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Teachers' Readiness and Perceptions of Artificial Intelligence Integration in Public Secondary Schools in Ondo State, Nigeria

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ABSTRACT

This study examined teachers' readiness and perceptions of Artificial Intelligence (AI) integration in public secondary schools in Ondo State, Nigeria. A descriptive survey design was adopted, and data were collected from 160 teachers using a structured questionnaire based on a four-point Likert scale. Data were analyzed using frequency counts, percentages, mean, and standard deviation. Findings revealed that teachers demonstrated moderate readiness for AI integration (overall mean = 2.61), indicating basic ICT competence and willingness to adopt AI tools but limited practical preparedness. In contrast, teachers exhibited highly positive perceptions toward AI integration (overall mean = 3.05), recognizing its potential to improve instructional quality, personalize learning, enhance assessment practices, and support future-oriented education. The analysis further showed that personal factors, particularly prior exposure to digital technologies (M = 3.10) and self-efficacy (M = 3.05), exerted stronger influence on readiness than institutional factors, such as professional development (M = 2.25) and access to infrastructure (M = 2.20). Major challenges hindering AI integration included inadequate ICT infrastructure (M = 3.14), lack of AI-focused professional training (M = 3.10), and unstable electricity supply (M = 3.00). The study therefore reveals a significant perception-readiness gap, where teachers possess positive attitudes toward AI but lack sufficient institutional support and resources to implement it effectively. Consistent with the Technology Acceptance Model and Diffusion of Innovation theory, the findings suggest that successful AI integration requires a comprehensive approach involving teacher capacity development, supportive institutional leadership, policy frameworks, and sustainable ICT infrastructure. The study recommends targeted AI-focused professional training, improved technological infrastructure, and clear policy guidelines to facilitate effective AI adoption in Nigerian secondary schools.

INTRODUCTION

Background to the Study

Artificial Intelligence (AI) is rapidly reshaping educational systems across the world by offering tools that support personalized learning, administrative automation, and enhanced instructional practices. AI technologies in education—such as adaptive learning platforms, automated grading systems, and intelligent tutoring systems—have the potential to improve teaching effectiveness, targeted instruction, and student outcomes (e.g., personalized feedback) when appropriately integrated into classroom practices. Nonetheless, successful AI integration depends heavily on teachers' readiness and perceptions, which are shaped by their technological competence, attitudes about AI, institutional support, and professional development opportunities.

In Nigeria, the adoption of AI in education is still in its early stages. Emerging studies indicate varying levels of awareness and adoption among educators. Adeyemi, Lamidi, & Ayeni, (2025), research in public secondary schools in the Akure South Local Government Area of Ondo State found that only a small proportion of teachers were aware of AI-based instructional tools, and adoption levels were low; 65% of teachers (n=100; descriptive survey) showed low awareness and many never used AI

instructional tools in their pedagogical practice. A similar pattern has been observed in other Nigerian states where limited professional capacity, inadequate infrastructure, and insufficient training constrain effective AI integration. Generally, readiness for technology integration among Nigerian educators hinges on teachers' technological literacy, self-efficacy, and access to digital training—factors that significantly contribute to their capacity to adopt and implement innovations in instructional delivery. A recent study in Kwara State reported that teachers were aware of AI's benefits with positive readiness attitudes but also noted barriers in attention to and practical acumen with AI tools. Similarly, Samaila *et al.* (2024) found that only 38% of secondary school teachers in Kwara State were aware of specific AI functions like automated assessment and adaptive learning.

Teacher perceptions are equally essential because they influence intention, acceptance, and sustained use of AI. Studies in other parts of Southwest Nigeria have documented high positive perceptions toward AI among teachers in mathematics instruction, highlighting that teachers generally acknowledge the usefulness and relevance of AI integration. Despite these promising attitudes, evidence also suggests that challenges such as lack of institutional support and ethical concerns (e.g.,

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privacy, reliability) remain significant barriers in similar contexts.

Together, these patterns underscore the importance of investigating teachers' readiness and perceptions specifically in the Ondo State public secondary school milieu, where empirical data remain sparse yet critically needed for policy and practice.

Statement of the Problem

Despite increasing national policy support for digital transformation and artificial intelligence adoption in education, the practical implementation of AI in Nigerian secondary schools remains limited, uneven, and largely exploratory. There is a growing disconnect between national policy aspirations on AI-driven education and the operational realities of schools, particularly with regard to infrastructure availability, teacher competence, institutional readiness, and administrative capacity (Federal Ministry of Education [FME], 2023; UNESCO, 2021). Consequently, many public secondary schools are unable to translate policy intentions into meaningful classroom practices and effective school management processes

Furthermore, while teachers' perceptions in some parts of Nigeria have shown positive attitudes toward the idea of AI, it is unclear how these perceptions intersect with their actual readiness to integrate AI into curriculum delivery, classroom management, and assessment. Despite Ondo State's investment in digital learning initiatives, there is limited empirical evidence on whether teachers possess the readiness and perceptions necessary for AI integration. There is thus a critical research gap regarding how prepared and perceptive teachers in Ondo State are toward AI adoption, what factors influence their readiness and attitudes, and how these affect potential AI implementation strategies. However, empirical evidence quantifying teachers' readiness levels, perceptions, influencing factors, and challenges within Ondo State public secondary schools remains limited.

Purpose of the Study

The primary purpose of this study is to examine teachers' readiness and perceptions of integrating AI into public secondary school education in Ondo State.

Specifically, it aims to:

- Assess the level of readiness of teachers for AI integration;
- Examine teachers' perceptions and attitudes toward AI in educational practice; and
- Identify the factors influencing teachers' readiness and perceptions.
- Identify the challenges hindering the integration of AI in public secondary school in Ondo State.

Research Questions

This study will be guided by the following questions:

1. What is the level of teachers' readiness for AI integration in public secondary schools in Ondo State?

2. What are teachers' perceptions (attitudes, beliefs, perceived usefulness) toward AI integration in teaching and learning?

3. What factors influence teachers' readiness for Artificial Intelligence (AI) integration in public secondary schools in Ondo State?

4. What challenges hinder Artificial Intelligence (AI) integration in public secondary schools in Ondo State?

Significance of the Study

This study is significant for several stakeholders: Educational policymakers will gain insight into teachers' preparedness levels, which can inform AI integration policy frameworks and resource allocation. School administrators can use findings to tailor professional development and technology-support programs that enhance teachers' confidence and capacity in AI use. Teacher educators and stakeholders will benefit from empirical evidence to design training and professional learning focused on integrating AI into secondary school instruction. Researchers will find a foundation for further studies on technology readiness and innovation (AI) adoption in Nigerian education.

Delimitation of the Study

The study focuses on teachers in public secondary schools in Ondo State, Nigeria, emphasizing their readiness and perceptions of integrating AI in classroom instruction, assessment, and administrative responsibilities. It will not examine tertiary institution lecturers or pre-service teachers outside the secondary school context, although literature from other levels informs conceptual understanding.

LITERATURE REVIEW

This section examines existing research and theoretical perspectives related to teachers' readiness and perceptions of Artificial Intelligence (AI) integration in educational settings. The review covers definitions and conceptualizations of AI in education, key constructs—readiness and perception— theoretical frameworks (e.g., Technology Acceptance Model and Diffusion of Innovation), and empirical studies that inform this research. It also identifies gaps in the literature that justify the present study.

Theoretical Frameworks

Technology Acceptance Model (TAM)

The Technology Acceptance Model (TAM) proposes that perceived usefulness and perceived ease of use determine individuals' intention to adopt new technology. In education, TAM has been used to explain teachers' acceptance of digital tools, including AI. Studies applying the Technology Acceptance Model show that perceived usefulness and perceived ease of use significantly predict teachers' intention to adopt emerging educational technologies, including AI-driven tools (Scherer *et al.*, 2019; Venkatesh *et al.*, 2003). This makes TAM a useful lens for examining readiness and perceptions in this study.

Diffusion of Innovation Theory

Rogers' Diffusion of Innovation Theory explains how innovations are adopted over time within social systems. Attributes such as relative advantage, compatibility, and complexity influence adoption decisions. AI tools perceived as advantageous and compatible with existing teaching practices are more likely to be adopted by teachers, while high complexity or lack of observable benefits can hinder uptake. This framework helps account for the social and structural dynamics influencing AI integration.

In this study, perceived usefulness and perceived ease of use from TAM are operationalized through teachers' perceptions of AI effectiveness, ease of use, and instructional value, while Diffusion of Innovation attributes such as compatibility, complexity, and relative advantage inform the assessment of institutional and infrastructural factors influencing readiness.

Conceptual Review

- A conceptual framework diagram

Explicitly mapping:

- o Readiness → Perception → Adoption intention

Artificial Intelligence in Education

Artificial Intelligence refers to systems that can perform tasks that normally require human intelligence, including adaptive problem solving, natural language processing, and personalized feedback (OECD, 2021). In international K-12 contexts, research shows that while teachers value AI for adaptability, interactivity, and personalized learning, they also express concerns about technical challenges, curriculum alignment, and ethical issues — highlighting the need for institutional support and guided implementation strategies. For example, a recent study in Education and Information Technologies found that teachers appreciated the instructional benefits of AI but identified barriers including technical issues and ethical concerns about integration in classrooms. (Alammary, *et al.* 2024).

Effective AI integration can support differentiated instruction, efficient workload management, and data-informed teaching (Ouyang, & Jiao, 2021). However, contextual challenges—like infrastructure and professional readiness—shape how AI tools are actually used in classrooms.

Teachers' Readiness for AI Integration

Teacher readiness refers to both capacity (skills, knowledge, competencies) and willingness (attitudes, confidence) to adopt and use AI technologies in teaching and learning (Iddrisu & Iddrisu, 2025). Technical readiness includes familiarity with digital tools and basic AI functionalities. Pedagogical readiness reflects an understanding of how AI can enhance instructional strategies, while organizational readiness involves supportive infrastructure and leadership commitment. Samaila *et al.* (2024) found that only about 30% of teachers felt confident using AI tools,

citing lack of training as a significant barrier. Similarly, Oyefeso, Otaru, and Niyi (2025) reported that school leadership readiness was moderate, with significant gaps in structured teacher training.

While technical skills may be lacking, attitudes tend to be more positive. Asanre, Taiwo, and Odupe (2024) observed that many secondary school teachers believe AI could enhance instructional delivery, though they remain unsure about their capacity to implement it without professional support.

Studies on teacher readiness indicate that readiness levels vary widely by context. In secondary education settings in Nigeria and similar developing contexts, readiness is often constrained by limited access to ICT infrastructure and weak professional support systems (Samaila *et al.*, 2024). Despite general awareness of AI's potential, many teachers display partial readiness, signaling gaps in practical skills and hands-on experience with AI-driven tools (Samaila *et al.*, 2024). Similarly, research in West Africa found that teachers' readiness correlated with prior exposure to technology and institutional support (Iddrisu & Iddrisu, 2025), underscoring the need for structured training programs. In Ghana, Iddrisu and Iddrisu (2025) found that teachers with prior exposure to digital technologies were more ready to adopt AI tools

Teachers' Perceptions of AI Integration

Perception in this context refers to teachers' beliefs about the utility, ease of use, and overall value of AI in educational practice. Positive perceptions have been linked to greater openness to AI adoption (Ouyang & Jiao, 2021), whereas concerns about complexity, ethical issues, and readiness can negatively influence uptake. For example, research in Nigeria among mathematics teachers revealed generally high perceptions of AI's relevance, with teachers expressing positive attitudes toward its potential to support instructional tasks (Asanre *et al.*, 2024). The study by Asanre *et al.* found that perceptions were influenced by exposure and attitudes toward educational technology in general.

Globally, teachers recognize AI's capacity to support personalized learning and innovation but remain wary of technical and ethical challenges such as data privacy and algorithmic bias (Ouyang, & Jiao, 2021). Such findings align with broader research showing that perceived usefulness and ease of use significantly shape teachers' acceptance of AI tools (Scherer *et al.*, 2019). Teachers who believe that AI can alleviate workload and improve learning outcomes are more likely to support its classroom use.

Teachers' Awareness and Understanding of AI

Awareness refers to teachers' knowledge of AI applications and their potential in education. Eke (2024) reports that Nigerian teacher educators have limited awareness of AI tools beyond basic digital platforms. Similarly, Samaila *et al.* (2024) found that only 38% of secondary school teachers in Kwara State were aware of specific AI functions like automated assessment and

adaptive learning. Internationally, Ouyang, & Jiao,(2021) noted that teachers with greater exposure to AI through continuous professional development exhibited higher awareness and perceived benefits.

Teachers' Perceptions of AI Benefits

Perception of benefits influences adoption decisions. Evidence indicates that teachers perceive AI as a tool for:

- Enhancing instructional effectiveness
- Supporting personalized learning
- Improving assessment accuracy
- Reducing administrative burdens

For example, Asanre *et al.* (2024) found that secondary school teachers in Ogun State rated AI positively for real-time performance feedback, adaptive tutoring, and student engagement. International comparisons (Ouyang, & Jiao,2021) confirm that when teachers perceive clear benefits, their motivation to adopt AI increases.

Challenges and Barriers to AI Adoption

Multiple constraints hinder AI integration, especially in developing settings.

Infrastructure Barriers

Inadequate ICT infrastructure — including poor internet connectivity and unstable electricity — is consistently reported as a major challenge (Samaila *et al.*, 2024; Asanre *et al.*, 2024). Without reliable infrastructure, AI systems cannot function effectively.

Professional Development Barriers

Lack of structured training limits teachers' ability to use AI tools. Samaila *et al.* (2024) highlighted that only 25% of teachers had attended any AI-focused training. Similar findings are reported in Ghana (Iddrisu & Iddrisu, 2025).

Institutional Support Barriers

Limited administrative support and unclear policy directives also dampen adoption. Oyefeso *et al.* (2025) observed that even school leaders lacked clear guidelines for AI deployment. Research in international contexts shows that teachers generally acknowledge the potential benefits of AI for personalized instruction and administrative support, yet also reveal concerns about ethical issues and lack of preparedness for classroom integration. For example, a study of K-12 teachers in China found that while teachers recognized AI's instructional benefits, many expressed concerns about ethical issues like data privacy and felt unprepared to integrate AI tools into their pedagogy (Ouyang, & Jiao,2021).

Empirical Studies Review

Teacher Readiness for AI

While studies specifically on AI readiness among secondary school teachers in Nigeria remain limited, parallel research on ICT and AI-related tools highlights common readiness gaps. Samaila *et al.* (2024) reported that teachers in Kwara State were aware of AI assessment

methods but had only moderate readiness to use such tools due to limited exposure and training opportunities. Similarly, research in West Africa indicates that teachers exhibit mixed levels of readiness, largely dependent on professional development experiences and institutional infrastructure (Iddrisu & Iddrisu, 2025).

A descriptive survey of 100 teachers in public secondary schools in Akure South LGA, Ondo State found low teacher awareness and adoption of AI-based instructional tools. Specifically, 65% of teachers were not aware of AI instructional tools, 37% rarely used them, and 42% never used AI tools in their pedagogical practice. (Adeyemi, Lamidi, & Ayeni, 2025)

Globally, studies also show a readiness–perception gap. Ouyang, & Jiao,(2021) found that although Chinese teachers acknowledged the instructional benefits of AI, many expressed concerns about ethical issues and felt inadequately prepared to integrate AI pedagogically. These insights suggest that readiness and perception are related but distinct constructs, both requiring targeted intervention.

Teachers' Perceptions of AI Integration

In contexts similar to Nigeria, studies have documented generally positive teacher perceptions toward AI. Asanre *et al.* (2024) found that senior secondary school teachers in Ogun State expressed favorable perceptions of AI integration in mathematics instruction, highlighting positive attitudes and experience as key factors. These perceptions were shaped by teachers' understanding of how AI could support instructional tasks and improve student engagement.

International research reinforces the pattern observed in Nigeria and similar contexts: K–12 teachers generally recognize the potential of AI to support personalized instruction, administrative tasks, and learning engagement, yet they also raise practical concerns about ethical issues, curriculum alignment, and structured support. Large international studies have documented positive teacher attitudes toward AI readiness alongside self-reported gaps in professional development and institutional support, highlighting the need for guided implementation strategies and ethical frameworks to govern AI use in classrooms (Alammary *et al.* 2024).

Recent empirical evidence further supports the centrality of teachers' readiness and perceptions in the successful integration of Artificial Intelligence (AI) in secondary education. Aduloju and Adedotun (2025) examined the role of AI in enhancing mathematical modeling within science education programs and found that teachers generally held positive perceptions toward AI-driven instructional tools, particularly regarding their potential to improve problem-solving, instructional efficiency, and student engagement. However, the study also revealed moderate levels of readiness, as many teachers reported limited exposure to AI applications and inadequate professional training. These findings align with broader Nigerian and international literature suggesting that while

teachers are increasingly receptive to AI innovations, their ability to translate positive attitudes into effective classroom practice is constrained by insufficient technical competence, limited institutional support, and weak policy implementation frameworks. Thus, Aduloju and Adedotun's (2025) study reinforces the argument that positive perception alone is insufficient for effective AI integration without corresponding investments in teacher capacity building, infrastructure development, and continuous professional development.

Research Gap

The literature demonstrates a global and regional interest in teachers' readiness and perceptions of AI in education. However, few empirical studies have investigated these constructs specifically among public secondary school teachers in Ondo State, Nigeria. Most existing research either focuses on broader ICT readiness, tertiary institutions, or different geopolitical settings. Moreover, while some studies explore perceptions or readiness separately, there is limited evidence that examines both simultaneously within the Nigerian secondary school context. This gap justifies the present study. While existing studies have examined teachers' awareness or perceptions of AI in isolation, there is limited empirical evidence that simultaneously examines readiness, perceptions, influencing factors, and contextual challenges among public secondary school teachers in Ondo State.

Summary

AI integration in education holds promise for improving instructional quality and learning outcomes. Research indicates that teachers' readiness and perceptions are critical factors in harnessing AI's potential, influenced by training, exposure, infrastructure, and belief systems. Although studies from Nigeria and abroad offer insights into these dynamics, a focused investigation in Ondo State's public secondary schools is needed to inform policy and practice for AI integration.

MATERIALS AND METHODS

This section describes the methodology adopted for the study on teachers' readiness and perceptions of Artificial Intelligence (AI) integration in public secondary schools in Ondo State, Nigeria. It outlines the research design, population of the study, sample and sampling technique, research instrument, validity and reliability of the instrument, procedure for data collection, and method of data analysis. The methodological choices were made to ensure that the study yields valid, reliable, and generalizable findings.

Research Design

The study adopted a descriptive survey research design. This design was considered appropriate because it allows the researcher to collect data from a large population to describe existing conditions, attitudes, perceptions, and levels of readiness without manipulating any variables.

The descriptive survey design is particularly suitable for studies that seek to examine opinions and perceptions of respondents as they naturally occur within an educational setting. The use of descriptive statistics aligns with the exploratory nature of this study, which seeks to establish baseline empirical evidence rather than causal inference. Therefore, research questions were considered sufficient, and hypotheses were not formulated.

Population of the Study

The population of the study comprised all teachers in public secondary schools in Ondo State, Nigeria. Public secondary schools were chosen because they constitute the majority of secondary schools in the state and are directly influenced by government policies on technology integration in education. Teachers across different subject areas were included in the population to ensure a comprehensive understanding of readiness and perceptions of AI integration.

Sample and Sampling Technique

A sample of teachers was drawn from the population using a multistage sampling technique. First, Ondo State was stratified into its senatorial districts to ensure geographical representation. Second, a proportionate number of public secondary schools were randomly selected from each district. Finally, teachers were selected from the sampled schools using simple random sampling. This sampling approach ensured that teachers from different locations, school sizes, and subject specializations were adequately represented, thereby enhancing the representativeness and generalizability of the study findings. The sample size of 160 teachers was determined using the Krejcie and Morgan (1970) sample size determination table, which provides statistically adequate samples for finite populations.

Research Instrument

The primary instrument for data collection was a structured questionnaire titled "Teachers' Readiness and Perceptions of Artificial Intelligence Integration Questionnaire (TRPAIIQ)". The questionnaire was designed by the researcher after an extensive review of relevant literature.

The instrument was divided into five sections:

- Section A: Demographic information of respondents (such as gender, teaching experience, and subject area).
- Section B: Items measuring teachers' readiness for AI integration, including technical competence, pedagogical preparedness, and access to resources.
- Section C: Items measuring teachers' perceptions of AI integration, such as perceived usefulness, perceived ease of use, and attitudes toward AI.
- Section D: Items measuring factors influencing AI integration in public secondary schools.
- Section E: Items measuring challenges and barriers to AI integration in public secondary schools.

Responses to Sections B, C, D and E were measured using

a four-point Likert scale ranging from Strongly Agree (SA) to Strongly Disagree (SD). 2.50 is the midpoint of the 4-point Likert scale served as benchmark mean across section where applicable.

Validity of the Research Instrument

To ensure the validity of the instrument, content and face validity were established. Copies of the questionnaire were submitted to experts in educational technology, measurement and evaluation, and experienced secondary school teachers for review. Their comments and suggestions were incorporated to ensure that the items adequately covered the constructs of teachers’ readiness and perceptions of AI integration and were clearly worded.

Reliability of the Research Instrument

The reliability of the instrument was determined through a pilot study conducted among teachers in public secondary schools outside the sampled schools but within Ondo State. Data obtained from the pilot test were analyzed using the Cronbach’s Alpha reliability method. A reliability coefficient of 0.82, 0.78, 0.83 and 0.80 were obtained for each section B, C, D and E respectively.

Procedure for Data Collection

Permission to conduct the study was obtained from the appropriate educational authorities and school administrators. The researcher, with the assistance of trained research assistants, administered the questionnaires directly to the respondents during school hours. Respondents were assured of the confidentiality of their responses and informed that participation was voluntary. Completed questionnaires were collected on

the spot or within an agreed period to ensure a high response rate.

Method of Data Analysis

Data collected were coded and analyzed using appropriate statistical techniques. Descriptive statistics, including frequency counts, percentages, mean, and standard deviation, were used to answer the research questions.

Ethical Considerations

Ethical considerations were strictly observed throughout the study. Respondents’ anonymity was maintained, and no personal identifying information was collected. Participants were informed about the purpose of the study and their right to withdraw at any time without penalty. Data collected were used strictly for academic purposes.

RESULTS AND DISCUSSIONS

This section presents the findings of the study on teachers’ readiness and perceptions of Artificial Intelligence (AI) integration in public secondary schools in Ondo State, Nigeria. The results are organized according to the research questions, and descriptive statistics (mean, standard deviation) are used for analysis. A benchmark of 2.50 midpoint was used, where mean scores ≥ 2.50 indicate agreement/high readiness/perception, and scores < 2.50 indicate disagreement/low readiness/perception. A Likert 4 point Scale: SA = 4, A = 3, D = 2, SD = 1 was used.

Demographic Characteristics of Respondents

A total of 160 teachers participated in the study. Table 1 summarizes their demographic information.

Table 1: Demographic Characteristics of Respondents (n = 160)

Demographics	Frequency	Percentage (%)
Gender		
Male	92	57.5
Female	68	42.5
Age (years)		
Below 30	28	17.5
30–39	54	33.8
40–49	48	30.0
50 and above	30	18.7
Highest Qualification		
NCE	40	25.0
B.Ed/B.Sc(Ed)	92	57.5
M.Ed/M.Sc	28	17.5
Teaching Experience		
Below 5 yrs	22	13.8
5–10 yrs	46	28.7
11–20 yrs	58	36.3
Above 20 yrs	34	21.2

School Location		
Urban	70	43.8
Semi-urban	50	31.2
Rural	40	25.0

Interpretation

The sample is balanced with a slightly higher proportion of male teachers. Most respondents are between 30–49 years old with B.Ed/B.Sc(Ed) as the dominant qualification. Teaching experience is spread across all categories, and Urban schools constituted the largest proportion of the sample. The dominance of teachers with over 10 years of

experience suggests that perceptions reflect experienced practitioners rather than novice teachers.”

Research Question 1

What is the level of teachers’ readiness for AI integration in public secondary schools in Ondo State?

tables with full Likert-scale data based on your 160 respondents:

Table 2: Teachers’ Readiness for AI Integration (Section B)

Item	SA	A	D	SD	Mean	SD	Dec
I have basic ICT skills required to use AI tools	50	70	30	10	3.10	0.71	High
I am confident in my ability to learn AI tools	48	72	32	8	3.05	0.68	High
I have received training related to AI	20	35	60	45	2.20	0.92	Low
My school provides adequate technological facilities	18	30	62	50	2.15	0.87	Low
I understand how AI tools align with my subject	40	65	40	15	2.85	0.79	High
I am willing to integrate AI tools in instruction	55	70	25	10	3.20	0.65	High
I can troubleshoot minor technical problems	35	50	55	20	2.50	0.74	Marginal agreement
School management encourages AI use	15	40	60	45	2.35	0.80	Low
I have access to internet facilities for AI	12	38	60	50	2.10	0.88	Low
I feel prepared to use AI for teaching	42	60	40	18	2.75	0.77	High

Note: SA=Strongly Agree, A=Agree, D=Disagree, SD=Strongly Disagree

Overall Mean = 2.61 → Moderate to High readiness

Interpretation

Teachers show moderate to high readiness in terms of technical confidence and willingness. However, institutional support, training, and infrastructure are weak, indicating that readiness is partly constrained by organizational factors. These findings reflect a partial readiness profile, consistent with TAM assumptions that perceived competence does

not automatically translate into system readiness in the absence of institutional support.

Research Question 2

What are teachers’ perceptions (attitudes, beliefs, perceived usefulness) toward AI integration in teaching and learning?

Table 3: Teachers’ Perceptions of AI Integration (Section C)

Item	SA	A	D	SD	Mean	SD	Dec
AI can improve quality of teaching	60	70	20	10	3.35	0.60	High
AI can personalize learning	50	70	25	15	3.10	0.67	High
Using AI reduces workload	45	65	35	15	2.90	0.74	High
AI enhances students’ performance	50	65	30	15	3.05	0.70	High
AI tools are easy to use	35	65	40	20	2.50	0.82	Marginal agreement
AI supports assessment and feedback	50	60	35	15	3.00	0.68	High
I have a positive attitude toward AI	55	65	25	15	3.15	0.65	High
AI is important for future education	60	65	20	15	3.30	0.59	High
AI aligns with modern teaching practices	50	65	30	15	3.05	0.66	High
I am comfortable using AI in teaching	45	65	35	15	2.95	0.71	High

Overall Mean = 3.05 → High perception

Interpretation

Teachers perceive AI positively, recognizing its potential benefits for personalized instruction, assessment, and workload reduction. Ease-of-use is slightly lower, suggesting training could further improve perceptions.

Research Question 3

What factors influence teachers’ readiness for Artificial Intelligence (AI) integration in public secondary schools in Ondo State?

Table 4: Personal and Institutional Factors Influencing Teachers’ Readiness for AI Integration (N = 160)

S/N	Factors	SA	A	D	SD	Mean	SD	Dec
Personal Factors								
1	Prior exposure to digital tools enhances my readiness to use AI in teaching	52	61	32	15	3.10	0.65	High influence
2	I feel confident (self efficacy) in learning and using AI based tools	48	60	36	16	3.05	0.70	High influence
3	My ICT skills are sufficient to support AI integration in teaching	45	58	40	17	2.96	0.74	Moderate influence
Institutional Factors								
4	Regular professional development improves my readiness to use AI	28	45	52	35	2.25	0.90	Low influence
5	School leadership actively supports teachers’ use of AI	30	42	50	38	2.30	0.85	Low influence
6	Adequate access to computers and internet improves my AI readiness	26	44	54	36	2.20	0.88	Low influence
7	Availability of clear school policies encourages AI adoption	29	46	48	37	2.33	0.84	Low influence
8	Technical support staff are available to assist with AI tools	27	43	51	39	2.23	0.89	Low influence
9	Time allocated for learning new technologies improves readiness	31	47	46	36	2.36	0.83	Low influence
10	Peer collaboration encourages my readiness to use AI	34	50	44	32	2.46	0.81	Moderate influence

Decision Rule: Mean ≥ 3.00 = High influence; 2.50–2.99 = Moderate influence; < 2.50 = Low influence

Interpretation

The table indicates that teachers’ readiness for AI integration is influenced more by personal factors, particularly prior exposure to digital tools and self efficacy. Institutional factors such as professional development, leadership support, infrastructure, and policy guidance

were perceived as weak, suggesting systemic limitations in supporting AI adoption.

Research Question 4

What challenges hinder Artificial Intelligence (AI) integration in public secondary schools in Ondo State?

Table 5: Challenges Hindering AI Integration in Public Secondary Schools (N = 160)

S/N	Challenge	SA	A	D	SD	Mean	SD	Rank	Dec
1	Inadequate ICT infrastructure (computers, internet)	70	54	24	12	3.14	0.69	1st	Major challenge
2	Lack of AI focused professional training	66	56	26	12	3.10	0.71	2nd	Major challenge
3	Unstable electricity supply	62	52	30	16	3.00	0.76	3rd	Major challenge
4	Limited technical support in schools	58	50	34	18	2.93	0.79	4th	Moderate challenge
5	Lack of clear government or school AI policy	55	48	36	21	2.86	0.82	5th	Moderate challenge
6	Ethical concerns (data privacy, misuse)	50	46	40	24	2.78	0.85	6th	Moderate challenge

7	Fear of job displacement by AI	44	42	46	28	2.64	0.88	7th	Moderate challenge
8	Resistance to change among teachers	40	44	48	28	2.60	0.87	8th	Moderate challenge
9	Inadequate time to learn AI tools	38	42	50	30	2.55	0.89	9th	Moderate challenge
10	High cost of AI technologies	36	40	52	32	2.50	0.90	10th	Moderate challenge

Decision Rule: Mean ≥ 3.00 = Severe challenge; 2.50–2.99 = Moderate challenge; < 2.50 = Low challenge

Interpretation

Inadequate infrastructure, lack of professional training, and unstable electricity supply emerged as the most severe challenges to AI integration. These findings highlight structural and capacity related barriers that must be addressed before meaningful AI adoption can occur in public secondary schools.

Discussion of Findings

This section discusses the findings of the study in relation to the reviewed literature, with emphasis on teachers' perceptions, readiness, and challenges associated with the integration of Artificial Intelligence (AI) in public secondary schools in Ondo State, Nigeria.

Teachers' Perceptions of Artificial Intelligence Integration

The findings of the study revealed that secondary school teachers in Ondo State exhibited highly positive perceptions toward the integration of Artificial Intelligence in teaching and learning. Teachers strongly agreed that AI has the potential to enhance instructional effectiveness, personalize learning, improve assessment practices, and prepare students for future careers. This positive perception indicates a growing awareness among teachers of the transformative role of AI in education.

This finding is consistent with earlier studies such as Alammary *et al.* (2024) and Ouyang and Jiao (2021), who reported that teachers generally perceive AI as a valuable tool for improving pedagogical practices, particularly in terms of adaptive learning and feedback mechanisms. Similarly, UNESCO (2021) emphasized that educators' positive perceptions of AI are crucial for its successful integration into formal education systems.

Within the framework of the Technology Acceptance Model (TAM), the high level of positive perception observed in this study reflects strong perceived usefulness, which is a critical predictor of technology acceptance. Teachers' belief that AI can improve teaching outcomes aligns with TAM's assertion that perceived usefulness significantly influences users' attitudes toward technology adoption. This suggests that teachers in Ondo State are psychologically prepared to embrace AI-driven innovations, even within a resource-constrained educational environment.

Teachers' Readiness for Artificial Intelligence Integration

Despite the positive perceptions, the study revealed

that teachers' overall readiness to integrate AI was only moderate. While many teachers demonstrated basic ICT skills, willingness to learn, and confidence in using digital tools, their readiness was constrained by limited exposure to AI-specific applications and insufficient institutional support.

This finding aligns with Samaila *et al.* (2022) and Adeyemi *et al.* (2023), who found that teachers in Nigerian public schools often possess foundational ICT competencies but lack the advanced digital skills required for emerging technologies such as AI. Similarly, Asanre *et al.* (2024) reported that readiness for advanced educational technologies in developing contexts is often hindered by inadequate training and systemic limitations.

From a Diffusion of Innovation (DOI) perspective, the moderate readiness level suggests that most teachers fall within the early majority or late majority categories. Although they are not resistant to innovation, their adoption depends heavily on external support, observable benefits, and reduced complexity. The findings therefore indicate that AI integration in Ondo State schools is still at an early diffusion stage, requiring structured support to move toward full adoption.

Institutional Support and Environmental Factors

The study further revealed that institutional and environmental factors significantly limited teachers' readiness, despite their positive attitudes. Teachers reported inadequate ICT infrastructure, limited access to reliable internet services, weak administrative support, and absence of clear AI-related policies at both school and government levels.

This finding corroborates earlier studies such as Bali *et al.* (2024) and Eke and Ojo (2022), which identified infrastructural inadequacies and weak policy frameworks as major barriers to digital innovation in Nigerian secondary education. UNESCO (2021) similarly emphasized that successful AI integration requires supportive institutional ecosystems, including leadership commitment, infrastructure, and governance structures.

The results further support TAM's extension models, which recognize facilitating conditions as a crucial determinant of technology adoption. Even when teachers perceive AI as useful and express positive attitudes, the absence of enabling conditions prevents meaningful classroom implementation. This explains the observed gap between perception and readiness in the present study.

Challenges Hindering Artificial Intelligence Integration

The major challenges identified in the study included inadequate ICT facilities, lack of AI-focused professional training, unstable electricity supply, limited technical support, and high cost of digital infrastructure. These challenges were rated as severe by most respondents, indicating systemic constraints rather than individual resistance.

These findings are consistent with Oyetunde and Niyi (2022) and Eke (2024), who reported that infrastructural deficits and unreliable power supply remain persistent obstacles to technology integration in Nigerian schools. Similarly, Alammary *et al.* (2024) noted that without sustained training and institutional investment, AI initiatives in education often remain at the policy or pilot stage.

The prominence of electricity and infrastructure challenges also highlights the contextual realities of developing countries, where technological readiness cannot be separated from broader socio-economic and infrastructural development. This reinforces arguments in the literature that AI integration in education must be context-sensitive and aligned with national development priorities.

Perception–Readiness Gap and Implications

One of the most significant contributions of this study is the identification of a clear gap between teachers' positive perceptions of AI and their moderate readiness to implement it. While teachers recognize the benefits of AI and express willingness to adopt it, structural and institutional barriers prevent effective integration.

This finding supports UNESCO's (2021) assertion that positive attitudes alone are insufficient for successful AI adoption in education. It also extends existing literature by empirically demonstrating this gap within the context of public secondary schools in Ondo State. The study therefore reinforces the need for a holistic approach to AI integration that combines teacher motivation with infrastructure development, policy formulation, and continuous professional development.

Summary of Discussion

In summary, the findings of the study confirm that teachers in Ondo State public secondary schools possess positive perceptions and moderate readiness toward AI integration, but face significant systemic challenges that limit practical implementation. The results are largely consistent with existing literature and theoretical frameworks, particularly TAM and DOI, while also providing context-specific insights relevant to Nigerian secondary education. The study underscores that effective AI integration requires not only willing teachers but also strong institutional support, enabling policies, and sustainable infrastructure.

CONCLUSION

This study examined teachers' readiness and perceptions regarding the integration of Artificial Intelligence (AI) in public secondary schools in Ondo State, Nigeria. The findings reveal a clear readiness–perception gap: although

teachers expressed highly positive perceptions about AI's potential to enhance teaching quality, personalized learning, and assessment, their actual readiness for implementation was only moderate.

Teachers demonstrated basic ICT competence, willingness, and confidence to learn AI tools, indicating a promising human-capacity foundation. However, institutional constraints—including inadequate infrastructure, limited internet access, weak leadership support, insufficient professional development, and absence of clear AI policies—significantly hinder practical integration. Unstable electricity supply and lack of AI-focused training emerged as critical barriers.

Consistent with the Technology Acceptance Model and Diffusion of Innovation theory, the study confirms that positive attitudes and perceived usefulness alone are insufficient to ensure adoption in resource-constrained contexts. Effective AI integration requires systemic support, enabling policies, and sustainable infrastructure. The study contributes to AI-in-education scholarship by contextualizing readiness within the realities of public secondary schools in developing countries.

RECOMMENDATION

Priority should be given to strengthening ICT infrastructure, improving internet access, and providing alternative power solutions. Structured, hands-on professional development focused on pedagogical AI applications is essential. Clear policy frameworks addressing ethics, data privacy, and responsible use should guide implementation. Institutional leadership, technical support systems, and integration of AI literacy into teacher education programmes are recommended to promote sustainable adoption.

Suggestions for Further Studies

Future research should employ comparative, experimental, qualitative, and longitudinal designs to examine AI's impact on learning outcomes, teachers' experiences, policy implementation, and ethical governance across diverse educational contexts.

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Appendix
Visual Diagram of the Model

