about its direct influence on their academic achievement. The aspects swaying the adoption of GenAI (Generative Artificial Intelligence) in higher education are Personalised Learning, Curriculum Designing, Administrative Efficiency and Assessment and Feedback.

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