


Faculty Readiness and Ethical Perceptions of AI Integration in Higher Education Teaching and Assessment


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Abstract

The rapid advancement of artificial intelligence (AI) technologies presents both transformative opportunities and complex challenges for higher education, particularly in teaching and assessment. This study examines the readiness of faculty members in Pakistani universities to integrate AI tools into pedagogical and evaluative practices, alongside their ethical perceptions of AI use in academic contexts. Using a qualitative research design, semi-structured interviews were conducted with 20 faculty members across diverse disciplines and institutions. Thematic analysis, guided by the Technology Acceptance Model (TAM), the Technological Pedagogical Content Knowledge (TPACK) framework, and Rest's Four-Component Model of ethical decision making, revealed four interrelated themes: (1) varying levels of technological confidence, (2) institutional support and policy vacuum, (3) ethical concerns surrounding fairness and transparency, and (4) a human-centered orientation toward AI integration. The findings show that while faculty recognize AI's potential to enhance educational efficiency and personalization, adoption is hindered by limited training, unclear governance structures, and moral uncertainty. The study underscores that successful AI integration depends not only on technological competence but also on institutional scaffolding and ethical agency. Practical implications call for comprehensive professional development, transparent policy frameworks, and participatory AI design involving educators. By presenting insights from a developing-country context, this research contributes to the global discourse on responsible AI in higher education, emphasizing the need for balanced innovation grounded in human values.

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Introduction

The integration of artificial intelligence (AI) in higher education is reshaping the pedagogical landscape through routine task automation, personalized learning experiences, and enhanced assessment mechanisms (Zawacki-Richter et al., 2019). AI-powered tools, such as plagiarism checkers, automated grading systems, virtual teaching assistants, and adaptive learning platforms, are becoming more prevalent in academic settings (Roe et al., 2023). The adoption and effective use of these technologies, however, depend heavily on faculty members' readiness and ethical orientation toward these tools.

In Pakistan, government-backed initiatives, such as the Presidential Initiative for Artificial Intelligence and Computing (PIAIC), reflect a growing interest in digitizing higher education. Yet, practical implementation remains inconsistent. A recent study found that most Pakistani faculty lack sufficient training and institutional support to effectively integrate AI tools into teaching and assessment (Iqbal et al., 2025). Despite a moderate level of awareness, faculty members express uncertainty about AI's pedagogical relevance and its long-term implications.

Faculty perceptions are often influenced by technological proficiency and concerns surrounding academic ethics and responsibility. Ethical dilemmas, such as data privacy, algorithmic bias, plagiarism facilitation, and fairness in automated decision-making, continue to provoke apprehension among educators (Shalevska, 2024). The lack of clear institutional guidelines or ethical frameworks further complicates faculty engagement with AI (Yan et al., 2024).

Globally, there is an increasing recognition of the need to support faculty through professional development, ethical training, and policy reform to facilitate responsible AI adoption in academia (Luckin et al., 2016). The research focusing specifically on faculty readiness and ethical perceptions in the context of developing countries, however, remains limited. This is particularly critical in Pakistan, where the digital divide, traditional pedagogical mindsets, and limited access to AI tools can hinder meaningful technology integration.

Against this backdrop, this study aims to explore the readiness of university faculty in Pakistan to adopt AI technologies in teaching and assessment. This study also examines faculty perceptions regarding the ethical challenges associated with AI use. By employing a mixed-methods approach, and guided by the Technology Acceptance Model (TAM) and ethical decision-making theory, this research seeks to contribute empirical insights that can inform institutional policy and faculty training in ethically grounded AI integration.

Literature Review

The integration of AI in higher education has generated increasing scholarly interest due to its potential to transform teaching, learning, and assessment. Faculty readiness, defined as the combination of digital competence, pedagogical adaptability, and ethical confidence, emerges as a key determinant of successful AI

adoption (Luckin et al., 2016; Zawacki-Richter et al., 2019). However, while enthusiasm for AI's pedagogical promise is widespread, research continues to reveal gaps in technological preparedness and moral engagement, particularly in developing contexts (Crompton & Burke, 2023; Ghimire et al., 2024).

Faculty Readiness and Technological Integration

Faculty readiness for AI implementation extends beyond mere technical proficiency to encompass digital literacy, pedagogical innovation, and institutional support. Several studies have emphasized that educators' perceptions of usefulness and ease of use—central constructs in the TAM—strongly predict AI adoption (Al-Mughairi & Bhaskar, 2024; King & He, 2006). When faculty perceive AI as a tool that enhances instructional efficiency or assessment quality, their intention to use such technologies increases (Roshan et al., 2024).

Nonetheless, AI readiness remains uneven across contexts. In the United States and Europe, faculty tend to integrate AI tools, such as adaptive learning systems and automated feedback platforms, more readily due to institutional investment in training and infrastructure (Holmes et al., 2019; Zawacki-Richter et al., 2019). In contrast, educators in developing countries report lower confidence and limited exposure, often citing a lack of institutional guidance and reliable technology (Akram et al., 2022; Jan et al., 2024).

Ethical Perceptions and AI in Educational Practice

Beyond technical readiness, ethical perceptions shape how educators interpret AI's role in academic life. Faculty concerns commonly revolve around fairness, transparency, data privacy, and algorithmic bias (Floridi et al., 2018; Williamson & Eynon, 2020). Empirical studies reveal growing unease about the opacity of automated grading systems and plagiarism detection tools, which may reproduce systemic biases embedded in training data (Cotton et al., 2023; Gaisie et al., 2025). These anxieties reflect broader debates within AI ethics frameworks, emphasizing accountability and human oversight (Jobin et al., 2019; Knox, 2022). In higher education, the dehumanization of assessment processes has been particularly scrutinized, with scholars warning that excessive automation risks eroding empathy and moral judgment in teacher–student relationships (Biesta, 2020; Lindsay et al., 2025).

AI's Role in Teaching and Assessment

AI technologies in education encompass applications, such as intelligent tutoring systems, chatbots, predictive analytics, and automated feedback (Holmes et al., 2019; Xia et al., 2024). While these tools promise personalization and efficiency, faculty often remain skeptical of their pedagogical depth. Studies across Asia and Europe show that educators prefer AI for formative feedback and administrative tasks rather than for high-stakes assessment or complex reasoning evaluation (Crompton & Burke, 2023; Mah & Groß, 2024). This aligns with the Technological Pedagogical Content Knowledge (TPACK) framework, which posits that technology integration must harmonize with disciplinary knowledge and pedagogical intent (Mishra & Koehler, 2006). When AI tools are introduced without pedagogical alignment or ethical grounding, their impact on learning remains superficial.

Studies From Developing and Pakistani Contexts

In developing nations, faculty readiness is constrained by infrastructural limitations, digital divides, and insufficient training (Akram et al., 2022; Jan et al., 2024). Pakistani universities, while increasingly aware of AI's educational potential through initiatives, such as the PIAIC, still face significant implementation gaps (Iqbal et al., 2025). Mah and Groß (2024) found that although a majority of Pakistani faculty are aware of AI tools, only a small minority actively use them in teaching. Moreover, ethical concerns, particularly regarding fairness in AI-driven grading and privacy of student data, remain prevalent (Yan et al., 2024). These findings suggest that readiness is not merely a technological issue but also a moral and institutional one.

Existing literature underscores that the success of AI in higher education hinges on an integrated approach, combining technological confidence (TAM), pedagogical coherence (TPACK), and ethical literacy (AI ethics principles). Few studies, however, have examined how these dimensions interact in developing-country contexts, where faculty agency and institutional ethics are still emerging. This gap situates the present study, which explores Pakistani faculty members' readiness and ethical perceptions toward AI integration in teaching and assessment.

Research Objectives

1. Explore the perceptions of higher education faculty in Pakistan regarding their readiness to integrate AI tools in teaching and assessment practices.
2. Examine faculty members' ethical concerns and dilemmas associated with the use of AI in educational settings.
3. Investigate how Pakistani faculty perceive the pedagogical value and limitations of AI in instructional and assessment processes.
4. Identify institutional or contextual factors that influence faculty readiness and ethical decision-making regarding AI integration.

Research Questions

1. How do faculty members in Pakistani universities perceive their own readiness to incorporate AI technologies into teaching and assessment?
2. What ethical concerns do faculty members associate with the use of AI in higher education?
3. In what ways do faculty view the role of AI as beneficial or problematic in the context of teaching and assessment?
4. What institutional, professional, or cultural factors shape faculty attitudes and practices regarding AI integration in higher education?

Theoretical Framework

The integration of AI into higher education teaching and assessment introduces both technological and ethical complexities, particularly in developing contexts like Pakistan. To explore faculty members' readiness and ethical perceptions surrounding AI, this study draws upon a blended theoretical foundation incorporating the TAM (Davis, 1989) and globally recognized AI ethics principles (Jobin et al., 2019). Together, these perspectives provide a comprehensive framework to investigate how higher education faculty in Pakistan engage with the opportunities and challenges posed by AI in academic practice.

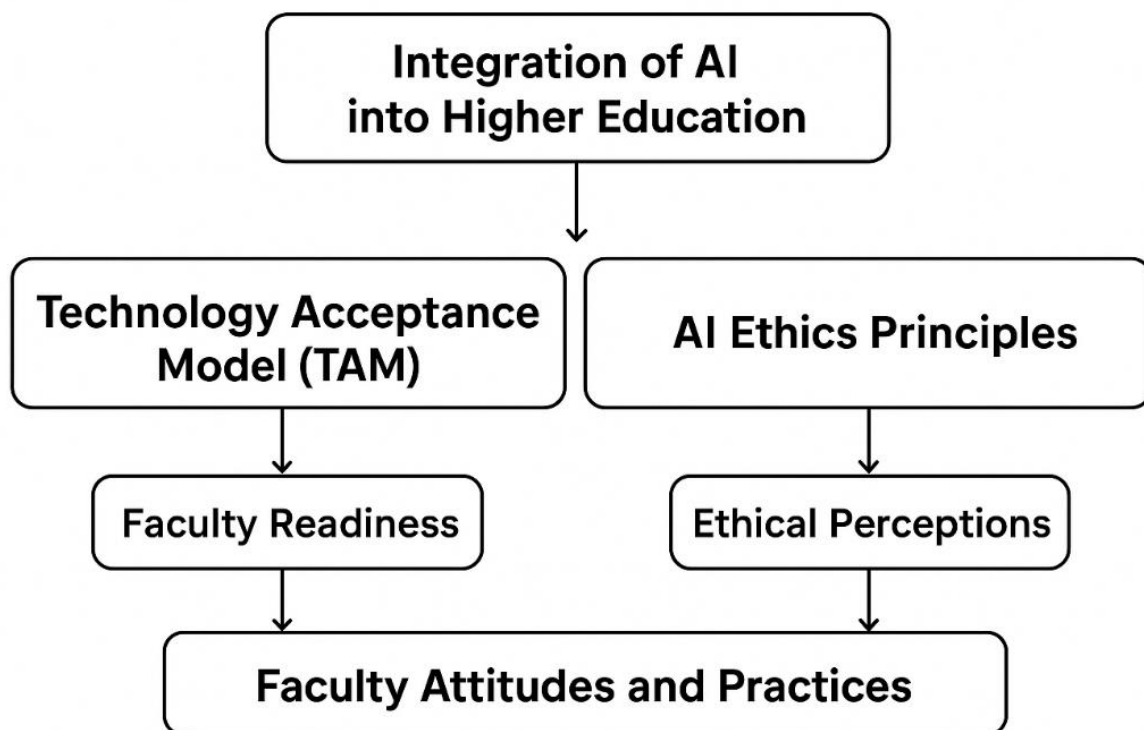
The TAM serves as a key lens to examine faculty readiness by emphasizing two pivotal constructs: "perceived usefulness" and "perceived ease of use." These dimensions determine an individual's likelihood to accept and utilize a new technology.

In the context of higher education, faculty members' confidence in using AI tools, including automated feedback, plagiarism detection, and intelligent tutoring systems, as well as their belief in AI's potential to enhance teaching effectiveness, are central to understanding faculties' willingness to adopt such technologies (King & He, 2006). Faculty who perceive AI as useful and manageable are more likely to integrate it into their pedagogical routines.

Technological readiness alone, however, does not capture the full scope of AI integration in education. As AI systems make decisions that can affect student outcomes, ethical considerations become increasingly significant. The study, therefore, also draws upon widely accepted AI ethics principles, such as fairness, transparency, accountability, and data privacy, as a way to explore how faculty perceive the moral dimensions of AI adoption in educational contexts (Floridi et al., 2018). Concerns about algorithmic bias, opacity in AI decision-making, and potential dehumanization of teaching processes shape the ethical acceptance of AI tools, particularly in environments where ethical training and regulatory guidelines are still underdeveloped.

By synthesizing TAM with AI ethics principles, this study adopts a dual-pronged theoretical lens, enabling a deeper investigation of both readiness (behavioral and cognitive) and perceptions (normative and moral). This integrated approach is especially pertinent in Pakistan's higher education landscape, where AI-based educational reforms are emerging rapidly. Yet, faculty development and ethical literacy around AI remain limited. The study framework thus allows for a detailed understanding of how technological confidence intersects with ethical judgment to shape faculty attitudes and practices, as shown in Figure 1.

Figure 1. *Theoretical Framework*



Methods

Research Design

This study employed a qualitative research design grounded in an interpretivist paradigm to explore how higher education faculty in Pakistan perceive the integration of AI in teaching and assessment. A qualitative approach allowed for an in-depth understanding of participants' experiences, ethical reasoning, and contextual challenges, aligning with interpretivist assumptions that knowledge is socially constructed (Creswell & Poth, 2017). Semi-structured interviews were conducted with 20 faculty members, enabling a detailed exploration of diverse disciplinary and institutional perspectives.

Research Setting and Context

The study was conducted in Pakistani higher education institutions, encompassing both public and private universities. The choice of setting was motivated by the increasing discourse on AI adoption in education, juxtaposed with the contextual challenges of technological infrastructure, faculty training, and ethical regulation in the Pakistani academic environment. This setting reflects Pakistan's heterogeneous higher education landscape, where institutional resources, digital infrastructure, and faculty technological literacy vary considerably between public and private sectors.

Sampling Strategy

We employed a purposive sampling technique to recruit faculty members who had experience or emerging exposure to AI tools in their teaching or assessment practices. We sent invitations via email to 32 potential participants across six universities (three public and three private) in Lahore, Multan, and Islamabad, three major cities in Pakistan. Twenty faculty members (12 male, 8 female) consented to participate. Participants represented diverse disciplines, including education, computer science, English, and business studies, with teaching experience ranging from 3 to 25 years. This diversity ensured representation across technological proficiency levels and institutional contexts.

Data Collection

Data were collected through semi-structured interviews conducted between January and March 2025. An interview protocol was designed to address the four research questions directly, with sections focusing on (1) faculty readiness and digital competence; (2) perceptions of AI's pedagogical value; (3) ethical concerns, such as bias and privacy; and (4) institutional support and awareness of policy. Each interview lasted 45–60 minutes and was conducted either in person or via Zoom, depending on participant availability. All interviews were conducted in English and audio-recorded with participant consent. Field notes were taken to capture contextual observations. Interview recordings were transcribed verbatim using Otter.ai software and manually verified for accuracy. Following Ghimire et al. (2024), we adopted an iterative approach, where preliminary analysis after early interviews informed minor refinements to subsequent questioning for greater depth and alignment with the research objectives.

Ethical Considerations

Prior to data collection, we obtained informed consent from all participants, and we assured them of confidentiality and anonymity. We conducted the study in compliance with ethical guidelines for educational research and secured institutional permission where required (Head, 2018). Interview recordings and transcripts were securely stored and accessible only to the researchers.

Data Analysis

Data were analyzed using thematic analysis and followed the six-step framework proposed by Braun and Clarke (2021). To ensure transparency and replicability, the process began with a phase of familiarization, during which the research team repeatedly read and reviewed the interview transcripts to gain an in-depth understanding of participants' perspectives on AI integration. In the second step, initial coding was conducted using NVivo 14, where open coding helped identify meaningful data segments related to faculty readiness, ethical concerns, and institutional conditions. During theme development, the generated codes were grouped into subthemes and overarching themes according to conceptual similarity and their relevance to the research questions. This was followed by a theme review stage, where emerging patterns were examined against the raw data to ensure internal consistency, coherence, and distinction among themes. Once validated, each theme underwent definition and naming, allowing for clear labeling and concise representation of the underlying ideas and experiences expressed by participants. The final step involved writing up the analysis, during which the refined themes were organized in direct correspondence with the four research questions to maintain a coherent analytical narrative. Representative participant quotes were selected to illustrate key findings and preserve the authenticity of voice.

Through this systematic process, four major themes emerged: (1) faculty readiness and technological confidence, (2) institutional support and policy vacuum, (3) ethical perceptions and moral ambiguity, and (4) AI's role in teaching and assessment. These themes collectively reflect the complex interplay between technological capability, ethical awareness, and institutional preparedness that shapes faculty engagement with AI in higher education.

Trustworthiness and Rigor

To ensure credibility, we employed member checking, whereby participants reviewed summaries of their interview transcripts. Triangulation was achieved by gathering perspectives from diverse institutions and academic disciplines. Transferability was addressed through thick description of context, and dependability and confirmability were ensured by maintaining an audit trail of coding decisions and analytic memos. To enhance analytical credibility, two independent researchers reviewed 20% of the coded transcripts. Inter-coder agreement reached 87%, after which discrepancies were resolved through discussion. Member checking was performed with six participants to validate interpretive accuracy. An audit trail documenting analytical decisions was maintained throughout (Adler, 2022).

Results

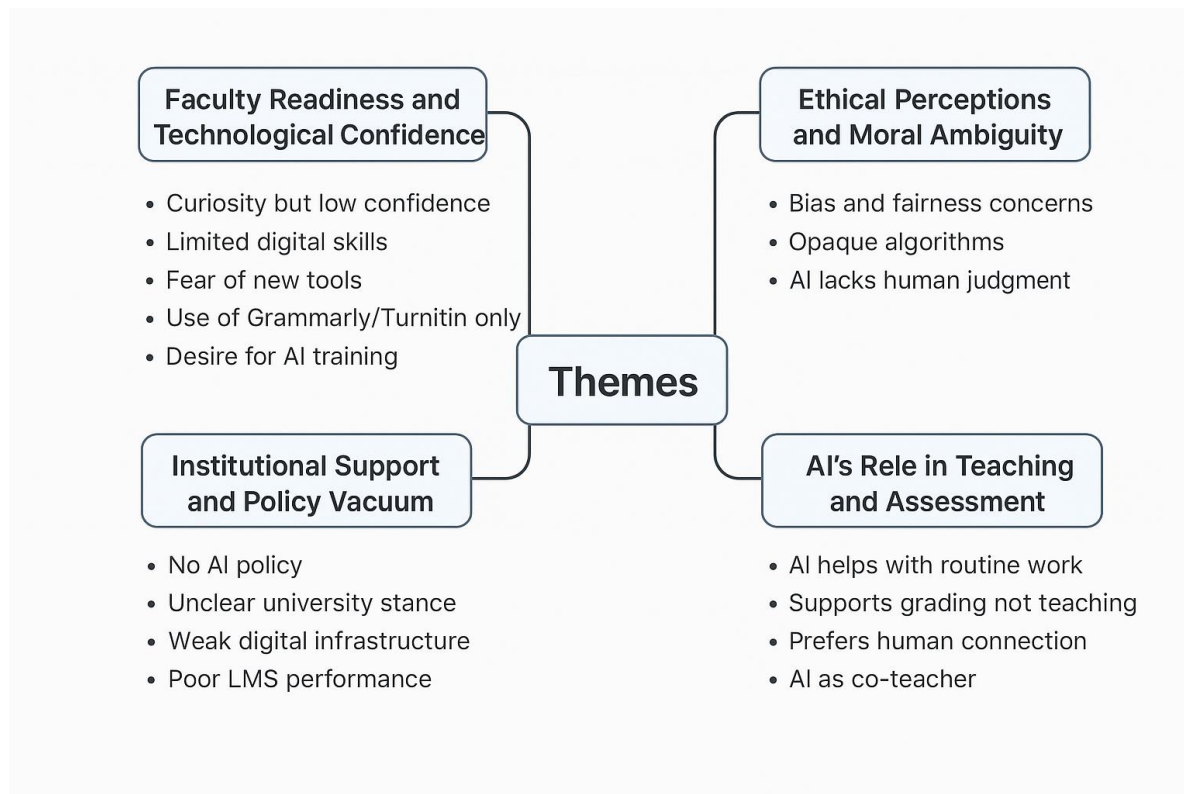
Table 1: Themes Extracted Through Thematic Analysis

Initial Coding	Sub-Themes	Final Themes
Curiosity but low confidence, limited digital skills, fear of new tools, use of Grammarly/Turnitin only, desire for AI training, lack of exposure, experimenting cautiously, dependence on student knowledge	Uneven technological literacy, need for structured professional training, apprehension toward generative AI	Faculty Readiness and Technological Confidence
No AI policy, unclear university stance, everyone does what they think is right, weak digital infrastructure, poor learning management systems (LMS) performance,	Absence of institutional AI policy, infrastructure and resource disparities, fragmented and inconsistent implementation	Institutional Support and Policy Vacuum

Initial Coding	Sub-Themes	Final Themes
resource inequality, lack of leadership support, ad hoc adoption		
Bias and fairness concerns, opaque algorithms, no accountability when AI errs, fear of unfair grading, moral unease, AI lacks human judgment, teachers as ethical guardians, need ethical framework	Algorithmic transparency and bias, responsibility and moral accountability, ethical uncertainty and institutional silence	Ethical Perceptions and Moral Ambiguity
AI helps with routine work, not a replacement for empathy, AI lacks spontaneity, supports grading not teaching, prefers human connection, AI as co-teacher, automation versus education, preserving teacher agency	Human–AI partnership, preservation of empathy and teacher identity, caution against full automation	AI’s Role in Teaching and Assessment

Table 1 shows how faculty experiences with AI cluster into four broad areas. Many feel curious but underprepared, which highlights uneven skills and a need for structured training. Institutions lack clear policies and reliable systems, leaving staff to navigate AI on their own. Ethical worries are common, especially around bias, fairness, and accountability. Faculty also see AI as helpful for routine tasks but believe it should support, not replace, human judgment and connection in teaching, as shown in Figure 2 below.

Figure 2: *Thematic Analysis Mind Map*



Thematic Analysis Findings

Thematic analysis of the 20 semi-structured faculty interviews revealed four interconnected themes that reflect the opportunities and challenges of integrating AI into higher education teaching and assessment. Each theme aligns directly with the study's research questions, ensuring conceptual coherence and analytical transparency (Braun & Clarke, 2021).

Theme 1: Faculty Readiness and Technological Confidence

Addresses Research Question 1:

How do faculty members in Pakistani universities perceive their own readiness to incorporate AI technologies into teaching and assessment?

Participants exhibited uneven levels of awareness and preparedness for AI integration. While most had experience with digital aids such as Grammarly or Turnitin, far fewer had engaged with generative or assessment-based AI systems. The dominant sentiment was one of curiosity mixed with apprehension, grounded in limited institutional exposure and self-reported skill gaps. Some participant responses include:

- I've used Grammarly and Turnitin, but tools like ChatGPT or AI assessment tools are still unfamiliar territory. (P3)
- Sometimes I hear about AI from students first, which is quite embarrassing. (P5)

Several participants voiced a strong desire for professional development but noted the absence of structured training opportunities. Their readiness appeared constrained not by unwillingness but by institutional neglect. Participant 7 (P7) stated, "We need proper training. You can't expect us to experiment with students without knowing what we are doing."

For this theme, the responses underscore a gap between faculty interest and institutional preparedness. Many participants expressed enthusiasm to experiment with AI once adequate support and skill-building programs were in place, echoing the TAM's emphasis on perceived usefulness and ease of use (King & He, 2006).

Theme 2: Institutional Support and Policy Vacuum

Addresses Research Question 4:

What institutional, professional, or cultural factors shape faculty attitudes and practices regarding AI integration in higher education?

Participants consistently described a lack of formal policy frameworks governing AI use in their universities. This absence left educators uncertain about what was permissible or encouraged. Several remarked that decision-making regarding AI was ad hoc and personally negotiated rather than institutionally guided. For example, P6 said, "There's no formal policy on AI in our university. Everyone is doing whatever they feel is right." Infrastructure deficits compounded these challenges.

Unstable internet access, malfunctioning LMS, and inequitable resource distribution undermined faculty confidence in technological adoption. Participant 1 (P1) expresses it this way: "Even the LMS doesn't function properly. How do you expect us to implement AI-driven solutions?" Other participants highlighted that these infrastructural and policy gaps disproportionately affected departments with fewer digital resources, widening intra-institutional inequities. According to P9, "Some departments have better access to technology; others can barely use projectors."

For this theme, the lack of institutional strategy contributed to fragmented and inconsistent adoption of AI tools. This finding reinforces the perception that AI implementation remains a personal rather than systemic responsibility.

Theme 3: Ethical Perceptions and Moral Ambiguity

Addresses Research Question 2:

What ethical concerns do faculty members associate with the use of AI in higher education?

Faculty expressed deep moral unease regarding the fairness, transparency, and accountability of AI-driven systems, particularly in assessment. Concerns centered on the reliability of algorithmic judgments and the opacity of AI decision-making. A sample of participant responses include:

- What if AI misjudges a student's work? How do we explain that to parents? (P8)
- AI algorithms can carry hidden biases. That scares me more than it excites me. (P11)

Participants worried about the ethical implications of delegating evaluative authority to opaque systems and the absence of accountability mechanisms when errors occur. Several noted that while AI could assist in grading, it risked undermining the teacher's role as moral and contextual evaluator. According to Participant 7 (P7), "AI can help with grading, but that's not teaching." This moral uncertainty mirrors the ethical dimensions of AI adoption highlighted in global frameworks emphasizing fairness, transparency, and accountability (Floridi et al., 2018; Jobin et al., 2019).

For this theme, faculty respondents demonstrated ethical sensitivity but lacked institutional guidance to translate moral reflection into action. This finding echoes the gap between moral judgment and moral action in Rest's (1986) Four-Component Model.

Theme 4: AI's Role in Teaching and Assessment

Addresses Research Question 3:

In what ways do faculty view the role of AI as beneficial or problematic in the context of teaching and assessment?

Participants recognized the pragmatic benefits of AI for reducing administrative burdens, such as grading repetitive assignments or generating preliminary feedback. However, most viewed AI as an assistive tool rather than a pedagogical partner. Sample participant responses include:

- AI can help with routine tasks, but teaching is about connection, not automation. (P5)
- Students need empathy and spontaneity, something AI cannot offer. (P10)

Faculty articulated a clear boundary between automation and education, expressing skepticism about AI's ability to replicate empathy, moral reasoning, and pedagogical intuition. Many advocated for a hybrid "co-teacher" model, where AI supports educators without replacing them. P7 stated, "I see AI as a co-teacher for repetitive tasks, not a replacement."

This theme underscores a human-centered orientation toward AI, where technology is valued for augmenting rather than supplanting teacher agency. Faculty stressed that pedagogical meaning arises from relational and contextual engagement, qualities they fear AI cannot authentically reproduce.

Summary of Findings

Collectively, these themes reveal that faculty readiness for AI integration in Pakistan's higher education system is contingent upon three interrelated dimensions: technological capability, ethical assurance, and institutional support. While participants expressed enthusiasm for the potential of AI to enhance educational efficiency, their adoption remains limited by systemic barriers and moral uncertainty. The findings highlight

the need for comprehensive training, ethical frameworks, and infrastructure reform to cultivate trust and meaningful integration of AI in academic practice.

Discussion

This study explored how university faculty in Pakistan perceive the integration of AI in teaching and assessment, revealing four key themes: (1) faculty readiness and technological confidence, (2) institutional support and policy vacuum, (3) ethical perceptions and moral ambiguity, and (4) AI's role in teaching and assessment. Together, these findings highlight that successful AI adoption in higher education depends not only on technological competence but also on moral agency and institutional scaffolding.

The following discussion integrates these themes through the interpretive lenses of the TAM, TPACK, and Rest's Four-Component Model of ethical decision-making.

Faculty Readiness and Technological Confidence: The TAM Perspective

The first theme underscores a critical readiness gap among Pakistani faculty. While participants expressed curiosity and openness toward AI, their adoption remains limited by low digital confidence and insufficient training. According to the TAM, technology adoption is determined by perceived usefulness and perceived ease of use (Davis, 1989; King & He, 2006).

In this study, faculty perceived AI tools as potentially useful, especially for streamlining administrative work. They felt, however, that these tools were not yet easy to use due to a lack of exposure and institutional support. This pattern mirrors international findings where educators acknowledge AI's pedagogical promise but hesitate to integrate it without practical training and technical reliability (Crompton & Burke, 2023; Mah & Groß, 2024).

Within Pakistan's context, this gap between promise and hesitancy reflects broader systemic challenges, such as insufficient digital infrastructure and inconsistent institutional leadership (Jan et al., 2024). Readiness must therefore be conceptualized, not only as an individual capacity but as a relational outcome shaped by organizational culture, training availability, and perceived institutional commitment to technological advancement.

Institutional Support and Policy Vacuum: Bridging TAM and TPACK

The second theme highlights a structural deficit that constrains both adoption and innovation. Faculty noted that in the absence of formal AI policies or reliable technological infrastructure, individual experimentation becomes risky and inconsistent. This aligns with the TPACK framework (Mishra & Koehler, 2006), which posits that effective technology integration requires the intersection of technological, pedagogical, and content knowledge within supportive institutional environments. The lack of institutional policy thus prevents TPACK alignment, as faculty possess disciplinary and pedagogical expertise but lack the systemic conditions to translate that into technologically enhanced practice. This finding also complements TAM's external variables: perceived organizational support and resource availability strongly influence perceptions of ease of use.

Internationally, structured policy environments, such as those in Singapore and Finland, have demonstrated that institutional scaffolding directly enhances teacher confidence and innovation (Luckin et al., 2016; Zawacki-Richter et al., 2019). Pakistan's case, conversely, exemplifies how the absence of digital governance can stifle even positive attitudes toward AI.

Ethical Perceptions and Moral Ambiguity: Insights From Rest’s Model

Faculty concerns about algorithmic bias, data privacy, and fairness reveal a moral dimension often overlooked in discussions of AI adoption. According to Rest (1986), these ethical apprehensions align with the first two stages of Rest’s Four-Component Model—moral sensitivity (recognizing ethical issues) and moral judgment (evaluating what ought to be done).

Participants demonstrated awareness of AI’s ethical risks and articulated clear moral positions, such as opposing opaque or biased grading algorithms. However, due to institutional ambiguity and a lack of ethical frameworks, they struggled to progress to the later stages of moral motivation and action, the implementation of ethical decisions. This paralysis between awareness and action has been noted in broader AI ethics literature.

Floridi et al. (2018) argues that ethical AI governance requires both normative principles and procedural mechanisms that empower human actors to intervene. Faculty participants’ repeated calls for transparency, accountability, and ethical training demonstrate readiness for moral engagement but a lack of institutional pathways for doing so. Consequently, ethical literacy should be embedded not only in professional development programs but also in policy and tool design, ensuring that educators are not passive users but active moral agents in AI-mediated education.

AI’s Role in Teaching and Assessment: Human-Centered Pedagogy and TPACK Integration

Faculty members consistently framed AI as an assistive partner rather than a pedagogical replacement. This distinction reflects the humanistic orientation within the TPACK framework, which emphasizes that technological tools must support, not dictate, pedagogical decisions (Angeli et al., 2016). Participants’ insistence that “teaching is about connection, not automation” reflects concern that AI could erode the affective and relational dimensions of education, dimensions central to human learning (Biesta, 2020). Their perspective aligns with current scholarship advocating for a co-teaching model in which AI handles routine or data-intensive tasks while educators preserve the interpretive and ethical dimensions of learning (Lindsay et al., 2025). In this sense, Pakistani faculty echo a global pedagogical caution: AI can enhance efficiency but must not replace empathy, creativity, or contextual sensitivity. Rather than viewing resistance as conservatism, these attitudes should be interpreted as calls for balanced integration, anchored in pedagogy and ethics, not technological determinism.

Integrative Interpretation: AI Adoption as a Tri-Dimensional Process

Synthesizing across frameworks, AI integration in higher education emerges as a tri-dimensional process involving:

1. Technological readiness and perceived utility (TAM),
2. Pedagogical coherence and knowledge alignment (TPACK), and
3. Ethical agency and moral action (Rest’s Model)

Each dimension interacts dynamically. For instance, a faculty member confident in AI’s usefulness (TAM) but uncertain about its fairness (Rest’s Model) may hesitate to adopt it, while strong institutional support (TPACK environment) can mediate these anxieties. Thus, readiness must be reconceptualized as both technical and ethical preparedness, embedded within institutional ecosystems that promote critical reflection, collaboration, and transparency.

The Pakistani Context and Global Relevance

While these findings emerge from a developing-country context, their implications are globally resonant. Pakistan's challenges, insufficient training, infrastructural inequity, and policy absence mirror those of other low- and middle-income countries transitioning toward AI-mediated education (Akram et al., 2022; Gaisie et al., 2025). The study contributes a critical voice from the Global South, illustrating how cultural, ethical, and infrastructural realities intersect to shape faculty engagement with AI.

By situating Pakistani faculty as reflective practitioners navigating technological and moral uncertainty, this research underscores that trustworthy AI in education cannot be achieved through compliance alone. Trustworthy AI demands contextual sensitivity, participatory governance, and recognition of educators as ethical agents, not mere technology users.

The discussion demonstrates that faculty readiness for AI integration is not solely a function of technological proficiency but a synthesis of confidence, ethical conviction, and institutional coherence. The integration of TAM, TPACK, and Rest's Model provides a comprehensive explanatory framework, revealing that effective and responsible AI adoption in higher education requires both capability and conscience. Future faculty development initiatives must therefore blend technical training with ethical inquiry, preparing educators to not only use AI but also to guide it.

Practical Implications

To translate this study's insights into actionable strategies, its findings identify three primary stakeholder groups that are responsible for implementing AI in higher education: national policymakers, higher education administrators, and institutional leaders. Each group faces distinct but interconnected responsibilities that are organized into short-term initiatives (immediate, actionable steps) and long-term strategies (sustained changes over time) to guide realistic and strategic implementation.

Policymakers

Policymakers should provide the following short-term initiatives:

- Establish a national AI in education task force or steering committee with diverse representation from academia, technology, ethics, and civil society.
- Launch initial consultations and needs assessments across public and private institutions.
- Begin mapping baseline AI readiness and digital resource disparities across the country.

Policymakers should provide the following long-term strategies:

- Develop national AI literacy standards for educators and students that are tailored to local sociocultural and institutional contexts.
- Draft and enact AI ethics and governance guidelines, drawing on global frameworks like European Skills, Competences, Qualifications and Occupations (UNESCO) and Organization for Economic Co-operation and Development (OECD).
- Ensure equitable infrastructure development by promoting long-term investment in rural and under-resourced universities.
- Support cross-sectoral collaborations between universities, technology developers, and public bodies to foster a sustainable AI ecosystem in higher education.

Higher Education Administrators

For short-term initiatives, higher education administrators should:

- Implement faculty development programs on AI literacy, pedagogical integration, and ethics, including introductory workshops and awareness sessions.
- Create interim institutional policies or guidance memos on responsible AI use in teaching and assessment.
- Establish pilot projects to explore AI-supported teaching tools and feedback systems in select departments.

For long-term strategies, higher education administrators should:

- Institutionalize ongoing professional development pathways, including AI certifications or micro-credentials for educators.
- Build robust AI governance frameworks, including mechanisms for algorithmic transparency, human oversight, and data privacy compliance.
- Foster international partnerships for knowledge exchange and access to cutting-edge tools and training resources.
- Embed AI readiness evaluations into quality assurance systems and curriculum review cycles.

Institutional Leaders (Deans, Department Heads)

For short-term initiatives, institutional leaders should:

- Organize peer-learning communities or faculty learning circles focused on AI experimentation and ethical reflection.
- Initiate department-level discussions on the implications of AI for pedagogy, assessment, and teacher–student relationships.
- Promote early adoption models through mentoring and intra-departmental collaboration.

For long-term strategies, institutional leadership should:

- Create a culture of ethical deliberation around AI, integrating discussions into faculty meetings, curriculum design sessions, and assessment boards.
- Develop AI-integrated course design templates or support frameworks that ensure human–AI collaboration aligns with disciplinary pedagogies.
- Promote faculty agency and innovation by offering incentives or recognition for responsible AI use in teaching practice.

Final Note

These short- and long-term timelines acknowledge both the urgency of immediate action and the complexity of long-term transformation. By grounding implementation in moral reflection and faculty collaboration, AI adoption can strengthen, rather than diminish, the human values at the heart of higher education.

Reflection and Call to Action

While this study focuses on the Pakistani higher education context, its implications extend globally. The challenge facing universities is not whether to adopt AI but *how* to do so responsibly, balancing innovation with ethics and efficiency with empathy. The integration of AI represents a profound cultural transformation, one that must be guided by moral reflection and collaborative governance rather than technological determinism.

Future research and practice should move beyond diagnosing barriers to actively testing and refining models of ethical AI integration that strengthen faculty confidence, institutional coherence, and student trust. Ultimately, the goal is not to automate education but to humanize it further, using AI as a partner that amplifies, rather than diminishes, the human capacity to teach, learn, and care.

Conclusion

This study examined how faculty members in Pakistani higher education perceive and respond to the integration of AI in teaching and assessment. Using qualitative inquiry, the research revealed that while educators recognize AI's transformative potential, their readiness to integrate it effectively is constrained by three interlinked factors: limited technological competence, inadequate institutional support, and unresolved ethical concerns. Through the combined lenses of the TAM, TPACK, and Rest's Four-Component Model, the findings demonstrate that AI adoption is not merely a technical process but a moral and pedagogical transformation. Faculty members displayed awareness of AI's utility but also deep concern about its ethical implications, particularly fairness, accountability, and the dehumanization of education.

In Pakistan's context, these findings underscore the urgent need for a human-centered AI strategy in higher education that integrates technological capability, pedagogical relevance, and ethical governance. Faculty are not AI resistant per se; rather, they seek meaningful training, transparent policies, and collaborative spaces where technology complements—not replaces—the moral and relational core of teaching.

Limitations and Future Directions

Although this study provides meaningful insights into faculty readiness and ethical perceptions regarding AI integration in higher education, several limitations should be acknowledged. The qualitative design, while allowing for depth and contextual richness, limits the generalizability of findings. The study relied on interviews with 20 faculty members from a select group of Pakistani universities; thus, results may not capture the full diversity of institutional realities across the country. Moreover, data reflects perceptions at a single point in time during a rapidly evolving phase of AI development, meaning faculty attitudes and competencies may shift as exposure and institutional policies mature.

Future research should address these limitations through broader, mixed-method designs that combine qualitative depth with quantitative breadth. National or regional surveys could complement interview data to provide comparative insights into readiness levels across disciplines, university types, and gender or age groups. Including additional stakeholders, such as students, administrators, and technical staff, would offer a more holistic understanding of institutional readiness and ethical governance.

Longitudinal studies are particularly important to track how training initiatives, policy interventions, and evolving AI tools influence faculty practices over time. Intervention-based research could also test the effectiveness of professional development programs focused on ethical AI use and pedagogical innovation. Most importantly, there is an urgent need for cross-sector collaboration, bringing together educators, computer scientists, and policymakers, to design AI systems that are pedagogically sound, ethically

transparent, and contextually grounded. Addressing these questions is not merely academic; it is essential if higher education is to cultivate trust in AI and ensure that technological transformation strengthens, rather than replaces, the human values at the heart of learning.

References

- Adler, R. H. (2022). Trustworthiness in qualitative research. *Journal of Human Lactation*, 38(4), 598–602. <https://doi.org/10.1177/08903344221116620>
- Akram, H., Abdelrady, A. H., Al-Adwan, A. S., & Ramzan, M. (2022). Teachers' perceptions of technology integration in teaching-learning practices: A systematic review. *Frontiers in Psychology*, 13, Article 920317. <https://doi.org/10.3389/fpsyg.2022.920317>
- Al-Mughairi, H., & Bhaskar, P. (2024). Exploring the factors affecting the adoption AI techniques in higher education: insights from teachers' perspectives on ChatGPT. *Journal of Research in Innovative Teaching & Learning*, 18(2), 232–247. <https://doi.org/10.1108/jrit-09-2023-0129>
- Angeli, C., Valanides, N., & Christodoulou, A. (2016). Theoretical considerations and alternative conceptualizations of TPACK. In P. Mishra, & M. J. Koehler (Eds.), *Handbook of Technological Pedagogical Content Knowledge (TPACK) for educators* (pp. 11–32). Routledge.
- Biesta, G. (2020). *Educational research: An unorthodox introduction*. Bloomsbury Publishing.
- Braun, V., & Clarke, V. (2021). *Thematic analysis : A practical guide*. SAGE. <https://www.torrossa.com/it/resources/an/5282292>
- Cotton, D. R. E., Cotton, P. A., & Shipway, J. R. (2023). Chatting and cheating: Ensuring academic integrity in the era of ChatGPT. *Innovations in Education and Teaching International*, 61(2), 228–239. <https://doi.org/10.1080/14703297.2023.2190148>
- Creswell, J. W., & Poth, C. N. (2017). *Qualitative inquiry and research design: Choosing among five approaches* (4th ed.). SAGE.
- Crompton, H., & Burke, D. (2023). Artificial intelligence in higher education: The state of the field. *International Journal of Educational Technology in Higher Education*, 20(1), Article 22. <https://doi.org/10.1186/s41239-023-00392-8>
- Davis, F. D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS Quarterly*, 13(3), 319–340. <https://doi.org/10.2307/249008>
- Floridi, L., Cowls, J., Beltrametti, M., Chatila, R., Chazerand, P., Dignum, V., Luetge, C., Madelin, R., Pagallo, U., Rossi, F., Schafer, B., Valcke, P., & Vayena, E. (2018). AI4People—An ethical framework for a good AI society: Opportunities, risks, principles, and recommendations. *Minds and Machines*, 28(4), 689–707. <https://doi.org/10.1007/s11023-018-9482-5>
- Gaisie, E., Owusu-Boateng, O., Yidana, I., & Ghansah, B. (2025). Ethical considerations and data privacy in artificial intelligence. In O. Owusu-Boateng (Ed.), *Unlocking the potential: Artificial intelligence in education* (pp. 58–81). Deep Science Publishing. https://doi.org/10.70593/978-93-49307-53-7_5
- Ghimire, A., Pather, J., & Edwards, J. (2024, October 13–16). Generative AI in education: A study of educators' awareness, sentiments, and influencing factors. *2024 IEEE Frontiers in Education Conference (FIE)* (pp. 1–9). IEEE. <https://doi.org/10.1109/fie61694.2024.10892891>
- Head, G. (2018). Ethics in educational research: Review boards, ethical issues and researcher development. *European Educational Research Journal*, 19(1), 72–83. <https://doi.org/10.1177/1474904118796315>
- Holmes, W., Bialik, M., & Fadel, C. (2019). *Artificial intelligence in education promises and implications for teaching and learning* (1st ed.). UCL Discovery. <https://discovery.ucl.ac.uk/id/eprint/10139722/>
- Iqbal, F., Akhtar, S., & Naz, F. L. (2025). Analyzing the integration of artificial intelligence in higher education: A study on teachers' attitudes and perspectives. *The Critical Review of Social Sciences Studies*, 3(1), 2788–2798. <https://doi.org/10.59075/8fsmaz37>

- Jan, S. U., Khan, M. S. A., & Khan, A. S. (2024). Organizational readiness to adopt artificial intelligence in the library and information sector of Pakistan. *Evidence Based Library and Information Practice*, 19(1), 58–76. <https://doi.org/10.18438/ebliip30408>
- Jobin, A., Ienca, M., & Vayena, E. (2019). The global landscape of AI ethics guidelines. *Nature Machine Intelligence*, 1(9), 389–399. <https://doi.org/10.1038/s42256-019-0088-2>
- King, W. R., & He, J. (2006). A meta-analysis of the technology acceptance model. *Information & Management*, 43(6), 740–755. <https://doi.org/10.1016/j.im.2006.05.003>
- Knox, J. (2022). (Re)politicising data-driven education: From ethical principles to radical participation. *Learning Media and Technology*, 48(2), 200–212. <https://doi.org/10.1080/17439884.2022.2158466>
- Lindsay, E. D., Zhang, M., Johri, A., & Bjerva, J. (2025, April 22–25). The responsible development of automated student feedback with generative AI. 2025 IEEE Global Engineering Education Conference (EDUCON) (pp. 1–10). IEEE. <https://doi.org/10.1109/educon62633.2025.11016572>
- Luckin, R., & Holmes, W., Griffiths, M., & Forcier, L. B. (2016). *Intelligence unleashed: An argument for AI in education*. Pearson. <https://www.pearson.com/content/dam/corporate/global/pearson-dot-com/files/innovation/Intelligence-Unleashed-Publication.pdf>
- Mah, D.-K., & Groß, N. (2024). Artificial intelligence in higher education: Exploring faculty use, self-efficacy, distinct profiles, and professional development needs. *International Journal of Educational Technology in Higher Education*, 21(1), Article 58. <https://doi.org/10.1186/s41239-024-00490-1>
- Mishra, P., & Koehler, M. J. (2006). Technological pedagogical content knowledge: A framework for teacher knowledge. *Teachers College Record*, 108(6), 1017–1054. <https://doi.org/10.1111/j.1467-9620.2006.00684.x>
- Rest, J. R. (1986). *Moral development: Advances in research and theory*. Praeger Publishers.
- Roe, J., Renandya, W. A., & Jacobs, G. M. (2023). A review of AI-powered writing tools and their implications for academic integrity in the language classroom. *Journal of English and Applied Linguistics*, 2(1), Article 3. <https://doi.org/10.59588/2961-3094.1035>
- Roshan, S., Iqbal, S. Z., & Zhang, Q. (2024). Teacher training and professional development for implementing AI-based educational tools. *Journal of Asian Development Studies*, 13(2), 1972–1987. <https://doi.org/10.62345/jads.2024.13.2.154>
- Shalevska, E. (2024). Human rights in the age of AI: Understanding the risks, ethical dilemmas, and the role of education in mitigating threats. *Journal of Legal and Political Education*, 1(2), 38–52. <https://www.cceol.com/search/article-detail?id=1294935>
- Williamson, B., & Eynon, R. (2020). Historical threads, missing links, and future directions in AI in education. *Learning, Media and Technology*, 45(3), 223–235. <https://doi.org/10.1080/17439884.2020.1798995>
- Xia, Q., Weng, X., Ouyang, F., Lin, T. J., & Chiu, T. K. F. (2024). A scoping review on how generative artificial intelligence transforms assessment in higher education. *International Journal of Educational Technology in Higher Education*, 21(1), Article 40. <https://doi.org/10.1186/s41239-024-00468-z>
- Yan, L., Sha, L., Zhao, L., Li, Y., Martinez-Maldonado, R., Chen, G., Li, X., Jin, Y., & Gašević, D. (2024). Practical and ethical challenges of large language models in education: A systematic scoping review. *British Journal of Educational Technology*, 55(1), 90–112. <https://doi.org/10.1111/bjet.13370>
- 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>

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