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EVALUATING ARTIFICIAL INTELLIGENCE CHATBOTS AS LEARNING-SUPPORT TOOLS AMONG UNDERGRADUATES: A MULTIDIMENSIONAL PERSPECTIVE

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ABSTRACT: Artificial intelligence (AI) chatbots such as ChatGPT, Gemini and Meta AI are increasingly used to support learning, but their accessibility, usefulness and challenges among Nigerian undergraduates remain insufficiently understood. This study examined AI chatbots as learning-support tools among undergraduates in Southwestern Nigeria, focusing on awareness, accessibility, perceived usefulness, challenges and perceived solutions. A descriptive survey design was adopted. Three public universities in Southwestern Nigeria were purposively selected, and 1,012 undergraduates were sampled using simple random sampling. Of the questionnaires administered, 992 valid responses were retrieved and analysed, yielding a 98.0% response rate. Data were collected using the Artificial Intelligence Chatbots Tools' Awareness, Accessibility, Usefulness, Challenges, and Solutions among Undergraduates Questionnaire (ACTAAUCSUQ), adapted from constructs derived from Davis's (1989) Technology Acceptance Model and Venkatesh et al.'s (2003) Unified Theory of Acceptance and Use of Technology, and informed by the guidance on generative AI in education and research provided by Miao and Holmes (2023). Data were analysed using percentages, mean and standard deviation. Findings showed high awareness of QuillBot, Grammarly, ChatGPT and Meta AI, but low awareness of Gemini, Claude, Copilot and Character AI. Accessibility and perceived usefulness were high, while major challenges included high data costs, inadequate usage skills, unaffordable subscriptions, low lecturer encouragement and fear of academic punishment. Campus Wi-Fi, affordable data, lecturer demonstrations, clear policies, peer training and first-year orientation were identified as key solutions. The study concluded that AI chatbots have potential as learning-support tools, although infrastructural, financial, skill-related and institutional challenges require attention to promote effective use among undergraduates in Southwestern Nigeria.

Keywords: Artificial Intelligence Chatbots, Perceived Usefulness, Adoption, Learning-Support Tools, Undergraduates

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INTRODUCTION

The rapid development of generative artificial intelligence (GenAI) has introduced a new dimension to technology-supported learning in higher education. AI chatbot tools such as ChatGPT, Gemini, Microsoft Copilot and Claude provide conversational interfaces through which students can obtain explanations, clarify concepts, summarise information, generate ideas, improve written work and support various academic activities. Their growing presence in higher education has expanded the range of digital resources available for learning support and raised important questions concerning students' awareness, accessibility, perceptions and experiences with these technologies. Emerging literature indicates that AI chatbots are increasingly incorporated into students' academic practices, particularly for information seeking, brainstorming, summarising learning materials and obtaining assistance with difficult concepts (Ravšelj et al., 2025; Strzelecki, 2024). However, the expanding range of available platforms suggests that students' familiarity and engagement may vary considerably across AI chatbot tools.

Awareness constitutes an important starting point for understanding students' engagement with AI chatbot technologies. In this context, awareness encompasses knowledge of available AI chatbot tools, familiarity with their functions and recognition of their potential applications to learning. As the visibility of GenAI increases within higher education, students are increasingly exposed to technologies capable of performing functions previously associated primarily with conventional search engines, digital libraries and other educational technologies. Evidence from different educational contexts indicates growing familiarity with ChatGPT and related applications (Baidoo-Anu et al., 2024; Orok et al., 2024; Shittu et al., 2025). However, awareness of one prominent platform does not necessarily indicate familiarity with the broader range of AI chatbot tools currently available. This distinction is particularly important when examining students' awareness across multiple platforms rather than concentrating exclusively on a single application.

Beyond awareness, accessibility influences the extent to which students can translate knowledge of AI chatbot technologies into actual educational engagement. Accessibility encompasses the availability and usability of the technological, infrastructural and individual resources required to interact with these tools. Access to appropriate devices, reliable internet connectivity, affordable data, digital skills and suitable platforms may shape students' opportunities to use AI chatbots for learning. Concerns relating to privacy and security may also influence students' willingness to engage with these technologies (Baidoo-Anu et al., 2024). Thus, awareness does not necessarily translate into effective utilisation. Recent evidence from Nigeria points to a potential gap between awareness and actual utilisation of GenAI among undergraduates, highlighting the importance of the conditions that facilitate or constrain students' engagement with these technologies (Adedokun et al., 2026). Differences in socioeconomic circumstances and institutional environments may further contribute to variations in students' access to and perceptions of GenAI technologies (Baek et al., 2024).

The perceived usefulness of AI chatbots represents another important dimension of their potential contribution to learning. Their educational relevance derives from their capacity to provide

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immediate responses, simplify complex information, generate examples and ideas, summarise learning materials and facilitate aspects of independent learning. These functions may complement conventional academic resources by providing students with an interactive means of seeking clarification and exploring learning content. Existing literature has associated AI chatbot use with perceived improvements in access to knowledge, understanding of complex information and study efficiency (Ravšelj et al., 2025). Positive perceptions of their educational potential have also been reported across different higher education contexts (Baidoo-Anu et al., 2024; Orok et al., 2024), while students' perceptions of ChatGPT have been associated with their engagement in online learning (Mehrvarz et al., 2025). Nevertheless, perceived usefulness should not be equated with educational effectiveness, as the value of AI-generated assistance depends partly on the accuracy of generated responses, the quality of students' interaction with the technology and their capacity to critically evaluate and appropriately apply the information provided.

The educational use of AI chatbots is also accompanied by challenges that may constrain their effectiveness as learning-support resources. These challenges encompass informational, academic, ethical, technological and institutional dimensions. AI-generated responses may contain inaccurate or misleading information, requiring students to verify generated content rather than accept it uncritically. Academic concerns include plagiarism, inappropriate assistance, academic dishonesty and potential overdependence on AI-generated content. Other concerns relate to privacy, security, originality, distraction and the possible weakening of students' independent thinking and critical engagement with learning materials (Baidoo-Anu et al., 2024; Nnaemeka & Ogunbadejo, 2024; Ravšelj et al., 2025). Consequently, the educational value of AI chatbots depends not only on their technological capabilities but also on students' capacity to use them critically and responsibly within appropriate academic and institutional contexts.

Addressing these challenges requires attention to student capacity, lecturer support and institutional provision. Students require adequate AI literacy to formulate appropriate prompts, evaluate generated responses, identify inaccuracies and use AI-supported information responsibly. Lecturers can provide guidance on appropriate applications of AI in academic activities, while higher education institutions can establish policies, training opportunities and assessment practices that promote responsible use. The need for students to critically evaluate AI-generated information and for institutions to provide clearer guidance has been emphasised in the emerging literature (Hadinejad et al., 2025). Similarly, curricular integration, seminars, institutional guidelines and appropriate academic-integrity measures have been identified as relevant responses to the educational challenges associated with GenAI (Espartinez, 2024; Johnston et al., 2024; Orok et al., 2024; Shittu et al., 2025). UNESCO's guidance similarly emphasises the need for human-centred, safe, equitable and meaningful use of GenAI, supported by institutional policy, ethical safeguards and human capacity development (Miao & Holmes, 2023).

Despite the growing body of literature on AI in higher education, an important problem remains in the Nigerian context. Existing evidence has frequently focused on ChatGPT or on students' general attitudes towards GenAI, while comparatively less attention has been given to students' awareness across multiple AI chatbot platforms, their practical accessibility, perceived usefulness, experienced challenges and the measures they consider necessary to support effective use. Recent Nigerian evidence has identified an awareness-to-utilisation gap among undergraduates, suggesting that

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knowledge of GenAI tools does not necessarily translate into their educational use (Adedokun et al., 2026). This issue has practical implications for higher education because inadequate knowledge of which tools students know and can access, how useful they perceive them to be and what constrains their use may limit institutions' ability to design appropriate AI-literacy programmes, digital-support interventions, lecturer guidance and institutional policies. Conversely, uncritical or unsupported use may expose students to inaccurate information, academic-integrity concerns, privacy risks and overreliance on AI-generated content. UNESCO has similarly emphasised that educational institutions need appropriate policies, ethical safeguards and capacity development to ensure that GenAI contributes meaningfully to teaching and learning rather than simply increasing technological adoption.

The problem is therefore not simply whether Nigerian undergraduates are using AI chatbots, but whether they possess sufficient awareness, access and understanding to use these technologies effectively and responsibly for learning. Without empirical evidence on these dimensions, institutional responses may be based on assumptions about students' familiarity, access and educational experiences rather than on their actual circumstances. In Southwestern Nigeria, where institutional resources, digital infrastructure and students' socioeconomic circumstances may vary, understanding these dimensions is particularly important for informing contextually appropriate approaches to AI-supported learning.

Against this background, the present study examines AI chatbot tools as learning-support resources among undergraduates in Southwestern Nigeria. Specifically, the study considers students' awareness of commonly used AI chatbot tools, accessibility to these technologies, perceived usefulness for learning support, challenges that may constrain their use and perceived solutions to such challenges. Examining these dimensions together provides an empirical basis for understanding students' engagement with AI chatbot technologies and for identifying the pedagogical, infrastructural and institutional conditions required to support their effective use in higher education.

Objective of the Study

The study's broad objective was to evaluate the perceived usefulness and adoption of artificial intelligence chatbots as learning-support tools among undergraduates in southwestern Nigeria. The specific objectives are to:

i. identify the level of awareness of commonly used AI chatbot tools among undergraduates in Southwestern Nigeria;
ii. assess the level of accessibility of AI chatbot tools among undergraduates in Southwestern Nigeria;
iii. examine undergraduates' perceptions of the usefulness of AI chatbot tools for learning support in Southwestern Nigeria;
iv. identify the perceived challenges that affect the effectiveness of AI chatbot tools for learning support among undergraduates in Southwestern Nigeria; and
v. examine undergraduates' perceived solutions to the challenges affecting the effectiveness of AI chatbot tools for learning support in Southwestern Nigeria.

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Research Questions

The following research questions guided the study.

i. What is the level of awareness of commonly used AI chatbot tools among undergraduates in Southwestern Nigeria?
ii. What is the level of accessibility of AI chatbot tools among undergraduates in Southwestern Nigeria?
iii. How do undergraduates perceive the usefulness of AI chatbot tools for learning support in Southwestern Nigeria?
iv. What are the perceived challenges that affect the effectiveness of AI chatbot tools for learning support among undergraduates in Southwestern Nigeria?
v. What are undergraduates' perceived solutions to the challenges affecting the effectiveness of AI chatbot tools for learning support in Southwestern Nigeria?

LITERATURE REVIEW

Awareness of AI chatbot tools

Awareness of AI chatbot tools refers to students' knowledge of their existence, functions and potential educational applications. Evidence across higher education contexts indicates increasing awareness of ChatGPT and related generative AI tools, although levels vary across settings. In Africa, studies have reported both limited and relatively high awareness: Adarkwah et al. (2023) found limited awareness among Ghanaian academics, whereas Shittu et al. (2025) reported high awareness among University of Ibadan students. Aiyebelehin et al. (2025) further identified awareness as an important factor associated with undergraduate students' use of ChatGPT in Nigeria, while Ojubanire et al. (2025) found variations in awareness and knowledge across Morocco, Nigeria and Tanzania. These findings suggest that awareness is context-dependent and should not be assumed to be uniform across higher education.

Similar patterns are evident beyond Africa. In China, Shahzad et al. (2024) found that ChatGPT awareness significantly influenced university students' intention to adopt the technology, while Liu et al. (2026) reported high levels of generative AI awareness among university students in China and Malaysia. European evidence similarly indicates that awareness may be concentrated around dominant platforms. For example, a large survey of students across Swedish universities found widespread familiarity with ChatGPT, whereas awareness of other AI chatbots remained comparatively limited (Stöhr et al., 2024). In Australia, Kelly et al. (2023) reported relatively low levels of students' knowledge, experience and confidence in using generative AI during the early phase of its adoption in higher education. Collectively, these findings indicate that awareness of AI chatbots is expanding internationally, but familiarity varies across tools, contexts and stages of adoption.

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Accessibility of AI chatbot tools

Accessibility of AI chatbot tools refers to students' ability to obtain and use these technologies through appropriate devices, reliable internet connectivity, affordable data and the digital capabilities required for meaningful interaction. Access to digital devices and high-quality connectivity constitutes a necessary condition for effective participation in technology-supported education, although access alone does not guarantee meaningful use (OECD, 2023). UNESCO similarly emphasises equitable and meaningful access to generative AI, alongside human capacity and appropriate institutional conditions, as important for its responsible use in education (Miao & Holmes, 2023). These concerns are relevant across educational systems because inequalities in connectivity, device availability, affordability and digital skills can produce unequal opportunities to benefit from emerging technologies. Thus, the accessibility of AI chatbot tools extends beyond their technical availability to include students' practical and equitable ability to access and use them for learning.

Usefulness of AI chatbot tools

Usefulness of AI chatbot tools refers to the extent to which students perceive these technologies as capable of supporting their learning activities, academic tasks and study efficiency. AI chatbots can provide explanations, simplify complex concepts, summarise learning materials, generate ideas, answer questions and facilitate personalised learning support. Evidence across higher education contexts indicates that students perceive ChatGPT as useful for accessing knowledge, understanding difficult information, summarising content and brainstorming (Ravšelj et al., 2025). Perceived usefulness has also been associated with students' attitudes, satisfaction and intentions to continue using AI chatbots for academic purposes (Pham et al., 2025; Yu et al., 2024). However, perceived usefulness does not necessarily imply educational effectiveness, as the quality and accuracy of AI-generated responses may vary and require students to critically evaluate the information provided (Urban et al., 2024). Thus, the usefulness of AI chatbot tools lies in their potential to provide accessible, interactive and efficient learning support, while their educational value depends on appropriate and critical use.

Challenges facing effective usage of AI chatbot tools

Challenges facing effective use of AI chatbot tools refer to the difficulties that may limit students' ability to use these technologies accurately, ethically and meaningfully for learning. Evidence across higher education contexts indicates that students encounter concerns relating to the reliability of AI-generated information, academic integrity, privacy, overreliance and unclear guidance. Hadinejad et al. (2025) reported concerns about plagiarism, unreliable AI-generated content and inadequate institutional guidance, while García-López and Trujillo-Liñán (2025) identified technological integration, equity, data security, algorithmic bias and ethical issues as major challenges to educational use. These findings indicate that access to AI chatbots does not necessarily translate into effective or responsible use.

Similar concerns are evident across different higher education settings. Hadinejad et al. (2025) reported concerns about academic integrity, reliability of AI-generated content and inadequate

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institutional guidance, while Gambo et al. (2026) found that students' positive perceptions and reported usefulness of ChatGPT did not correspond to improved academic performance. Collectively, the literature suggests that effective use of AI chatbot tools depends on students' ability to critically evaluate AI-generated responses, recognise ethical boundaries and use the technology within appropriate institutional and pedagogical guidance.

Solutions to Challenges Affecting Effective Use of AI Chatbot Tools

Solutions to challenges affecting effective use of AI chatbot tools refer to measures that enable students to use these technologies accurately, ethically and meaningfully for learning. Evidence across higher education contexts emphasises AI literacy, clear institutional policies, lecturer support, critical evaluation of AI-generated information and appropriate assessment practices. In Nigeria, Peters and Olojede (2025) recommended critical AI literacy, institutional AI policies and robust data governance, while Aiyebelehin et al. (2025) highlighted digital literacy as important for effective ChatGPT utilisation. Ojubanire et al. (2025) similarly identified training and appropriate institutional support as important for responsible AI adoption across African higher education. In South Africa, Thaldar et al. (2025) demonstrated the value of institutional guidelines, disclosure requirements and capacity building for students and staff.

International evidence reinforces these measures. Jin et al. (2025) identified AI-literacy training, ethical guidelines, authentic assessment and equitable access as important institutional responses across global higher education. Jiang et al. (2025) emphasised clearer institutional policies and adequate support for students and lecturers, while McDonald et al. (2025) highlighted structured guidance, curriculum integration and ethical considerations. An et al. (2025) further stressed course-specific policies, academic-integrity guidance and responsible integration of GenAI. Collectively, the literature indicates that addressing AI chatbot challenges requires coordinated efforts involving AI literacy, institutional policies, lecturer guidance, critical evaluation, ethical awareness, assessment reform and equitable digital access.

Technology Acceptance Model

Davis's (1989) Technology Acceptance Model (TAM) explains technology acceptance through perceived usefulness and perceived ease of use. Perceived usefulness concerns the extent to which users believe that a technology improves task performance, while perceived ease of use concerns the extent to which it can be used with minimal effort. TAM is relevant to this study because undergraduates' use of AI chatbot tools may depend on whether they perceive the tools as useful and easy to use for learning.

Unified Theory of Acceptance and Use of Technology

Venkatesh et al.'s (2003) Unified Theory of Acceptance and Use of Technology (UTAUT) explains technology acceptance through performance expectancy, effort expectancy, social influence and facilitating conditions. The model is relevant because students' use of AI chatbot tools may be influenced by expected learning benefits, ease of use, peer and lecturer influence, and access to devices, internet connectivity and institutional support.

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Miao and Holmes (2023) emphasise the human-centred, ethical, safe and equitable use of generative AI in education. The study was therefore guided by the constructs of TAM and UTAUT, with consideration of Miao and Holmes' (2023) guidance on responsible use of generative AI, to examine awareness, accessibility, perceived usefulness, challenges and solutions relating to AI chatbot use among undergraduates.

METHODOLOGY

Research Design

The study adopted a descriptive survey research design to examine undergraduates' awareness, accessibility, perceived usefulness, challenges and perceived solutions regarding AI chatbot tools as learning-support resources.

Population, Sample and Sampling Procedure

The target population comprised undergraduates enrolled in the selected public universities in Southwestern Nigeria. A multistage sampling procedure was adopted for the study. At the first stage, three public universities in Southwestern Nigeria, namely Federal University Oye-Ekiti (FUOYE), Obafemi Awolowo University (OAU), Ile-Ife, and the University of Ibadan (UI), Ibadan, were purposively selected. The universities were selected to provide institutional representation across the study area and because they offered an appropriate population of undergraduates relevant to the study.

At the second stage, three faculties, namely the Faculties of Education, Arts, and Social Sciences, were purposively selected from each of the three universities. The faculties were selected to ensure representation of undergraduates from different academic disciplines and to provide variation in their educational and disciplinary backgrounds.

At the third stage, a total of 1,012 undergraduates was selected from the selected faculties using simple random sampling. This technique was adopted to give eligible undergraduates an equal opportunity of selection and to minimise selection bias. The sample comprised 337 undergraduates from FUOYE, including 112 from the Faculty of Education, 112 from the Faculty of Arts, and 113 from the Faculty of Social Sciences; 337 from OAU, comprising 112 from the Faculty of Education, 112 from the Faculty of Arts, and 113 from the Faculty of Social Sciences; and 338 from UI, comprising 113 from the Faculty of Education, 112 from the Faculty of Arts, and 113 from the Faculty of Social Sciences.

Instrument for Data Collection

Data were collected using the *Artificial Intelligence Chatbots Tools' Awareness, Accessibility, Usefulness, Challenges, and Solutions among Undergraduates Questionnaire (ACTAAUCSUQ)*. The instrument was adapted and modified from the constructs of the Technology Acceptance Model (Davis, 1989) and Unified Theory of Acceptance and Use of Technology (Venkatesh et al., 2003), with consideration of Miao and Holmes' (2023) guidance on responsible use of generative AI. The

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questionnaire comprised five subscales covering awareness, accessibility, perceived usefulness, challenges and perceived solutions relating to AI chatbot tools.

Validity and Reliability of the Instrument

The instrument was subjected to face and content validation by experts in the field of Test and Measurement to establish its clarity, relevance, adequacy and alignment with the study objectives. A pilot test was conducted by the researchers among 40 undergraduates who were not included in the main study. Internal consistency was established using Cronbach's alpha, with coefficients of 0.86 for awareness, 0.73 for accessibility, 0.79 for perceived usefulness, 0.83 for challenges, and 0.82 for perceived solutions. The coefficients indicated satisfactory internal consistency of the five subscales.

Data Collection Procedure

The questionnaire was administered to selected undergraduates across FUOYE, OAU and UI with the assistance of three trained research assistants in each university. The research assistants were trained by the researchers on the administration of the instrument and data collection procedures.

Method of Data Analysis

Data were analysed using frequency, percentage, mean and standard deviation. The four-point response scale had a criterion mean of 2.50, calculated as (4 + 3 + 2 + 1) / 4. Item or dimension means of 2.50 and above were interpreted as high/affirmative, while means below 2.50 were interpreted as low/negative. The results were presented in tables and interpreted according to the respective research questions.

Ethical Considerations

Participation was voluntary, and respondents were informed about the purpose of the study. Confidentiality and anonymity were maintained, and the data were used strictly for academic purposes.

RESULTS

The analyses were based on 992 valid questionnaires retrieved from the 1,012 questionnaires administered.

Research Question I: What is the level of awareness of commonly used AI chatbot tools among undergraduates in Southwestern Nigeria?

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Table 1: Level of awareness of commonly used AI chatbot tools among undergraduates in Southwestern Nigeria

Statement	HA	MA	LA	NA	Mean (x̄)	St. Dev.
ChatGPT	158 (15.9%)	717 (72.3%)	117 (11.8%)	0 (0.0%)	3.04	0.53
Google Gemini	10 (1.0%)	50 (5.0%)	778 (78.4%)	154 (15.5%)	1.92	0.49
Anthropic Claude	6 (0.6%)	200 (20.2%)	283 (28.5%)	503 (50.7%)	1.71	0.80
Microsoft Copilot	12 (1.2%)	179 (18.0%)	495 (49.9%)	306 (30.8%)	1.90	0.73
Character AI	31 (3.1%)	127 (12.8%)	534 (53.8%)	300 (30.2%)	1.89	0.74
Grammarly	376 (37.9%)	405 (40.8%)	205 (20.7%)	6 (0.6%)	3.16	0.77
QuillBot	501 (50.5%)	428 (43.1%)	54 (5.4%)	9 (0.9%)	3.43	0.64
Meta AI	717 (72.3%)	111(11.2%)	158 (15.9%)	6 (0.6%)	3.55	0.78

Decision Criterion: Mean ≥ 2.50 = High Awareness; Mean < 2.50 = Low Awareness

Table 1 shows that undergraduates had high awareness of Meta AI (M = 3.55, SD = 0.78), QuillBot (M = 3.43, SD = 0.64), Grammarly (M = 3.16, SD = 0.77), and ChatGPT (M = 3.04, SD = 0.53), as their mean scores were above the 2.50 decision criterion. In contrast, the respondents had low awareness of Google Gemini (M = 1.92, SD = 0.49), Microsoft Copilot (M = 1.90, SD = 0.73), Character AI (M = 1.89, SD = 0.74), and Anthropic Claude (M = 1.71, SD = 0.80).

Research Question II: What is the level of accessibility of AI chatbot tools among undergraduates in Southwestern Nigeria?

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Table 2: Level of accessibility of AI chatbot tools among undergraduates in Southwestern Nigeria

Statement	SA	A	D	SD	Mean	S. D
AI Chatbot tools are accessible to students of all academic levels.	310 (31.3%)	523 (52.7%)	159 (16.0%)	0(0%)	3.15	0.67
AI Chatbot tools load quickly when I try to use them.	256 (25.8%)	496 (50.0%)	240 (24.2%)	0(0%)	3.02	0.71
AI Chatbot tools are accessible regardless of my field of study.	240 (24.2%)	593 (59.8%)	159 (16.0%)	0(0%)	3.08	0.63
I feel comfortable accessing AI Chatbot tools for learning.	319 (32.2%)	620 (62.5%)	53 (5.3%)	0(0%)	3.27	0.55
AI Chatbot tools work well on my device.	404 (40.7%)	321 (32.4%)	267 (26.9%)	0(0%)	3.14	0.79

Decision criterion: Mean ≥ 2.50 = Accessible; Mean < 2.50 = Not accessible.

Table 2 indicates that AI chatbot tools were generally accessible to undergraduates, as all item mean scores exceeded the 2.50 decision criterion. The highest mean score was recorded for students' comfort in accessing AI chatbot tools for learning (M = 3.27, SD = 0.55), followed by accessibility across academic levels (M = 3.15, SD = 0.67) and the effective functioning of the tools on students' devices (M = 3.14, SD = 0.79). AI chatbot tools were also perceived as accessible irrespective of students' fields of study (M = 3.08, SD = 0.63) and as loading quickly when accessed (M = 3.02, SD = 0.71). The findings indicate that the respondents reported a generally high level of accessibility to AI chatbot tools for academic purposes.

Research Question III: How do undergraduates perceive the usefulness of AI chatbot tools for learning support in Southwestern Nigeria?

Table 3: Undergraduates' perceived usefulness of AI chatbot tools for learning support in Southwestern Nigeria

Statement	SA	A	D	SD	Mean	S. D
AI chatbot tools make learning more personalised.	325 (32.8%)	530 (53.4%)	125 (12.6%)	12 (1.2%)	3.18	0.69
AI chatbot tools help me learn at my own pace.	362 (36.5%)	542 (54.6%)	76 (7.7%)	12 (1.2%)	3.26	0.65

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Using AI chatbot tools improves my confidence in academic tasks.	353 (35.6%)	639 (64.4%)	0(0%)	0(0%)	3.36	0.48
AI chatbot tools support deeper understanding of course materials.	301 (30.3%)	396 (39.9%)	295 (29.7%)	0(0%)	3.01	0.78
AI chatbot tools reduce the time spent searching for academic information.	291 (29.3%)	655 (66.0%)	46 (4.6%)	0(0%)	3.25	0.53
AI chatbot tools improve the quality of my academic work.	312 (31.5%)	608 (61.3%)	72 (7.3%)	0(0%)	3.24	0.57
AI chatbot tools help bridge learning gaps caused by large class sizes	305 (30.7%)	550 (55.4%)	125 (12.6%)	12 (1.2%)	3.16	0.68
AI chatbot tools are effective for supporting undergraduate learning.	342 (34.5%)	532 (53.6%)	106 (10.7%)	12 (1.2%)	3.21	0.67
AI chatbot tools enhance my problem-solving ability.	303 (30.5%)	620 (62.5%)	50 (5.0%)	19 (1.9%)	3.22	0.62
AI chatbot tools support retention of learned concepts.	291 (29.3%)	296 (29.8%)	295 (29.7%)	110 (11.1%)	2.77	0.99

Decision Criterion: Mean ≥ 2.50 = Accepted; Mean < 2.50 = Rejected.

Table 3 indicates that undergraduates generally perceived AI chatbot tools as useful for learning support, as all the item mean scores exceeded the 2.50 decision criterion. The highest mean was recorded for improved confidence in academic tasks (M = 3.36, SD = 0.48), followed by learning at one's own pace (M = 3.26, SD = 0.65) and reduced time spent searching for academic information (M = 3.25, SD = 0.53). Other perceived benefits included improved quality of academic work (M = 3.24, SD = 0.57), enhanced problem-solving ability (M = 3.22, SD = 0.62), effectiveness in supporting undergraduate learning (M = 3.21, SD = 0.67), personalised learning (M = 3.18, SD = 0.69), bridging learning gaps associated with large class sizes (M = 3.16, SD = 0.68), and deeper understanding of course materials (M = 3.01, SD = 0.78). Support for retention of learned concepts recorded the lowest mean (M = 2.77, SD = 0.99), although it remained above the acceptance criterion.

Research Question IV: What are the perceived challenges that affect the effectiveness of AI chatbot tools for learning support among undergraduates in Southwestern Nigeria?

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Table 4: Perceived challenges that affect the effectiveness of AI chatbot tools for learning support among undergraduates in Southwestern Nigeria

Statement	SA	A	D	SD	Mean	S. D
The high cost of internet data prevents me from using AI chatbot tools.	390 (39.3%)	569 (57.4%)	33 (3.3%)	0(0%)	3.36	0.55
AI chatbot tools may encourage laziness among students.	443 (44.7%)	381 (38.4%)	168 (16.9%)	0(0%)	3.28	0.74
I do not know how to use AI chatbot tools effectively.	462 (46.6%)	309 (31.1%)	221 (22.3%)	0(0%)	3.24	0.79
I cannot afford subscription fees for AI chatbot tools	337 (34.0%)	484 (48.8%)	171 (17.2%)	0(0%)	3.17	0.69
Fear academic punishment limits my use of AI chatbot tools.	347 (35.0%)	452 (45.6%)	193 (19.5%)	0(0%)	3.16	0.72

Decision Criterion: Mean ≥ 2.50 = Accepted; Mean < 2.50 = Rejected.

Table 4 indicates that all the identified challenges affecting the effectiveness of AI chatbot tools for learning support were accepted, as all the item mean scores exceeded the 2.50 decision criterion. The high cost of internet data was the most prominent challenge (M = 3.36, SD = 0.55), indicating that internet affordability constitutes a major constraint to students' use of AI chatbot tools. This was followed by the perception that AI chatbot tools may encourage laziness among students (M = 3.28, SD = 0.74) and inadequate knowledge of how to use AI chatbot tools effectively (M = 3.24, SD = 0.79). Respondents also accepted inability to afford subscription fees (M = 3.17, SD = 0.69) and fear of academic punishment (M = 3.16, SD = 0.72) as challenges.

Research Question V: What are undergraduates' perceived solutions to the challenges affecting the effectiveness of AI chatbot tools for learning support in Southwestern Nigeria?

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Table 5: Undergraduates' perceived solutions to the challenges affecting the effectiveness of AI chatbot tools for learning support in Southwestern Nigeria

Statement	SA	A	D	SD	Mean	S. D
Availability of campus Wi-Fi will enhance students' access to AI chatbot tools.	181 (18.2%)	591 (59.6%)	202 (20.4%)	18 (1.8%)	2.94	0.68
Provision of affordable data plans will encourage effective use of AI chatbot tools.	158 (15.9%)	717 (72.3%)	117 (11.8%)	0(0%)	3.04	0.53
Integration of AI chatbot tools into course handbooks will promote proper usage.	154 (15.5%)	778 (78.4%)	50 (5.0%)	10 (1.0%)	3.08	0.49
Lecturers' demonstrations of AI chatbot use will enhance students' understanding.	223 (22.5%)	339 (34.2%)	422 (42.5%)	8 (0.8%)	2.78	0.80
Improved internet connectivity will reduce challenges in using AI chatbot tools.	283 (28.5%)	503 (50.7%)	200 (20.2%)	6 (0.6%)	3.07	0.71
Clear university policies on AI chatbot usage will guide responsible use by undergraduates.	191 (19.3%)	581 (58.6%)	202 (20.4%)	18 (1.8%)	2.95	0.68
Peer-to-peer training will enhance undergraduates' confidence in using AI chatbot tools.	148 (14.9%)	707 (71.3%)	137 (13.8%)	0 (0.0%)	3.01	0.54
Orientation programmes in AI chatbot tools should be included in first-year courses.	134 (13.5%)	758 (76.4%)	90 (9.1%)	10 (1.0%)	3.02	0.52

Decision Criterion: Mean ≥ 2.50 = Accepted; Mean < 2.50 = Rejected.

Table 5 presents undergraduates' perceived solutions to the challenges affecting the effectiveness of AI chatbot tools for learning support in Southwestern Nigeria. Based on the decision criterion of 2.50, all eight items were accepted, with mean scores ranging from 2.78 to 3.08. The highest mean score was recorded for the integration of AI chatbot tools into course handbooks (M = 3.08, SD = 0.49), followed by improved internet connectivity (M = 3.07, SD = 0.71), affordable data plans (M = 3.04, SD = 0.53), orientation programmes (M = 3.02, SD = 0.52), peer-to-peer training (M = 3.01, SD = 0.54), clear university policies (M = 2.95, SD = 0.68), campus Wi-Fi (M = 2.94, SD = 0.68), and lecturers' demonstrations (M = 2.78, SD = 0.80). Overall, the findings indicate that undergraduates perceived these measures as relevant for addressing the challenges and enhancing the effective use of AI chatbot tools for learning support.

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DISCUSSION OF FINDINGS

The findings in Table 1 imply that undergraduates under study were more familiar with Meta AI, QuillBot, Grammarly, and ChatGPT than with Google Gemini, Microsoft Copilot, Character AI, and Anthropic Claude. This indicates that awareness of AI-based tools was uneven across platforms, with some tools being considerably more familiar to the respondents than others. The pattern suggests that students' exposure to AI technologies may be concentrated around particular tools used or encountered within their academic and everyday digital environments, while awareness of other available AI tools remains relatively limited. In alignment, Hassan and Harande (2025) found that Nigerian undergraduates had relatively high awareness of ChatGPT and Grammarly, indicating substantial familiarity with these AI-enabled learning-support tools. Hamzat and Ansah (2025) reported a high level of artificial intelligence awareness among undergraduate students in Nigerian universities, supporting the relatively high awareness of several AI-enabled learning-support tools observed in the present study.

The findings in Table 2 imply that undergraduates under investigation had a favourable level of access to AI chatbot tools for academic purposes. The results indicate that students were sufficiently familiar with AI chatbot tools as learning-support resources. Furthermore, accessibility across academic levels and fields of study indicates that the use of these tools was not substantially constrained by students' academic backgrounds. The findings also suggest that device compatibility and loading speed were not major impediments to students' academic engagement with AI chatbot tools; this indicates that the technological accessibility of these resources may support their integration into learning activities. This is consistent with previous studies. In Nigeria, Orok et al. (2024) found that undergraduate pharmacy students at Afe Babalola University, Ado-Ekiti, were familiar with chat-based AI tools and perceived them as improving access to educational resources. Similarly, Yu et al. (2024) found that perceived ease of use influenced students' satisfaction and continued use of ChatGPT, while Duong et al. (2023) reported that effort expectancy positively influenced students' intention to use and actual use of ChatGPT. These findings support the present study's evidence that undergraduates could comfortably access and use AI chatbot tools for academic purposes.

The results in Table 3 imply that undergraduates under consideration generally perceive AI chatbot tools as useful for supporting their learning across all the assessed areas. The findings indicate that AI chatbot tools contribute to personalised and self-paced learning, enhance students' confidence in academic tasks, facilitate understanding of course materials, reduce the time required to access academic information, improve the quality of academic work, and support problem-solving and retention of learned concepts. This suggests that AI chatbot tools can serve as flexible and accessible complementary resources for undergraduate learning, particularly by providing students with immediate academic support and opportunities to engage with learning tasks at their own pace. The findings are consistent with recent empirical evidence on the educational usefulness of AI chatbot tools. Baidoo-Anu et al. (2024) reported that students perceived generative AI as useful for supporting learning and completing academic tasks, particularly because of its accessibility and interactive nature. Essel et al. (2024) similarly found that ChatGPT could support students' cognitive engagement by providing immediate responses and facilitating interaction with learning content. Chauke et al. (2024) also reported that students perceived ChatGPT as beneficial to

academic success, while Yakubu et al. (2024) found that ChatGPT was increasingly recognised as a resource for academic support and enhanced learning. These findings support the present result by indicating that AI chatbot tools can provide accessible, interactive and flexible assistance that complements conventional teaching and learning and supports students in undertaking academic activities.

The outcomes in Table 4 imply that the effective utilisation of AI chatbot tools for learning support is constrained by economic, technical, behavioural, and academic factors. In particular, the high cost of internet data and subscription fees may limit sustained access, while inadequate user competence may hinder effective utilisation. Concerns about student laziness and fear of academic punishment may further discourage their educational use. Thus, effective integration of AI chatbot tools requires affordable digital access, adequate user training, and clear institutional guidelines on their appropriate academic use. The finding is supported by recent evidence showing that digital literacy, technical access, affordability, and institutional guidance influence students' effective use of AI chatbots. Aiyebelehin et al. (2025) found that digital literacy significantly predicted ChatGPT utilisation among Nigerian undergraduates, while Wang et al. (2024) highlighted the need for institutional policies and guidance on generative AI use. Studies also identify concerns about academic integrity and inappropriate dependence as important issues in students' use of AI tools.

The findings imply that effective use of AI chatbot tools for learning support requires more than students' access to the technology. They suggest the need for curricular integration, reliable and affordable internet access, orientation and peer training, clear institutional policies, and lecturers' practical guidance to support responsible and effective use of AI chatbot tools among undergraduates. The findings are consistent with Wang et al. (2024), who found that effective integration of generative AI in higher education requires alignment with learning objectives, curriculum adaptation, institutional guidelines, workshops, and other forms of user support. Similarly, Jo (2024) identified facilitating conditions as significant in students' adoption and use of ChatGPT, while Moore and Lookadoo (2024) emphasised the importance of clear institutional guidance for promoting responsible generative AI use. These findings support the present study's implication that effective AI chatbot use requires not only access to the technology but also curricular integration, enabling infrastructure, training, institutional guidance, and lecturers' practical support.

Conclusion

The study concluded that undergraduates in the sampled public universities in Southwestern Nigeria demonstrated varying levels of awareness of AI chatbot tools, while the tools were generally accessible and perceived as useful resources for learning support. However, financial costs, inadequate usage skills, limited lecturer support, and concerns about academic penalties were identified as factors that may constrain their effective use.

Limitations of the Study

The study has some limitations. First, it was conducted among undergraduates in selected public universities in Southwestern Nigeria; hence, the findings may not be generalisable to all universities

in Nigeria. Second, the study relied on students' self-reported perceptions rather than objective measures of actual AI chatbot use. Third, its cross-sectional design captured perceptions at a single point in time and could not establish changes over time. Finally, perceived usefulness of AI chatbot tools was not validated against objective measures of academic performance or learning outcomes.

Recommendations

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

i. Universities should organise regular AI-literacy orientation programmes and practical demonstrations to increase students' awareness of less familiar tools such as Gemini, Claude, Copilot, and Character AI, while promoting responsible academic use of widely known tools such as ChatGPT and QuillBot.
ii. Universities should sustain and strengthen reliable internet connectivity and digital infrastructure to support continuous and equitable access to AI chatbot tools for learning across academic levels and disciplines.
iii. Universities should integrate guided and responsible use of AI chatbot tools into teaching and learning activities to support personalised and self-paced learning, problem-solving, and deeper understanding, while ensuring that such use complements rather than replaces students' independent learning.
iv. Universities should provide AI-literacy training, clear guidelines on acceptable academic use, and practical support from lecturers and academic staff to reduce skill-related and institutional barriers to responsible use of AI chatbot tools.
v. Universities should establish structured AI-support programmes that combine affordable internet access, AI-use orientation, peer training, lecturer demonstrations, and institutional guidance to promote effective and responsible use of AI chatbot tools for learning.

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