

Promise and Perils of Artificial Intelligence in Educational Research: An Exploratory Study of Doctoral Scholars' Perspectives

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Abstract

Artificial intelligence (AI) is playing an important role across academia, especially in research. While some technical aspects of this AI have been studied and discussed in prior research, relatively little is known about its use by doctoral students in the Indian context and how they perceive or utilise it, especially where access to resources and professional training is limited. The present study tries to address this research gap by phenomenologically exploring the real-time experience of doctoral researchers in Tamil Nadu, India. Based on the Technology Acceptance Model (TAM) and its later revisions, TAM2 and TAM3, and the constructs of these models, theoretically and conceptually align with scholars' experiences and perspectives. Interpretive phenomenological analysis was used to systematically collect and analyse data to discover the study's scientific findings. The study identified seven main themes from the perceptions of 11 doctoral participants regarding AI in research. The finding is a mixed response from the participants. Ethical concerns, capacity building, and institutional supports are highlighted.

Keywords: artificial intelligence, educational research, doctoral scholars, interpretative phenomenological analysis, ethical concerns, research practices

Introduction

Artificial intelligence (AI) is rapidly transforming higher education and research worldwide through its power of Man-made intelligence, data-driven insights, personalized learning, processing complex datasets, and generating content. Nowadays, AI has become a powerful tool for researchers in all fields, including educational research (Chen et al., 2020; Stolpe & Hallstrom, 2024). Advanced AI technologies, including natural language processing, machine learning, and intelligent tutoring systems, are now widely assisting scholars in processing complex academic and research work, such as literature reviews, data generation, visualisation, and writing (Chiu et al., 2023; Gao & Feng, 2023). For PhD students, these tools offer a unique opportunity to improve research quality and efficiency and to access global knowledge networks (Adiguzel et al., 2023; Wang et al., 2024). Yet, with all the promise this holds, implementing AI in educational research introduces a host of ethical, methodological, and practical challenges. Concerns about privacy in data, bias in algorithms, the correctness of AI-generated outputs, and the erosion of critical thinking from overreliance on machine automation have also been raised by scholars (Dwivedi et al., 2023; Lund & Wang, 2023). Other challenges are non-transparent AI decision-making and unequal access to these technologies, especially in low-resource and developmental academic environments (Holmes et al., 2022; Joseph et al., 2024)

Although AI platforms (e.g., ChatGPT, Grammarly, Turnitin, Jenni AI, and Mendeley) have been broadly adopted to facilitate academic work, it is not well-documented to what extent these online tools are effective and what limitations lie within them at the user-ends

particularly for doctoral students (Kurniati & Fithriani, 2022; Nazaretsky et al., 2022). A great deal of what has been written so far has tended to be overviews of the technical potentialities and shortcomings of AI, alongside brief lists of ways in which it might be used for educational purposes, with little attention being paid to the lived experiences and reflexivity of scholars who rely on these tools for their research output (Zawacki-Richter et al., 2020).

In particular, the Indian case studies provide useful insights into how AI adoption and educational research might be intertwined. India's National Education Policy (NEP) 2020 focuses on the role of technology, particularly AI in education, to improve learning outcomes and encourages research and innovation in academia. But Indian doctoral researchers' experiences differ, including limited access to state-of-the-art tech tools, very low institutional support, a lack of formal instruction on AI use, and ethical concerns about data privacy and integrity. There's also linguistic diversity and the digital divide, which stand in the way of fair AI education in India's academic institutions. Notwithstanding these inevitable difficulties, some researchers have already begun using AI platforms (QuillBot, Mendeley, ChatGPT, or Grammarly, among others) for their thesis writing, literature reviews, and data analysis.

Thus, it is significant to explore how the doctoral community, especially in the Indian context, perceives and interacts with AI in their scholarly work. Understanding their perceptions, attitudes, and ethical concerns regarding methodological challenges, while mitigating unwanted effects and developing coping strategies, will not only enrich understanding of the potential AI rewards and risks but also help shape broad-based, ethically sensitive, contextually relevant research policies. This paper fills this gap through an exploratory investigation with the objectives of providing a clear

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picture of the realities of integrating AI into educational research and informing responsible practice that is sensitive to the needs and voices of scholars.

Review of the Related Literature

Integration of Artificial Intelligence in Educational Research

The integration of AI in educational research has radically changed the production, analysis, and dissemination of knowledge. AI tools are widely used by researchers for literature review, academic writing, data analysis, and Feedback generation. These technologies assist students in accessing massive digital databases, managing a range of source materials, and creating references, even paraphrasing or summarising texts, which are becoming AI-enabled. Software that uses AI, such as chatbots and intelligent tutoring systems, is being used to assist in the personalisation of learning and to develop students' independent study skills (Chen et al., 2020; Zawacki-Richter et al., 2020). Resources such as Grammarly, ChatGPT, Mendeley and Elicit help doctoral students to express themselves more clearly, be more persuasive throughout their writing, and connect with academic texts in new and interactive ways (Kurniati & Fithriani, 2022) According to Swiecki et al. (2019) it is possible to monitor the progress of research, gather and analyse data, discover research gaps among others; Consequently increasing labs efficiency by clearing the cognitive load related with recurring mundane tasks; Conducting AI in research nowadays can help researchers to reframe their challenges.

AI has been particularly instrumental in improving the quality and productivity of research. It aids researchers in automating routine tasks and then in pondering interpretation and critical thinking. Applications such as automated statistical tools, literature profiling systems, and cloud-based collaboration software, powered by AI, have enabled researchers to organise large amounts of data and draw useful conclusions (Kabudi et al., 2021; Owan et al., 2023). Furthermore, AI contributes to digital competence and makes early-stage researchers feel more confident in tackling academic work at higher levels of complexity (Häkkinen et al., 2017; Seufert et al., 2020). And over time, students themselves showed interest in these and became aware of their value in their learning, considering AI a top tool for support rather than a hindrance (Li, 2020; Miranty & Widiati, 2021). Worldwide educational structures, including UNESCO policy documents and the Digital Competence Framework, also underscore the importance of including AI in the development of core research skills (Shiohira & Holmes, 2023; Vuorikari et al., 2022). Despite these challenges, AI is transforming scholarly research by providing new means for PhD students and scholars to discover knowledge, analyse data, and make significant contributions to a body of evidence

Ethical, Methodological, and Practical Challenges of AI Adoption

The rapid incorporation of AI into learning and research has raised numerous ethical and methodological questions. One of the key problems is privacy (AI tools often need to access personal and academic data), which raises questions about how data is collected, stored, and used (Zou, 2024). Algorithmic discrimination is also a major issue in this context, as AI technologies generate biased outcomes (due to limited or biased training data), which can marginalise particular groups and undermine efforts towards fairness and diversity (Arora et al., 2023). The lack of transparency and explainability in AI systems also poses a significant issue, especially in learning environments where it is important to know why decisions were made. These issues are exacerbated by a lack of standardisation that would contribute to more accountable and trustworthy AI (Radanliev, 2025). Developers are also urged to engage in international collaborations and to establish a global framework for comprehensive AI governance that emphasises fairness, accountability, and transparency (Maiti et al., 2025; Zou, 2024).

In addition to ethical considerations, researchers have identified practical and cognitive threats posed by over-reliance on AI tooling. With AI systems' increasing ability to write essays, crunch data, and provide academic feedback, there is growing concern that independent thinking and scholarly independence may decrease. Obaje (2025) also opines that AI can support analytical skills, but excessive reliance on it could prevent learners from digging deep

when using student-generated content. Universities also face challenges related to academic integrity, as AI-assisted writing blurs the line between legitimate assistance and cheating (Nwozor, 2025). Existing detection methods are inadequate, and insufficient education about ethical AI use leads to more cases of academic misconduct. Other hurdles impede the successful infusion of AI in education, including outdated skills, AI shortcut abuses, and a lack of both teacher and student training (Taneja et al., 2025). Pandey (2025) further underscores that while stakeholders are cautiously optimistic about AI's potential, a lack of transparency—where AI systems operate as "black boxes"—erodes trust and necessitates robust governance frameworks to ensure accountability. For the responsible use of AI, researchers underscore the need for ethical education, revised institutional policies, and proactive measures that reconcile technological revolution with core academic principles (Obaje, 2025; Radanliev, 2025).

AI in Indian Higher Education

The conventional method of teaching in India is typically "one-size-fits-all," ignoring the wide variety of learning styles and needs. But the AI application overwrites it and creates opportunities for personalised, non-discriminatory education (Moharana, 2025). Adaptive learning systems that are AI-driven can now analyse strengths, weaknesses, and learning styles of students in real time to offer customised resources and support (Chakravarti et al., 2025). Recognising this opportunity, the NEP 2020 focuses on how technology and AI can revolutionise Indian education. The NEP-2020 acknowledges AI as a major catalyst for enhancing research and teaching-learning, with the intent to further equity and inclusion through digital interventions. But there are obstacles to AI use in higher education, even as colleges and universities express those grand ambitions. These concerns relate to data privacy, ethical use, disparities in access to technology and infrastructure, and insufficient teacher training (Sharma et al., 2024). Although advanced AI tools, like machine learning (ML) based writing systems and natural language processing (NLP) applications, are increasingly adopted by PhD researchers for literature review/citation management/academic writing, usage is typically informal and self-starter in nature, largely because of no well-orchestrated institutional support structure (Chakravarti et al., 2025; Mahajan et al., 2025). This means that the absence of formal policies, training mechanisms, and opportunities impedes Indian scholars from fully benefiting from AI. While research recognises AI's potential to facilitate ecological academic practices, fair, accountable, and inclusive implementation is yet to be questioned (Mahajan et al., 2025; Sharma et al., 2024)

Indian PhD students encounter various difficulties in properly adopting AI tools. These involve a lack of access to state-of-the-art AI platforms, a shortage of digital infrastructure, and an absence of structured training programs. Several researchers also use tools such as ChatGPT, Grammarly, Turnitin, and QuillBot, but they fear these tools compromise the originality and authenticity of their work (Malik et al., 2025; Subaveerapandiyani et al., 2025). Ethical issues such as data privacy, consent, and intellectual property rights are commonly raised, especially in the absence of established ethical guidelines (Annamalai et al., 2025). Researchers also claim that over-reliance on AI can hinder original thought and creativity in scholarly writing. Moreover, the cost of using high-end tools, language constraints, and lack of digital equity further increase the barriers (especially for academics from rural and underprivileged institutions) (Krishnamoorthy et al., 2025; Sharma et al., 2024). There is an evident call for context-sensitive policies, AI literacy programs, and institutional support systems that put equity, ethics, and the empowerment of researchers at the centre to enable responsible and inclusive use of AI in educational research (Chakravarti et al., 2025; Malik et al., 2025).

Theoretical Framework

The present study adopted TAM as a theoretical framework. TAM, originally developed by Davis (1989) and based on the Theory of Reasoned Action (TRA) (Ajzen & Fishbein, 1980), was intended to account for users' acceptance of information technologies specifically. It emphasises two fundamental beliefs: Perceived Usefulness (PU), which refers to the belief that a technology will

improve performance; and Perceived Ease of Use (PEOU), the degree to which a system is perceived as free of effort. These are predictors of users' behavioural intentions, which, in turn, predict usage (Davis, 1993, 1989). Empirically, PU was found to have a direct effect on both intention and behaviour, while PEOU has an indirect impact through PU, making TAM one of the most robust and parsimonious models for predicting technology adoption behaviour.

TAM has been extensively confirmed in fields such as education, health care, e-commerce, and organisational information systems for years. Further, it has provided a reliable explanation of why teachers and students have accepted technology in educational environments and accounts for more than 40% of the variance across these studies (Scherer et al., 2019). Its predictive power was also verified in research on e-learning, MOOCs, and digital libraries across various cultural contexts (Altwairesh & Aloud, 2021; Barteit, 2020; Tzafilkou, 2021; Zhang, 2023). Based on this work, TAM2 included social influence and cognitive instrumental processes as potential determinants of PU.

Additional models in TAM3 included a precursor to PEOU and were proposed to provide a broader understanding of adoption. The anchoring elements, computer self-efficacy, perceived external control, and computer anxiety impact initial ease of use. On the other hand, augmented constructs (i.e., computer playfulness, perceived enjoyment, and objective usability) polish user perceptions over time. Together, these constructs expand the TAM context and provide actionable implications for intervention in terms of training, organizational support, and easy-to-use design (Venkatesh & Bala, 2008). These refinements are especially important in higher education, where tech use will only be embraced to the extent that scholars feel confident with it, and institutional resources allow for meaningful tech-enabled experiences.

The emergence of generative technologies presents challenges and opportunities for adoption, necessitating the extension of TAM. Recent studies have confirmed that such tools are useful to doctoral students, carrying them through literature reviews and creative learning activities until data analysis; however, the acceptance of TAM is influenced by accuracy, originality and privacy concerns as well as digital literacy skills and support at the institutional level (Belda-Medina & Kokošková, 2024; Saad et al., 2025; Sharma et al., 2025; Shen et al., 2024). Cognitive factors such as attitude, awareness of the issue, past experiences, and trust are also important predictors of behavioural intent (Wang et al., 2025). Extending this logic, the researchers emphasise the roles of Metacognitive Self-Regulation (MSR), Learning Motivation (LM), and Learning Agility (LA) (Simsek et al., 2025). The unified TAM, TAM2, and TAM3 as well as such extensions highlight that acceptances on generative tools by the doctoral students are not only dominated by perceived usefulness and perceived ease of use but also governed by self-regulatory ability, motivation to learn from technology, adaptation condition, social context etc aligning with new lines of inquiry like Immersive TAM (i-TAM) which has incorporated affective, emotional and social aspects of in learning (Nilash & Abumalloh 2025). This extended framework, therefore, connects traditional to current situations, providing an all-encompassing explanation of PhD students' adoption of technology for generativity.

Research Questions

1. How do doctoral scholars perceive the role of AI in enhancing educational research, and what ethical and methodological concerns do they associate with its use?
2. What are the key enablers and barriers perceived by doctoral scholars in effectively and responsibly integrating AI tools into their research practices?

Methodology

Research Method and Approach

The purpose of this study was to examine the attitudes and lived experiences of doctoral research scholars regarding AI in educational research. A qualitative research approach and interpretative phenomenological analysis (IPA) were utilised. IPA was used to explore individual sense-making of personal and educational experiences of AI tools (Finlay, 2011; Smith et al., 2009). It is therefore well-suited for research concerned with

researchers' interpretations of the phenomenon and its contexts, allowing them to make sense of complex occurrences in higher education. Although IPA is a useful approach for examining the individual's view, it is also recognised that its conclusions may be of questionable generalisability, given that they were based on small, purposively selected samples (Smith et al., 2009). But its value is the ability to see the richness and depth of individual experiences.

Population, Sampling Technique, and Participant Selection

The sample for the present study comprised doctoral research scholars from state universities in Tamil Nadu, India, with experience with AI tools and their adoption in their academic research. Convenience sampling was used to identify respondents who could provide informative responses to the issue of AI in their research (Creswell, 2009). A total of 11 participants who regularly use AI applications, such as ChatGPT, Grammarly, and Mendeley, in their academic process were recruited. This facilitated the representation of participants with richly grounded views on how AI was integrated into their doctoral student progression.

Data Collection and Interview Process

The data collection involved semi-structured interviews, guided by seven open-ended questions developed within the IPA framework. These interviews were conducted face-to-face and designed to last between 40 to 50 minutes. The interview style followed the principles outlined by Kvale and Brinkmann (2009), incorporating both structured prompts and spontaneous follow-up questions, such as "Can you elaborate?" or "Please continue." This approach encouraged participants to reflect openly, promoting a natural and engaging dialogue (Roberts, 2020). Minimal note-taking was conducted during the interviews to maintain the conversational flow and facilitate authentic expression. All interviews were conducted in a secure and respectful setting to ensure participant comfort and data reliability.

Data Analysis

Qualitative data from the interviews were analysed using systematic text condensation (STC), a widely accepted method in phenomenological research analysis. The STC method involved five main stages: identifying Meaning Units, Condensing these units, Codes, Sub-Themes, and, lastly, synthesizing overarching Themes from transcripts (Malterud, 2012). The qualitative data were analysed systematically to produce a logical understanding of the phenomena under investigation and thereby facilitate theory development. The detailed steps of analysis are given in Appendix I and II.

Ethical Considerations

This study was conducted in full compliance with the ethical principles of research involving human subjects. The Dean of Research at Alagappa University granted formal research clearance to undertake the research, indicating that institutional oversight and regulations were adhered to. All participants consented to participate in this study and understood its purpose, the extent of the investigation, and the procedures before data collection. Informed consent was obtained from the participants, and they were informed that participation was voluntary and anonymous, with the option to withdraw at any time without consequences. Confidentiality and anonymity were maintained throughout the data collection process. Interview transcripts were securely stored and used only for academic purposes, in accordance with ethical research practices.

Results

The analysis of participant responses revealed seven main themes that illustrate how educational doctoral scholars perceive and engage with AI in their academic and research. These themes include: (1) Enhancing Research Efficiency and Workflow, (2) Cognitive Bias and Ethical Use of AI, (3) Research Accountability and Reproducibility, (4) Accessibility and Interdisciplinary Research Facilitation, (5) Limitations on Creativity and Innovation, and (6) Inequity in AI Knowledge and Skill Acquisition, (7) Transparency and

Methodological Trust. The following paragraphs address the two main research questions by organizing these themes under each, supported by direct quotes from participants to highlight shared experiences, concerns, and insights.

Research Question 1: How do doctoral scholars perceive the role of AI in enhancing educational research, and what ethical and methodological concerns do they associate with its use?

Enhancing Research Efficiency and Workflow

Doctoral scholars generally recognized the significant potential of AI in streamlining various aspects of educational research, particularly in data handling and process automation. Participants described AI as an effective tool for managing large-scale datasets, conducting advanced statistical analyses, and reducing manual workload. For example, one respondent noted, "AI is beneficial for dealing with such complex data. The ability to automate data cleaning, classification, and analysis allows me to focus on the more creative components of my research" (R4). AI applications in referencing, translation, and academic writing were also acknowledged, with another scholar stating, "AI-powered tools like Mendeley have made referencing easier and more accurate" (R3) and "AI writing tools have improved the quality of my academic work by suggesting better grammar and sentence structure" (R4). Overall, AI was perceived as a catalyst for increased efficiency and productivity within research workflows.

Cognitive Bias and Ethical Use of AI

Despite its practical advantages, participants expressed a range of ethical and cognitive concerns surrounding AI's application in educational research. A prevailing theme was the potential for bias and misinformation in AI-generated outputs. One scholar expressed concern that "Sometimes, AI tools produce fake information" (R1), while others raised issues about data privacy and the potential misuse of sensitive information (R2, R10, R11). The risk of over-reliance on AI was also highlighted, particularly its implications for critical thinking and student learning. As one participant cautioned, "If AI delivers all the answers, will learners lose their ability to understand problems and critical thinking skills?" (R7). Additionally, respondents were wary of AI's inability to contextualize complex human experiences, especially within culturally diverse or emotionally nuanced educational settings (R4). These findings reflect broader global concerns about the ethical governance of AI in education.

Research Accountability and Reproducibility

Accountability in research emerged as a crucial concern, particularly concerning validating AI-generated findings. Scholars emphasized the need to cross-verify AI outputs against established academic sources and theoretical frameworks to ensure rigour and credibility. One respondent remarked, "I cross-verify AI-generated data with peer-reviewed journals and books" (R1). At the same time, another emphasized, "I check for reliability by consulting domain experts and ensuring the data aligns with theoretical frameworks" (R3). Practices such as triangulation and pilot testing were employed to address AI's limitations in interpreting deeply human-centered data. As R8 noted, "I use triangulation, cross-verifying data from different sources to ensure holistic results." These responses underscore the importance of maintaining human oversight and methodological transparency when incorporating AI into academic research.

Research Question 1: What are the key enablers and barriers perceived by doctoral scholars in effectively and responsibly integrating AI tools into their research practices?

Accessibility and Interdisciplinary Research Facilitation

All the participants identified AI as a facilitator of cross-disciplinary collaboration and broader research engagement. AI tools were seen as valuable for bridging gaps between disciplines such as education, computer science, and psychology, enabling more comprehensive and innovative research models. As R7 observed, "AI is an excellent instrument for multidisciplinary study. It enables me to work with people from other disciplines." Moreover, AI was credited with simplifying information retrieval, supporting

multilingual literature reviews, and enabling faster analysis, as one scholar commented, "Thanks to AI, I can efficiently sift through a lot of reading and educational resources" (R2). These affordances make AI a compelling enabler for international researchers seeking to broaden and deepen their scholarly inquiries.

Limitations on Creativity and Innovation

While AI was praised for its efficiency, several participants raised concerns about its impact on creativity and originality. The risk of AI reproducing existing patterns, rather than fostering new insights, was frequently mentioned. For instance, R8 stated, "AI tends to replicate existing patterns and trends, sometimes limiting creativity and innovation in idea generation." Others noted that reliance on AI for writing or conceptual understanding might diminish depth of thought, with R10 warning, "That simplicity sometimes comes at the cost of depth or critical thinking." These reflections suggest a tension between AI's ability to streamline research processes and its potential to restrict innovative scholarly exploration.

Inequity in AI Knowledge and Skill Acquisition

A significant barrier highlighted by many respondents was the unequal access to AI-related skills and training, which can perpetuate disparities in research opportunities. Several scholars emphasized that effective use of AI demands specialized knowledge that is not universally accessible. As R3 noted, "The skills needed to use AI open up great opportunities but can also limit participation to those with access to proper training." Financial and technical barriers were also flagged, with R9 sharing, "Learning AI often requires expensive training or certifications that many cannot afford". These findings emphasize the need for inclusive AI literacy initiatives to promote equitable participation in AI-enhanced research worldwide.

Transparency and Methodological Trust

A recurring concern involved the perceived lack of transparency in AI-generated results, which posed challenges to understanding and justifying research methodologies. Several participants referred to AI systems as "black boxes," making it difficult to interpret how conclusions were reached. As R1 put it, "Some AI technologies lack transparency, making understanding how findings or suggestions are generated hard." This issue becomes particularly problematic during peer reviews or when presenting findings in academic forums, where methodological clarity is essential (R5). Therefore, greater transparency and interpretability in AI systems are crucial for promoting trust and accountability in research.

Philosophical paradigm

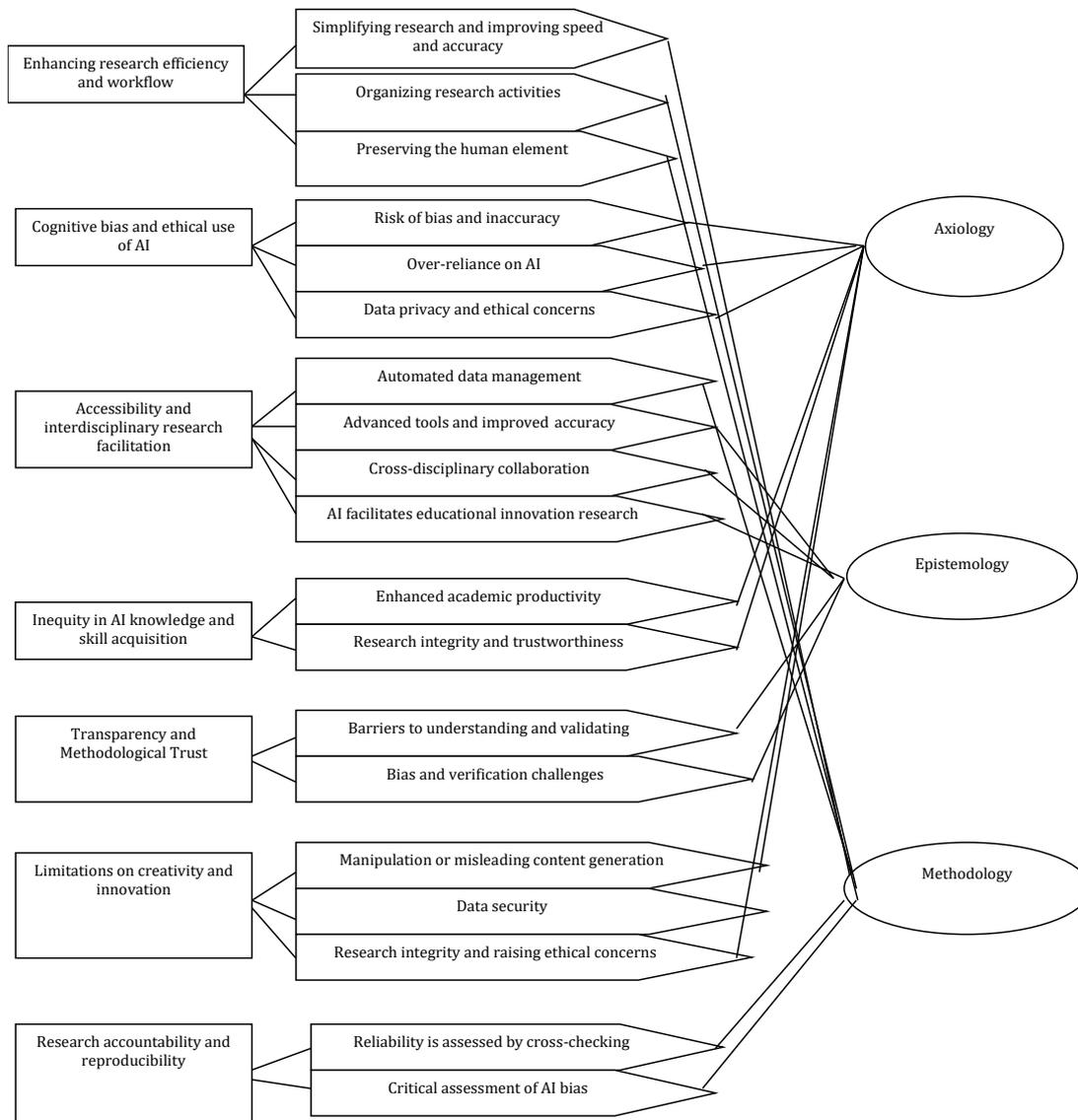
In the present study, the philosophical paradigm is framed around three interrelated dimensions: axiology, epistemology, and methodology, as they collectively provide a comprehensive foundation for examining the influence of AI on education and research. Axiology emphasizes the ethical aspects of AI, drawing attention to issues such as cognitive bias, inequitable access to AI knowledge and skills, over-reliance on automated systems, and limitations on creativity and innovation. These concerns underscore the risks of privacy violations, misleading content, and the unfair distribution of opportunities, highlighting the importance of aligning AI applications with human values. From this perspective, academic honesty, fairness, and the prevention of harm remain central. Epistemology, in turn, addresses the nature of knowledge creation and validation, focusing on transparency, methodological trust, accessibility, and interdisciplinary collaboration. This dimension raises critical questions about the credibility, verifiability, and inclusivity of AI-generated knowledge, recognizing both the opportunities and the uncertainties involved in integrating AI into scholarly work (Holmes et al., 2022; Zawacki-Richter et al., 2020).

Methodology complements these dimensions by addressing the processes and strategies employed in conducting research. Within this paradigm, AI is understood as a tool that can streamline research tasks by enhancing efficiency, accountability, reproducibility, and data management. The significance of adopting this paradigm lies in its ability to integrate ethical, epistemic, and

methodological considerations, offering a balanced and critical understanding of AI's dual role: enabling opportunities and presenting challenges. Situating the themes and subthemes of this study within axiology, epistemology, and methodology, the research provides a holistic framework for interpreting the transformative influence of AI on higher education and research practices, ensuring

that technological innovation is assessed alongside its ethical and epistemological implications (Holmes et al., 2022; Zawacki-Richter et al., 2020). Alignment of themes and sub-themes with the philosophical paradigm, as shown in Figure 1, illustrates how axiology, epistemology, and methodology collectively frame the study's interpretation of AI in education and research.

Figure 1
Alignment of Main Themes with Philosophical Paradigms



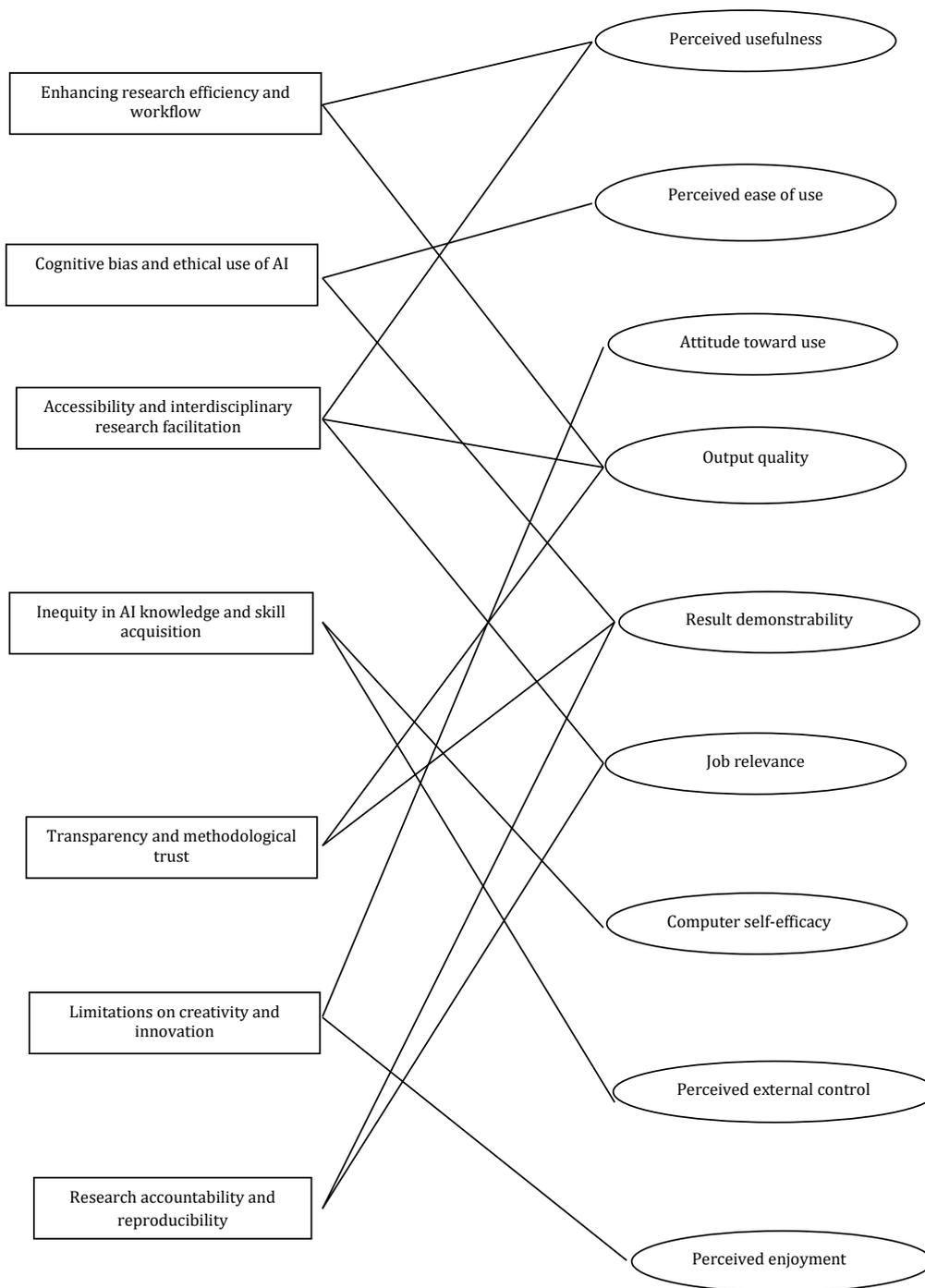
Conceptual Alignment of Main Themes with TAM Constructs

The alignment of the seven themes with TAM, TAM2, and TAM3 constructs shows how doctoral scholars' experiences connect with established ideas of technology adoption. For example, the theme of enhancing research efficiency links with Perceived Usefulness (PU) and output quality (TAM2) because scholars viewed generative AI as a tool that improves speed, accuracy, and organization in their work. Concerns about bias and ethics are closely tied to result demonstrability, trust, and Perceived Ease of Use (PEOU), which highlight the challenges of verifying results, over-reliance, and privacy. Accessibility and interdisciplinary research are closely related to Job Relevance and Learning Motivation, as scholars have recognized AI's ability to support cross-disciplinary collaboration and innovation. Inequities in AI knowledge align with computer self-efficacy and perceived external control (TAM3), reflecting differences in confidence and available support. Transparency and methodological trust correspond with result demonstrability and

output quality, while limits on creativity relate to attitude and perceived enjoyment, showing reduced confidence when originality or security is questioned. Finally, accountability and reproducibility connect to job relevance and lead to demonstrability, underscoring the importance of reliable, verifiable results.

The study shows that factors beyond usefulness and ease of use shape the adoption of generative AI among doctoral scholars. Social, psychological, and ethical factors play a key role, indicating that technology acceptance is a complex process influenced by trust, transparency, motivation, and self-regulation. While generative AI is viewed as highly useful for improving academic research, concerns about bias, plagiarism, data security, and methodological reliability remain significant. The findings highlight the dual nature of generative AI adoption: it is seen as a driver of efficiency and innovation, but also as a source of new challenges that demand strong ethical safeguards, equitable access to skills, and institutional support to ensure responsible integration in research practice.

Figure 2
Conceptual Alignment of Main Themes with TAM Construct



Discussion

This study addressed a key research gap by examining how doctoral scholars in India perceive and integrate generative technologies in their research practices. While previous studies have shown that digital innovations enhance efficiency in literature reviews, data analysis, and academic writing (Chen et al., 2020; Zawacki-Richter et al., 2020; Zhao, 2022), there has been limited attention to how advanced scholars themselves negotiate benefits and risks. Existing research has highlighted productivity gains and support for personalized learning (Swiecki et al., 2019; Kurniati & Fithriani, 2022), but fewer studies have explored ethical issues such as bias, plagiarism, or inequity in skill acquisition (Arora et al., 2023;

Sharma et al., 2024; Zou, 2024). This investigation responds to those gaps by situating doctoral scholars' experiences within the Technology Acceptance Model (Davis, 1989) and its extensions, TAM2 (Venkatesh & Davis, 2000) and TAM3 (Venkatesh & Bala, 2008), while also considering more recent developments such as learning motivation, agility, and self-regulation (Simşek et al., 2025; Wang et al., 2025).

The findings discovered seven main themes that provide a comprehensive picture of the adoption of AI by doctoral scholars in their research process. Enhancing research efficiency and workflow was strongly emphasized, consistent with research reporting improved speed, accuracy, and organization of academic tasks (Kabudi et al., 2021; Owan et al., 2023; Swiecki et al., 2019; Zhao,

2022). Ethical concerns such as cognitive bias, over-reliance, and privacy risks echo studies that question transparency, regulation, and academic integrity (Arora et al., 2023; Maiti et al., 2025; Obaje, 2025; Radanliev, 2025). Accessibility and interdisciplinary collaboration resonate with findings that highlight the breaking down of disciplinary silos and the importance of collaborative knowledge construction (Chen et al., 2020; Li, 2020; Miranty & Widiati, 2021; Zawacki-Richter et al., 2020). However, inequity in knowledge and skill acquisition reflects persistent digital divides reported in Indian higher education, where access to infrastructure and training remains uneven (Chakravarti et al., 2025; Krishnamoorthy et al., 2025; Mahajan et al., 2025; Malik et al., 2025). Transparency and methodological trust issues parallel prior critiques of black-box systems and the need for explainable outcomes (Radanliev, 2025; Seufert et al., 2020; Zou, 2024), while limitations on creativity support arguments that generative outputs reproduce existing patterns rather than stimulate originality (Belda-Medina & Kokošková, 2024; Nwozor, 2025; Taneja et al., 2025). Finally, accountability and reproducibility connect with broader concerns about the reproducibility crisis in academic work, with participants reinforcing the necessity of triangulation and cross-verification (Seufert et al., 2020; Radanliev, 2025; Wang et al., 2025).

Conceptualize main themes within TAM and its extensions shows that adoption is shaped not only by "Perceived Usefulness (PU)" and "Perceived Ease of Use (PEOU)" (Davis, 1989) but also by contextual and social constructs such as "Job Relevance, Output Quality, Result Demonstrability, Subjective Norm, and Attitude toward Use" (Venkatesh & Davis, 2000). The study also highlights the role of "Self-Efficacy, Perceived External Control, and Perceived Enjoyment" in shaping confidence and motivation (Venkatesh & Bala, 2008), while more recent constructs such as "Learning Motivation, Learning Agility, and Metacognitive Self-Regulation" capture how scholars adapt and critically regulate use (Simšek et al., 2025). The themes thus confirm that generative technologies are viewed as valuable and relevant, yet their adoption is mediated through concerns of trust, equity, and originality. This positions doctoral scholars not as passive users but as reflective adopters who leverage technological benefits while maintaining critical oversight. In doing so, the study extends classical acceptance models and provides timely insights into how technology use in higher education is embedded within ethical, methodological, and socio-cultural realities (Malik et al., 2025; Nilashi & Abumalloh, 2025; Sharma et al., 2024).

Conclusion

This study explored how doctoral scholars perceive the role of AI in enhancing educational research and identified the key enablers and barriers to its effective and responsible use. Drawing on qualitative data from scholars in Tamil Nadu, India, and guided by interpretative phenomenological analysis, the findings revealed a complex and evolving relationship between scholars and AI technologies. Participants largely viewed AI as a valuable tool that enhances research efficiency by automating time-consuming tasks, such as data analysis, literature reviews, referencing, and academic writing. These insights are consistent with the existing literature, which highlights AI's potential to improve research quality and productivity. Moreover, AI was recognized for enabling interdisciplinary collaboration and broader access to academic resources, making it especially valuable in increasingly global and digital research environments.

At the same time, the study discovered several ethical, cognitive, and methodological concerns. These included issues related to data privacy, algorithmic bias, over-reliance on AI, and the diminishing role of critical thinking and originality in research practices. Participants also expressed concern about the lack of transparency in AI-generated outputs and emphasised the need for human oversight and methodological accountability. Additionally, unequal access to AI tools and training was identified as a significant barrier, underscoring the need for inclusive digital literacy programs and institutional support, particularly in under-resourced settings. What makes this study particularly significant is the nuanced understanding it provides: doctoral scholars are not merely adopting AI passively but are critically engaging with its capabilities and limitations. Their perspectives offer valuable guidance for educators, institutions, and policymakers seeking to integrate AI into research in an ethical, equitable, and pedagogically sound way.

Limitations and Future Directions

While this study offers important insights into doctoral scholars' perceptions of AI in educational research, it is not without limitations. First, the study used IPA, which focuses on in-depth exploration but typically involves a small sample. As a result, participants were limited to a single academic discipline and selected only from state universities in Tamil Nadu, India. This narrow focus may limit the broader applicability of the findings to other disciplines, regions, or countries. In addition, participants' views may have been influenced by factors such as their specific field of study, level of AI literacy, or access to institutional support and resources. Another key limitation is the rapidly changing nature of AI technologies. Because new tools and features are constantly being developed, users' experiences and opinions may shift over time. Therefore, regular updates and longitudinal studies are necessary to keep pace with these developments and to capture changing perceptions more accurately.

To address these limitations, future research should include a larger, more diverse sample of scholars from multiple academic disciplines, regions, and countries. Comparative studies across different cultural and educational contexts would help improve the generalizability of findings. Research should also explore how AI affects cognitive skills, such as critical thinking and creativity, over time. In addition, future studies could examine how AI tools can be better integrated into doctoral education through structured training programs and equitable access policies. It is also crucial to examine how global ethical standards can be tailored to local contexts, particularly in under-resourced institutions, and to comprehend how researchers from diverse cultural backgrounds perceive and respond to AI-generated content.

AI Use Statement

The authors used Grammarly and ChatGPT for grammar checking, improving sentence clarity, and language improvement. The author reviewed and edited the output and takes full responsibility for the final content.

References

- Adiguzel, T., Kaya, M. H., & Cansu, F. K. (2023). Revolutionizing education with AI: Exploring the transformative potential of ChatGPT. *Contemporary Educational Technology, 15*(3), Article ep429. <https://doi.org/10.30935/cedtech/13152>
- Ajzen, I., & Fishbein, M. (1980). *Understanding attitudes and predicting social behavior*. Prentice Hall.
- Altwaresh, R., & Aloud, M. (2021). Mobile payments from merchants' perspective: An empirical study using the TAM model in Saudi Arabia. *International Journal of Computer Science and Network Security, 21*(8), 317–326.
- Annamalai, S., Ramnath, R., Antony, S., & Devi, S. B. (2025). Doctoral researchers' perspectives on ethical considerations in artificial intelligence in education through the lens of the PAPA framework. In M. Khaldi (Ed.), *Ethics and AI integration into modern classrooms* (pp. 493–518). IGI Global Scientific Publishing. <https://doi.org/10.4018/979-8-3373-2262-9.ch017>
- Arora, A., Barrett, M., Lee, E., Oborn, E., & Prince, K. (2023). Risk and the future of AI: Algorithmic bias, data colonialism, and marginalization. *Information and Organization, 33*(3), Article 100478. <https://doi.org/10.1016/j.infoandorg.2023.100478>
- Barteit, S., Guzek, D., Jahn, A., Bärnighausen, T., Jorge, M. M., & Neuhaus, F. (2020). Evaluation of e-learning for medical education in low- and middle-income countries: A systematic review. *Computers and Education, 145*, Article 103726. <https://doi.org/10.1016/j.compedu.2019.103726>
- Belda-Medina, J., & Kokošková, V. (2024). ChatGPT for language learning: Assessing teacher candidates' skills and perceptions using the technology acceptance model (TAM). *Innovation in Language Learning and Teaching, 1*, 1–16. <https://doi.org/10.1080/17501229.2024.2435900>
- Chakravarti, M. A., Biswas, M. D., Mondal, M. B., & Gupta, D. P. (2025). Towards A hybrid epistemology in the doctoral ecosystem: A narrative review in the age of human-ai collaboration. *Indian Education In The 21st Century, 33*.

- Chen, L., Chen, P., & Lin, Z. (2020). Artificial intelligence in education: A review. *IEEE Access*, 8, 75264–75278. <https://doi.org/10.1109/ACCESS.2020.2988510>
- Chiu, T. K. F., Moorhouse, B. L., Chai, C. S., & Ismailov, M. (2023). Teacher support and student motivation to learn with artificial intelligence (AI) based chatbot. *Interactive Learning Environments*, 32(7), 3240–3256. <https://doi.org/10.1080/10494820.2023.2172044>
- Creswell, J. W. (2009). Editorial: Mapping the field of mixed methods research. *Journal of Mixed Methods Research*, 3(2), 95–108. <https://doi.org/10.1177/1558689808330883>
- Davis, F. D., Bagozzi, R. P., & Warshaw, P. R. (1989). User acceptance of computer technology: A comparison of two theoretical models. *Management Science*, 35(8), 982–1003. <https://doi.org/10.1287/mnsc.35.8.982>
- Dwivedi, Y. K., Kshetri, N., Hughes, L., Slade, E. L., Jeyaraj, A., Kar, A. K., Baabdullah, A. M., Koohang, A., Raghavan, V., Ahuja, M., Albanna, H., Albashrawi, M. A., Al-Busaidi, A. S., Balakrishnan, J., Barlette, Y., Basu, S., Bose, I., Brooks, L., Buhalis, D., ... Wright, R. (2023). Opinion Paper: “So what if ChatGPT wrote it?” Multidisciplinary perspectives on opportunities, challenges and implications of generative conversational AI for research, practice and policy. *International Journal of Information Management*, 71(March), Article 102642. <https://doi.org/10.1016/j.ijinfomgt.2023.102642>
- Finlay, L. (2011). *Phenomenology for therapists: Researching the lived world*. Wiley-Blackwell. <https://doi.org/10.1002/9781119975144>
- Gao, X., & Feng, H. (2023). AI-driven productivity gains: Artificial intelligence and firm productivity. *Sustainability*, 15(11), 8934. <https://doi.org/10.3390/su15118934>
- Häkkinen, P., Järvelä, S., Mäkitalo-Siegl, K., Ahonen, A., Näykki, P., & Valtonen, T. (2017). Preparing teacher-students for twenty-first-century learning practices (PREP 21): A framework for enhancing collaborative problem-solving and strategic learning skills. *Teachers and Teaching*, 23(1), 25–41. <https://doi.org/10.1080/13540602.2016.1203772>
- Holmes, W., Bialik, M., & Fadel, C. (2022). *Artificial intelligence in education: Promises and implications for teaching and learning*. Center for Curriculum Redesign.
- Joseph, O. U., Arikpo, I. M., Victor, O. S., Chidirim, N. E., Mbua, A. P., Ify, U. M., & Diwa, O. B. (2024). Artificial intelligence (AI) in academic research. A multi-group analysis of students' awareness and perceptions using gender and programme type. *Journal of Applied Learning and Teaching*, 7(1). <https://doi.org/10.37074/jalt.2024.7.1.9>
- Kabudi, T., Pappas, I., & Olsen, D. H. (2021). AI-enabled adaptive learning systems: A systematic mapping of the literature. *Computers and Education*. *Artificial Intelligence*, 2, Article 100017.
- Krishnamoorthy, R., Srivastava, M., & Khanna, D. (2025). AI in higher education: Tapping educators' perspective. *International Journal of System Assurance Engineering and Management*. <https://doi.org/10.1007/s13198-024-02657-5>
- Kurniati, E. Y., & Fithriani, R. (2022). Post-graduate students' perceptions of Quillbot utilization in English academic writing class. *Journal of English Language Teaching and Linguistics*, 7(3), 437–451. <https://doi.org/10.21462/jeltl.v7i3.852>
- Kvale, S., & Brinkmann, S. (2009). *InterViews: Learning the craft of qualitative research interviewing* (2nd ed.). Sage Publications, Inc.
- Lund, B. D., & Wang, T. (2023). Chatting about ChatGPT: How may AI and GPT impact academia and libraries? *Library Hi Tech News*, 40(3), 26–29. <https://doi.org/10.1108/LHTN-01-2023-0009>
- Mahajan, S., Pandey, P. K., Pandey, P. K., & Guleria, N. (2024). Leveraging artificial intelligence in Indian higher education institutions to foster sustainable practices: A comprehensive analysis. In S. Yildirim, I. Demirtaş, F. A. Malik (Eds.), *Adaptive strategies for green economy and sustainability policies* (pp. 301–320). IGI Global. <https://doi.org/10.4018/979-8-3693-7570-9.ch018>
- Maiti, M., Kayal, P., & Vujko, A. (2025). A study on ethical implications of artificial intelligence adoption in business: Challenges and best practices. *Future Business Journal*, 11(1), Article 34. <https://doi.org/10.1186/s43093-025-00462-5>
- Malik, A., Khan, M. L., Hussain, K., Qadir, J., & Tarhini, A. (2025). AI in higher education: Unveiling academicians' perspectives on teaching, research, and ethics in the age of ChatGPT. *Interactive Learning Environments*, 33(3), 2390–2406. <https://doi.org/10.1080/10494820.2024.2409407>
- Malterud, K. (2012). Systematic text condensation: A strategy for qualitative analysis. *Scandinavian Journal of Public Health*, 40(8), 795–805. <https://doi.org/10.1177/1403494812465030>
- Miranty, D., Widiati, U., Cahyono, B. Y., & Sharif, T. I. S. T. (2021). The effectiveness of using Grammarly in teaching writing among Indonesian undergraduate EFL students. In *Proceedings of the International Seminar on Language, Education, and Culture* (pp. 41–45). <https://doi.org/10.2991/assehr.k.211212.008>
- Moharana, S. (2025). Prospects of artificial intelligence (AI) and personalized learning in inclusive education integrated to NEP-2020. *Asian Journal of Education and Social Studies*, 51(4), 109–116. <https://doi.org/10.9734/ajess/2025/v51i41852>
- Nazaretsky, T., Bar, C., Walter, M., & Alexandron, G. (2022, March). Empowering teachers with AI: Co-designing a learning analytics tool for personalized instruction in the science classroom. In *LAK22: 12th international learning analytics and knowledge conference* (pp. 1–12). <https://doi.org/10.1145/3506860.3506861>
- Nilashi, M., & Abumalloh, R. A. (2025). i-TAM: A model for immersive technology acceptance. *Education and Information Technologies*, 30(6), 7689–7717. <https://doi.org/10.1007/s10639-024-13080-5>
- Nwozor, A. (2025). Artificial intelligence (AI) and academic honesty-dishonesty nexus: Trends and preventive measures. In Peter A. Okebukola (Ed.), *AI and Ethics, Academic Integrity and the Future of Quality Assurance in Higher Education* (Ch. 40, pp. 287–296). Sterling Publishers.
- Obaje, T. A. (2025). Advancing critical thinking in higher education: The transformative role of artificial intelligence. *Interdisciplinary Journal of Economics and Business Law*, 14(Special Issue), 254–271.
- Owan, V. J., Abang, K. B., Idika, D. O., Etta, E. O., & Basse, B. A. (2023). Exploring the potential of artificial intelligence tools in educational measurement and assessment. *Eurasia Journal of Mathematics, Science and Technology Education*, 19(8), Article em2307. <https://doi.org/10.29333/ejmste/13428>
- Pandey, A. (2025). Ethical and practical challenges in AI integration for education: stakeholder perspectives on trust, transparency, and accountability. *Innovare Journal of Education*, 13(2), 13–20. <https://doi.org/10.22159/ijoe.2025v13i2.53957>
- Radanliev, P. (2025). AI ethics: Integrating transparency, fairness, and privacy in AI development. *Applied Artificial Intelligence*, 39(1). <https://doi.org/10.1080/08839514.2025.2463722>
- Roberts, L. M. (2020). Interviewing: The art of science. In C. E. Jorgensen, K. M. R. Tackett, & J. L. Suizzo (Eds.), *Handbook of research methods in human development* (2nd ed., pp. 107–128). Guilford Press.
- Saad, S., Ramli, Z., Sarmila, M. S., Ali, M. N. S., & Ali, S. (2025). Exploring the adoption of AI-driven adaptive learning in higher education: A multidimensional TAM perspective. *International Journal of Academic Research in Business and Social Sciences*, 15(5), 1011–1025. <https://doi.org/10.6007/IJARBS/v15-i5/25487>
- Scherer, R., Siddiq, F., & Tondeur, J. (2019). The technology acceptance model (TAM): A meta-analytic structural equation modeling approach to explaining teachers' adoption of digital technology in education. *Computers and Education*, 128, 13–35. <https://doi.org/10.1016/j.compedu.2018.09.009>
- Seufert, S., Guggemos, J., & Tarantini, E. (2020). Online professional learning communities for developing teachers' digital competences. In P. Isaias, D. G. Sampson, & D. Ifenthaler (Eds.), *Technology supported innovations in school education* (pp. 159–173). Springer International Publishing. https://doi.org/10.1007/978-3-030-48194-0_9
- Sharma, D., Pareek, A., Noor, S., & Dey, S. K. (2025). Adoption of AI in education: An analysis of acceptance of ChatGPT among students based on the technology acceptance model (TAM). *South Asian Journal of Management*, 32(1), 196–214. <https://doi.org/10.62206/sajm.32.1.2025.196-214>
- Sharma, M., Chahal, S., Sharma, Y., Roy, S. K., & Singh, A. (2024). Educational transformation: A bibliometric and scientometric analysis of AI in higher education. *Cahiers Magellanes-NS*, 6(2). <https://doi.org/10.6084/m9.figshare.263387>
- Shen, X., Mo, X., & Xia, T. (2024). Exploring the attitude and use of GenAI-image among art and design college students based on TAM and SDT. *Interactive Learning Environments*, 33(2), 1–18. <https://doi.org/10.1080/10494820.2024.2365959>

- Shiohira, K., & Holmes, W. (2023). Proceed with caution: The pitfalls and potential of AI and education. In *Augmented education in the global age* (pp. 137–156). Routledge.
- Smith, J. A., Flower, P., & Larkin, M. (2009). *Interpretative phenomenological analysis: Theory, method and research*. Sage Publications. <https://uk.sagepub.com/engb/eur/interpretative-phenomenological-analysis/book250130>
- Stolpe, K., & Hallström, J. (2024). Artificial intelligence literacy for technology education. *Computers and Education Open*, 6, Article 100159. <https://doi.org/10.1016/j.caeo.2024.100159>
- Subaveerapandiyani, A., Kalbande, D., & Ahmad, N. (2025). Perceptions of effectiveness and ethical use of AI tools in academic writing: A study among PhD scholars in India. *Information Development*, 41(3), 728–746. <https://doi.org/10.1177/02666669251314840>
- Swiecki, Z., Ruis, A. R., Gautam, D., Rus, V., & Williamson Shaffer, D. (2019). Understanding when students are active-in-thinking through modeling-in-context. *British Journal of Educational Technology*, 50(5), 2346–2364. <https://doi.org/10.1111/bjet.12869>
- Taneja, D., Prabagaren, H., & Thomas, M. R. (2025). AI in academia: Balancing integrity, ethics, and. In M. Garcia, J. Rosak-Szyrocka, & A. Bozkurt (Eds.), *Pitfalls of AI Integration in Education: Skill Obsolescence, Misuse, and bias: Skill obsolescence, misuse, and bias* (Ch. 14, pp. 315–336). IGI Global Scientific Publishing. <https://doi.org/10.4018/979-8-3373-0122-8.ch014>
- Tzaflikou, K., Perifanou, M., & Economides, A. A. (2021). Negative emotions, cognitive load, acceptance, and self-perceived learning outcome in emergency remote education during COVID-19. *Education and Information Technologies*, 26(6), 7497–7521. <https://doi.org/10.1007/s10639-021-10604-1>
- Venkatesh, V., & Bala, H. (2008). Technology acceptance model 3 and a research agenda on interventions. *Decision Sciences*, 39(2), 273–315. <https://doi.org/10.1111/j.1540-5915.2008.00192.x>
- Venkatesh, V., & Davis, F. D. (2000). A theoretical extension of the technology acceptance model: Four longitudinal field studies. *Management Science*, 46(2), 186–204. <https://doi.org/10.1287/mnsc.46.2.186.11926>
- Venkatesh, V., Morris, M. G., Davis, G. B., & Davis, F. D. (2003). User acceptance of information technology: Toward a unified view. *MIS Quarterly*, 27(3), 425–478. <https://doi.org/10.2307/30036540>
- Vuorikari, R., Kluzer, S., & Punie, Y. (2022). *DigComp 2.2: The digital competence framework for citizens: with new examples of knowledge, skills and attitudes*. Publications Office of the European Union. <https://data.europa.eu/doi/10.2760/115376>
- Wang, S., Wang, F., Zhu, Z., Wang, J., Tran, T., & Du, Z. (2024). Artificial intelligence in education: A systematic literature review. *Expert Systems with Applications*, 252, Article 124167. <https://doi.org/10.1016/j.eswa.2024.124167>
- Wang, Z., Wang, Y., Zeng, Y., Su, J., & Li, Z. (2025). An investigation into the acceptance of intelligent care systems: An extended technology acceptance model (TAM). *Scientific Reports*, 15(1), Article 17912. <https://doi.org/10.1038/s41598-025-02746-w>
- Zawacki-Richter, O., Marín, V. I., Bond, M., & Gouverneur, F. (2019). Systematic review of research on artificial intelligence applications in higher education—Where are the educators? *International Journal of Educational Technology in Higher Education*, 16(1), 1–27. <https://doi.org/10.1186/s41239-019-0171-0>
- Zhang, C., Schießl, J., Plöchl, L., Hofmann, F., & Gläser-Zikuda, M. (2023). Acceptance of artificial intelligence among pre-service teachers: A multigroup analysis. *International Journal of Educational Technology in Higher Education*, 20(1), 49. <https://doi.org/10.1186/s41239-023-00420-7>
- Zou, R. (2024). Research on ethical issues, data privacy protection, algorithmic bias, and regulatory policy of artificial intelligence technology in digital transformation. In X. Li, C. Yuan, & L. Vartiak (Eds.), *Proceedings of the 8th International Conference on Economic Management and Green Development, 26 September 2024* (pp. 234–242). Springer Nature Singapore. https://doi.org/10.1007/978-981-96-3236-7_21

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Appendix I

Systematic Text Condensation (STC) of Research Questions

Meaning unit	Condensed meaning unit	Sub theme	Theme
1. What is your perspective on AI in educational Research?			
P1: AI is mixed bag for me. It has advantages and disadvantages; in some cases, it provides useful information promptly. It simplifies things and can assist with time management, but I'm concerned about how it may compromise research accuracy.	AI-generated content must be verified to ensure accuracy.	Simplifying research and improving speed and accuracy	Enhancing research efficiency and workflow
P2: Honestly, I like AI tools. They help me plan my Research better. It's a game-changer that simplifies my work. They provide fast and accurate answers, saving time and effort. Searching for information or solving problems.	AI simplifies research planning and provides procedural support.	Organizing research activities	
P3: Personally, I find artificial intelligence to be rather beneficial. It provides immediate aid and guides me through multiple procedures, resulting in efficient interactions and Hassle-free.	AI improves research efficiency through speed, availability, and workflow organization.	Preserving the human element	
P4: AI offers constant availability for assistance. It also enhances research workflow and organization. Their 24x7 availability ensures immediate support and makes them affordable in today's fast-moving world.	Over-reliance on AI can reduce deep thinking and change the researcher's behavior.		
P5: I always double-check the information AI provides. It's great for quick answers, but you can't always trust everything without verifying. Checking AI-generated content for the accuracy of the result.	AI often lacks personalization and provides pre-set or generic responses.		
P6: AI is helpful, but only in the right situations. It's great for research and finding information quickly, but it doesn't replace deep thinking.	AI lacks human qualities like emotional connection and critical reasoning.		
P7: I'm sceptical about AI effectiveness. Using AI has made me realize how little I actually write by hand these days. It's all digital now, which is super convenient but kind of strange too.			
P8: The problem with AI is that it gives pre-set answers. Sometimes I need specific details, but they don't always deliver			

Meaning unit	Condensed meaning unit	Sub theme	Theme
exactly what I want. Their pre-programmed responses often fail to address my specific needs.			
P9: AI is super helpful! It provides quick, accurate answers, making it much easier and faster to find information. Sometimes, it fails to understand nuanced questions, leading to frustration and a need for human support.			
P10: I have no strong feelings about AI. Although they can be useful in giving basic information, I think that human connection improves knowledge and gives an element of authenticity.			
P11: AI is great for speeding things up, but still lacks the human touch. It helps, but at the end of the day, critical thinking is still on us. I prefer direct human interaction for a more personalized and tailored experience.			

Appendix II

Code Table

Code type	Explanation
Descriptive codes P2,P3,P4	"Efficient and time-saving", "Verification needed", "Constant availability" Describes the function AI serves in research. AI provides immediate, procedural help and is available anytime;
In vivo codes P8,P9,P10,P11	"Human touch is important", "Fast but limited", "AI aids, not replaces" Emphasizes the value of human presence in research.
Process codes P5	"Double-checking AI-generated content", reflects the action of double-checking information.
Value codes P1,P6,P7,P10,P11	"Dual nature of AI", "Skepticism about AI", "AI cannot replace critical thinking" AI helps, but critical thinking and human interaction are essential.