REIMAGINING THE POSTGRADUATE SUPERVISION THROUGH TECHNOLOGY-BASED APPROACH: IMPLICATION FOR TIMELY COMPLETION OF POSTGRADUATE STUDIES IN NIGERIA

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Abstract

One of the reasons for the high rate of postgraduate students drop out has been linked to supervisors' inability to attend to their supervisory roles at the record time, steaming from huge amount of fees for the students. The traditional method of postgraduate supervision faces increasing pressure from rising student massification, globalized research demands, often leading to supervisory overload and student attrition. This study therefore explored how the technology-based approach of postgraduate supervision could be utilized for timely completion of postgraduate studies in Nigeria. The research posited that technology can fundamentally shift the supervisory dynamic from reactive problem-solving to proactive, data-driven mentorship. Specifically, LMS offered flexible method of managing, delivering tracking educational progress of the supervisees, technology-based tools processed student engagement, progress markers, and communication patterns which provided early warning systems for supervisors, flagging students at risk of crises of isolation, or dissertation and thesis procrastination long before traditional mechanisms would. This shift enabled timely completion, targeted human intervention, which is crucial for retaining students in their respective programs. Systemic literatures showed a positive contribution of technology-based approach on both students' satisfaction and perceived timely completion of the program. Furthermore, AI-powered tools offered immediate, scalable feedback on lower-order tasks, such as syntax correction, stylistic consistency, and initial literature synthesis, effectively managing the cognitive load on both the supervisors and supervisees. However, the study also highlighted the critical need for ethical management to ensure data privacy, transparency, and equity access, preventing the digital divide amongst supervisors and supervisees. Therefore, the integration of technology-based approach for postgraduate supervision promises to be more efficient, and equitable to postgraduate journey amongst students, significantly boosting research quality and student completion rates.

Keywords: Technology-based approach, Postgraduate supervision, Timely completion

Introduction

Postgraduate supervision is the act of guiding, mentoring students; especially postgraduate students in an institution of higher learning. This process involves supervisors providing academic, professional, and often emotional support to master's and doctoral students in developing independent research skills for choosing researchable topics, critical thinking, and original manuscripts presentation with a means of contributions to knowledge in solving global problem (Kreber 2023). Every postgraduate supervision has an intent for academic success and timely completion of the program.

Academic success is a means of achieving goals, making the learning outcomes visible through positive behavioural change in the learners. Academic success is no longer just a "Pass" mark. In a modern context, academic success includes the student's employability, publication record, and mental well-being throughout the journey. According to Sim, Northcote, and Lim (2023), academic success, including timely completion, high-quality theses, publications, and post-graduation career outcomes. Evidence shows that effective supervision positively predicts research engagement, thriving, and psychological well-being, while poor supervision leads to delays, attrition, and reduced confidence (Sim et al., 2023). For instance, the simplest use of group whatsapp, phone calls can enhance students' engagement and timely completion of their theses and dissertation. Strong supervisory relationship amongst students fosters motivation, progress, and psychological well-being to supervisees.

The overwhelming recognition of postgraduate supervision for academic success has been hampered by the traditional method of supervision mostly used by postgraduate supervisors in Nigerian universities. Traditional supervision methods often follow an apprenticeship mechanism, with one-on-one master-novice relationships emphasizing direct guidance and imitation (Harrison and Grant 2015). These methods prioritize individual intellectual inheritance but can perpetuate hierarchical dynamics and isolation. Enrolment massification of students and distance failed the traditional method of supervision (Sim, Timmermans & Zou 2020). Alhashem, Agha and Mohammad (2022), opined that the ratio of supervisors to students should be flexible such that supervisors could read and respond to the students within the records time with large printed materials. On the contrary, these numbers of students had travelled distant without the hope to meet with their supervisors; as there was no initial schedule, the students will only find that their works were not attended to. This may result to students' frustrations, most auto crash involved with postgraduate students have claimed their lives. This can make postgraduate journey a miserable adventure for the students. This current systems of

traditional supervision methods often fail due to overloaded supervisors, inconsistent feedback, and limited emotional support. Distance supervision exacerbates isolation and communication breakdowns (Zhai, 2022). Traditional one-on-one method struggle with scale, resulting in delays and inequity for diverse students (e.g., part-time or international). To this end, Contemporary methods shift towards utilization of digital tools to address scale and distance as a major challenge of traditional supervision approach. Porter et al., (2014) opined that the blended methods postgraduate supervision that can integrate AI, and LMS, for flexibility, improving interaction in distance programs.

The use of artificial intelligence (AI) tools, such as Grok, Gemini or ChatGPT, into higher education has sparked a paradigm shift in postgraduate supervision. Traditionally, supervision has been a deeply interpersonal process, relying on the mentor's expertise to guide students through complex research tasks (Wisker, 2012; Lee, 2018). However, the advent of AI technologies has introduced new possibilities, reshaping the roles and responsibilities of both supervisors and students (Kumar & Dawson, 2022). AI-driven tools have the potential to enhance postgraduate research by providing instant feedback, generating ideas, and assisting with literature reviews and academic writing (Zhai, 2022). These capabilities can significantly improve students' productivity and creativity, enabling them to refine their arguments, structure their theses, and engage with academic content more effectively (Luckin et al., 2016). Moreso, AI can facilitate interdisciplinary research by providing insights across various fields and streamlining data analysis processes (Bailey & Fornell, 2021). Again, the instrumentation of learning management system is a priority for enhanced postgraduate supervision.

The use of Learning Management Systems (LMS) in postgraduate supervision is a significant trend in enhancing educational experiences for both supervisors and students in an engaging platform. The system facilitates and enhances the management of research supervision, allowing for a more efficient and effective use of digital technologies in higher education. LMS are particularly useful for:

1. ***Collaboration:*** LMS as a technology-based approach for postgraduate supervision enable supervisors and students to work remotely irrespective of their distant location. This is important for global research recommendations for supervisors and supervisees. This aspect of LMS helps the students and other researchers to engage with more robust experts to improve their research endowments.
2. ***Data Management:*** LMS is one of the emerging technologies that helps supervisors and supervises in organizing and managing data; ensuring its

accessibility and adequate storage for future use.

3. ***Feedback and Assessment:*** LMS provide a framework for ensuring feedback and conducting assessment of students learning outcomes. This approach is essential for the learning and development of supervisors and supervisees.
4. ***Professional Development:*** LMS also offers online professional development for the supervisors and supervisees, ensuring the skills and understanding the research processes.

The use of LMS in postgraduate supervision is not just about technology; it is about creating a formidable, supportive and engaging environment that fosters learning, collaboration and growth for both supervisors and supervisees. These technologies are not limited to use of learning analytics to support students progress in postgraduate studies in Nigeria. The use of technology-based system in postgraduate supervision is a promising approach that promotes the good adventure for an enhanced educational experience and support students' academic success and timely completion of their postgraduate journey.Technology-based system integration in postgraduate supervision has significantly enhanced the research process by providing valuable tools for both supervisors and students (Kreber, 2023). Supervisors can use AI to offer efficient and detailed feedback, streamline data analysis, and focus on mentorship rather than technical corrections. Grammar and plagiarism detection tools further refine academic writing. For students, AI acts as a powerful research assistant, improving the efficiency of literature reviews by summarizing extensive academic sources. It also ensures ethical standards by detecting plagiarism and reduces the risk of academic misconduct. AI aids in idea generation, helping students explore new research avenues and refine their topics. By automating routine tasks, it allows students to dedicate more time to critical thinking and analysis. AI also boosts research efficiency, helping both supervisors and students manage their time effectively through automated scheduling and project management tools. This is especially beneficial in today's fast-paced academic environment, where students juggle research, course work, and other personal responsibilities.

The Roles of Supervisors and use of technology-based approach for timely completion of the program

Supervisors play a vital role in guiding postgraduate students to use AI tools ethically in their research. As AI becomes integral to academic work, supervisors must set clear expectations on when and how AI tools should be used, ensuring they complement rather than replace genuine academic effort (Upadhayaya, Sharma, Gnawali, & Belbase 2021). This helps students develop critical research skills while

benefiting from AI's efficiencies. Supervisors also have a responsibility to uphold academic integrity and originality. While AI tools can assist in drafting, editing, and data analysis, students must ensure that their work reflects their own intellectual contributions. Supervisors should emphasize independent thinking, discouraging over-reliance on AI-generated content, and encourage rigorous research practices, such as proper citations, literature reviews, and critical engagement with findings. The contents and insights generated from AI platforms shall be communicated to the students through learning management system.

Learning Management Systems (LMS) are digital platforms that are designed to facilitate the delivery, management, and assessment of educational content like theses and dissertations. LMS are commonly used in the form of Moodle, Canvas, and Blackboard, that have features like notes sharing, discussion forums, quizzes, and progress tracking. For postgraduate students, who often balance advanced studies with professional or personal commitments, LMS can play a crucial role in enhancing flexibility, engagement, and self-directed learning. Studies of Kumar and Dawson, (2022) posited that LMS are usefulness tools that draws the frameworks like the self-regulated learning. LMS adoption influences learning outcomes and program completion by promoting accessibility, interaction, bridging the distance barriers and enhance personalized pacing.

The Role of Technology-based approach in Postgraduate Supervision for timely completion of the program

A generative AI tool, has become a valuable resource for postgraduate students, offering assistance in tasks such as literature reviews, data analysis, and academic writing (Dwivedi et al., 2023). For example, students can use ChatGPT to generate research ideas, summarise complex articles, or draft sections of their theses and dissertations. This capability can significantly reduce the time postgraduate students spent on routine tasks, travelling distant to meet their supervisors, allowing them to focus on higher-order thinking and analysis (Cotton et al., 2023). Moreover, ChatGPT can facilitate language translation and assist non-native English speakers in improving their academic writing skills, making research more accessible to a broader audience (Zhai, 2022). AI-driven tools also enhance collaborative research by streamlining communication and knowledge sharing among researchers across different institutions and countries of the world (García-Peñalvo et al., 2021). ChatGPT can assist in structuring research proposals, suggesting relevant methodologies, and identifying key gaps in the literature (Bailey & Fornell, 2021). Additionally, it can support systematic reviews by quickly summarising large volumes of scholarly work, thus expediting the initial stages of research (Luckin et al., 2016). AI-driven tools like Groks have the potential to improve students'

engagement in their research activities, as it offers reliable assistance that is devoid of distant. AI as a technology-based tool serves as a tool to enhance an effective and efficient relationship between the supervisor and supervisees as well as to reflect on their research and learning about how to work together as researchers, especially in relation to being a self-directed learner or researcher. This is particularly relevant when artificial intelligence is evolving. ChatGPT and other AI tools has improved Supervisors supervisees relationship in this contemporary time. Sims and Uhomoibhi, (2023) identified five key dimensions of research supervision – functional, enculturation, critical thinking, emancipation and relationship development – where the findings suggest a shift in the roles and responsibilities of supervisors and students: the former provides strategic direction and high-level guidance, while the latter transits from apprentices to autonomous researchers due to the independence fostered by technology-based mechanisms like ChatGPT.

Academic Integrity and Ethical use of technology-based approach for postgraduate supervision

Academic integrity remains a core challenge in AI assisted learning. While useful, AI tools raise concerns about plagiarism, authorship ethics, and the responsible use of machine-generated content (Sims & Uhomoibhi, 2023). Institutions are actively revising academic integrity policies to accommodate AI's role in research and ensure that its use does not compromise scholarly originality (Cotton et al., 2023). Scholars emphasise the necessity for robust institutional guidelines that define acceptable AI use in postgraduate research (Bender et al., 2021). Strategies such as AI literacy workshops, revised plagiarism detection mechanisms, and AI-generated content verification protocols have been proposed to mitigate risks (Frey et al., 2023). Some universities have begun implementing AI detection tools to distinguish human-authored and AI-assisted debated (Gupta et al., 2023). Furthermore, AI-generated biases present another ethical dilemma. Since language models are trained on vast datasets containing human biases, their outputs can perpetuate discriminatory or misleading perspectives (Haque et al., 2022). Researchers stress the importance of supervisors guiding students to critically assess AI generated research insights rather than uncritically accepting them (Floridi & Chiriatti, 2020).

Challenges of the use of technology-based approach towards postgraduate supervision

The use of technology-based approach for postgraduate supervision present severe ethical challenges. A key concern is the risk of over-reliance on AI tools, such as those for summarizing literature, generating text, and analyzing data (Sims & Uhomoibhi, 2023). The use of AI tools raises concerns about over-reliance,

plagiarism, and the potential for generating inaccurate or biased content (Selwyn, 2022). AI models, including Groks, Gemini and ChatGPT, are trained on existing datasets that may contain biases, leading to the reproduction of systemic prejudices in research outputs (Bender et al., 2021). Furthermore, AI-generated content lacks the critical reasoning and contextual understanding that human researchers provide, necessitating thorough verification of AI-assisted outputs (Strobl et al., 2023). Students may become dependent on these tools, potentially undermining their own analytical and problem-solving abilities. This could result in a superficial understanding of their research topic, as students might focus more on AI-generated insights rather than deeply engaging with their work (Cotton et al 2023). Another issue is the potential compromise of originality and critical thinking. AI-generated content can blur the line between authentic intellectual contributions and automated outputs, leading to derivative work. If students rely solely on AI to write entire sections of their theses or dissertation without critical evaluation, their work may lack originality, raising concerns about academic integrity. AI in academic research also raises data privacy and confidentiality concerns. Many AI tools require the input of sensitive research data, but these tools may not always guarantee secure storage or use of this information. There is a risk of exposure if weak security measures are in place.

Possible solutions to the challenges in the use of technology-based approach in postgraduate research supervision

To address these concerns, Supervisors must now navigate these challenges by teaching students to use AI tools critically and ethically. This involves fostering an understanding of the limitations of AI, encouraging students to verify AI-generated content, and emphasizing the importance of originality in academic work (Kumar & Dawson 2022). Best practices include requiring students to cross-check AI-assisted outputs with peer-reviewed sources, integrate AI as a brainstorming tool rather than a content generator, and use proper citation practices when incorporating AI generated insights (García-Peñalvo et al., 2021). As AI becomes more prevalent, supervisors must also stay informed about the capabilities and ethical implications of these tools to provide effective guidance. Moreover, universities should develop clear policies on AI use in research, ensuring transparency, accountability, and adherence to academic integrity standards (Sims & Uhomoibhi, 2023). Universities must ensure that AI is used responsibly, supporting research without replacing independent thinking, compromising originality, or risking data security. A balance must be struck to maintain academic integrity while benefiting from AI's efficiencies. Postgraduate students have a responsibility to use AI tools ethically, ensuring that technology enhances rather than replaces their intellectual efforts.

While AI can assist with tasks like literature reviews, grammar checks, and data analysis, it should never replace critical thinking, creativity, or independent research. Over-reliance on AI risks producing work that lacks originality and depth, undermining the educational goal of developing analytical and problem-solving skills. Students must use AI as a research aid while maintaining ownership of their academic work.

Proper attribution is also essential. For instance, if AI-generated content influences a student's work through text suggestions, summarizations, or data insights. It must be acknowledged according to academic integrity standards. Just as sources are cited in research, AI contributions should be transparently documented. As universities develop AI citation policies, students must familiarize themselves with these guidelines to ensure compliance.

A significant ethical concern is the misuse of AI to generate entire theses, dissertation or research papers, which undermines academic credibility and devalues genuine scholarly work. While AI can improve efficiency, it should never serve as a shortcut to bypass the intellectual rigor required in postgraduate studies. Students must uphold ethical research practices, using AI responsibly and ensuring that their academic journey reflects their own hard work, creativity, and critical engagement with knowledge.

Conclusion

Technology-based approach for postgraduate supervision is essential for next-generation of postgraduate supervision, enabling equitable, efficient support that addresses scale, distance, and consistency challenges. By integrating AI, LMS, and collaborative tools, supervision evolves from traditional apprenticeship to hybrid, student-centred models, enhancing timely feedback, emotional support, and project management. This innovative approach contributes to higher education by improving completion rates, fostering inclusive research communities, and preparing students for digital-era academia. Institutions must prioritize ethical implementation to maximize benefits while safeguarding academic integrity.

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