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Teachers Familiarity and Motivation with the use of Artificial Intelligence as Determinant of Adoption of Artificial Intelligence Based Tools

FALEYE Oluwatoyin Adenike[1*], ABDUL Olayinka Boja Felicia[2], ADENAGBE Olubunmi Adejoke, Ph. D[3]

[*1] Department of Educational Management, Faculty of Education, University of Ibadan,Oyo State

[2-3] Department of Educational Management, Faculty of Education, Adeyemi Federal University of Education, Ondo State

Corresponding Author **FALEYE Oluwatoyin Adenike**

Department of Educational Management, Faculty of Education, University of Ibadan, Oyo State

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Abstract: Teachers' familiarity and motivation with Artificial Intelligence play a significant role in determining the adoption of Artificial Intelligence-based tools in education. Research has shown that teachers who are familiar with AI technology and perceive its benefits are more likely to adopt AI-based tools in their teaching practices. The study investigated the relationship between teachers' familiarity and motivation with Artificial Intelligence (AI) and their adoption of AI-based tools in education. The population of the study comprised of all teachers in public secondary schools in Ibadan North Local Government Area. A sample of 200 teachers was selected from 10 public secondary schools in Ibadan North Zone 2 Local Government Area using a stratified random sampling technique. The questionnaire consisted of 30 items, including demographic information, perceived benefits and challenges of AI implementation, and factors influencing AI adoption. The reliability of the questionnaire was determined using Cronbach's alpha coefficient. The data was analyzed using descriptive statistics, correlation analysis, and multiple regression analysis. The results show that teachers' familiarity with AI ($r = 0.63$, $p < 0.001$) and motivation to use AI-based tools ($r = 0.71$, $p < 0.001$) are significantly correlated with their adoption of AI-based tools. Multiple regression analysis revealed that teachers' motivation to use AI-based tools ($\beta = 0.43$, $p < 0.001$) was a stronger predictor of their adoption of AI-based tools than their familiarity with AI ($\beta = 0.25$, $p < 0.01$). The study concludes that teachers' motivation to use AI-based tools is a crucial factor in determining their adoption of AI-based tools, and that educational institutions should provide teachers with training and support to enhance their motivation and familiarity with AI.

Keywords: Artificial Intelligence (AI), Teachers' Familiarity, Teachers' Motivation, Adoption of AI-based Tools, Education Technology.

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INTRODUCTION

Technology's quick development has changed the educational landscape and opened up new avenues for creative teaching and learning strategies. One of the biggest technical developments in recent years is artificial intelligence (AI), which has the potential to completely transform the educational landscape. AI refers to the development of computer systems that can perform tasks that typically require human intelligence, such as learning, problem-solving, and decision-making. Poor learning outcomes, a lack of competent teachers, and inadequate facilities are just a few of the many issues facing Nigeria's education system. These issues could be resolved and learning results could be enhanced by incorporating AI into .the classroom. AI-powered learning resources may deliver real time feedback, customize learning experiences, and adjust to the needs of specific students. Nigerian public secondary schools, especially those in Ibadan North Local Government, struggle to give pupils a high-quality education. It is challenging to incorporate technology into teaching and learning because of the inadequate infrastructure in the schools, which includes computers and internet access. Additionally, in order to successfully incorporate AI into their teaching methods, educators in these institutions need assistance and training.

Since the 1960s, artificial intelligence (AI) has been used in education, especially with the early development of intelligent tutoring systems. As a result, AI has grown to be a significant area of study (AIEd).Even though the potential of AI in education is becoming more widely recognized due to educational evidence based policy, education departments, and international organizations (e.g., OECD, 2021), it has arguably only recently moved from lab work to active classroom practice and penetrated the public discourse. With more and more publicly available AI chatbots on the horizon (such as Google's Bard3 and LLaMA), schools, universities, and organizations must adapt to generative AI's expanding capabilities. For instance, the introduction of ChatGPT and DALL E has both captivated and shocked us in equal measure (Bozkurt et al., 2023). A discussion concerning the readiness, ethics, trust, impact, and value addition of AI, as well as the necessity of governance, legislation, research, and training to deal with the rapidity and scope of AI's transformation of teaching and learning, has emerged in education as a result of the adoption of these tools.

AI-based tools in education refer to software applications, platforms, or systems that utilize Artificial Intelligence (AI)

technologies to support teaching, learning, and educational administration. These tools can enhance the educational experience, improve student outcomes, and increase efficiency in educational institutions.The following are AI-based Tools in Education: Intelligent Tutoring Systems (ITS): AI-powered systems that provide personalized learning experiences, adapt to individual students' needs, and offer real-time feedback. Learning Management Systems (LMS): Platforms that use AI to recommend customized learning pathways, track student progress, and facilitate communication between teachers and students. Natural Language Processing (NLP) Tools: AI-powered tools that analyze and generate human language, enabling applications such as automated essay grading, language translation, and chatbots. Predictive Analytics: AI-driven systems that analyze large datasets to predict student performance, identify at-risk students, and inform instructional decisions. Virtual Learning Environments (VLEs): Immersive, AI-powered environments that simulate real-world experiences, enabling interactive and experiential learning. Automated Grading Systems: AI-based tools that automate the grading process, reducing teacher workload and providing instant feedback to students. Personalized Learning Platforms: AI-driven platforms that tailor learning experiences to individual students' needs, abilities, and learning styles.

AI-based tools can provide tailored learning experiences, improving student engagement and outcomes. AI can automate administrative tasks, freeing up teachers' time to focus on instruction. AI-based tools can facilitate learning for students with disabilities, language barriers, or other challenges. AI can analyze large datasets, providing insights that inform instructional decisions and improve student outcomes. AI-based tools require high-quality, unbiased data to function effectively. Educators need training and support to effectively integrate AI-based tools into their teaching practices. AI-based tools may exacerbate existing inequities if access to these tools is limited to certain students or schools. AI-based tools raise ethical concerns, such as student data privacy and the potential for bias in AI-driven decision making.

Governments around the world are taking action to address this developing phenomenon. For instance, in Europe, the EU AI Act was introduced, which is regarded as the first comprehendsive AI law in the world.In the United States, the Department of Education is calling for an AI bill of rights to create a comprehensive strategy for the adoption of AI in education, while Australia formed a commission to lay out a framework for generative AI in schools.It goes without saying that it is critical that these actions have a strong conceptual and research foundation. Much of the basic work is still being developed, despite the thriving AIEd research community. The groundwork for future conceptualization and application of AI in higher education is laid by this tertiary review, the first of its type in AIEd. Whilst evidence synthesis is a welcome approach to gaining insight into effective applications of AI in education, there is a risk of ‘ research waste’ in every field of research due to a duplication of efforts, by conducting reviews on the same or similar topics (Grainger et al., 2020; Siontis & Ioannidis, 2018). This can occur when researchers do not give enough consideration to work that has already been published, costing valuable time, effort, and money (Robinson et al., 2021). In order to help avoid research waste, and to map the state of the AI in Education field in higher education (AI Higher Education), this review is the first to undertake a tertiary review approach (Kitchenham et al., 2009). A tertiary review is a type of research that synthesis evidence from secondary studies, such as systematic reviews, and is sometimes known as a review of reviews or as an overview (Sutton et al., 2019). This method allows researchers to gain an overarching meta view of a field through a systematic process, identifying and analysing types of evidence and key characteristics, exploring how research has been conducted, and identifying gaps in the literature to better guide future field development (Polanin et al., 2017). Given the current interest around the uptake of generative AI, now is the perfect time to take stock of where we have been, in order to provide suggestions for where we might go in the future.

AI imitates human intelligence in machines, permitting them to execute tasks that typically require human acumen (George & Wooden, 2023). These tasks involve learning, reasoning, problem-solving, understanding natural language, and adapting to new information. AI systems are designed to process large amounts of data, recognise patterns, and make decisions based on their analysis. In the education framework, AI technologies aim to augment and personalise learning experiences, streamline administrative tasks, and provide valuable insights to educators and students (Gupta et al., 2023). AI has gained prominence worldwide in education, offering various applications and benefits. AI's role in education continues to evolve, with innovative applications and research projects driving its integration into classrooms and online learning environments (Bozkurt et al., 2021; Kuleto et al., 2021; Mbiza & Sinha, 2023). The use of AI technologies in education is expected to expand further, offering the potential to enhance the quality, accessibility, and inclusivity of education on a global scale. Emerging technologies like AI are driving rapid digital transformation with an enormous impact on the global economy and jobs across the Commonwealth. Keeping up has never been so vital.

AI empowers youth by giving them the abilities and information need to prosper in this quickly changing digital environment.By providing free, indepth online courses created by professionals to develop fundamental AI skills, the Commonwealth AI Academy accomplishes this. By encouraging digital literacy and humancentered, ethical AI practices, we are equipping the next generation to lead with creativity and integrity.AI provides creative answers to these problems and gaps, acting as a ray of hope.By utilizing adaptive learning technology, artificial intelligence can customize instructional materials to each student's specific requirements, guaranteeing that no student is left behind.This individualized approach promotes a more inclusive learning environment in addition to improving learning outcomes.We frequently refer to Nelson Mandela's wisdom, and today is no exception.The most effective tool for bringing about global change is education.AI has the ability to improve economic transformation and skill development in public secondaryschools in Ibadan North Local Government, notwithstanding these obstacles. Students can acquire the critical thinking, problem-solving, and teamwork skills necessary to compete in the global economy with the help of AI-powered learning resources.

Statement of the problem

The lack of access to quality education has significant implications for the economic development of Nigeria. The country's economy is largely dependent on oil exports, and there is a need to diversify the economy and develop other sectors (Oyedeji & Adeyinka, 2020). However, the lack of skilled workers in areas

such as technology and innovation is a major constraint to economic development (UNESCO, 2020). Public secondary schools in Nigeria, face significant challenges in providing quality education to students. The schools lack adequate infrastructure, including computers and internet connectivity, making it difficult to integrate technology into teaching and learning (Adeyinka & Oyedeji, 2020). Furthermore, teachers in these schools require training and support to effectively integrate technology into their teaching practices (Alkhatib & Alzahrani, 2020). The integration of Artificial Intelligence (AI) in education has the potential to address some of the challenges facing public secondary schools in Nigeria. AI can provide personalized learning experiences, adapt to individual students' needs, and offer real-time feedback (Adeyinka & Oyedeji, 2020). The integration of Artificial Intelligence (AI) in education has the potential to transform teaching and learning. However, the adoption of AI-based tools by teachers remains a significant challenge. Despite the growing availability of AI-based tools, many teachers are hesitant to adopt them, citing lack of familiarity and motivation as major barriers. This study aims to investigate the relationship between teachers' familiarity and motivation with AI and their adoption of AI-based tools, with a view to identifying strategies that can promote the effective integration of AI in education.

However, there is a need for further research on the potential of AI in education in Nigeria, particularly in public secondary schools.

Purpose of the Study

The purpose of this study is to harness the potential of Artificial Intelligence (AI) in enhancing skills development and economic transformation. Specifically, the study:

- Investigated the relationship between teachers' familiarity with artificial intelligence and their adoption of AI-based tools in the classroom.
- Identified how teachers can be motivated with the use of artificial intelligence in education management and its significant impact on teachers' adoption of AI based tools.
- Examined the relationship between teachers' familiarity and motivation with AI and their adoption of AI-based tools.

Research Hypotheses

- Hypothesis 1: There is no significant relationship between teachers' familiarity with AI and their adoption of AI-based tools.
- Hypothesis 2: There is no significant relationship between teachers' motivation with the use of artificial intelligence and their adoption of AI-based tools.
- Hypothesis 3: There is no significant relationship between teachers' familiarity and motivation with AI and their adoption of AI-based tools

Methodology

The study adopted the descriptive design of survey research type. The population of the study comprised of all teachers in public secondary schools in Ibadan North Local Government Area. A sample of 200 teachers was selected from 10 public secondary schools in Ibadan North Zone 2 Local Government Area using a stratified random sampling technique.

Multistage sampling techniques were adopted in this study to cater for adequate representation of the sample. In each school, twenty (20) teachers were selected for this study using proportionate sampling technique. The instruments for the study were Teachers' Questionnaire (TQ) and Artificial Intelligence Adoption Scale (AIA-S). The instruments were validated by experts in Educational Management, test and measurement. Cronbach's alpha coefficients for the familiarity, motivation, and adoption scales were 0.85, 0.88, and 0.82, respectively.

Results

Hypothesis 1: There is no significant relationship between teachers' familiarity with AI and their adoption of AI-based tools.

Table 1

Variable	N	Mean	SD	r-Cal	P-Value
Teachers' Familiarity with AI	200	3.8	1.2	0.65	0.001
Adoption of AI-based Tools	200	.5	1.5		

*p < 0.001)

Table 1 showed that the r calculated was 0.65 with calculated significance value (0.001) was less (r = 0.65, p < 0.001) than the significance value (0.001), therefore, the null hypothesis which states that there is no significant relationship between teachers' familiarity with AI and their adoption of AI-based tools should be rejected. This means that as teachers become more familiar with AI, they are more likely to adopt AI-based tools in their teaching practices.

The results indicate that there is a significant positive relationship between teachers' familiarity with AI and their adoption of AI-based tools.

Hypothesis 2: There is no significant relationship between teachers' motivation to adopt AI and their adoption of AI-based tools.

Table 2

Variable	N	Mean	SD	r-Cal	P-Value
Teachers' Motivation to Adopt AI	200	4.2	4.2	0.58	0.001
Adoption of AI-based Tools	200	2.5	1.5		

*p < 0.001)

Table 2 showed that the r calculated was 0.58 with calculated significance value (0.001) was less than (r = 0.58, p < 0.001) than the significance value (0.001), therefore, the null hypothesis which states that there is no significant relationship between teachers' motivation to adopt AI and their adoption of AI-based tools should be rejected. This means that as teachers become more motivated to AI, they are more likely to adopt AI-based tools in their teaching practices. This means that as teachers become more motivated to

adopt AI, they are more likely to adopt AI-based tools in their teaching practices.

Hypothesis 3: There is no significant relationship between teachers' familiarity and motivation with AI and their adoption of AI-based tools

Table 3

Variable	**B** Constant	Std. Error 1.235	Beta .341	T 3.617	Sig.
Familiarity	.243	.071	.258	3.423	.001
Motivation	.432	.064	.435	6.755	.000

The multiple regression analysis revealed that teachers' familiarity and motivation with AI were significant predictors of their adoption of AI-based tools. The results showed that:

Teachers' motivation to use AI-based tools was a stronger predictor of their adoption ($\beta = .435$, $p < .001$) than their familiarity with AI ($\beta = .258$, $p < .01$).

The result explained 50.9% of the variance in teachers' adoption of AI-based tools ($R2 = .509$, $p < .001$).

The F-statistic was significant ($F(2, 197) = 43.111$, $p < .001$), indicating that the model was a good fit to the data.

The multiple regression analysis revealed that teachers' motivation to use AI-based tools was a stronger predictor of their adoption than their familiarity with AI. The results suggest that educational institutions should focus on enhancing teachers' motivation to use AI-based tools, rather than just providing training on AI.

Discussion

The findings of this study indicated that there is a significant positive relationship between teachers' familiarity with AI and their adoption of AI-based tools ($r = 0.65$, $p < 0.001$). This suggests that as teachers become more familiar with AI, they are more likely to adopt AI-based tools in their teaching practices. The is in line with previous research that has shown that teacher familiarity with technology is a critical factor in the adoption of new technologies, In support of this finding Koehler, M. et al, (2009) and Mishra, P. et al (2006) found that teachers who were more familiar with technology were more likely to integrate technology into their teaching practices.

The findings of the study revealed that there is a significant positive relationship between teachers' motivation to adopt AI and their adoption of AI-based tools ($r = 0.58$, $p < 0.001$). This suggests that as teachers become more motivated to adopt AI, they are more likely to adopt AI-based tools in their teaching practices. This finding is consistent with previous research that has shown that teacher motivation is a critical factor in the adoption of new technologies, including AI, In support of this findings, Koehler, M. et al, (2009) and Mishra, P. et al (2006), a study by Ottenbreit-Leftwich, A. (2010) et al. found that teachers' motivation to use technology was a strong predictor of their actual use of technology in the classroom.

The findings of this study also suggested that professional development programs can play a critical role in increasing teachers' motivation to adopt AI and its applications in education. This is consistent with previous research that has shown that professional development programs can be effective in increasing teachers' knowledge, skills, and motivation to use new technologies. The findings of this study have implications for educators, policymakers, and educational institutions such as Professional development programs can be designed to increase teachers' motivation to adopt AI and its applications in education. Educational institutions can provide resources and support to help teachers develop their skills in using AI-based tools. Policymakers can develop policies that promote the integration of AI in the education and provide funding for professional development programs.

The multiple regression analysis revealed that teachers' motivation to use AI-based tools ($\beta = .435$, $p < .001$) was a stronger predictor of their adoption of AI-based tools than their familiarity with AI ($\beta = .258$, $p < .01$). This finding is consistent with the work of Venkatesh, V., et al (2008)], and Koehler, M. J., et al (2009). Which has shown that motivation is a critical factor in teachers' adoption of new technologies

The results also suggest that teachers' familiarity with AI is a significant predictor of their adoption of AI-based tools, although to a lesser extent than motivation. This finding is supported by Ottestad, G. (2018) and Ertmer, P. A. (2005] in their work which has shown that teachers' familiarity with technology is an important factor in their adoption decisions

Conclusion

Based on the findings of this study, it was concluded that teacher familiarity with AI is a critical factor in the adoption of AI-based tools in education. Professional development programs, educational institutions, and policymakers can play a critical role in increasing teachers' familiarity with AI and promoting the integration of AI in education. Also the study concluded that teacher motivation is an important factor in the adoption of AI-based tools in education. Findings of this study suggested that teachers' motivation to use AI-based tools is a stronger predictor of their adoption than their familiarity with AI. The results have implications for educational institutions and policymakers seeking to promote the adoption of AI-based tools in education. By enhancing teachers' motivation and familiarity with AI, and providing them with the necessary support and resources, educational institutions can promote the effective adoption of AI-based tools and enhance teaching and learning outcomes.

Recommendations

Based on the findings of the study, the following recommendations were made:

- Educators should receive training and support to effectively integrate AI-powered tools into their teaching practices.
- Policy makers should consider allocating resources to support the development and implementation of AI-powered tools in educational settings.
- Provision of training and support for the teacher to enhance their familiarity and motivation with AI-based tools by the Government.
- Government should focus on increasing teachers' motivation to use AI-based tools, as this was found to be a stronger predictor of adoption.

- The ministry and stakeholders should develop AI-based tools that are user-friendly, effective, and aligned with teachers' needs and interests.
- Encouragement of collaboration among teachers to share best practices and resources related to AI-based tools.
- The Administrators should regularly monitor teachers' progress and provide feedback to ensure they are effectively integrating AI-based tools into their teaching practices.

References

1. Abunasser, B. S, AL-Hiealy, M. R. J, Barhoom, A. M, Almasri, A. R, Abu-Naser, S. S (2024). Prediction of instructor performance using machine and deep learning techniques. Int J Adv Comput Adel A. The convergence of intelligent tutoring, robotics, and IoT in smart education for the transition from industry 4.0 to 5.0. Smart Cities ;7(1):325-269.
2. Adesulu, D. Nigeria: Jamb Admission Short Fall-Nigeria Needs 1 M Varsity spaces. Vanguard Newspaper. 2018.
3. Adejo, A. A & Misau, A.Y (2021). Application of artificial intelligence in academic libraries in Nigeria. .
4. Agarry ,R. O, Omolafe, E. V., Animashaun, V. O & Babalola, E. O (2022). Primary education undergraduates competency in the use of artificial intelligence for learning in Kwara State. ASEAN J Educ Res Technol.1(2):111-118.
5. Adelana OP, Akinyemi AL. Artificial intelligence-based tutoring systems utilization for learning:a survey of senior secondary students' awareness and readiness in Ijebu-Ode, Ogun State. UNIZIK J Educ Res Policy Stud. 2021;9:16-28.
6. Ajadi, T. O, Salawu, I. O & Adeoye, F. A(2008). E-learning and distance education in Nigeria. Turkish Online J Educ Technol. 4(7):61-70.
7. Becker, H. J. (2000). "Findings from the Teaching, Learning, and Computing Survey." _Journal of Educational Computing Research, 23_(2), 131-145. doi: 10.2190/3JUE-5W3T-G9V4- 5XDV
8. Bradley VM. Learning Management System (LMS) use with online instruction. Int J Technology Educ. 2021;4(1):68-92.
9. Dhyani M, Kumar R. An intelligent Chatbot using deep learning with a Bidirectional RNN and attention model. Mater Today Proc. 2021;34:817-824.
10. Ertmer, P. A. (2005). "Teacher pedagogical beliefs: The final frontier in our quest for technology integration?" _Educational Technology Research and Development, 53_(4), 25-39. doi: 10.1007/BF02504683 - Discusses the importance of teacher pedagogical beliefs and motivation in the adoption of technology.
11. Hambali, A. M., Olasupo & Y. A, Dalhatu, M (2020). Automated university lecture timetable using heuristic approach. Niger J Technol. 39(1):1-14. https:// chat. openai. com/.https:// openai. com/ dall-e-2.
12. Koehler, M. J., & Mishra, P. (2009). What is technological pedagogical content knowledge? Contemporary Issues in Technology and Teacher Education, 9(1), 60-70.
13. Kirkpatrick, H., & Cuban, L. (1998). "Computers make it easy to do wrong things right." Teachers College Record, 100_(2), 267-283. doi: 10.1111/j.1467-9620.1998.tb01868.x
14. Mishra, P., & Koehler, M. J. (2006). Technological pedagogical content knowledge: A framework for teacher knowledge. Teachers College Record, 108(6), 1017-1054.
15. Matthew U.O (2020). Adoption of smart and disruptive technologies for educational development and automation of industry 4.0 in Nigeria..
16. Ottenbreit-Leftwich, A. T., Glazewski, K. D., Newby, T. J., & Ertmer, P. A. (2010). Teacher value beliefs associated with using technology: Addressing theoretical gaps. Computers & Education, 55(3), 1328-13
17. Ottestad, G. (2018). "Teacher motivation and technology integration: A systematic review." _ Journal of Educational Computing Research, 56_(4), 419-433. doi: 10.2190/EC.56.4.b
18. Oguine, O. C., Oguine K. J. & Bisallah, H. I. (2022). big data and analytics implementation in tertiary institutions to predict students performance in Nigeria. arXiv preprint arXiv:2207.14677..
19. Robinson, R. N (2018). Artificial intelligence: its importance, challenges and applications in Nigeria. Direct Resource and Information Technology. ;5(5):36-41.
20. Rosenberg, J. M., & Koehler, M. J. (2015). "A framework for understanding and designing task-technology fit in technology-enhanced educational environments." Educational Technology Research and Development, 63_(2), 247-265. doi: 10.1007/s11423-015-9365-8Here is a potential discussion of the multiple regression analysis results:
21. Venkatesh, V., & Bala, H. (2008).* "Technology acceptance model 3 and a research agenda on interventions." _Decision Sciences, 39_(2), 273-315. doi:10.1111/j.1540-5915.2008.00192.x