



Artificial Intelligence in Indian Higher Education: Adoption Determinants, Academic Engagement and Learning Motivation Among Generation z — An Integrative Review

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Abstract

Purpose: Artificial intelligence has emerged as a transformative force in higher education worldwide; in India, its integration has gained strategic importance through the National Education Policy 2020 and the Digital India initiative (Shabana, 2026). For Generation Z — the first true cohort of digital natives — AI-powered tools such as adaptive platforms, chatbots and generative AI systems are rapidly becoming part of everyday academic life (Alruthaya et al., 2021). This paper presents an integrative review of the literature on AI adoption among Gen Z students in Indian higher education and its relationship with academic engagement and learning motivation.

Design/Methodology/Approach: An integrative, thematic review of peer-reviewed studies published between 2019 and 2026 was conducted, informed by recent systematic reviews in the field (Bhutoria, 2022). Evidence was organised into seven themes; an empirically grounded conceptual framework integrating the Technology Acceptance Model, UTAUT2 and self-determination theory is proposed.

Findings: Motivation-related constructs — learning interest, achievement goals, self-efficacy and subjective norms — are central drivers of AI adoption (Pasupuleti et al., 2025). AI-integrated tools are significantly associated with academic engagement and performance (Shaikh, 2025). Indian students are simultaneously optimistic about AI's potential and concerned about over-reliance, privacy and academic integrity (Patidar, 2026). Contextual factors (habit, facilitating conditions) outweigh social influence in shaping adoption (Jasrai, 2025; Sudan et al., 2024).

Originality/Value: The review proposes an integrated conceptual framework and a ten-point research agenda addressing the underexplored intersections of motivation theory, technology acceptance and equity in Indian AI-enabled higher education.

Keywords: artificial intelligence; generative AI; ChatGPT; higher education; India; Generation Z; academic engagement; learning motivation; Technology Acceptance Model; UTAUT2; self-determination theory

1. Introduction

Artificial intelligence has moved from the periphery to the centre of higher education globally, transforming teaching–learning processes, administrative functions and research ecosystems. India has been an active participant in this transformation: the National Education Policy 2020 envisions leveraging technology, including AI, to foster innovation, inclusivity and lifelong learning, and AI has received formal recognition as a tool for personalised learning, digital assessment, student analytics and administrative efficiency in Indian higher education (Sidam.Madhuvar, 2026). Qualitative exploration of the AI–NEP 2020 interface identifies personalised learning, teacher support, inclusivity and ethical challenges as the key themes shaping this agenda (Toppo, 2025).

Generation Z — individuals born between 1995 and 2012 — has never known a world without the internet, and its members are distinguished by speed, nonlinear processing and a preference for technology-mediated, personalised learning experiences (Hammad, 2025). In India, the adoption of AI in daily study and research activity has become distinctly visible among students and research scholars in university environments (Archana et al., 2025). Yet the relationship between AI and learning is not straightforward: while Gen Z students express optimism about generative AI's capacity to enhance productivity and personalised learning (Chan & Lee, 2023), persistent concerns around over-reliance, diminished creativity, data privacy and academic integrity remain.

Despite rapid scholarly growth, the evidence on AI in Indian education remains scattered across isolated studies of adoption, engagement, motivation and ethics. Recent systematic reviews have begun mapping the field — one examined AI-driven innovation across the Indian higher education system against the frameworks of the Technology

Acceptance Model, Cognitive Load Theory and self-determination theory, and another reviewed AI's impact on teaching and learning in Indian schools and universities (Das, 2026). Building on this momentum, the present review synthesises the empirical and conceptual literature on AI adoption among Gen Z students in India, with specific attention to academic engagement and learning motivation, and derives a structured research agenda.

2. Review Methodology

This paper adopts an integrative, thematic review methodology. Literature was identified through structured searches of major academic databases, including Scopus and Web of Science, supplemented by backward and forward citation chasing of key reviews in the field (Bhutoria, 2022). Sources were selected against four criteria: (a) peer-reviewed journal articles and systematic reviews; (b) studies published between 2019 and 2026, reflecting the post-policy and post-pandemic era of Indian digital education; (c) studies addressing artificial intelligence, machine learning, generative AI or chatbots in higher education, with priority given to Indian or India-relevant samples; and (d) works of demonstrated theoretical contribution or empirical rigour, including studies applying TAM, UTAUT2 or self-determination theory. Evidence was extracted, coded and organised into seven recurring themes reported below. As a review paper, this study does not test hypotheses; it aggregates and interprets the state of evidence to derive directions for future research.

3. Conceptual Framework

Synthesising the reviewed literature, this paper proposes an integrated conceptual framework. The framework posits that motivational antecedents (learning interest, achievement goals) shape perceived ease of use, while self-efficacy and subjective norms shape perceived usefulness (Pasupuleti et al., 2025). Technology perceptions and contextual factors — facilitating conditions, habit, hedonic motivation and performance expectancy — jointly determine behavioural intention and actual AI usage (Jasrai, 2025; Kumar, 2026; Sudan et al., 2024). AI usage, in turn, influences academic engagement and learning motivation, with the psychological needs of autonomy, competence and relatedness moderating the quality of that influence (Chiu, 2021; Hartnett, 2015). Academic engagement and motivation are theorised to translate into academic performance (Shaikh, 2025).

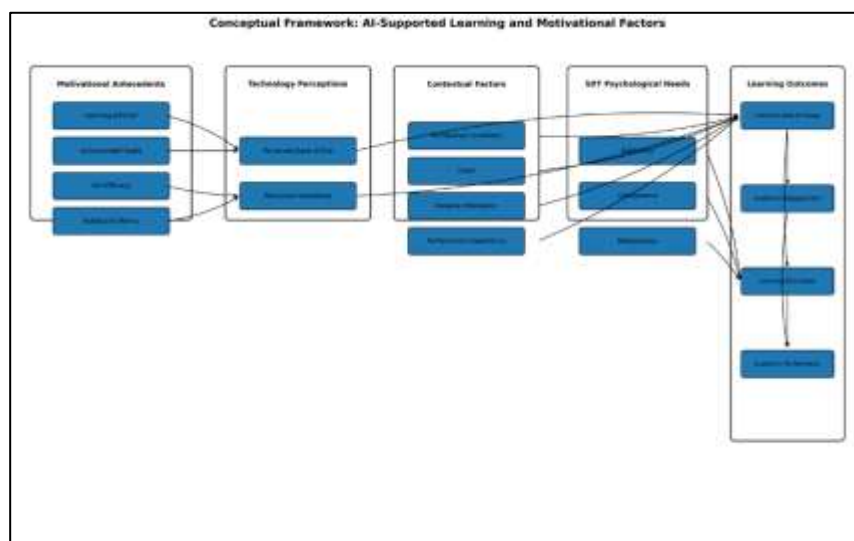


Figure 1. Proposed integrative framework of AI adoption, academic engagement and learning motivation among Gen Z students in Indian higher education (based on (Chiu, 2021; Hartnett, 2015; Jasrai, 2025; Kumar, 2026; Pasupuleti et al., 2025; Shaikh, 2025; Sudan et al., 2024)).

4. Thematic Synthesis of Literature

4.1 Policy and Institutional Context

The policy scaffolding for AI in Indian higher education is well established. The National Education Policy 2020 positions technology, including AI, as central to educational transformation, alongside initiatives such as Digital India and NITI Aayog's AI for All strategy. Analyses of AI integration into NEP 2020 highlight opportunities for personalised learning, teacher improvement and adaptive learning environments, but equally emphasise challenges of infrastructure limitations, the information divide and ethical concerns such as data privacy and algorithmic bias (Akanksha et al., 2025). Qualitative research on emerging perspectives from the NEP on AI integration in higher education similarly concludes that AI's success depends on teacher preparedness, infrastructural readiness and ethical governance.

In practice, AI is enabling content tailored to individual needs — analysing student performance data, engagement and learning pace — and, in a country as diverse as India, beginning to bridge accessibility gaps in rural and underserved communities through intelligent tutoring systems, predictive analytics and multilingual support (Devendran et al., 2026). Systematic reviews of personalised education and AI across India, China and the United States confirm a growing international research base in this area (Bhutoria, 2022).

4.2 Generation Z as AI-Ready Learners

The generational dimension is central to understanding AI adoption. Gen Z students have shown distinctive attitudes toward AI relative to earlier generations: in a widely cited comparative study, Gen Z participants demonstrated optimism about generative AI's potential to enhance productivity, efficiency and personalised learning, and expressed intentions to use it for acquiring and consolidating information, language learning and writing support (Chan & Lee, 2023). Generative AI can also fulfil Gen Z students' expectation of constant, quick, personalised feedback, encouraging independent learning and reducing reliance on teachers. Gen Z learners in higher education possess digital strengths that can be harnessed, but their learning barriers and the educator's role must be redefined accordingly (Eskasasnanda et al., 2025). These dispositions matter for Indian classrooms, where a tension persists between students' technology-mediated expectations and traditional pedagogical practices.

4.3 Determinants of AI Adoption: TAM and UTAUT2 Evidence from India

A substantial Indian evidence base examines what drives students to adopt AI tools. Table 1 summarises the key empirical studies identified in this review, and Table 2 consolidates their findings on significant and non-significant adoption determinants.

Table 1-Key Empirical Studies on AI Adoption in Indian Higher Education

Study Focus	Sample	Analytical Approach	Key Finding
Deepseek adoption (extended TAM)	346 higher education students	PLS-SEM	Learning interest and achievement goals → perceived ease of use; self-efficacy and subjective norms → perceived usefulness; behavioural intention → actual usage (Pasupuleti et al., 2025)
Generative AI adoption	612 students, Greater Noida	Random Forest	Performance expectancy, hedonic motivation and facilitating conditions were significant predictors; social influence and price value were not significant (Kumar, 2026)
ChatGPT adoption	638 business and management students	Survey-based analysis	Habit and perceived benefits were strong predictors; performance expectancy and social influence exerted no influence (Sudan et al., 2024)
ChatGPT adoption	311 students, Northern India	PLS-SEM	Performance expectancy, facilitating conditions, price value and habit determined behavioural intention; effort expectancy, social influence and hedonic motivation were negligible (Jasrai, 2025)
AI-integrated learning tools and academic engagement	400 Gen Z respondents, Mumbai	Regression analysis	Usage patterns strongly predicted academic engagement ($R^2 = 0.997$); positive association with academic performance (Shaikh, 2025)
Student perceptions of AI	682 business management students	Survey	Positive perceptions for administrative and admission processes; hesitation regarding faculty replacement; prior exposure shaped perceptions (Chan & Zhou, 2023)
Generative AI familiarity	1,197 undergraduate and postgraduate students	Large-scale survey	Strong understanding of AI capabilities; concerns over reliability, privacy, over-reliance, creativity loss and job insecurity (Patidar, 2026)

Note. PLS-SEM = partial least squares structural equation modelling; TAM = Technology Acceptance Model. Table compiled by the author from the reviewed literature (2019–2026).

Table 2 Determinants of AI Adoption across Reviewed Indian Studies

Study	Significant Predictors	Non-Significant Predictors
Deepseek adoption (extended TAM) (Pasupuleti et al., 2025)	Learning interest, achievement goals (→ perceived ease of use); self-efficacy, subjective norms (→ perceived usefulness); behavioural intention (→ actual usage)	Not reported
Generative AI adoption (Kumar, 2026)	Performance expectancy, hedonic motivation, facilitating conditions	Social influence, price value
ChatGPT adoption (Sudan et al., 2024)	Habit, perceived benefits	Performance expectancy, social influence
ChatGPT adoption (extended UTAUT) (Jasrai, 2025)	Performance expectancy, facilitating conditions, price value, habit	Effort expectancy, social influence, hedonic motivation

Taken together, these studies indicate that motivation, habit and facilitating conditions — rather than social pressure

— drive Indian students' AI adoption, a pattern that contradicts several classic UTAUT2 predictions and carries clear implications for institutional strategy.

4.4 AI Tools, Academic Engagement and Performance

Empirical evidence directly links AI tool usage with academic engagement in India. In a study of 400 Gen Z respondents in Mumbai, AI-integrated learning tools showed a significant positive relationship with academic performance, with usage patterns strongly predicting academic engagement ($R^2 = 0.997$); students using AI tools demonstrated higher motivation, improved understanding and better performance (Shaikh, 2025). A separate study of AI-based smart learning tools — adaptive learning platforms, AI chatbots and automated feedback systems — among Indian undergraduates found a positive association between regular AI-tool usage, higher engagement levels and improved academic performance, while raising concerns about over-dependence and academic integrity (Bhoir&Iyer, 2026).

4.5 Learning Motivation: A Self-Determination Perspective

Motivation is both a driver and an outcome of AI adoption. Self-determination theory provides a robust lens: it posits three universal psychological needs — autonomy, competence and relatedness — whose satisfaction determines the quality of motivation (Hartnett, 2015). Applied to technology-mediated learning, online environments that fail to support these needs undermine learners' perceived autonomy, competence and relatedness, and thereby their engagement and motivation. In online learning contexts, all three psychological needs predict student engagement, with relatedness support being particularly important (Chiu, 2021).

The Indian TAM evidence reinforces this picture: constructs such as learning interest, achievement goals and self-efficacy — motivational in nature — shape the technological perceptions (perceived ease of use and perceived usefulness) that precede adoption (Pasupuleti et al., 2025). An expectancy-value theory based instrument applied to Indian business management students further shows that students' perceptions of AI's usefulness are conditioned by their prior exposure to AI (Chan & Zhou, 2023). AI tools that enable self-paced, personalised learning can support autonomy; adaptive feedback and intelligent tutoring can build competence; and interactive conversational platforms can foster engagement — provided institutions deliberately design for these needs.

4.6 Student Perceptions, Willingness and Concerns

A large-scale survey of 1,197 undergraduate and postgraduate students across Indian disciplines found that most students possess a strong understanding of generative AI's capabilities and limitations, recognising its potential to enhance personalised learning, research efficiency and writing support. Students appreciated AI's accessibility, time-saving features and 24/7 assistance, but notable concerns emerged regarding reliability, transparency, privacy and ethical implications, along with apprehension about over-reliance, diminished creativity, reduced social interaction and future job insecurity (Patidar, 2026).

In a study of 682 students in full-time business management programmes, students generally had positive perceptions of AI usage in higher education — particularly in administrative and admission processes — but were significantly more hesitant about AI being used as a partial replacement for faculty members in the teaching–learning process; prior exposure to AI shaped their perceptions (Chan & Zhou, 2023). This pattern is consistent with the broader literature's finding that generative AI adoption is accompanied by ethical considerations, data governance demands and new skill requirements (Gupta et al., 2024).

4.7 The Digital Divide and Equity

Any account of digital learning in India must confront the digital divide. Data from the Indian Institutes of Technology reveal that 96% of learners from rural households faced internet-related problems, compared with 71.42% of learners from urban households (Pushpanadham et al., 2023). National-level data rank India 105th globally in internet speed, with roughly 68.8% of the population living in rural areas where connectivity is markedly poorer than in urban centres (Bast, 2021). During the pandemic-era shift to online learning, students from rural and disadvantaged backgrounds faced severe barriers including unreliable internet connectivity, power cuts and inadequate devices (Naik et al., 2021; Rizvi&Nabi, 2021). Figure 3 visualises this urban–rural disparity.

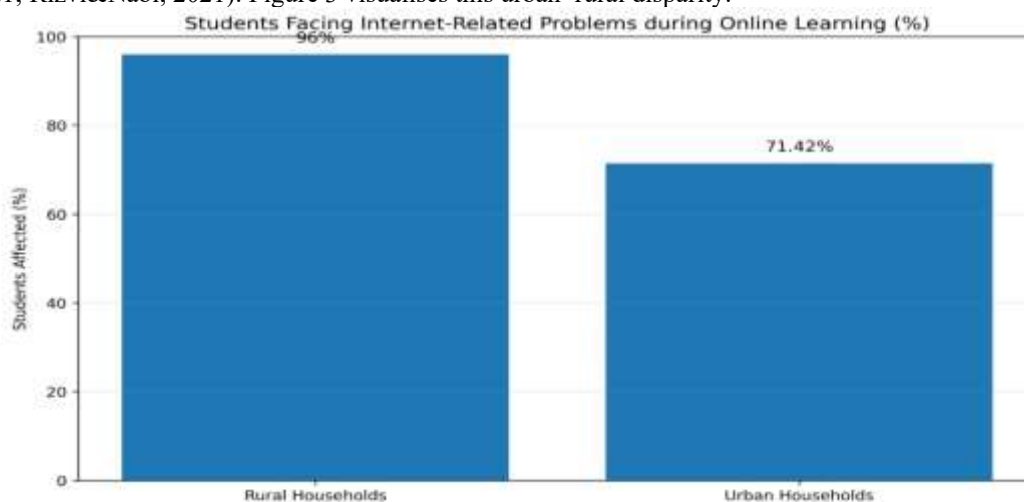


Figure 3. Urban–rural disparity in internet-related problems among learners (data from (Pushpanadham et al., 2023)).

These material conditions directly shape whether Gen Z students' digital habits and AI adoption translate into genuine academic engagement — AI's promise of personalised learning and multilingual support (Devendran et al., 2026) can only be realised where devices, connectivity and institutional support exist.

5. Discussion and Implications

5.1 Discussion

The reviewed evidence indicates that AI has become a routine feature of Indian higher education, and that Gen Z students are both willing and able to integrate AI into their learning. The strong empirical association between AI usage and academic engagement — exemplified by the Mumbai study's R^2 of 0.997 (Shaikh, 2025) — suggests that AI-integrated tools can meaningfully enhance motivation, understanding and performance when purposefully deployed. The adoption literature adds an important nuance: Indian students adopt AI not primarily because of social influence, but because of motivational constructs (learning interest, achievement goals, self-efficacy) and contextual conditions (habit, facilitating conditions) (Jasrai, 2025; Kumar, 2026; Sudan et al., 2024). This implies that institutional strategies must shape the conditions of use — infrastructure, training and structured opportunities — rather than merely exhorting adoption. The self-determination lens cautions that poorly designed AI integration, which undermines autonomy, competence or relatedness, can foster dependence rather than self-regulated learning (Chiu, 2021; Hartnett, 2015). Finally, the digital divide literature warns that the benefits of AI-enabled learning are unevenly distributed: where 96% of rural learners faced connectivity problems against 71.42% of urban learners (Pushpanadham et al., 2023), technology optimism must be paired with equity investment.

5.2 Implications

For policymakers: NEP 2020's AI provisions require implementation support — teacher preparedness, infrastructure and ethical governance (Akanksha et al., 2025). Equity-focused investment in connectivity and devices for rural institutions is a precondition for inclusive AI-enabled education.

For institutions: develop transparent AI policies addressing academic integrity, privacy and responsible use; design motivation-aware, need-supportive AI integration aligned with autonomy, competence and relatedness; and structure sustained, purposeful AI use rather than one-off exposure.

For educators: AI literacy and human oversight remain essential; students' hesitation about AI replacing faculty (Chan & Zhou, 2023) indicates that augmentation — not substitution — is the acceptable frame.

6. Research Gaps and Future Research Agenda

The review surfaces ten gaps that define a research agenda.

Table 3 Research Gaps and Proposed Future Research Agenda

Gap	Description	Suggested Approach
1. Longitudinal and causal designs	Most reviewed studies are cross-sectional; causal directions between AI usage, motivation and engagement remain untested	Panel/longitudinal surveys; quasi-experimental designs
2. Institutional diversity	Central, state and private institutions across rural, semi-urban and urban geographies underrepresented	Multi-institution stratified sampling
3. Integrated theoretical testing	TAM, UTAUT2 and SDT tested separately rather than together	Structural equation modelling with mediation and moderation
4. Disciplinary variation	Adoption patterns across science, humanities, commerce and professional programmes unknown	Comparative cross-disciplinary designs
5. Faculty and institutional readiness	Teacher preparedness and institutional policy effects on student adoption unexamined	Faculty surveys; institutional case studies
6. Long-term effects of dependence	Impact of sustained AI reliance on creativity, critical thinking and integrity unknown	Longitudinal tracking studies
7. Equity and the digital divide	How infrastructure gaps condition AI benefits for rural and first-generation learners	Rural–urban comparative studies
8. Cultural and linguistic contexts	Multilingual moderation of AI personalisation effectiveness unstudied	Multilingual experimental designs
9. Policy effectiveness	Implementation and impact of NEP 2020's AI provisions unevaluated	Policy evaluation research
10. Assessment integrity	AI-resistant and AI-integrated assessment designs underdeveloped	Design-based research

7. Limitations

This paper is an integrative review based on secondary data; its conclusions rely on existing studies that vary in sample size, region and discipline. Most reviewed Indian studies are cross-sectional surveys, limiting causal inference. The proposed framework is theoretical and awaits empirical validation. Finally, the review is restricted to English-language sources published between 2019 and 2026.

8. Conclusion

The evidence reviewed here indicates that artificial intelligence has become a routine, not novel, feature of Indian higher education, and that Generation Z students are both willing and able to integrate AI into their learning. Policy recognition through NEP 2020 and related initiatives has created a supportive environment (Sidam.Madhuar, 2026), and empirical studies demonstrate that AI-integrated tools can significantly enhance academic engagement and performance when usage is purposeful and well-supported (Bhoir&Iyer, 2026; Shaikh, 2025). Adoption itself is driven by motivational constructs — learning interest, achievement goals, self-efficacy and subjective norms — as well as by habit and facilitating conditions, rather than by social influence (Jasrai, 2025; Kumar, 2026; Pasupuleti et al., 2025; Sudan et al., 2024). Yet the Indian context demands caution: students simultaneously value AI's accessibility and fear over-reliance, privacy erosion and diminished creativity (Patidar, 2026), and the digital divide continues to constrain equitable access to AI-enabled learning (Bast, 2021; Pushpanadham et al., 2023). The challenge for educators, institutions and policymakers is not whether to adopt AI, but how — to create ethical, equitable and motivating learning environments in which AI amplifies rather than replaces human potential. This review's contribution is to organise the scattered evidence into a coherent thematic map, propose an integrated conceptual framework, and provide a research agenda capable of guiding the next wave of investigation into AI's evolving role in Indian higher education.

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