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Factors influencing the adoption of generative AI tools among university students: A structured literature review

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Abstract

Generative Artificial Intelligence (GenAI) tools such as ChatGPT are changing how university students access information, write, solve problems, write code and receive personalised academic support. Their rapid uptake has also raised concerns about accuracy, trust, privacy, academic integrity and overdependence. This paper presents a structured literature review of 20 scholarly publications from 2023 to 2026 that examine what influences students' adoption of GenAI tools. The review draws on empirical, systematic and meta analytic studies, mainly those based on the Technology Acceptance Model (TAM), the Unified Theory of Acceptance and Use of Technology (UTAUT) and UTAUT2. A thematic synthesis groups the determinants of adoption into four dimensions: technological, individual, social and contextual, and trust and risk. Perceived usefulness and performance expectancy are the most consistent positive predictors. Self efficacy, habit, facilitating conditions, social influence and academic value also support adoption. Trust, anxiety, perceived risk and AI literacy show effects that depend on context. The review argues that conventional acceptance models do not fully capture the features of GenAI, including output reliability, ethical use, academic integrity and the need for critical evaluation. It therefore proposes a multidimensional view that moves from simple acceptance toward effective and responsible adoption. The findings suggest that universities should pair access to AI tools with AI literacy training, clear institutional policies and faculty guidance. Future research should develop AI specific extensions of existing models, use longitudinal and cross cultural designs, and link GenAI use to measurable learning outcomes.

***Keywords*:** Generative Artificial Intelligence, ChatGPT, University Students, Higher Education, Technology Adoption, Technology Acceptance Model, UTAUT, AI Literacy, Responsible AI Use

JEL Classification: I21, I23, O33, D83

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1. Introduction

Generative Artificial Intelligence (GenAI) has rapidly transformed the technological landscape of higher education. The emergence of tools such as ChatGPT has introduced new possibilities for how students acquire knowledge, interact with learning resources, prepare academic work, and solve complex problems. Unlike conventional digital technologies that primarily provide access to existing information, GenAI systems can generate context-sensitive responses, explanations, summaries, examples, and computer code through natural-language interaction. This interactive capability has made GenAI particularly attractive to university students.

GenAI is increasingly being used for concept clarification, brainstorming, summarization, writing assistance, programming, language improvement, examination preparation, and personalized academic support. These applications have the potential to make learning more flexible and accessible. Vats and Khanna (2025) discussed the potential relationship between Generative AI and sustainable higher learning, while Vats and Sharma (2025) examined the role of artificial intelligence in advancing green education and highlighted associated implementation challenges. Despite these opportunities, the growing use of GenAI has created considerable academic and ethical concerns. AI-generated information may be inaccurate or misleading, while excessive reliance on AI-generated content may affect students' independent thinking and learning. Additional concerns include privacy, bias, academic misconduct, plagiarism, authorship, and the appropriate role of AI in assessment. Consequently, understanding GenAI adoption requires consideration not only of whether students use these technologies but also why they choose to use them and which factors influence their decisions.

Technology acceptance theories provide an important foundation for understanding these decisions. The Technology Acceptance Model (TAM) emphasizes perceived usefulness and perceived ease of use as major determinants of technology acceptance. The Unified Theory of Acceptance and Use of Technology (UTAUT) extends this perspective through constructs such as performance expectancy, effort expectancy, social influence, and facilitating conditions. UTAUT2 further incorporates factors such as habit and motivational dimensions. Researchers have increasingly applied these models to ChatGPT and Generative AI adoption in higher education. Duong et al. (2023) applied a modified TAM to examine higher education students' use of ChatGPT, while Foroughi et al. (2023) examined determinants of students' intention to use ChatGPT for educational purposes using PLS-SEM and fuzzy-set qualitative comparative analysis.

UTAUT-based studies have produced similar evidence. Habibi et al. (2023) investigated ChatGPT acceptance and use among higher education students, while Strzelecki (2024) applied an extended UTAUT2 framework to examine students' acceptance of ChatGPT. Their findings indicate that constructs such as performance expectancy, facilitating conditions, and habit can contribute to students' intention and use behaviour.

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However, research has increasingly moved beyond conventional technology acceptance variables. Budhathoki et al. (2024) examined anxiety in relation to ChatGPT adoption, while Shahzad et al. (2024) examined trust as a central factor in ChatGPT awareness, acceptance, and adoption. Foroughi et al. (2024) further investigated the moderating role of trust in ChatGPT adoption. Strzelecki and ElArabawy (2024) examined whether gender and study level moderate the acceptance and use of Generative AI.

Recent research also reinforces the importance of perceived usefulness. Caliciuri et al. (2026) examined ChatGPT adoption among Italian university students and found perceived usefulness to be particularly important in shaping students' attitudes and intentions toward the technology. At the review level, Tan (2026) synthesized empirical research on Generative AI adoption in education and identified psychological, technological, social, contextual, quality-related, task-related, and inhibiting factors. Teo et al. (2026) conducted a meta-analytic review of studies involving post-secondary students and demonstrated that individual, contextual, and technological factors collectively contribute to AI adoption. Yang (2026) further reviewed research specifically concerning ChatGPT acceptance and use in higher education. Although this growing body of literature provides valuable insights, the findings remain fragmented because studies differ in their theoretical models, variables, geographical contexts, student populations, and definitions of adoption. More importantly, conventional technology acceptance models were developed for general information technologies and may not fully capture the distinctive characteristics of Generative AI. GenAI can produce human-like responses, generate inaccurate information, raise questions regarding authorship and academic integrity, and require users to critically evaluate generated content.

Three important gaps emerge from the existing literature.

First, although TAM, UTAUT, and UTAUT2 dominate GenAI adoption research, there is limited theoretical integration of AI-specific factors such as AI literacy, output reliability, critical evaluation, and responsible-use capability.

Second, existing studies frequently focus on behavioural intention or acceptance**,** while comparatively less attention is given to the distinction between adoption and effective and responsible use**.**

Third, findings concerning factors such as trust, anxiety, social influence, and perceived risk vary across contexts, indicating a need for a broader synthesis that considers technological, individual, social, institutional, and risk-related dimensions simultaneously. The present review therefore aims to:

1. Examine the major factors influencing the adoption of Generative AI tools among university students.

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2. Synthesize findings from studies based on TAM, UTAUT, UTAUT2, and related technology adoption frameworks.
3. Classify the major determinants into technological, individual, social-contextual, and trust-risk dimensions.
4. Examine emerging factors such as AI literacy, self-efficacy, output reliability, and responsible use.
5. Identify gaps in existing research and propose directions for future investigation.

2. Literature Review

The adoption of Generative Artificial Intelligence (GenAI) among university students has attracted considerable research attention, particularly following the emergence of ChatGPT and other conversational AI tools. Existing studies have primarily examined students' acceptance, behavioural intention, and actual use of GenAI through established technology adoption frameworks such as the Technology Acceptance Model (TAM), Unified Theory of Acceptance and Use of Technology (UTAUT), and UTAUT2. TAM emphasizes perceived usefulness and perceived ease of use as central determinants of technology acceptance, whereas UTAUT incorporates additional factors such as performance expectancy, effort expectancy, social influence, and facilitating conditions. UTAUT2 further extends the model by incorporating factors such as habit and motivational influences. Duong et al. (2023) applied a modified TAM to examine higher education students' use of ChatGPT and demonstrated the relevance of technology acceptance variables in explaining student engagement. Similarly, Foroughi et al. (2023) investigated students' intention to use ChatGPT for educational purposes and demonstrated that adoption is influenced by multiple interacting perceptions rather than by a single determinant. Habibi et al. (2023) examined ChatGPT acceptance and use through UTAUT2, while Strzelecki (2024) applied an extended UTAUT2 framework to investigate university students' acceptance of ChatGPT. These studies indicate that performance expectancy, facilitating conditions, and habit can contribute to students' intention to use and actual use of Generative AI. The continued importance of these theoretical frameworks is also evident in recent review studies. Tan (2026) identified TAM as a dominant theoretical approach in research on Generative AI adoption in education, while Yang (2026) highlighted the continued relevance of TAM in studies examining ChatGPT acceptance and use in higher education. However, the increasing range of factors identified in recent research suggests that conventional technology acceptance models alone may not fully explain the complexity of Generative AI adoption.

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Among the factors identified in the literature, perceived usefulness and performance expectancy appear to be the most consistently reported determinants of Generative AI adoption. Perceived usefulness refers to the extent to which students believe that using GenAI will improve their academic performance, while performance expectancy reflects their expectation that the technology will help them accomplish academic tasks more effectively. Students are more likely to adopt GenAI when they perceive tangible benefits such as improved productivity, time savings, better understanding of academic concepts, assistance with writing, and support for problem-solving. Foroughi et al. (2023) identified performance expectancy and learning value as important determinants of students' intention to use ChatGPT for educational purposes. Strzelecki (2024) similarly identified performance expectancy as an important predictor within an extended UTAUT2 framework, while Shahzad et al. (2025) demonstrated the relevance of technology acceptance factors in explaining Generative AI use among higher education students. More recent evidence from Caliciuri et al. (2026) further reinforces the importance of perceived usefulness, with usefulness emerging as a particularly influential factor in students' attitudes and intentions toward ChatGPT. The consistency of these findings suggests that students are unlikely to adopt Generative AI merely because it represents an innovative technology. Instead, adoption is strongly associated with the perceived academic value and practical usefulness of the technology. Perceived ease of use is another important construct traditionally associated with technology acceptance. It represents the extent to which students perceive Generative AI tools as simple, accessible, and effortless to operate. Duong et al. (2023) identified effort-related perceptions as relevant to ChatGPT adoption, suggesting that the effort required to interact with the technology can influence students' willingness to use it. However, the influence of ease of use appears to be less consistent than that of perceived usefulness. One possible explanation is that conversational GenAI tools have become increasingly intuitive and accessible, making ease of use a basic expectation rather than a factor that differentiates adoption decisions. Caliciuri et al. (2026) further demonstrated that perceptions of ease of use may be associated with individual characteristics such as technology self-efficacy and anxiety. Facilitating conditions also contribute to adoption and include access to appropriate technological infrastructure, internet connectivity, technical resources, institutional support, and knowledge required to use AI tools effectively. Habibi et al. (2023) identified facilitating conditions as an important component of ChatGPT acceptance and use. Thus, even when Generative AI tools are technically accessible, the technological and institutional environment remains important in enabling effective adoption. In addition to technological characteristics, individual and psychological factors influence students' willingness to adopt Generative AI. Self-efficacy, previous experience, habit, and anxiety can shape students' perceptions and interactions with AI technologies. Self-efficacy represents students' confidence in their ability to use technology effectively. Students with greater technological confidence may be more willing to experiment with GenAI and integrate it into their academic activities. Shahzad et al. (2025) examined self-efficacy as one of the factors associated with Generative AI use in higher

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education, while Caliciuri et al. (2026) demonstrated its relevance to students' perceptions of technology usability. Habit becomes particularly important when students move from initial experimentation to regular use. Strzelecki (2024) identified habit as an important predictor of behavioural intention to use ChatGPT, suggesting that repeated interaction with GenAI may transform it from an experimental technology into a routine academic resource. Previous experience may similarly reduce uncertainty and increase students' familiarity with AI capabilities and limitations. In contrast, anxiety may act as an inhibiting factor. Students may experience uncertainty regarding the reliability of AI-generated information, institutional restrictions, academic integrity, or their own technological competence. Budhathoki et al. (2024) examined anxiety in relation to ChatGPT adoption across national contexts, while Caliciuri et al. (2026) also considered technology anxiety in explaining students' perceptions of Generative AI. These findings collectively indicate that students' confidence, experience, and psychological comfort with AI can influence their adoption decisions. Generative AI adoption also occurs within a broader social and institutional environment. Social influence refers to the extent to which students perceive that peers, teachers, or other significant individuals encourage or expect them to use a particular technology. In higher education, students may be influenced by the practices of their classmates, recommendations from faculty members, and broader perceptions regarding the acceptability of AI-assisted learning. Sobaih et al. (2024) examined social influence in relation to ChatGPT acceptance among Saudi Arabian higher education students, while the meta-analytic evidence reported by Teo et al. (2026) provides broader support for the relevance of social norms and contextual influences in student AI adoption. Institutional factors are similarly important because universities can influence adoption through policies, training programmes, faculty guidance, infrastructure, and technical support. Clear institutional policies may reduce uncertainty regarding acceptable AI use, whereas ambiguous or inconsistent policies may create confusion and anxiety among students. Strzelecki and ElArabawy (2024) further demonstrated that student characteristics such as gender and study level may influence patterns of Generative AI acceptance and use. These findings indicate that student adoption cannot necessarily be understood through a completely uniform model and that social, institutional, and demographic contexts should be considered when examining Generative AI adoption. Trust and perceived risk have emerged as particularly relevant dimensions because Generative AI systems can produce responses that appear authoritative while containing inaccurate or misleading information. Shahzad et al. (2024) identified trust as an important factor in ChatGPT awareness, acceptance, and adoption, while Foroughi et al. (2024) specifically investigated the moderating role of trust in ChatGPT adoption among higher education students. These studies suggest that students' confidence in the reliability and usefulness of AI-generated outputs can influence their willingness to use such technologies. However, the influence of trust is not uniform across the literature. Teo et al. (2026) reported comparatively weaker associations for trust and perceived risk than for several individual and contextual factors, suggesting that their importance may depend on the educational and

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technological context. Perceived risk may arise from concerns regarding privacy, misinformation, academic misconduct, plagiarism, bias, data security, and overdependence on AI. Students' willingness to adopt GenAI may therefore involve an implicit evaluation of its perceived benefits against its potential risks. This benefit-risk relationship is particularly relevant in higher education, where students are expected to use emerging technologies while maintaining academic integrity and critical judgment. AI literacy represents an increasingly important dimension of Generative AI adoption and provides an opportunity to extend conventional technology acceptance models. Effective use of GenAI requires more than the ability to access an AI tool; students need to understand how to formulate appropriate prompts, evaluate generated information, identify errors, recognize potential bias, protect personal information, and use AI within academic and ethical boundaries. Tan (2026) identified several factors extending beyond conventional technology acceptance constructs, including quality-related, task-related, psychological, social, and inhibiting factors. These findings indicate that Generative AI adoption involves not only the willingness to use the technology but also the capability to use it appropriately. Grover (2025) emphasized the importance of prompt engineering in shaping AI responses and supporting practical applications of Generative AI. The quality of interaction between students and AI systems may therefore influence the usefulness and effectiveness they perceive from the technology. Consequently, the literature suggests a need to distinguish between simple technology adoption and effective and responsible adoption. A student may use GenAI frequently without necessarily possessing the skills required to critically evaluate its outputs, verify information, or recognize the ethical implications of its use. The academic value of Generative AI is closely connected to the purposes for which students adopt these tools. GenAI can support concept clarification, summarization, brainstorming, academic writing, programming, language improvement, examination preparation, and personalized learning. Foroughi et al. (2023) identified learning value as an important consideration in students' intention to use ChatGPT for educational purposes, while Duong et al. (2023) examined ChatGPT use in relation to educational activities and knowledge sharing. The potential educational contribution of AI also extends beyond immediate academic productivity. Vats and Khanna (2025) highlighted the potential of Generative AI to contribute to sustainable higher learning, while Vats and Sharma (2025) discussed the application of artificial intelligence to green education and associated implementation challenges. These perspectives suggest that Generative AI adoption should not be evaluated solely in terms of how frequently students use AI tools. Instead, attention should also be given to the purpose, quality, educational value, and consequences of AI use. Overall, the reviewed literature demonstrates that no single factor can adequately explain Generative AI adoption among university students. The evidence points toward a multidimensional process involving technological perceptions, individual characteristics, social and institutional influences, and trust- and risk-related considerations. Perceived usefulness, performance expectancy, and academic value appear to be the most consistently reported positive determinants, while self-efficacy, habit, facilitating conditions, and social influence also contribute

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to adoption. In contrast, anxiety, perceived risk, and concerns regarding reliability may act as barriers, although their influence varies across contexts. Recent review-level research supports this multidimensional interpretation. Tan (2026) identified technological, psychological, social, contextual, quality-related, task-related, and inhibiting factors, while Teo et al. (2026) demonstrated the combined contribution of individual, contextual, and technological factors to AI adoption among post-secondary students. Yang (2026) further highlighted the continued dominance of TAM-based research in the study of ChatGPT acceptance in higher education. Taken together, the literature suggests that traditional technology acceptance models remain valuable but require extension through AI-specific constructs such as AI literacy, output reliability, critical evaluation, ethical awareness, and responsible-use capability. This provides a strong basis for examining Generative AI adoption as a broader process of effective and responsible technology adoption rather than simple acceptance or usage.

3. Methodology

This study adopts a structured literature review approach to examine the factors influencing the adoption of Generative Artificial Intelligence (GenAI) tools among university students. The purpose of the review is to synthesize existing evidence rather than statistically estimate a single overall effect size. Accordingly, the review focuses on identifying recurring factors, theoretical approaches, similarities, differences, emerging themes, and research gaps across the selected literature. The review focuses primarily on research published between 2023 and 2026, reflecting the rapid emergence and increasing use of ChatGPT and related Generative AI tools in higher education. The literature considered studies examining the adoption and use of Generative AI and ChatGPT, with particular emphasis on technology acceptance, behavioural intention, and actual use. The review also considers technological factors, including perceived usefulness, performance expectancy, perceived ease of use, and facilitating conditions, as well as social and contextual factors such as social influence and institutional support. Individual and psychological factors, including self-efficacy and anxiety, are also considered to understand how students' personal characteristics influence their willingness to adopt Generative AI. In addition, the review examines trust and perceived risk, particularly in relation to the reliability, privacy, accuracy, and ethical implications of AI-generated content. Emerging dimensions such as AI literacy and responsible AI use are also included, recognizing that effective adoption requires students not only to use Generative AI tools but also to understand their capabilities, limitations, and appropriate academic applications.

A final pool of 20 scholarly publications was selected for the review. The selected literature includes empirical studies examining university and higher education students as well as recent systematic and meta-analytic studies. The studies represent different theoretical perspectives and geographical contexts, with particular emphasis placed on research directly examining student acceptance, adoption, behavioural intention, or use of Generative AI. Studies were considered

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relevant when they examined Generative AI, ChatGPT, or closely related AI technologies; focused on university or higher education students; investigated acceptance, adoption, behavioural intention, actual use, or related determinants; were published primarily between 2023 and 2026; provided identifiable theoretical, methodological, or empirical findings; and were published as scholarly journal articles. Studies were excluded when they focused exclusively on school students without relevance to higher education, examined technical AI development without addressing user adoption, focused exclusively on teachers or employees, did not provide meaningful evidence concerning adoption or acceptance, or consisted primarily of non-scholarly commentary or general media publications.

The selected studies were systematically examined based on their author and year of publication, research context, study population, theoretical framework, adoption-related variables, research approach, major findings, positive determinants, negative or inhibiting determinants, and identified research gaps. The information extracted from the selected literature was subsequently synthesized to identify recurring patterns and relationships among the factors influencing Generative AI adoption. Based on the thematic analysis, the identified determinants were organized into four broad dimensions: technological factors, individual factors, social and contextual factors, and trust and risk factors. Technological factors include perceived usefulness, performance expectancy, perceived ease of use, and facilitating conditions, while individual factors encompass self-efficacy, habit, prior experience, anxiety, and AI literacy. Social and contextual factors include social influence, peer influence, institutional support, and the academic environment, whereas trust and risk factors include trust, perceived risk, privacy concerns, reliability, and ethical considerations. This thematic approach facilitated systematic comparison across the selected studies and enabled the identification of common patterns and emerging themes extending beyond the constructs of individual technology acceptance models.

From an analytical perspective, the review conceptualizes GenAI adoption as a process in which technological perceptions and individual characteristics interact with social and institutional contexts. These factors influence students' attitudes and behavioural intentions, which may subsequently contribute to actual adoption and use. The review also recognizes that adoption may vary according to prior AI experience, technological competence, study level, academic discipline, gender, cultural environment, and institutional policies. This approach enables the study to examine Generative AI adoption as a multidimensional phenomenon rather than as a simple technology acceptance decision, thereby providing a broader understanding of the factors that shape students' willingness and ability to adopt GenAI tools in higher education.

4. Findings and Results

The synthesis of the selected literature indicates that Generative AI adoption among university students is influenced by multiple interacting factors rather than a single determinant. Among the technological factors, perceived usefulness and performance expectancy emerge as the most

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consistently reported positive determinants of adoption, with perceived ease of use and facilitating conditions also contributing to students' willingness to use GenAI. Foroughi et al. (2023), Shahzad et al. (2025), and Caliciuri et al. (2026) provide converging evidence regarding the importance of usefulness and performance-related perceptions, suggesting that students are more likely to adopt GenAI when they perceive direct academic benefits such as improved productivity, learning support, and assistance with academic tasks. Individual factors, including self-efficacy, habit, prior experience, AI literacy, and anxiety, also influence adoption. Self-efficacy and previous experience can increase students' confidence and willingness to engage with GenAI, while habit may contribute particularly to continued use after initial adoption. In contrast, anxiety may inhibit adoption by creating uncertainty regarding AI use, reliability, or students' own technological capabilities. Although AI literacy is increasingly recognized as important for effective use, it remains comparatively less developed as a conventional technology adoption construct. The findings also demonstrate the importance of social and institutional factors, as students may be influenced by peers, faculty recommendations, social norms, institutional support, and university policies. The findings reported by Teo et al. (2026) particularly emphasize the relevance of social norms and contextual influences in student AI adoption. Clear institutional guidance may reduce uncertainty and encourage appropriate use, whereas unclear policies may create anxiety and inconsistent adoption practices. Trust and perceived risk represent additional but more context-dependent determinants. Students require a certain level of trust in AI-generated outputs; however, trust does not appear to be a universally dominant predictor of adoption. Similarly, perceived risks associated with privacy, inaccurate information, academic misconduct, ethical concerns, and overdependence may discourage adoption, although students may be willing to accept certain risks when the perceived academic benefits are sufficiently high. Overall, the findings suggest that students' adoption decisions involve a benefit-risk evaluation process, with perceived academic value, technological usefulness, individual capability, social environment, institutional support, and trust collectively shaping their willingness to adopt Generative AI tools.

5. Discussion

The findings of the review demonstrate that university students' adoption of Generative AI cannot be adequately explained through a single technology acceptance variable. Instead, adoption is influenced by the combined effects of perceived academic value, technological characteristics, individual capabilities, social and institutional contexts, and perceptions of trust and risk. The strongest pattern identified across the reviewed literature concerns perceived usefulness and performance expectancy**,** indicating that students are more likely to adopt Generative AI when they believe that it can help them achieve academic objectives. This finding is consistent with TAM- and UTAUT-based research and is further supported by recent evidence from Caliciuri et al. (2026). Thus, universities seeking meaningful integration of Generative AI should focus not merely on providing students with access to AI tools but on demonstrating how these technologies can support learning, productivity, problem-solving, and other legitimate academic activities.

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At the same time, the findings suggest that technology acceptance alone is insufficient to explain effective Generative AI use**.** A student may accept and frequently use ChatGPT while lacking the skills required to formulate effective prompts, evaluate generated information, identify inaccurate or misleading outputs, and use AI within appropriate academic and ethical boundaries. This highlights the importance of AI literacy as an emerging dimension of Generative AI adoption research. AI literacy can potentially extend conventional TAM and UTAUT frameworks by addressing not only whether students are willing to use AI but also whether they possess the knowledge and competencies necessary to use it effectively and responsibly. The growing importance of prompt engineering and critical evaluation further reinforces the need to consider user capability alongside conventional acceptance variables.

The discussion also highlights the importance of the social and institutional context in which Generative AI adoption takes place. Students' adoption decisions may be influenced by peers, faculty members, institutional expectations, and broader social norms concerning the use of AI in education. The findings of Teo et al. (2026) particularly emphasize the relevance of social norms and contextual factors. Universities therefore have an important role in creating an environment that supports appropriate AI adoption through clear policies, faculty guidance, training opportunities, and AI literacy initiatives. Rather than treating Generative AI exclusively as a prohibited or problematic technology, institutions can establish clear boundaries that enable students to understand when and how AI can be used appropriately.

Trust represents another important but complex dimension of Generative AI adoption. Students require a certain level of confidence in AI-generated outputs before they are willing to rely on these tools for academic activities. However, excessive trust may lead to uncritical acceptance of inaccurate or misleading information. Therefore, the objective should not be to develop unconditional trust in Generative AI but rather critical and informed trust**.** Students should be encouraged to verify AI-generated information using reliable academic sources, recognize the limitations of AI systems, and understand that apparently convincing responses may not always be factually accurate. This approach would allow trust to support adoption while simultaneously encouraging critical judgment.

An important conceptual implication of the review is the distinction between Generative AI adoption and responsible Generative AI adoption**.** Traditional technology acceptance research generally evaluates whether individuals intend to use a technology or whether they actually use it. However, frequent use of Generative AI does not necessarily indicate successful educational integration. Responsible adoption requires students to use AI for appropriate academic purposes, critically evaluate generated content, verify information, maintain academic integrity, protect privacy, provide appropriate attribution where required, and avoid excessive dependence on AI. Consequently, future research should examine not only the frequency or intention of AI use but

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also the quality, purpose, and consequences of such use. This broader perspective provides a stronger basis for evaluating the educational implications of Generative AI.

From a theoretical perspective, the findings indicate that TAM, UTAUT, and UTAUT2 remain useful but require contextual extension for Generative AI**.** Traditional constructs such as perceived usefulness, performance expectancy, and ease of use continue to explain important aspects of student adoption. However, the distinctive characteristics of Generative AI justify the inclusion of additional technological, individual, social-contextual, and trust-risk variables. Technological factors may include usefulness, performance expectancy, ease of use, and output quality; individual factors may include self-efficacy, AI literacy, habit, and previous experience; social-contextual factors may include social influence, institutional support, and faculty guidance; while trust-risk factors may include trust, privacy, perceived risk, and ethical concerns. Collectively, these factors can influence students' attitudes and behavioural intentions, which may subsequently contribute to actual adoption and, ultimately, responsible use. Such an extended perspective addresses some of the limitations associated with applying conventional technology acceptance models directly to Generative AI.

The findings also have important practical implications for higher education institutions**.** Universities should consider introducing AI literacy programmes that teach students effective prompting, information verification, critical evaluation, privacy awareness, and ethical AI use. Clear institutional policies should also explain acceptable and unacceptable applications of Generative AI in assignments, examinations, research, programming, and other academic activities. Faculty members can further support responsible adoption by incorporating GenAI into learning activities that require students to compare, critique, verify, and improve AI-generated content rather than simply accepting generated responses. In addition, institutions should evaluate the success of Generative AI integration through learning outcomes, student capabilities, and responsible use rather than measuring adoption solely through the frequency with which students use AI tools.

The review identifies several directions for future research**.** Future studies should develop AI-specific extensions of TAM and UTAUT that incorporate constructs particularly relevant to Generative AI. Greater attention should also be given to AI literacy and its potential role as both a predictor and moderator of adoption. Longitudinal studies could provide valuable insights into how students' perceptions and adoption behaviours change as they gain experience with GenAI. Cross-cultural and cross-institutional research is also required to examine how social norms, policies, trust, and educational environments influence adoption in different contexts. Further research should investigate discipline-specific patterns of GenAI use and distinguish between behavioural intention, actual use, and responsible use. In addition, future studies should examine the relationship between GenAI adoption and measurable learning outcomes while considering factors such as output reliability, academic integrity, critical evaluation, and potential

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overdependence. These directions can contribute to the development of a more comprehensive understanding of Generative AI adoption and its implications for the future of higher education.

6. Conclusion

Generative Artificial Intelligence has become an increasingly important component of higher education, particularly among university students. This structured literature review examined the major factors influencing students' adoption of GenAI tools and synthesized evidence from research published between 2023 and 2026.

The findings demonstrate that GenAI adoption is a multidimensional phenomenon**.** Perceived usefulness, performance expectancy, and academic value emerge as the most consistent positive determinants. Individual factors such as self-efficacy, habit, previous experience, and AI literacy also influence adoption, while anxiety may act as a barrier. Social influence, institutional support, and university policies further shape students' adoption decisions. Trust and perceived risk remain important but appear to be more context-dependent.

The review also identifies a significant conceptual limitation in existing research. Although TAM, UTAUT, and UTAUT2 provide valuable explanations of technology acceptance, they do not completely capture the distinctive characteristics of Generative AI. The ability of GenAI to generate convincing but potentially inaccurate content, together with concerns about academic integrity, privacy, ethics, and dependence, requires additional AI-specific constructs.

Accordingly, this paper argues for a shift from studying GenAI adoption alone toward responsible GenAI adoption**.** The central question should no longer be limited to whether students are willing to use AI, but should also consider whether they possess the knowledge and critical capabilities necessary to use it effectively and responsibly.

For higher education institutions, this implies that successful GenAI integration requires more than technological access. Universities should combine access with AI literacy, clear institutional policies, faculty guidance, critical evaluation skills, and responsible-use practices.

Future research should therefore develop more comprehensive and AI-specific adoption frameworks, examine adoption longitudinally and across cultural contexts, and investigate whether GenAI use actually contributes to improved learning outcomes. Such research can help higher education institutions move toward an approach in which Generative AI serves as a supportive educational technology rather than a substitute for students' learning, reasoning, and academic responsibility.

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