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THE USE OF ARTIFICIAL INTELLIGENCE IN SUPERVISING MASTER'S DISSERTATIONS AND DOCTORAL THESES

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ABSTRACT

Generative artificial intelligence (AI) is gradually transforming the supervision of master's dissertations and doctoral theses in higher education. Although it creates new opportunities for supporting students, it also raises questions about academic integrity, research quality, and the role of academic staff. This study examines the uses, perceptions, and implications of AI in dissertation and thesis supervision in Francophone African universities. An interpretive qualitative approach was adopted, drawing on semi-structured interviews with 42 participants (18 academic supervisors, 12 doctoral candidates, and 12 master's students) from four public universities. Data were examined using Braun and Clarke's thematic analysis. The findings show that AI is used primarily for literature searches, research problem formulation, academic writing, and methodological support. Participants highlighted time savings, improved writing quality, and greater student autonomy, while also identifying risks such as hallucinations, fabricated references, and cognitive dependence. The study proposes a Hybrid AI-Assisted Supervision Model (MEHIA, its French acronym) and recommends institutional policies that promote the ethical and responsible use of these technologies.

Keywords: Artificial Intelligence; Academic Supervision; Master's Dissertation; Doctoral Thesis; Qualitative Research

1 INTRODUCTION

Higher education has undergone profound changes in recent years as digital technologies have become widely embedded in teaching, research, and assessment. This transformation has accelerated with the emergence of publicly accessible generative artificial intelligence (AI) tools, including ChatGPT, Gemini, Copilot, Claude, and Perplexity, which create new possibilities for producing, disseminating, and using research knowledge. In academic research, these technologies are gradually reshaping the practices involved in preparing master's dissertations and doctoral theses. They can support several stages of the research process: selecting a topic, developing a research problem, searching the literature, synthesising previous studies, improving writing, translating academic texts, analysing data, and preparing research presentations. For students, AI therefore provides assistance with certain methodological and writing tasks. It is also transforming supervisors' practices by offering new ways to support students, monitor progress, and improve research outputs. However, integrating AI into academic supervision raises several questions. Although these tools may

improve research efficiency, they also pose risks involving unreliable information, fabricated bibliographic references, algorithmic bias, technological dependence, and academic integrity. Uncritical use could restrict students' intellectual autonomy and compromise research quality. These issues are particularly salient in Francophone African universities, where AI use is expanding rapidly while institutional frameworks remain underdeveloped. Few institutions have policies specifying the conditions under which these technologies may be used in academic work, the responsibilities of those involved, or the assessment of AI-assisted outputs. Practices consequently often depend on individual initiatives.

Although recent literature extensively examines the educational potential of AI, research specifically addressing its role in dissertation and thesis supervision remains limited, particularly in Francophone Africa. Few studies jointly investigate the perceptions and practices of academic staff and students, despite their central roles in research supervision. Against this background, this study examines AI use in dissertation and thesis supervision in Francophone African universities. It pursues four objectives: to identify current AI uses at different stages of research support; to analyse the benefits perceived by academic staff and students; to identify the associated risks and challenges; and to propose directions for the responsible integration of these technologies into academic supervision.

To address these objectives, the study adopts a qualitative approach based on semi-structured interviews with academic staff, master's students, and doctoral candidates from several Francophone African universities. The data were subjected to thematic analysis to understand participants' practices, perceptions, and expectations. The study has both scholarly and practical relevance. It contributes to understanding how academic supervision is changing in the age of AI and offers guidance for higher education institutions seeking to develop strategies for ethical, critical, and responsible technology use while safeguarding academic integrity and the fundamental requirements of research training.

2 LITERATURE REVIEW

2.1 Foundations of dissertation and thesis supervision

- Dissertation and thesis supervision is central to research training. It extends beyond administrative oversight to encompass intellectual, methodological, and relational support through which novice researchers gradually develop research autonomy.
- According to Lee (2008), doctoral supervision comprises several complementary dimensions: transmitting disciplinary knowledge, developing research skills, providing psychosocial support, integrating candidates into the research community, and developing researcher identity. The author emphasises that supervisors are not merely assessors but also mentors supporting doctoral candidates' professional development.
- From this perspective, Boud and Lee (2005) conceptualise supervision as a setting for social learning in which doctoral candidates gradually acquire the norms, practices, and values of the research community. The supervisor–student relationship thus becomes a process of academic socialisation.
- For De Ketele (2010), effective academic supervision integrates three principal functions: guidance, training, and assessment. Supervisors must help students master methodological tools while developing their capacity for critical analysis.
- In African contexts, particularly in universities experiencing rapid enrolment growth, Mouton (2001) and Cloete et al. (2015) identify several challenges to doctoral supervision: excessive academic workloads, insufficient individual support, limited access to scholarly resources, and prolonged thesis completion times.
- New assistive technologies therefore offer a possible response to existing constraints on research supervision.

2.2 Artificial intelligence as a tool for cognitive mediation in learning

AI in education forms part of a long history of educational technology development. According to Luckin (2018), educational AI aims to create environments that adapt learning to individual learners' needs. Rather than replacing teachers, it acts as a support system that enables greater personalisation.

Similarly, Holmes et al. (2019) argue that AI profoundly reshapes the traditional roles of educational stakeholders. Teachers increasingly design learning experiences and support intellectual development.

For Woolf (2009), intelligent systems can serve as "artificial tutors" that provide immediate feedback, identify learning difficulties, and recommend appropriate resources.

These approaches align with Hutchins's (1995) theory of distributed cognition, which holds that human intellectual activity involves interactions between individuals, tools, and the environment. From this perspective, AI becomes a cognitive instrument that extends researchers' capabilities.

2.3 Generative artificial intelligence and support for novice researchers

The emergence of generative models such as ChatGPT has renewed debate about AI use in higher education. According to Kasneci et al. (2023), large language models can support several academic activities, including explaining complex concepts, generating ideas, improving writing, and providing methodological assistance.

However, the authors emphasise that these tools should function as cognitive assistants rather than substitutes for human scholarly reasoning.

In academic research, Dai et al. (2023) show that ChatGPT influences postgraduate supervision practices. Their study identifies several positive AI functions: functional support for research tasks, increased autonomy, support for critical thinking, and improved interactions between students and supervisors.

Likewise, Cowling et al. (2023) examine ChatGPT use in undergraduate and postgraduate research supervision. They show that AI can enhance student autonomy, facilitate access to scholarly resources, and improve supervisory efficiency, while requiring institutional support.

More recently, Lai et al. (2025) show that generative AI use changes relationships among doctoral candidates, peers, and supervisors. Drawing on activity theory, they explain that AI becomes a new mediating element within the doctoral training system, reshaping collaboration and supervision practices.

2.4 AI support across the stages of dissertation and thesis preparation

The literature review is an essential yet complex stage for student researchers. According to Booth et al. (2016), it requires the ability to identify, select, analyse, and synthesise existing research.

Generative AI now creates new possibilities. Kumar and Gunn (2025) show that doctoral candidates use AI to explore scholarly literature rapidly, identify key concepts, and organise literature syntheses. However, they stress that human validation of the information generated remains necessary.

According to Creswell and Creswell (2023), research quality depends substantially on alignment among the research problem, theoretical framework, data collection methods, and analytical techniques.

AI can support researchers in formulating research questions, developing data collection instruments, and understanding statistical methods. However, Selwyn (2019) cautions against allowing educational technologies to automate pedagogical decisions excessively.

For Hyland (2009), academic writing is a complex competence that requires mastery of the discourse conventions of particular scholarly communities.

AI tools can improve textual coherence, language accuracy, and argument structure. They cannot, however, replace the intellectual work of conceptualisation and scholarly interpretation.

2.5 Limitations and ethical issues in AI-assisted supervision

Despite its advantages, AI use in research raises several concerns.

According to Floridi and Cowls (2019), responsible AI should uphold five principles: beneficence, non-maleficence, autonomy, justice, and explicability.

In higher education, Miao and Holmes (2023) identify several risks associated with generative AI: inaccurate information, threats to academic integrity, cognitive dependence, and confidentiality concerns.

Cotton et al. (2024) show that uncontrolled ChatGPT use in academic work can challenge traditional assessment methods and requires pedagogical practices to be reconsidered.

Recent research on doctoral supervision confirms that AI presents both opportunities and challenges. Angelov et al. (2026) show that generative AI requires supervisors to rethink their practices in relation to research integrity, responsibility, and pedagogical relationships with doctoral candidates.

3 METHODOLOGY

3.1 Epistemological positioning

This study is situated within an interpretive paradigm, which views social realities as constructed through individuals' experiences, interactions, and the meanings they attach to their practices (Creswell & Poth, 2018). Its purpose is not to quantify AI use but to understand how academic staff and students perceive, use, and interpret these tools in dissertation and thesis supervision.

This position is particularly appropriate for examining an emerging phenomenon such as the integration of generative AI into academic practices, where uses are still evolving and are strongly influenced by institutional, disciplinary, and cultural contexts.

3.2 Research design

The study adopts an exploratory qualitative approach. This methodological choice reflects the aim of accessing participants' lived experiences, identifying the reasoning underlying their practices, and understanding the scholarly, pedagogical, and ethical issues associated with AI use in academic supervision.

A qualitative approach also captures the diversity of stakeholders' perceptions and provides an in-depth understanding of current changes in academic supervision.

3.3 Study setting

The study was conducted in several public universities in Francophone Africa offering master's and doctoral programmes.

The participating institutions were Université André Salifou in Zinder (Niger), Université Abdou Moumouni in Niamey (Niger), Université Joseph Ki-Zerbo (Burkina Faso), and Université de Lomé (Togo).

These institutions were selected on the basis of several criteria: the gradual expansion of AI use in academic activities, the availability of master's and doctoral programmes, disciplinary diversity, and participant accessibility.

This diversity enables comparison of practices across different Francophone African university contexts.

3.4 Study population and sampling strategy

The study population comprised:

- academic staff supervising master's dissertations or doctoral theses;
- master's students and doctoral candidates using AI tools in their research.

Purposive sampling was used to select participants with relevant experience of the phenomenon under investigation.

The inclusion criteria were as follows:

For academic staff: having supervised at least three master's dissertations or one doctoral thesis, using or being familiar with generative AI tools, and volunteering to participate in the study.

For students: being enrolled in a master's or doctoral programme, using at least one generative AI tool for research, and agreeing to an online interview. A total of 42 participants were selected.

Table 1: Participant profile

Category	Number
Academic staff	18
Doctoral candidates	12
Master's students	12
Total	42

Source: Field survey data, June 2026.

The sample comprised 42 participants: 18 academic staff members, 12 doctoral candidates, and 12 master's students.

3.5 Data collection techniques

Two complementary techniques were employed.

3.5.1 Interview guide

- Interviews constituted the main source of data.
- Each interview lasted between 45 and 70 minutes.
- With participants' consent, the interviews were recorded and subsequently transcribed in full.
- The interview guide covered five main topics: AI uses, perceived benefits, difficulties encountered, ethical issues, and prospects for integrating AI into academic supervision.
- This technique generated rich accounts of participants' personal experiences.

3.5.2 Document analysis

Document analysis complemented the interviews.

The documents examined included academic regulations, dissertation and thesis writing guidelines, doctoral charters, university digital policies, and internal notices on AI use where available.

This triangulation of sources strengthens the credibility of the findings.

3.6 Data analysis

Data were analysed using the thematic analysis approach proposed by Braun and Clarke (2006).

Analysis proceeded through six stages: close reading of the transcripts; initial coding of meaning units; grouping codes into categories; developing themes; reviewing and validating themes; and interpreting the findings in relation to the scholarly literature.

NVivo 14 was used to organise, code, and classify the qualitative data.

The final themes were validated through cross-review by the researchers to strengthen analytical reliability.

4 FINDINGS

Thematic analysis of the 42 interviews identified five main themes characterising AI use in dissertation and thesis supervision: (1) AI uses at different research stages; (2) perceived benefits for students and supervisors; (3) limitations and risks; (4) ethical and institutional issues; and (5) conditions for responsible integration into academic supervision.

4.1 Artificial intelligence use at different research stages

The interviews show that students use AI from the earliest stages of their research projects. Generative tools are primarily used to explore a topic, clarify concepts, formulate a research problem, and develop an initial work plan.

One doctoral candidate explained:

"When I start a research project, I first ask ChatGPT to suggest several analytical perspectives. This helps me organise my ideas before discussing them with my thesis supervisor." (D4)

Academic staff also acknowledged that AI facilitates the initial stages of scholarly thinking, while emphasising that generated suggestions must be discussed and validated through supervision.

"AI helps students start thinking, but it does not replace the scholarly dialogue needed to develop a substantive research problem." (E7)

The analysis also shows that literature searching is among the most frequent uses. Students use AI to identify concepts, summarise articles, and gain a rapid understanding of complex theories. Nevertheless, bibliographic references must still be verified.

4.2 Perceived benefits of artificial intelligence

Participants identified several advantages associated with AI use.

The first benefit was time savings. Students reported that certain previously time-consuming tasks, particularly searching for general information, rephrasing, and language correction, could now be completed much more quickly.

"Something that sometimes took me two days can now be done in an hour. I can then spend more time analysing my findings." (M6)

Academic staff confirmed this perception.

"Students come to supervision meetings better prepared. Discussions focus more on scholarly substance than on writing alone." (E11)

The second benefit concerned writing quality. Participants emphasised that generative tools improve textual fluency, correct language errors, and help rephrase difficult passages.

Doctoral candidates also highlighted assistance with translating research texts into English, which facilitates international publication.

Finally, several academics considered that AI fosters greater student autonomy.

"Students do not have to wait as long for an answer to a methodological difficulty. They come with more precise questions." (E2)

4.3 Limitations and risks of AI use

Despite these benefits, participants reported several important limitations.

The first concerned the reliability of generated information.

Many students reported encountering nonexistent references or incorrectly attributed quotations.

"At first, I trusted the references it suggested. Later, I discovered that some did not exist at all." (D8)

Academic staff regarded this limitation as the principal risk to research quality.

"We now insist that every reference be systematically checked before it is included in a dissertation." (E15)

A second limitation concerned dependence on AI.

Several academics observed that some students use generative tools to produce texts rapidly without substantive scholarly reflection.

"Some students no longer distinguish assistance from substitution. They copy content without understanding it." (E9)

Students themselves acknowledged this risk.

"When you use AI too often, you end up thinking less for yourself." (M4)

Finally, several participants stressed that generated responses often remain generic and insufficiently adapted to African realities or the local specificities of research projects.

4.4 Ethical and institutional issues

Academic integrity emerged as participants' main concern.

Most considered it necessary to distinguish responsible AI use from practices that constitute academic misconduct.

One academic stated:

- *"Using AI to improve your writing style is not a problem. Having it write an entire dissertation, however, goes against academic values." (E5)*
- Students also expressed a need for clearer institutional rules.
- *"We do not always know what is allowed and what is prohibited. Each lecturer seems to have their own position." (D11)*

Several participants regretted the absence of university charters specifying how AI may be used in dissertations and theses.

The confidentiality of research data was also discussed, particularly in studies involving sensitive information.

4.5 Conditions for responsible integration of artificial intelligence

The final theme highlighted several recommendations made by participants.

The first concerned training.

Both academics and students considered that AI use requires new skills.

"Students need training in asking AI good questions, but above all in checking the answers they receive." (E3)

The second recommendation concerned institutional policies.

Participants wanted universities to develop charters specifying permitted uses, transparency requirements, the responsibilities of students and supervisors, and procedures for assessing AI-assisted work.

Finally, most interviewees considered that AI should be treated as a tool that complements human expertise.

As one doctoral candidate summarised:

"AI can speed up research, but it will never replace advice from a good thesis supervisor." (D2)

Overall, the findings show that academic stakeholders perceive AI as a significant opportunity to improve dissertation and thesis supervision, provided its use remains critical, transparent, and guided by clearly defined ethical principles. These findings inform the following discussion, which relates the empirical observations to recent scholarship and proposes a model for responsibly integrating AI into academic supervision.

5 DISCUSSION

This study sought to understand AI use in dissertation and thesis supervision through the perceptions of academic staff and students in Francophone African universities. The findings reveal a gradual adoption of generative AI tools alongside scholarly, pedagogical, and ethical challenges. They suggest that AI constitutes more than a technological innovation or a substitute for intellectual work: it creates a new cognitive environment that reshapes academic supervision practices.

The first major finding concerns the extension of AI use across the research process. Participants reported using these tools to delimit topics, formulate research problems, search the literature, write academic texts, translate, conduct preliminary data analysis, and prepare for oral defences. This diversification aligns with Kasneci et al. (2023), who show that generative models increasingly support the knowledge production cycle. Our findings add an important qualification: in Francophone African universities, AI is also used to compensate for certain structural constraints, including limited access to international scholarly resources, supervisors' excessive workloads, and difficulties accessing digital libraries. AI thus appears to offer a means of reducing some inequalities in access to knowledge.

The second finding concerns the perceived benefits of AI for research productivity. Students primarily emphasised time savings, improved writing, and rapid access to information. Academic staff considered that these tools allow supervision meetings to focus on scholarly and critical issues rather than language and presentation corrections. These observations support Dwivedi et al. (2023), who argue that AI enhances academic productivity when used as an assistive tool. They also align with Zawacki-Richter et al. (2019), who show that AI can support greater personalisation of learning and student autonomy. However, our data indicate that this autonomy remains strongly dependent on users' critical skills.

The third finding concerns the limitations of generative tools. Participants frequently mentioned hallucinations, fabricated bibliographic references, and misinterpretations produced by some models. These observations align with Cotton et al. (2024), who identify information reliability as a major challenge of generative AI in higher education. Responses generated by these systems should not be equated with validated knowledge and must be systematically checked against reliable scholarly sources. Our findings indicate that academic staff are gradually developing supervisory practices that train students to evaluate AI-generated content critically.

The findings also highlight the risk of cognitive dependence. Several academics observed that some students use generative tools as automatic content producers rather than methodological assistants. This tendency echoes the concerns expressed by Selwyn (2024), who argues that automating intellectual tasks may diminish cognitive engagement and the development of critical thinking. However, our study suggests that such dependence is not an inevitable consequence of AI use. Students receiving explicit pedagogical guidance develop a more reflective stance and use AI to support their reasoning rather than replace it.

A major contribution of this study is its examination of ethical issues. The interviews reveal that stakeholders' concerns extend well beyond plagiarism. Participants emphasised transparency, authors' scholarly responsibility, research data confidentiality, and appropriate institutional governance. These findings align with UNESCO's recommendations on responsible AI use in education. They suggest that academic integrity should now be understood as a set of practices promoting transparency, traceability, and critical thinking, rather than merely a mechanism for detecting misconduct.

The study also contributes specifically to understanding the Francophone African context. Whereas much international research has been conducted in European, North American, or Asian universities, the findings presented here show that local conditions strongly influence AI-related issues. Limited access to scholarly resources, supervisory constraints associated with high enrolment, disparities in digital equipment, and the absence of harmonised institutional policies lead stakeholders to develop particular AI uses. In this context, these technologies support research while also revealing the need for investment in digital infrastructure, staff training, and appropriate regulatory frameworks.

Theoretically, the findings support the relevance of the Technology Acceptance Model (TAM). Academics and students are more likely to adopt AI tools when they perceive them as useful for improving efficiency and relatively easy to use. However, our study suggests that this model would benefit from explicitly incorporating an ethical dimension. AI acceptance depends not only on perceived usefulness and ease of use but also on trust in the systems, the transparency of their outputs, and the institutional safeguards governing their use.

The findings also support social constructivist principles. AI does not replace interactions between students and supervisors; it enriches them by facilitating access to information and stimulating reflection. Scholarly exchanges, personalised feedback, and methodological discussions remain central to researcher development. AI therefore functions primarily as a mediator of learning rather than an autonomous supervisory actor.

Based on these findings, we propose a Hybrid AI-Assisted Supervision Model (MEHIA, from the French Modèle d'Encadrement Hybride Assisté par l'Intelligence Artificielle). This model comprises four interdependent components:

- The student, as the principal research actor, uses AI to support learning while retaining intellectual responsibility for the work.
- The supervisor provides scholarly oversight, develops critical thinking, offers methodological guidance, and safeguards academic integrity.
- Artificial intelligence assists with literature searches, writing, translation, organising ideas, and certain methodological tasks.
- The institutional framework ensures responsible AI use through ethical charters, training provision, transparency requirements, and governance policies.

MEHIA is grounded in complementarity. It holds that supervision quality depends on a balance between human expertise, the possibilities offered by AI, and institutional mechanisms that protect the fundamental values of scholarly research. This approach moves beyond a binary choice between accepting and rejecting AI by offering a framework for considered integration that is particularly suited to Francophone African universities.

Finally, this study has several limitations. The limited number of participating universities and the qualitative approach preclude statistical generalisation. The data reflect participants' perceptions, which may change rapidly alongside technological developments. These limitations suggest promising research directions, including cross-country comparisons, mixed-methods studies combining qualitative and quantitative approaches, and longitudinal research examining changes in supervision practices as AI becomes embedded in higher education.

6 CONCLUSION

Generative AI is gradually transforming research and supervision practices in higher education. This study examined the uses, perceptions, and issues associated with AI in dissertation and thesis supervision, drawing on the experiences of academic staff and students from several Francophone African universities.

The findings show that AI is now used throughout the research process. It supports students in formulating research problems, searching the literature, writing academic texts, translating research material, conducting preliminary data analysis, and preparing for oral defences. Academic staff also use these technologies to improve supervision, prepare feedback, and support students' methodological development.

The study identifies several associated benefits. Participants highlighted time savings, improved writing quality, easier access to scholarly information, greater student autonomy, and more effective supervision meetings. In Francophone African universities, where constraints involving scholarly resources, student enrolment, and supervisory workloads remain substantial, AI appears capable of enhancing research efficiency.

However, the findings also reveal several limitations. Hallucinations, fabricated references, algorithmic bias, cognitive dependence, and academic integrity concerns require cautious and critical use. Participants unanimously considered that AI cannot replace scholarly judgement, critical reflection, or the pedagogical guidance provided by dissertation and thesis supervisors.

The study therefore suggests that the future of academic supervision rests neither on systematically rejecting AI nor on delegating intellectual activity excessively to digital tools. Instead, it depends on complementarity between human expertise, generative AI capabilities, and an institutional framework that upholds research integrity.

Theoretically, the study contributes to research on AI integration in higher education by proposing the Hybrid AI-Assisted Supervision Model (MEHIA). This model emphasises the interdependence of four dimensions: the student, the supervisor, generative AI tools, and the institutional framework. It highlights that supervision quality depends on balancing these components and aligning them with transparency, scholarly responsibility, collaboration, and critical thinking.

Beyond its theoretical contribution, the study offers practical value for Francophone African universities undergoing digital transformation. Its findings can inform institutional policies on integrating AI into master's and doctoral programmes while encouraging responsible technology use to support research quality.

STATEMENTS ON COMPLIANCE WITH ETHICAL STANDARDS

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Statement of informed consent

Informed consent was obtained from all individual participants included in the study.

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