CHAPTER FIVE

Exploring Supervisors' Readiness to Integrate AI Tools in Postgraduate Supervision in Higher Education

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Abstract: The integration of artificial intelligence (AI) tools in postgraduate supervision has the potential to transform research processes by enhancing the quality of feedback, improving the efficiency of supervision, and addressing persistent challenges such as time constraints and student engagement within higher education. Despite this promise, the readiness of supervisors to adopt AI remains uneven, necessitating an exploration of their preparedness to integrate such tools. This study employs a constructivist paradigm and a qualitative research approach, guided by a generic qualitative research design. It draws on semi-structured interviews with 15 postgraduate supervisors from diverse disciplines to examine their perspectives on the integration of AI tools in postgraduate supervision. Through thematic analysis, four central themes emerged: technological literacy, institutional support, perceptions of AI, and ethical considerations, revealing the complex interplay between individual competence and institutional context. Supervisors with prior experience in digital technologies or from technology-intensive fields demonstrated higher readiness, while those from non-technical backgrounds encountered challenges due to limited digital exposure and perceived complexity. Institutional factors such as digital infrastructure, supportive policies, and professional development opportunities further influenced readiness levels. However, concerns surrounding academic rigour, ethical accountability, and workload pressures continue to constrain adoption. The chapter concludes by recommending targeted capacity-building programmes, institutional policy reforms, interdisciplinary collaboration, and enhanced supervisor–student partnerships to ensure ethical and effective AI use. Ultimately, while AI tools hold significant potential to enhance supervision efficiency and personalised support, their successful implementation requires tailored strategies responsive to diverse supervisory contexts, offering valuable insights for higher education institutions seeking to promote responsible AI integration in postgraduate supervision.

Keywords: AI tools, postgraduate supervision, readiness, supervisor-student collaboration, technological literacy.

1. Introduction

The emergence of Artificial Intelligence (AI) has precipitated significant transformations across various sectors, including higher education. In recent years, the adoption of AI tools has become increasingly prevalent, aimed at enhancing administrative processes, teaching, learning, and research (Lee et al., 2024; Tan et al., 2024). Within the realm of postgraduate education, AI technologies such as ChatGPT, Grammarly, and research-based analytics tools present potential benefits for the improvement of quality and efficiency in supervision (Nouri et al., 2020). These

tools can aid in generating feedback, identifying academic sources, checking for plagiarism, managing data, and providing writing support—functions traditionally performed manually by supervisors (Balalle & Pannilage, 2025).

Despite this promise, the preparedness of academic supervisors to integrate AI tools into postgraduate supervision is an area that remains underexplored, particularly in developing countries. Recent studies indicate that while the adoption of AI is advancing rapidly in the domains of teaching and assessment, the supervisory aspect is significantly under-researched, especially in low- and middle-income contexts where digital transformation is uneven (Omodan, 2025). Evidence suggests that supervisors' readiness is frequently impeded by structural inequities, including limited technological infrastructure, variable digital literacy, and inconsistent institutional strategies for AI integration (Akgun & Greenhow, 2022; Bayly-Castaneda et al., 2024). These deficiencies underscore the necessity for targeted empirical inquiry into supervisors' preparedness, given that their role is crucial in shaping the quality of postgraduate research and promoting ethical engagement with AI.

Recent scholarship confirms that empirical research on supervisors' readiness for AI integration is scarce, with the majority of studies focusing instead on student usage patterns or institutional digital strategies, rather than the readiness of supervisors (Chan & Hu, 2023; Nguyen et al., 2024). Research conducted in developing contexts further illustrates a widening gap in knowledge and skills, highlighting that supervisors often possess limited technological exposure and inadequate institutional support necessary for the effective adoption of AI tools (Kassa & Worku, 2025). This gap in evidence accentuates the significance of examining supervisory readiness, especially within resource-constrained higher education systems where digital transformation is inconsistent. Readiness comprises the knowledge, skills, attitudes, and institutional support structures vital for successful adoption (Uren & Edwards, 2023). As the responsibilities of supervisors evolve with technological advancements, it is imperative to understand their preparedness to engage with AI in ways that uphold academic integrity and facilitate student success (Rasul et al., 2024). This study aims to explore supervisors' readiness to integrate AI tools in postgraduate supervision within the broader context of digital transformation in higher education.

While the integration of artificial intelligence (AI) is progressively transforming the educational landscape, empirical evidence regarding the preparedness of postgraduate supervisors to incorporate AI tools into their supervision practices remains limited (Omodan, 2025). Many institutions are either unaware of or ill-prepared to address the pedagogical and ethical implications associated with AI usage in postgraduate research (Lee et al., 2024). Supervisors may lack the necessary technical skills, institutional support, or confidence to effectively utilise AI tools, thereby impeding innovation and adversely affecting the quality of research supervision (Kassa & Worku, 2025). Furthermore, in the absence of a comprehensive understanding of supervisors' readiness, higher education institutions may encounter difficulties in designing

appropriate training or support systems to facilitate effective integration. This study aims to address this gap by investigating the extent of supervisors' readiness to incorporate AI tools in postgraduate supervision. Although existing research has underscored the potential of AI to enhance teaching and learning within higher education (Kassa & Worku, 2025; Nouri et al., 2020), a significant gap persists in studies specifically focusing on the preparedness of academic staff, particularly supervisors, to integrate AI into postgraduate supervision (Sehmi et al., 2025). Most extant literature predominantly emphasises student utilisation of AI, ethical concerns, or general perceptions of AI in education (Chan & Hu, 2023; Nguyen et al., 2023; Rasul et al., 2024; Uren et al., 2023), with insufficient attention directed towards supervisors' skills, attitudes, and preparedness. Scholars increasingly caution that this omission is problematic, as supervisors play a critical role as gatekeepers of research quality, ethical conduct, and methodological rigour, rendering their readiness essential for responsible AI integration (Spring et al., 2022; Malik et al., 2023). In the absence of intentional capacity-building and empirically grounded insights into supervisors' needs, institutions risk exacerbating digital divides, reinforcing inequities across disciplines, and compromising supervision standards in the context of generative AI (Makore, 2024; Rioseco-Pais et al., 2024). Understanding supervisors' readiness to integrate AI tools into postgraduate supervision is vital for guiding institutional policy, staff development, and digital transformation strategies. As higher education institutions endeavour to uphold quality supervision and support research excellence in the digital age, it becomes imperative to assess and enhance supervisors' competencies related to AI usage.

1.1 Problem statement

The rapid expansion of artificial intelligence (AI) in higher education has significantly transformed teaching, learning, and research practices; however, its integration into postgraduate supervision remains uneven and under-examined. While AI tools present clear potential to enhance supervisory efficiency, feedback quality, and student support, existing research has predominantly focused on student utilisation and institutional strategies, with limited empirical attention directed towards supervisors as key agents of postgraduate research quality and ethical governance. This gap is noteworthy, as supervisors play a central role in shaping research rigour, academic integrity, and responsible engagement with emerging technologies. In the absence of a clear understanding of supervisors' readiness to integrate AI, institutions risk promoting AI adoption without adequately considering supervisors' skills, attitudes, ethical concerns, and disciplinary contexts.

This issue is particularly pronounced in developing and resource-constrained higher education contexts, where digital transformation is inconsistent and institutional support structures are often fragmented. Evidence from this study indicates that supervisors' readiness to integrate AI varies considerably across disciplines and is influenced by technological literacy, perceptions of AI, workload pressures, and the availability of institutional guidance and training. Without coherent policies and targeted capacity-building, AI integration in postgraduate supervision risks

becoming ad hoc, reinforcing disciplinary and digital inequalities and potentially compromising supervision quality and academic integrity. There is, therefore, a pressing need for empirically grounded insights into supervisors' readiness to inform responsible, equitable, and contextually responsive AI integration in postgraduate supervision. Hence, the study answer the following question: *What is the supervisors' readiness to integrate AI tools into postgraduate supervision in higher education?*

2. Methodology

This study is grounded in the constructivist research paradigm, which posits that reality is socially constructed through human experiences and interactions (Creswell & Poth, 2016). Constructivism enables researchers to understand how individuals interpret phenomena within their specific contexts. In the case of this study, it facilitates a nuanced exploration of how postgraduate supervisors perceive their readiness to integrate AI tools into the supervision process. The paradigm supports an interpretive lens through which the subjective meanings and experiences of supervisors are examined, making it particularly suitable for a study aimed at understanding human perspectives in a technologically evolving academic context (Lincoln et al., 2011).

The study adopts a qualitative research approach, which is appropriate for an in-depth exploration of complex human behaviours, beliefs, and experiences (Tisdell et al., 2025). A qualitative approach enables the collection of rich, descriptive data that captures the participants' views, attitudes, and experiences regarding the use of AI in postgraduate supervision. Within this approach, the study employs a generic qualitative research design. This design is valuable for uncovering patterns, generating insights, and developing a deeper understanding of how supervisors conceptualise and respond to AI integration (Babbie, 2020).

The population for this study consists of postgraduate supervisors in higher education institutions in South Africa. Using purposive sampling, 15 supervisors from diverse disciplines across multiple institutions (a mixture of public and private higher education institutions) were selected based on their direct involvement in supervising postgraduate students and their varying levels of familiarity with digital tools. This sampling method ensures that participants are information-rich and well-positioned to provide meaningful insights relevant to the research focus (Patton, 2015). The diversity in disciplinary backgrounds also adds depth to the findings by capturing cross-disciplinary variations in perceptions and readiness.

Data collection was conducted through semi-structured interviews, which allowed participants the flexibility to express their views while ensuring consistency in the key areas explored. Interviews were audio-recorded with participants' consent and subsequently transcribed for analysis. Thematic analysis was employed to interpret the data, following Braun and Clarke's (2006) six-phase framework: familiarisation with the data, generating initial codes, searching for themes, reviewing themes, defining and naming themes, and producing the final report. This

method supports the constructivist aim of interpreting meaning from participants' perspectives and facilitates the emergence of themes that reflect supervisors' readiness, perceived benefits and challenges, and contextual enablers or barriers to AI integration.

3. Presentation of Results and Discussion of Findings

The analysis of the interview data generated six interrelated themes, readiness across disciplines, AI integration into supervisory practices, perceptions and attitudes toward AI, institutional support and resources, technological literacy and familiarity, and workload and time constraints, which collectively illuminate the multifaceted factors shaping supervisors' readiness to integrate AI tools into postgraduate supervision.

3.1 Readiness across disciplines

The integration of AI tools into postgraduate supervision reveals varied levels of readiness among supervisors, shaped by their disciplinary orientations and the nature of research practices within their fields. Supervisors from more technically inclined disciplines expressed a higher level of readiness and familiarity with AI, while those from the humanities and social sciences adopted a more cautious or critical stance. Participant 4, an Engineering Supervisor, expressed a strong sense of readiness, noting that AI tools are already embedded in their research processes: "*AI tools have already become part of our research process, from data modelling to simulations, so for me, integrating them into supervision feels like a natural progression*." In contrast, Participant 5, a Law Supervisor, expressed uncertainty regarding the applicability of AI tools in their supervision practices: "*To be honest, I still struggle to see how AI fits into literary analysis or creative writing supervision. It feels a bit removed from our pedagogical approach*." Similarly, Participant 9, a Sociology Supervisor, acknowledged the potential efficiency AI could bring but voiced concerns about its implications for critical thinking in qualitative research: "*While I can appreciate the efficiency AI might bring to data analysis, I worry that it might dilute the critical thinking we aim to develop in qualitative research*." Participant 10, a Computer Science Supervisor, reported a high level of readiness, indicating that both they and their students are already engaging with AI tools in practical ways: "*My students are already using AI-based tools for code generation and testing, so as a supervisor, I have to stay ahead to guide them effectively*." From a more reflective standpoint, Participant 11, a Philosophy Supervisor, raised deeper epistemological concerns about the role of AI in academic supervision: "*There is a philosophical irony in relying on AI for thesis development. It challenges our very foundations about human reasoning and original thought*." Participant 13, an Interdisciplinary Supervisor, highlighted the conditional nature of their readiness, which depends on the AI tool in question and its alignment with educational objectives: "*Our field sits between the technical and the humanistic, so my readiness depends on the specific AI tool and how it aligns with the educational goals of my students*."

The data underscores that disciplinary orientations significantly influence the level of familiarity, openness, and critical engagement with AI technologies in supervisory practices. Supervisors in technical and STEM-related disciplines, such as Engineering and Computer Science,

demonstrate a high degree of readiness and fluency with AI tools. This observation aligns with existing literature suggesting that disciplines engaged in computational, quantitative, and data-driven research are more predisposed to adopt emerging technologies, including AI, due to their embeddedness in established research workflows (Selten & Klievink et al., 2024). Participant 4's observation reflects this alignment, where AI's role in modelling, simulations, and automation seamlessly integrates with disciplinary norms. Similarly, Participant 10 from Computer Science highlighted that AI is not merely a supervisory tool but also a learning companion for students, particularly in programming, code generation, and software testing. This supports the argument put forth by Kamalov et al. (2023) that AI has already penetrated technical education landscapes, becoming indispensable in both instruction and assessment.

In contrast, supervisors from the humanities and social sciences articulated more caution and critical reflection, revealing a tension between AI integration and disciplinary epistemologies. Participant 5's concern regarding the applicability of AI in literary analysis echoes anxieties within the humanities about the potential reduction of interpretative depth and the threat to creativity and originality (Yadav, 2024). These concerns are compounded by Participant 9's comment on critical thinking, highlighting a fear that AI-driven efficiency may inadvertently erode cognitive rigour, a cornerstone of qualitative inquiry. Participant 11's philosophical interrogation of AI's epistemological implications raises an important point about the role of AI in reshaping academic values. This response draws attention to deeper ontological questions surrounding authorship, intellectual agency, and the authenticity of student work—issues also echoed in the work of Memarian and Doleck (2023), who argue that AI in higher education may inadvertently commodify learning processes.

Interestingly, the interdisciplinary perspective offered by Participant 13 reveals that readiness is not always binary but rather conditional, shaped by how AI tools align with educational intentions. This nuanced stance supports the findings of Uren and Edwards (2023), who advocate for a cross-disciplinary approach in integrating AI, emphasising that adaptability and critical alignment are necessary for meaningful adoption. Collectively, the data suggest that disciplinary cultures, values, and methodologies deeply inform supervisors' readiness to integrate AI. As Fu and Weng (2024) contend, educational technology cannot be divorced from the contexts in which it is applied; disciplinary traditions must be central to conversations about AI adoption in postgraduate supervision.

3.2 AI Integration into supervisory practices

Supervisors' readiness to integrate AI into postgraduate supervision is reflected in their current usage, ongoing exploration, and imaginative projections of AI's potential. The data captures both the practical adoption of AI tools in everyday supervision and the supervisors' openness to future integration. Their experiences demonstrate a spectrum, from current application to future possibilities, which indicates a growing awareness and readiness to embed AI

meaningfully into academic support. Participant 1 shared how plagiarism detection and writing enhancement tools have already become routine in their supervision practices: "*I already use Turnitin and Grammarly with my students; it has become part of my normal workflow. It saves time and ensures that we catch issues early, especially with referencing and originality.*" Expanding on current uses, Participant 7, a supervisor from the Social Sciences, described their recent engagement with more advanced AI tools to support students in developing their literature reviews and refining research questions: "*Recently, I have started experimenting with AI tools like Elicit and Scite to help students frame their literature reviews and refine their research questions. These tools are game changers, especially for first-time researchers.*" Participant 6 highlighted how AI contributes to methodological clarity for students, especially those unfamiliar with research designs: "*I have used AI-based platforms to help students explore appropriate methods for their research. It does not replace my input, but it is a good starting point, especially for those unfamiliar with qualitative or mixed methods designs.*" Some supervisors also pointed to the potential of AI to enhance communication and feedback mechanisms. Participant 8 envisioned a department-level AI assistant to handle routine student queries: "*Imagine if we had an AI chatbot for our department that could answer basic questions about formatting or deadlines; students wouldn't always have to wait for an email reply. That kind of support would really enhance the supervision process.*" Participant 15 echoed this optimism, focusing on the role of AI in streamlining feedback: "*AI can provide instant feedback on students' writing, especially in early drafts. This could free me up to focus on the deeper intellectual engagement during one-on-one meetings.*" Participant 12 acknowledged their exploratory phase, viewing AI as a promising enhancement rather than a replacement for their academic role: "*While I am not fully integrating AI in all aspects of supervision yet, I am actively exploring its potential. I see it as a complementary tool, not a threat; it is about adapting to what benefits the student most.*"

The data shows that AI integration is already underway, with many supervisors incorporating it into their teaching practices. Their growing comfort and proactive engagement highlight a shift from mere awareness to imaginative, experience-based application. Participant 1's routine use of Turnitin and Grammarly illustrates the mainstreaming of basic AI tools in academic supervision. While these tools are not generative AI, they serve foundational roles in promoting academic integrity and writing quality. Their widespread adoption reflects AI's integration into core educational workflows, consistent with Malik et al. (2023), who observed that text-based AI systems are often the initial entry points for AI adoption in higher education settings. They offer efficiency, early feedback, and reduced administrative burden, helping supervisors manage quality assurance with greater ease.

The use of more sophisticated tools, such as Elicit and Scite, as described by Participant 7, points to an emerging shift towards cognitive augmentation, where AI supports higher-order academic tasks like literature synthesis and question refinement. These tools leverage natural language processing and evidence-based AI to help students navigate vast academic databases and identify relevant scholarly arguments. According to Bayly-Castaneda et al. (2024), AI that enhances cognitive engagement—not just procedural tasks—marks the next frontier in educational

technology, allowing for more personalised and efficient learning journeys. Participant 6's use of AI for methodological guidance emphasises AI's potential as a pedagogical scaffold. Supervisors are no longer solely bearers of content but facilitators of AI-mediated exploration. This resonates with Adewale et al. (2024), who argue that AI can democratise access to complex academic knowledge, helping students better understand methodological options and research design choices.

While human supervision remains irreplaceable for critical discussion and ethical reasoning, AI can serve as a springboard for inquiry, especially for novice researchers. Forward-looking perspectives, such as Participant 8's idea of an AI chatbot for departmental queries, reflect an imaginative but practical vision of AI's administrative and communicative utility. As Dakakni and Safa (2023) note, AI-powered virtual assistants are becoming viable solutions in educational settings to handle repetitive, non-cognitive tasks. Their integration could significantly enhance responsiveness and student satisfaction, freeing supervisors to focus on mentorship and academic rigour. Similarly, Participant 15's emphasis on automated writing feedback aligns with literature that champions adaptive feedback systems. AI-enabled feedback, especially in early drafts, can promote self-directed learning and reduce delays in formative assessment cycles. However, as Zhai et al. (2024) caution, such systems must be carefully calibrated to avoid over-reliance on machine-generated evaluation, which can depersonalise the feedback process if not complemented with human insight.

3.3 Perceptions and attitudes toward AI

Supervisors' perceptions and attitudes toward AI tools significantly influence their readiness to adopt such technologies in postgraduate supervision. While several supervisors viewed AI as a complementary resource that enhances efficiency and support, others expressed caution, highlighting concerns about academic integrity, ethical risks, and institutional preparedness. Participant 1, who supervises multiple students simultaneously, regarded AI as a helpful assistant in managing feedback more efficiently: "*I see AI as a valuable assistant; it helps me speed up the initial feedback process, especially when I have several students submitting drafts at the same time.*" Similarly, Participant 5 reflected positively on the role of AI in refining research focus and streamlining supervision: "*Using AI to help identify relevant literature or refine students' research questions has made supervision more focused and efficient. It is like having a co-pilot.*" Participant 12 appreciated AI's potential in supporting individualised student needs, especially in academic writing: "*With AI, I can tailor support for each student's writing needs. It does not replace my input, but it certainly helps in scaffolding their progress.*" However, not all supervisors shared the same level of enthusiasm. Participant 3 expressed concern about students becoming overly dependent on AI, potentially undermining the development of critical thinking skills: "*My concern is that students might start leaning too heavily on AI tools and bypass the critical thinking process entirely. That would be detrimental to their learning.*" Participant 10 voiced hesitation around the lack of clear institutional policies, particularly regarding ethical use and plagiarism: "*I am hesitant to promote AI tools until there is a clear policy on*

academic integrity and plagiarism. The line between assistance and misconduct is blurry." In addition, Participant 4 raised issues around data privacy and institutional readiness, noting the absence of structured guidance on responsible AI use: "*We have not had any proper training on how to use these tools responsibly. I worry about data privacy and what happens to students' work once it goes into the system.*"

Participants 1 and 5 characterised AI as a supportive co-facilitator in managing extensive supervision loads, refining research questions, and streamlining the feedback process. These positive attitudes are consistent with findings by Tan et al. (2024), who argue that AI can mitigate administrative and cognitive burdens on educators by automating repetitive tasks and enhancing decision-making processes. When AI is conceptualised as a co-pilot or assistant, as articulated by Participant 5, supervisors are more inclined to perceive it as an augmentative rather than a substitutive force (Spring et al., 2022). Participant 12 further emphasised AI's capability to personalise feedback and scaffold student writing, reflecting a belief in AI as a tool for personalised learning, a notion widely supported in the literature. According to Tan et al. (2024), AI technologies can facilitate adaptive learning experiences that respond to the individual needs of students, thereby meaningfully complementing human supervision.

However, this optimism is tempered by concerns expressed by others. For instance, Participant 3 expressed apprehension regarding over-reliance on AI and its potential to undermine critical thinking. This concern aligns with the warning from Delello et al. (2025), who caution that while AI can streamline learning, it risks fostering superficial engagement with content if not critically mediated by educators. Participant 10's reservations about institutional unpreparedness and ethical ambiguity highlight a significant challenge: the absence of clear guidelines governing the use of AI in higher education. This uncertainty may impede adoption, as supervisors remain uncertain about how to address issues such as plagiarism, authorship, and the ambiguous boundaries between support and misconduct (Memarian & Doleck, 2023). Participant 10's advocacy for institutional policy resonates with Nguyen et al. (2023), who argue that successful integration of AI in academia must be supported by robust ethical frameworks and institutional support systems. Moreover, Participant 4's concerns regarding data privacy and responsible use draw attention to an often-overlooked aspect of AI deployment: the governance of student data. As Mienye and Swart (2025) contend, the collection and processing of student-generated data raise serious concerns regarding consent, transparency, and surveillance in educational settings. Without structured guidance or training, supervisors may hesitate to engage with AI tools that could jeopardise academic freedom or students' intellectual property.

3.4 Institutional support and resources

Participants indicate that institutional support plays a pivotal role in shaping supervisors' readiness to integrate AI tools into postgraduate supervision. The availability of resources, structured training, and clear frameworks significantly influences how confident and prepared supervisors feel. Participant 11 emphasised that access to institutional AI tools instils confidence

in both supervisors and students: "*Our university has made AI tools like Grammarly and Turnitin available, and that kind of institutional backing makes it easier for me to introduce these tools to my students with confidence.*" Participant 9 highlighted the importance of consistent encouragement and hands-on learning opportunities provided by the institution: "*We are constantly encouraged to explore digital innovations, and the institution provides regular workshops on tools like ChatGPT. That support really boosts my confidence in using AI effectively.*" From a structural and departmental level, Participant 6 appreciated the integration of digital literacy within the supervision framework, describing it as a key factor in their preparedness: "*I feel more prepared because our department integrates digital literacy and AI awareness into our postgraduate supervision strategy. That kind of systemic support matters.*" On the other hand, Participant 14 expressed concern about the absence of formal guidance from the institution, stressing the burden placed on individual supervisors: "*If the institution does not create a clear framework for AI use in supervision, it puts too much responsibility on individual supervisors to figure it out on their own.*"

The data highlights that access to technological tools alone is insufficient; what truly enhances readiness is a comprehensive, systemic framework that includes training, policy guidance, and a culture of innovation. Participant 11 credited their confidence in adopting AI tools to the availability of institutional resources such as Grammarly and Turnitin. Although these tools are not generative AI in the strictest sense, they illustrate how institutional endorsement lends credibility to the use of AI in supervision. This finding aligns with those of Zawacki-Richter et al. (2019), who emphasise that when AI tools are institutionally sanctioned, supervisors feel more secure regarding their legitimacy and pedagogical appropriateness. The endorsement of tools by universities indicates that such technologies have passed ethical and academic scrutiny, thereby reducing the risk for individual supervisors. Participant 9's reference to hands-on workshops and encouragement to explore innovations underscores the importance of ongoing professional development.

As Chan and Hu (2023) argue, the effective integration of AI in higher education depends not only on the availability of tools but also on the surrounding training ecosystem. Institutional readiness, therefore, must encompass consistent investment in capacity-building initiatives that assist academic staff in developing competence and confidence. Participant 6's experience with digital literacy embedded within departmental frameworks highlights the value of aligning AI integration with broader curricular and strategic priorities. Tan et al. (2016) stress that the systemic incorporation of digital and AI literacy in academic programmes ensures that both supervisors and students operate within a coherent, future-oriented educational vision. This proactive institutional stance fosters a shared culture of AI engagement, rather than relegating it to isolated initiatives or tech-savvy individuals. However, Participant 14's concern regarding the absence of clear institutional guidance underscores a critical gap. Without formal policies or frameworks, the burden of AI integration disproportionately falls on individual supervisors, leading to inconsistencies in usage and potentially conflicting interpretations of academic

integrity. This concern is echoed in Akgun and Greenhow (2022), who argue that institutions must take responsibility for the ethical, pedagogical, and technical implications of AI, rather than simply delegating them to frontline educators. Furthermore, Makore (2024) highlights the risk of creating technological patchworks when AI adoption is left to individual experimentation. In such contexts, some supervisors may thrive while others remain disengaged, resulting in uneven learning experiences for students.

3.5 Technological literacy and familiarity

Technological literacy and familiarity emerged as significant factors influencing supervisors' readiness to integrate AI tools into postgraduate supervision. Supervisors with prior experience using digital tools or those from technology-driven disciplines expressed greater confidence and enthusiasm regarding AI integration. Conversely, those with limited digital exposure or competing professional responsibilities reported feelings of apprehension and resistance. Participant 13, an interdisciplinary supervisor, expressed comfort with AI integration due to their existing familiarity with digital tools: "*Because I already use Turnitin and some basic data analysis software in my supervision process, I find the idea of integrating AI tools quite natural. I see it as an extension or advancement of what I am already doing.*" Similarly, Participant 15, from a Computer Science background, highlighted how their discipline fosters technological confidence: "*I come from a Computer Science background, so I am quite familiar with digital innovations and operations. AI does not intimidate me; I see it as an opportunity to improve supervision efficiency.*" Participant 4, a STEM supervisor, attributed readiness to generational familiarity and discipline-specific exposure to technological change: "*The younger generation of supervisors, especially in STEM fields, are generally more open to using technology. We have grown alongside it. For us, incorporating AI feels more like an evolution than a disruption.*" In contrast, supervisors from non-technical disciplines expressed discomfort and concern. Participant 8, from the humanities, described feeling overwhelmed by digital tools: "*To be honest, I am from a humanities background, and I have never been comfortable with digital tools beyond email and Word. The idea of using AI in supervision is quite overwhelming. I am not familiar with it.*" For Participant 14, the challenge was not a lack of awareness but a lack of time and capacity to learn new systems amid existing responsibilities: "*It is not that I do not see the value of AI, but I just do not have the time to learn another tool right now. Between teaching, admin, and supervision, it feels like an extra burden.*" Finally, Participant 2 raised philosophical and relational concerns, emphasising a fear of losing meaningful human interaction in the supervisory process: "*There is a fear of the unknown. Some of us worry that relying on AI might compromise the depth of human interaction that is essential in postgraduate supervision.*"

Participant 13's reflection that AI is a "natural extension" of tools such as Turnitin and data analysis software illustrates how familiarity breeds confidence. This aligns with Zawacki-Richter et al. (2019), who argue that prior engagement with educational technologies fosters a positive disposition towards adopting new tools. For such supervisors, AI is not a radical departure but an enhancement of current practices, which Collins et al. (2021) describe as technology-

enhanced learning ecosystems. Similarly, Participants 15 and 4, both from Computer Science and STEM backgrounds, emphasised how disciplinary training and generational exposure to digital environments create a culture of technological adaptability. Their readiness reflects the argument made by Malik et al. (2023) that digital natives and those in computational disciplines are more likely to embrace emerging technologies due to the alignment between their workflows and AI's functionalities, such as automation, modelling, and data analysis.

However, supervisors in the humanities and non-technical fields presented a contrasting view. Participant 8's comment about struggling beyond basic tools such as email or Word reveals a technological literacy divide, a barrier also noted by Rioseco-Pais et al. (2024), who caution against assuming uniform digital competence across academia. This divide not only affects AI adoption but also risks exacerbating inequalities in pedagogical innovation. Participant 14's perspective adds a pragmatic dimension to this barrier, which is not rooted in resistance but in time and capacity constraints. The competing demands of teaching, administration, and supervision often make professional upskilling seem burdensome. This is consistent with Kaputa et al. (2022), who emphasise that digital transformation in higher education is not just a technological issue but also a matter of institutional support and workload management. Participant 2's philosophical concern about AI undermining human interaction touches on a relational and pedagogical dilemma. The fear that AI might depersonalise supervision or reduce the richness of mentorship aligns with critiques by Zhai et al. (2024), who warn against the depersonalisation of education in the face of automation. In supervision, a process rooted in trust, dialogue, and intellectual growth, this concern cannot be overlooked.

3.6 Workload and time constraints

The data revealed that one of the key factors influencing supervisors' readiness to integrate AI tools into postgraduate supervision is the constraint of time and their existing workload. Many supervisors recognise the potential benefits of AI in alleviating certain aspects of their responsibilities; however, the significant demands of teaching, research, and administrative duties permit little opportunity to explore or adopt new technologies. Participant 11 emphasised how their multifaceted academic responsibilities significantly hinder their ability to engage with new technologies: "*I have back-to-back responsibilities such as teaching, administration, and supervision, which affect my readiness for the adoption and integration of AI tools into my students' supervision. Honestly, I do not have the time to explore or learn how AI tools work, even if they might help in the long run.*" Similarly, Participant 1 noted that while the promise of AI for automating feedback is appealing, the time investment required to learn a new system is a major barrier: "*The idea of AI sounds promising, especially for feedback automation, but learning a new system takes time I just do not have right now.*" Participant 12 shared comparable sentiments, recognising the potential of AI tools but expressing concern about the learning curve amidst their current commitments: "*I think AI could reduce my marking load or help with literature suggestions, but the initial learning curve feels overwhelming considering my current workload.*" Participant 7 echoed the general sense of overload experienced by

supervisors, suggesting that AI adoption currently feels more like an additional burden than a solution: "*We are already overloaded. Adding AI training on top of everything else feels like another task rather than a solution.*" Participant 14 pointed out that institutional support must go beyond training and include schedule adjustments if AI is to be realistically integrated into supervisory practices: "*If institutions really want us to use AI, they need to make space in our schedules. As it stands, we are too stretched to take on anything new.*"

Participant 11's reflection encapsulates a prevalent reality in higher education: supervisors are overextended across teaching, research, and administration. The tension between these responsibilities mirrors findings by Rasool et al. (2022), who argue that academic workloads are increasingly fragmented and intense, leaving little time for professional upskilling or technological experimentation. For many supervisors, the adoption of artificial intelligence (AI) is not a matter of resistance to innovation but rather a consequence of limited temporal bandwidth. The comments from Participant 1 and Participant 12 highlight the paradox of technological adoption. AI is perceived as a tool that could ultimately reduce workload (e.g., automating feedback, generating literature suggestions), yet the initial investment of time required to learn and adapt creates a barrier to adoption.

This challenge is echoed in Weller's (2020) critique of innovation in academia, wherein technological tools are often introduced without sufficient time or structural support for their integration. Participant 7's observation that AI feels like "another task" rather than a solution reinforces this notion. When innovations are imposed without alleviating existing obligations, they risk being perceived as additional burdens, regardless of their long-term value. Furthermore, the concern raised by Participant 14 regarding institutional support signals a systemic issue. Institutional ambitions for AI-enhanced supervision must be matched with structural changes, such as workload reallocation, dedicated training time, or even incentivised professional development. This aligns with Zawacki-Richter et al. (2019), who emphasise that AI readiness in higher education must be supported through strategic leadership, policy alignment, and capacity-building initiatives. Without such efforts, individual readiness will remain limited, and AI tools will likely remain underutilised despite their potential.

4. Conclusions

Drawing explicitly from the empirical findings of this study, the following conclusions are proposed. Supervisors' readiness to integrate artificial intelligence (AI) is uneven and dependent on discipline. The findings indicate that this readiness is significantly influenced by disciplinary orientation. Supervisors within STEM and technically oriented disciplines exhibit higher levels of readiness, primarily because AI tools are already embedded in their research workflows and epistemic traditions. In contrast, supervisors in the humanities and social sciences display a more cautious engagement, rooted in concerns regarding interpretive depth, originality, critical

thinking, and epistemological integrity. This confirms that readiness is not a generic competency but is mediated by disciplinary norms and knowledge practices.

AI integration is already occurring, albeit at differentiated levels of complexity. Evidence from the findings illustrates that supervisors are engaging with AI tools along a continuum. At the foundational level, tools such as Turnitin and Grammarly are widely normalised and incorporated into routine supervision practices. More advanced engagement, including the utilisation of tools such as Elicit and Scite for literature development and research framing, is emerging but remains inconsistent. This suggests that readiness manifests not as full adoption or rejection, but as incremental and layered engagement shaped by familiarity and perceived usefulness. Supervisors largely conceptualise AI as an augmentative rather than substitutive force. Across disciplines, supervisors consistently position AI as a support mechanism rather than a replacement for human supervision. The findings indicate that AI is valued for its capacity to reduce administrative burdens, support early-stage writing and literature work, and enhance efficiency, while core supervisory functions such as intellectual mentoring, ethical judgement, and epistemic guidance remain firmly centred on human input. This framing is central to supervisors' willingness to engage with AI.

Perceptions of artificial intelligence (AI) are influenced by ethical uncertainties and concerns regarding excessive reliance on technology. While several supervisors conveyed optimism about the pedagogical potential of AI, the findings also reveal enduring anxieties surrounding academic integrity, student dependency, data privacy, and the ambiguities between assistance and misconduct. These concerns restrict readiness, particularly in the absence of clear institutional guidance. Consequently, supervisors' attitudes towards AI are ambivalent, reflecting both opportunities and risks rather than outright resistance. Institutional support emerges as a critical enabler of readiness. The findings clearly indicate that supervisors operating within institutions that offer access to approved AI tools, structured training, and explicit policy frameworks report increased confidence and willingness to integrate AI into their supervisory practices. In contrast, in the absence of institutional guidance, supervisors encounter uncertainty and bear the ethical and practical burdens individually. Readiness is thus not solely an individual attribute but is profoundly contingent upon institutional culture, leadership, and infrastructure.

Technological literacy and workload pressures significantly influence readiness. Supervisors with prior digital exposure exhibit greater confidence and openness towards AI integration, while those with limited technological familiarity express anxiety and resistance. However, even technologically adept supervisors acknowledge that workload and time constraints serve as major barriers. The findings suggest that readiness is weakened when the adoption of AI is introduced without corresponding adjustments to workload or provisions for protected time for learning. This study concludes that supervisors' readiness to integrate AI into postgraduate supervision is contingent rather than static. It is shaped by the intersection of disciplinary epistemologies, technological familiarity, ethical positioning, institutional support, and workload

realities. Effective integration of AI in postgraduate supervision thus necessitates systemic, context-sensitive approaches rather than one-size-fits-all solutions.

4.1 Recommendations

The study recommends that higher education institutions implement ongoing, discipline-sensitive professional development programmes that equip supervisors with AI competencies in ways that respect and enhance their existing research traditions. Such initiatives carry significant social implications, as they can reduce disparities between supervisors who are digitally confident and those who feel marginalised by rapid technological change. Tailored training, coordinated by academic development units in collaboration with universities, can help ensure that supervisors across different age groups, backgrounds, and disciplines benefit equitably from AI-enhanced supervision practices.

Embedding ethical, inclusive, and socially responsible AI literacy within these programmes can further support supervisors in navigating issues of authorship, academic integrity, and student dependency. These efforts have practical implications for improving the quality of postgraduate supervision by strengthening supervisors' ability to provide consistent, timely, and pedagogically sound feedback. Institutions should also foster interdisciplinary dialogue through communities of practice, workshops, and structured forums where supervisors can collectively reflect on challenges, share experiences, and exchange strategies. Such platforms not only support the practical development of AI skills but also promote a reflective academic culture that enhances collegiality, reduces isolation, and bridges disciplinary divides in AI adoption.

At the institutional level, university leadership, together with research, legal, and ethics offices, should develop comprehensive policies governing AI use in postgraduate supervision. Clear guidelines on academic integrity, authorship, privacy, and responsible usage will ensure that both supervisors and students operate within safe and transparent boundaries. The social implication of robust policy frameworks lies in building trust within the academic community, ensuring that AI adoption does not inadvertently compromise equity, fairness, or intellectual integrity. Practically, these policies will support consistent decision-making across departments and reduce the burden on individual supervisors to interpret ethical grey areas independently.

Institutions should also invest in academically vetted AI tools and integrate them into existing digital ecosystems. ICT departments, in collaboration with relevant academic units, should ensure that supervisors have access to reliable tools and ongoing technical support. This investment has clear practical benefits, such as improving efficiency in feedback provision, supporting data management, and enhancing the overall supervision experience for both supervisors and students. Additionally, institutions should implement monitoring and evaluation mechanisms to assess the impact of AI on supervision practices. Feedback gathered from supervisors and students can guide iterative improvements to tools, training, and policy

frameworks, ensuring that AI integration remains sustainable, ethically sound, and pedagogically meaningful.

Based on the study, the following recommendations for further inquiry are proposed: Future research could investigate how discipline-specific pedagogical values and epistemologies influence supervisors' adoption and critical engagement with AI tools in postgraduate supervision. Additional studies could examine the effectiveness of institutional frameworks, such as training programmes and policy support, in enhancing supervisors' digital literacy and ethical preparedness for AI integration.

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References

Adewale, M. D., Azeta, A., Abayomi-Alli, A., & Sambo-Magaji, A. (2024). Impact of artificial intelligence adoption on students' academic performance in open and distance learning: A systematic literature review. *Heliyon, 10*, 1–19. https://doi.org/10.1016/j.heliyon.2024.e40025

Akgun, S., & Greenhow, C. (2022). Artificial intelligence in education: Addressing ethical challenges in K-12 settings. *AI and Ethics, 2*(3), 431–440. https://doi.org/10.1007/s43681-021-00096-7

Babbie, E. R. (2020). *The practice of social research* (15th ed.). Cengage Learning.

Balalle, H., & Pannilage, S. (2025). Reassessing academic integrity in the age of AI: A systematic literature review on AI and academic integrity. *Social Sciences & Humanities Open, 11*, 1–12. https://doi.org/10.1016/j.ssaho.2025.101299

Bayly-Castaneda, K., Ramirez-Montoya, M. S., & Morita-Alexander, A. (2024). Crafting personalised learning paths with AI for lifelong learning: A systematic literature review. *Frontiers in Education, 9*, 1–12. https://doi.org/10.3389/feduc.2024.1424386

Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology, 3*(2), 77–101. https://doi.org/10.1191/1478088706qp063oa

Chan, C. K. Y., & Hu, W. (2023). Students' voices on generative AI: Perceptions, benefits, and challenges in higher education. *International Journal of Educational Technology in Higher Education, 20*(1), 1–18. https://doi.org/10.1186/s41239-023-00411-8

Collins, C., Dennehy, D., Conboy, K., & Mikalef, P. (2021). Artificial intelligence in information systems research: A systematic literature review and research agenda. *International Journal of Information Management, 60*, 1–17. https://doi.org/10.1016/j.ijinfomgt.2021.102383

Creswell, J. W., & Poth, C. N. (2016). *Qualitative inquiry and research design: Choosing among five approaches* (4th ed.). Sage.

Dakakni, D., & Safa, N. (2023). Artificial intelligence in the L2 classroom: Implications and challenges on ethics and equity in higher education: A 21st-century Pandora's box. *Computers and Education: Artificial Intelligence, 5*, 1–10. https://doi.org/10.1016/j.caeai.2023.100179

Delello, J. A., Sung, W., Mokhtari, K., Hebert, J., Bronson, A., & De Giuseppe, T. (2025). AI in the classroom: Insights from educators on usage, challenges, and mental health. *Education Sciences, 15*(2), 1–27. https://doi.org/10.3390/educsci15020113

Fu, Y., & Weng, Z. (2024). Navigating the ethical terrain of AI in education: A systematic review on framing responsible human-centred AI practices. *Computers and Education: Artificial Intelligence, 7*, 1–20. https://doi.org/10.1016/j.caeai.2024.100306

Kamalov, F., Santandreu Calonge, D., & Gurrib, I. (2023). New era of artificial intelligence in education: Towards a sustainable multifaceted revolution. *Sustainability, 15*(16), 1–27. https://doi.org/10.3390/su151612451

Kaputa, V., Loučanová, E., & Tejerina-Gaite, F. A. (2022). Digital transformation in higher education institutions as a driver of socially oriented innovations. In *Social innovation in higher education* (pp. 81–85). Springer. https://doi.org/10.1007/978-3-030-84044-0_4

Kassa, B. Y., & Worku, E. K. (2025). The impact of artificial intelligence on organizational performance: The mediating role of employee productivity. *Journal of Open Innovation: Technology, Market, and Complexity, 11*, 1–17. https://doi.org/10.1016/j.joitmc.2025.100474

Lee, D., Arnold, M., Srivastava, A., Plastow, K., Strelan, P., Ploeckl, F., ... & Palmer, E. (2024). The impact of generative AI on higher education learning and teaching: A study of educators' perspectives. *Computers and Education: Artificial Intelligence, 6*, 1–10. https://doi.org/10.1016/j.caeai.2024.100221

Lincoln, Y. S., Lynham, S. A., & Guba, E. G. (2011). Paradigmatic controversies, contradictions, and emerging confluences, revisited. In N. K. Denzin & Y. S. Lincoln (Eds.), *The Sage handbook of qualitative research* (4th ed., pp. 97–128). Sage.

Malik, A. R., Pratiwi, Y., Andajani, K., Numertayasa, I. W., Suharti, S., & Darwis, A. (2023). Exploring artificial intelligence in academic essay: Higher education students' perspective. *International Journal of Educational Research Open, 5*, 1–11. https://doi.org/10.1016/j.ijedro.2023.100296

Makore, S. T. (2024). Regulating artificial intelligence to advance financial inclusion in South Africa. *Potchefstroom Electronic Law Journal (PELJ), 27*(1), 1–35. https://doi.org/10.17159/1727-3781/2024/v27i0a17488

Memarian, B., & Doleck, T. (2023). Fairness, accountability, transparency, and ethics (FATE) in artificial intelligence (AI) and higher education: A systematic review. *Computers and Education: Artificial Intelligence, 5*, 1–12. https://doi.org/10.1016/j.caeai.2023.100152

Mienye, I. D., & Swart, T. G. (2025). ChatGPT in education: A review of ethical challenges and approaches to enhancing transparency and privacy. *Procedia Computer Science, 254*, 181–190. https://doi.org/10.1016/j.procs.2025.01.022

Mulenga, R., & Shilongo, H. (2024). Academic integrity in higher education: Understanding and addressing plagiarism. *Acta Pedagogia Asiana, 3*(1), 30–43. https://doi.org/10.53623/apga.v3i1.337

Nguyen, A., Kremantzis, M., Essien, A., Petrounias, I., & Hosseini, S. (2024). Enhancing student engagement through artificial intelligence (AI): Understanding the basics, opportunities, and challenges. *Journal of University Teaching and Learning Practice*, *21*(6), 1-13.

Nguyen, A., Ngo, H. N., Hong, Y., Dang, B., & Nguyen, B. P. T. (2023). Ethical principles for artificial intelligence in education. *Education and Information Technologies, 28*(4), 4221–4241. https://doi.org/10.1007/s10639-022-11316-w

Nouri, J., Zhang, L., Mannila, L., & Norén, E. (2020). Development of computational thinking, digital competence and 21st century skills when learning programming in K–9. *Education Inquiry, 11*(1), 1–17. https://doi.org/10.1080/20004508.2019.1627844

Omodan, B. I. (2025). Redefining the role of supervisors in the era of artificial intelligence: Implications for hybrid postgraduate research governance. *Cogent Education, 12*(1), 1–16. https://doi.org/10.1080/2331186X.2025.2536534

Patton, M. Q. (2015). *Qualitative research & evaluation methods* (4th ed.). Sage.

Rasool, T., Warraich, N. F., & Sajid, M. (2022). Examining the impact of technology overload at the workplace: A systematic review. *Sage Open, 12*(3), 1–18. https://doi.org/10.1177/21582440221114320

Rasul, T., Nair, S., Kalendra, D., Balaji, M. S., de Oliveira Santini, F., Ladeira, W. J., ... & Hossain, M. U. (2024). Enhancing academic integrity among students in the GenAI era: A holistic framework. *The International Journal of Management Education, 22*(3), 1–14. https://doi.org/10.1016/j.ijme.2024.101041

Rioseco-Pais, M., Silva-Quiroz, J., & Vargas-Vitoria, R. (2024). Digital competences and years of access to technologies among Chilean university students: An analysis based on the DIGCOMP framework. *Sustainability, 16*(22), 1–14. https://doi.org/10.3390/su16229876

Sehmi, A., Sarfraz, I., & Hussain, M. (2025). Generative artificial intelligence's integration for data analysis in conducting academic research: Understanding the perspective of research supervisors. *Journal of Advanced Academics, 36*(4), 788–815. https://doi.org/10.1177/1932202X251365312

Selten, F., & Klievink, B. (2024). Organising public sector AI adoption: Navigating between separation and integration. *Government Information Quarterly, 41*(1), 1–14. https://doi.org/10.1016/j.giq.2023.101885

Spring, M., Faulconbridge, J., & Sarwar, A. (2022). How information technology automates and augments processes: Insights from artificial-intelligence-based systems in

professional service operations. *Journal of Operations Management, 68*(6–7), 592–618. https://doi.org/10.1002/joom.1215

Tan, X., Cheng, G., & Ling, M. H. (2024). Artificial intelligence in teaching and teacher professional development: A systematic review. *Computers and Education: Artificial Intelligence, 8*, 1–19. https://doi.org/10.1016/j.caeai.2024.100355

Tisdell, E. J., Merriam, S. B., & Stuckey-Peyrot, H. L. (2025). *Qualitative research: A guide to design and implementation.* John Wiley & Sons.

Uren, V., & Edwards, J. S. (2023). Technology readiness and the organisational journey towards AI adoption: An empirical study. *International Journal of Information Management, 68*, 1–12. https://doi.org/10.1016/j.ijinfomgt.2022.102588

Weller, M. (2020). *25 years of ed tech.* Athabasca University Press.

Yadav, D. (2024). The role of artificial intelligence in literary analysis: A computational approach to understand literary styles. *International Journal of Emerging Knowledge Studies, 3*(9), 558–565. https://doi.org/10.70333/ijeks-03-09-006

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

Zhai, C., Wibowo, S., & Li, L. D. (2024). The effects of over-reliance on AI dialogue systems on students' cognitive abilities: A systematic review. *Smart Learning Environments, 11*(1), 1–37. https://doi.org/10.1186/s40561-024-00316-7