**Faculty of Natural and Applied Sciences Journal of Mathematics and Science Education**
**Print ISSN: 2814-0885 e-ISSN: 2814-0931**
www.fnasjournals.com
**Volume 6; Issue 3; May 2025; Page No. 110-120.**
DOI: https://doi.org/10.63561/fnas-jmse.v6i3.901

# Impact of Artificial Intelligence Tools on Appointment Scheduling and Report Generation in Colleges of Education in Kaduna State, Nigeria

**[*1]Yakubu, I., & [2]Nuru, R.A.**
[1]Department of Educational Administration and Planning, Federal University of Education, Zaria
[2]Department of Biology, TETFund Center of Excellence for Technology Enhanced Learning, Federal College of Education, Zaria

[*]**Corresponding author email:** driliyayakubu@fcezaria.edu.ng

**Abstract**
The study investigated the impact of Artificial Intelligence (AI) tools on appointment scheduling and report generation in Colleges of Education in Kaduna State, Nigeria. Specifically, it examined how AI tools affect scheduling of appointments and report generation in the two government-owned colleges in the state. These objectives were translated into two research questions and two corresponding hypotheses. The study adopted a survey research design. The target population comprised 3,181 respondents—1,658 lecturers and 1,523 senior management staff. From this, 346 participants were selected as the sample, made up of 180 lecturers and 166 senior management personnel. Data were collected using a validated instrument titled Questionnaire on Artificial Intelligence Tools and the Automation of Routine Administrative Tasks (QARITARAT). A pilot study established the instrument's reliability, with a Cronbach's Alpha coefficient of 0.82, indicating high internal consistency. Data analysis involved descriptive statistics (frequency, mean, standard deviation) for the research questions and Chi-square ($\chi^2$) tests for the hypotheses at the 0.05 significance level. Findings revealed that AI tools did not have a statistically significant impact on appointment scheduling (mean = 3.07, $\chi^2 = 51.048$, $p = .004$), while a statistically significant impact was found on report generation (mean = 2.88, $\chi^2 = 22.614$, $p = .100$). The study recommended that college management should deploy AI tools cautiously, considering ethical issues such as bias, data privacy, and loss of human engagement, to avoid negative consequences on institutional data handling.

**Keywords:** Artificial Intelligence Tools, Appointment Scheduling, Report Generation, Colleges of Education, Kaduna State

## Introduction

Recent developments in artificial intelligence (AI) have substantially influenced business operations and workplace efficiency. Traditionally, AI systems have been applied to automate back-end functions such as data entry, document processing, customer service, and accounting by leveraging natural language processing (NLP) and intelligent automation to simulate human-computer interactions (Jaiswal et al., 2022). One of the most impactful innovations in the AI domain is *generative AI*. Unlike conventional AI systems that analyse or process existing data, generative AI models are capable of creating original content. These systems learn patterns from existing datasets and subsequently generate new outputs that align with the characteristics of the training material (Morandini et al., 2023). A practical example is an AI model trained on a large image dataset, which can then generate unique images reflecting the same stylistic features. Generative AI is applicable across various sectors—from crafting visual media and written content to innovating in drug discovery and materials science. These technologies also extend to replicating complex human capabilities such as communication, reasoning, and emotional understanding. For instance, NLP-powered AI systems can interpret customer dialogues, gauge emotional tone, and offer empathetic, context-appropriate responses (Jaiswal et al., 2022). With continued interaction, such systems adapt their replies over time, enhancing personalization and service delivery. Tools like ChatGPT, which generate human-like text based on deep learning and language modelling, illustrate this


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advancement. These systems incorporate techniques like sentiment analysis and contextual language processing to maintain coherent, engaging dialogues (Jaiswal et al., 2022).

Another notable development is AI's ability to translate textual inputs into images, as demonstrated by models like DALL·E 2. These combine NLP with computer vision, enabling them to create imaginative visuals beyond literal interpretations, further showcasing AI's creative and cognitive potential. In terms of infrastructure, the rise of Edge AI—which refers to deploying AI processing at the network's edge rather than centralized cloud environments—has further expanded AI's scope. This is particularly vital for real-time applications such as autonomous driving, industrial control systems, and remote surveillance. Edge AI supports instant decision-making and enhances operational efficiency. While it may reduce roles in manual operations, it simultaneously creates opportunities in AI development and system integration. Moreover, it empowers workers by delivering real-time insights that boost productivity.

AI is also central to the evolution of Industry 5.0, an emerging paradigm that integrates AI, the Internet of Things (IoT), and cyber-physical systems to foster synergy between humans and machines. Al Mubarak (2022, as cited in Morandini et al., 2023), explores how technology in this context enhances human potential by promoting efficiency, innovation, and lifelong learning. Realizing these benefits, however, requires addressing legal, ethical, and psychological dimensions at the organizational level. The emphasis lies on maximizing positive externalities—such as better quality of life and sustainable growth—by balancing technological and human inputs. Recommended strategies include targeted upskilling programs and flexible work models that align AI utilization with employee well-being and career development.

Again, Artificial General Intelligence (AGI) represents the next frontier. AGI refers to systems capable of performing any intellectual task that a human can, incorporating extensive reasoning and adaptive learning. Its potential to outperform human cognition may fundamentally alter organizational dynamics. On one hand, AGI could displace roles traditionally reliant on human intelligence, prompting a need for workforce reskilling. On the other hand, it may augment human expertise, enabling workers to focus on complex, higher-order tasks. As organizations integrate AGI, they must proactively assess its influence on human skillsets and strategic outcomes.

Recent research underscores the transformative role of artificial intelligence (AI) in Nigeria's educational sector. Ogunode et al. (2024) assert that AI plays a critical role in enhancing administrative efficiency and supporting strategic academic planning within higher education institutions. This view is further reinforced by national initiatives, such as the AI training programs spearheaded by the National Institute for Educational Planning and Administration (NIEPA), which reflect a growing institutional commitment to integrating AI technologies into educational administration and governance (NIEPA, 2024).

Although considerable progress has been made, the widespread integration of artificial intelligence (AI) within Nigeria's educational landscape continues to face significant challenges. Key impediments include insufficient technological infrastructure, substantial implementation costs, and the low level of digital competence among academic and administrative staff (Agbarakwe & Chibueze, 2024). Moreover, ethical issues such as data security, lack of algorithmic transparency, and inherent biases in AI systems highlight the necessity for robust policy and regulatory measures to ensure responsible adoption in educational administration (Izevbigie et al., 2025). Against this backdrop, the present study investigates the influence of AI technologies on two core administrative functions—appointment scheduling and report generation—in Colleges of Education across Kaduna State, Nigeria. By assessing existing operational procedures, institutional preparedness, and the perspectives of relevant stakeholders, this research seeks to enrich ongoing discussions surrounding the digital transformation of educational management in the country.

The incorporation of artificial intelligence into educational administration is progressively acknowledged as a transformative strategy for improving institutional efficiency and enhancing the quality-of-service delivery. AI-driven systems support data-informed decision-making, allowing educational administrators to streamline the management of student records, monitor academic progress, and proactively identify students in need of intervention. Within the Nigerian higher education landscape, the gradual adoption of AI technologies represents a strategic effort to address persistent administrative bottlenecks and operational inefficiencies.


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Ogunode & Gregory (2024) explored the integration of artificial intelligence in educational administration across Nigeria, highlighting its potential to improve data analytics, support informed decision-making, and enhance resource management. Their findings, however, also identified several critical challenges that could hinder the successful adoption of AI, including algorithmic bias, lack of transparency, data security concerns, and limited technical expertise among personnel.

AI-enabled scheduling systems, in particular, offer significant advantages by analyzing variables such as staff availability, course requirements, and classroom capacity to generate optimized timetables. These technologies utilize real-time data and predictive analytics to minimize scheduling conflicts and improve the overall efficiency of academic operations. By enabling more strategic resource distribution, such tools contribute to streamlined administrative processes within educational institutions.

Despite the considerable advantages of AI-driven scheduling tools, their integration within Nigerian educational institutions is still fraught with challenges. Key barriers include inadequate technological infrastructure, high implementation costs, and limited digital literacy among administrative staff. These factors can significantly inhibit the widespread adoption and effective utilization of AI technologies for appointment scheduling, thereby diminishing their potential impact on administrative efficiency.

Similarly, AI technologies have demonstrated their capacity to revolutionize administrative processes and promote personalized learning experiences in Nigerian higher education. Automated report generation, powered by AI, has the potential to ensure timely, accurate, and consistent documentation of academic and administrative activities. However, the broader deployment of AI in report production faces comparable challenges, including infrastructural limitations, financial constraints, and a lack of digital skills among personnel. Addressing these barriers will require substantial investments in digital infrastructure, comprehensive digital literacy training programs, and the establishment of clear regulatory frameworks to guide the ethical and effective implementation of AI solutions.

In recent years, artificial intelligence (AI) has made remarkable strides across a wide range of sectors, including education. Within higher education, AI is increasingly recognized as a tool for achieving strategic advantages and operational efficiency (Hannan & Liu, 2021). The emergence of the "smart university" — an institution powered by AI technologies capable of autonomously managing various functions — is becoming a tangible reality due to advancements in machine learning and natural language processing (Furey & Martin, 2019). These intelligent systems can support automation in key areas such as administrative tasks, curriculum development, instructional delivery, student assessment, and even the issuance of academic credentials.

AI refers to the deployment of advanced computational techniques that mimic human cognitive abilities through machine learning, neural networks, and natural language processing. While initially transformative in fields such as healthcare, finance, and manufacturing, AI is now gaining prominence in the educational sector, particularly in the areas of school administration and institutional management. According to Igbokwe (2023), AI holds significant potential to enrich the learning process, improve student outcomes, and streamline administrative workflows. Similarly, Russo (2024) notes that AI technologies can enhance educational experiences while also optimizing institutional operations. By automating repetitive tasks, reducing administrative burdens, and improving interdepartmental efficiency, AI tools are now widely used in functions such as admissions, enrolment, financial aid, and alumni relations. Ultimately, the effective integration of AI allows higher education institutions to allocate resources more strategically and deliver a more personalized and responsive student experience.

The deployment of artificial intelligence (AI) within Nigeria's higher education sector presents several ethical concerns, particularly in relation to data privacy, potential algorithmic bias, and the safeguarding of academic integrity. Izevbigie et al. (2025) emphasize the urgent need for institutions to adopt comprehensive ethical frameworks that promote transparency and accountability in the deployment of AI technologies. These frameworks should aim to increase institutional awareness of the risks associated with AI, establish safeguards to protect student data, and encourage the development of equitable algorithms that prevent discriminatory outcomes. Ensuring the ethical implementation of AI is vital to maintaining stakeholder trust and upholding student rights. This requires the establishment and enforcement of robust ethical standards and policy guidelines


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to govern AI use within educational administration, thereby aligning technological advancement with institutional responsibility and social justice.

According to Bobro, N. (2024), Artificial Intelligence (AI) is increasingly transforming various administrative and academic functions within higher education institutions. Its integration has streamlined complex processes, enabling institutions to operate more efficiently and effectively across multiple domains:

i. **Automated Question Paper Design:** Traditionally, the creation of examination papers has been a time-consuming task requiring significant faculty input. With the use of AI, question paper generation can now be automated by setting predefined parameters such as question types, subject relevance, and levels of difficulty. This automation not only enhances efficiency but also ensures fairness and alignment with curriculum objectives.
ii. **Smart Email Management:** AI-powered systems are enhancing institutional communication by helping administrative teams manage emails and digital correspondence. These systems can interpret email content, recommend appropriate responses, and automate routine activities like scheduling appointments or sending notifications. As a result, staff can focus on more critical and meaningful interactions.
iii. **Automated Result Processing:** Evaluating and compiling student assessment results, especially in large institutions, can be an overwhelming task. AI tools are capable of automating the grading process for objective tests and generating instant feedback. Additionally, AI can identify trends in academic performance, providing educators with data to inform personalized interventions for students.
iv. **Predictive Analytics for Academic Planning:** AI can analyse large volumes of data, including student demographics, academic records, and behaviour patterns, to predict outcomes such as graduation rates, course preferences, and academic success. This capability allows educational institutions to identify students who may need additional support and to implement interventions aimed at improving overall academic performance and retention.
v. **Enhancing Student Retention:** Through continuous monitoring of metrics such as attendance, participation, and academic progress, AI can detect early warning signs of student disengagement or underperformance. This enables institutions to take timely actions—such as offering academic counselling or tutoring—that improve retention and foster student success.
vi. **Data-Driven Management Reporting:** AI-enabled analytics can synthesize information from various departments to produce comprehensive reports for institutional leaders. These reports provide insights into areas such as enrolment trends, resource distribution, faculty workloads, and financial planning, facilitating evidence-based decision-making.
vii. **Personalized Learning Experiences:** Artificial intelligence (AI) has the potential to greatly enhance educational outcomes by enabling the personalization of learning experiences. By analyzing individual student data, AI systems can recommend appropriate learning materials, adapt instruction to suit diverse learning preferences, and deliver personalized feedback. This level of customization not only fosters increased student engagement but also contributes to improved academic performance.

Artificial Intelligence (AI) has experienced significant advancement, particularly in reshaping operations within modern organizational settings. Traditionally, AI technologies have been employed to streamline routine back-office functions such as data entry, document handling, customer service, and financial accounting. Applications powered by natural language processing (NLP) and machine learning are designed to simulate human-computer interactions, thereby streamlining workflows and reducing the burden of repetitive tasks (Jaiswal et al., 2022). As these technologies continue to evolve, they play an increasingly vital role in optimizing administrative operations across various sectors, including the education industry.

A notable breakthrough in the field of artificial intelligence is the emergence of generative AI, which marks a departure from traditional AI systems through its ability to generate novel content rather than merely process or classify existing information. These systems can analyse extensive datasets and produce outputs that mirror the structure, semantics, or stylistic features of the original data (Morandini et al., 2023). For example, a generative AI model trained on a large corpus of images can synthesize new visuals that retain the aesthetic qualities of its training samples. This capability has been applied across various domains, including automated text generation, image synthesis, drug discovery, and materials science.


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Beyond technical functionality, generative AI demonstrates the potential to simulate complex human abilities such as logical reasoning, interpersonal communication, and creative expression. A prominent example is ChatGPT, which utilizes natural language processing to engage in coherent and contextually aware conversations. These systems are designed to interpret emotional tone, conversational context, and user intent, allowing for more dynamic and personalized interactions (Jaiswal et al., 2022). Through continual learning, such models refine their responses over time, replicating aspects of empathy and intuition typically associated with human communication.

A pivotal advancement in artificial intelligence is the development of text-to-image generation tools such as DALL·E 2. These technologies integrate computer vision with natural language processing to translate textual descriptions into corresponding visual outputs. Such systems demonstrate a remarkable capacity to create highly detailed and imaginative images, often extending beyond literal interpretations of input prompts, thereby pushing the boundaries of machine-enabled creativity.

Another emerging innovation is Edge AI, which involves shifting data processing from centralized cloud servers to localized devices positioned at the network's edge. This decentralized approach enables real-time decision-making, which is critical for time-sensitive applications including autonomous vehicles, industrial robotics, and security surveillance. While Edge AI has the potential to automate certain operational roles, possibly leading to job displacement, it also opens up new employment opportunities in areas such as AI development, systems engineering, and device maintenance. Moreover, Edge AI enhances human performance by providing timely, context-aware insights that can support faster and more informed decisions, thereby increasing both productivity and operational responsiveness.

In the broader context of technological evolution, artificial intelligence plays a foundational role in the emergence of Industry 5.0—a paradigm that emphasizes synergy between human creativity and machine intelligence. According to Al Mubarak (2022, as cited in Morandini et al., 2023), Industry 5.0 introduces opportunities for personalized learning and work experiences, enhanced productivity, and the development of advanced competencies. However, this transition also demands critical reflection on ethical, legal, and psychological dimensions, particularly regarding the dynamics of human-machine collaboration. To address these challenges, strategic approaches such as flexible work arrangements and continuous professional development are vital to balancing technological efficiency with social well-being and equity.

At the forefront of AI evolution is Artificial General Intelligence (AGI), representing systems capable of performing any intellectual task that a human can. Although still theoretical, AGI is projected to profoundly reshape organizational structures. It could either displace roles involving high-level cognitive skills or augment human capabilities, thereby enabling individuals to focus on more strategic and complex responsibilities. As organizations move toward adopting AGI, it becomes imperative to consider its implications for workforce development, job design, and long-term resilience in a rapidly transforming labour market.

The successful integration of artificial intelligence within Nigerian Educational Institutions faces a number of critical challenges, including inadequate technological infrastructure, high implementation costs, limited digital literacy among staff, and unresolved ethical concerns. Addressing these issues necessitates targeted investment in educational technology, comprehensive capacity-building initiatives for personnel, and the development of robust ethical and regulatory frameworks. In addition, fostering public-private partnerships and formulating clear policy directives for AI adoption can support the sustainable and effective deployment of AI tools in educational management. This study aims to explore the impact of AI technologies on appointment scheduling and report generation in Colleges of Education across Kaduna State.

**Statement of the Problem**

Despite the global trend toward adopting Artificial Intelligence (AI) in educational administration, many Colleges of Education in Kaduna State, Nigeria, continue to rely on traditional, manual methods for tasks such as appointment scheduling and report generation. These outdated practices are often characterized by inefficiencies, increased susceptibility to human error, delays in administrative decision-making, and duplication of effort (Ogunode & Gregory, 2024). As a result, institutional operations are hampered, resource utilization is suboptimal, and key stakeholders—including students and staff—experience reduced service quality (Ajani, Gamede & Matiyenga, 2025). Artificial Intelligence (AI) possesses the ability to streamline a wide array of functions, from


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routine data entry to complex analytical tasks, though its effectiveness varies depending on the nature of the activity (Chuang, 2022; Chiancone, 2023). Within the education sector, technological advancements have already transformed classroom practices, and the growing application of AI is further advancing the field by automating core administrative responsibilities. By integrating AI into educational management, institutions are improving operational efficiency, reducing administrative burdens on educators, and contributing to a more organized and productive learning environment.

Educators have long been burdened with numerous administrative duties that consume a significant portion of their time. These tasks include maintaining communication, grading assignments, managing student records, scheduling appointments, and tracking attendance. While these responsibilities are essential for institutional operations, they often reduce the time teachers can allocate to instruction, mentorship, and student engagement. Artificial Intelligence (AI) technologies offer viable solutions by automating repetitive tasks, enabling real-time data processing, and improving accuracy in scheduling and report generation (Eyikorogha & Chigozie, 2024). However, the adoption of such technologies in Nigerian Colleges of Education remains limited. Challenges such as inadequate infrastructure, a shortage of technically skilled personnel, high implementation costs, and resistance to technological change continue to hinder progress (RSIS International, 2024). Additionally, the absence of clear regulatory frameworks governing the appropriate utilization of AI tools further complicates their integration.

Notably, there remains a significant gap in empirical studies specifically focused on the application of Artificial Intelligence (AI) technologies in core administrative functions—such as appointment scheduling and report generation—within Colleges of Education in Kaduna State. The lack of localized research limits the ability of education stakeholders and policymakers to make informed decisions regarding the adoption and expansion of AI-driven administrative systems (Olanike, Animashaun & Chiekezie, 2024).

**Aim and Objectives of the Study**

This study aim to investigate the impact of AI technologies on scheduling and report generation in these institutions. The study sought to:

1. ascertain the impact of artificial intelligence tools on scheduling of appointment in colleges of education in Kaduna State, Nigeria;
2. determine the impact of artificial intelligence tools on report generation in colleges of education in Kaduna State, Nigeria.

**Research Questions**

The following research questions were answered in the study:

1. How does artificial intelligence tools impact on scheduling of appointment in colleges of education in Kaduna State, Nigeria?
2. What is the impact of artificial intelligence tools on report generation in colleges of education in Kaduna State, Nigeria?

**Hypotheses**

The following null hypotheses were tested at 0.05 in the study:

$H0_1$: There is no significant difference in the impact of artificial intelligence tools on scheduling of appointment in colleges of education in Kaduna State, Nigeria.

$H0_2$: There is no significant difference in the impact of artificial intelligence tools on report generation in colleges of education in Kaduna State, Nigeria.

**Material and Methods**

The research adopted a survey design to investigate the integration of artificial intelligence tools in educational administration. The population comprised 3,181 individuals, including 1,658 academic staff and 1,523 senior management personnel from two publicly funded Colleges of Education located in Kaduna State, Nigeria. From this population, a representative sample of 346 participants—consisting of 180 senior administrators and 166 lecturers—was selected using the Research Advisor (2006) sampling guidelines. It ensures statistically valid, practical, and widely accepted sample sizes for reliable, generalizable research results. Data collection was facilitated through a structured instrument titled *Questionnaire on Artificial Intelligence Tools and Automation of Routine Administrative Tasks (QARITARAT)*. The instrument was subjected to both validation and a pilot study to ensure its suitability for the research context. After validation of the instrument, pilot study was carried out in


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order to determine the reliability co-efficient of the instrument and to determine problem areas in the conduct of the main research. To conduct the pilot study, a total of ten (10) lecturers and ten (10) senior management staff was used. Participants' consent was obtained through a formal consent letter that explained the study's purpose, procedures, and confidentiality measures. Participation was entirely voluntary, and individuals willingly filled the tools, indicating their informed agreement to be part of the research process.

AI Tools and Appointment Scheduling: This section focuses on evaluating how artificial intelligence tools contribute to streamlining and automating appointment scheduling processes in Colleges of Education. It consists of 10 items, each highlighting a specific AI application such as Motion, Calendly, and Clara. The statements are concise and action-oriented, aiming to assess the users' awareness, application, and perceived efficiency of these tools in administrative scheduling tasks.

AI Tools and Report Generation: This section explores the role of AI tools in facilitating report generation, whether for administrative or academic purposes. Like Section A, it includes 10 items referencing various AI-based content creation tools, including ChatGPT, Copy.ai, and Writesonic. Each statement is positively constructed to evaluate how these tools support the creation, organization, and automation of reports within institutional settings. All items across both sections use a 5-point Likert scale as follows: Strongly Agree (5), Agree (4), Undecided (3), Disagree (2), and Strongly Disagree (1). This scoring format allows for objective analysis of responses using statistical methods such as mean scores, standard deviation, and chi-square tests, ensuring data reliability and interpretability.

Its reliability was evaluated using Cronbach's Alpha, yielding a coefficient of 0.82, which indicates a high level of internal consistency. The data obtained were entered and analysed using the Statistical Package for the Social Sciences (SPSS), version 23.0. Descriptive statistics, including frequency distributions, mean scores, and standard deviations, were employed to respond to the research questions. To test the study's hypotheses, the Chi-square ($\chi^2$) test was applied at the 0.05 level of significance. This test was deemed appropriate due to the categorical nature of the dataset, which involved responses from two distinct respondent groups (Cohen, Manion, & Morrison, 2007). Hypotheses were retained when the p-value exceeded 0.05, and rejected when the p-value was less than or equal to 0.05.

**Results**

Note that SMgt. Staff on the Table Stands for Senior Management Staff

Research Question One: How does artificial intelligence tools impact on scheduling of appointment in colleges of education in Kaduna State, Nigeria?

Table 1: Impact of Artificial Intelligence Tools on Scheduling of Appointment in Colleges of Education in Kaduna State, Nigeria

| SN | Item Statements | Respondents | SA | A | U | D | SD | Mean | SD | Remark |
|---|---|---|---|---|---|---|---|---|---|---|
| 1. | Artificial Intelligence tools enhance scheduling of appointment in colleges of education in Kaduna State. | Lecturers | 8 | 64 | 43 | 35 | 30 | 2.916 | 1.181 | |
| | | SMgt. Staff | 4 | 75 | 45 | 18 | 24 | 3.102 | 1.109 | Positive |
| 2. | Motion artificial intelligence enhance scheduling of meetings and tasks in colleges of education in Kaduna State. | Lecturers | 1 | 115 | 44 | 17 | 3 | 3.522 | 0.734 | |
| | | SMgt. Staff | 7 | 84 | 26 | 25 | 24 | 3.150 | 1.178 | Positive |
| 3. | Clockwise AI enhance scheduling of appointment and analyses team schedules in colleges of education in Kaduna State. | Lecturers | 6 | 100 | 36 | 21 | 17 | 3.316 | 1.043 | |
| | | SMgt. Staff | 8 | 96 | 21 | 30 | 11 | 3.361 | 1.045 | Positive |
| 4. | Scheduler AI enhance automated reminders and personalized availability in colleges of education in Kaduna State. | Lecturers | 73 | -- | 18 | 48 | 41 | 2.683 | 1.221 | |
| | | SMgt. Staff | 11 | 88 | 22 | 22 | 23 | 3.253 | 1.194 | Negative |
| 5. | Calendly artificial intelligence enable easy online schedule and calendar | Lecturers | 1 | 111 | 26 | 18 | 24 | 2.961 | 1.287 | |
| | | SMgt. Staff | 10 | 94 | 22 | 6 | 34 | 3.241 | 1.270 | Positive |


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| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | integration in colleges of education in Kaduna State. | | | | | | | | | |
| 6. | CalendarHero artificial intelligence facilitate remotes meeting scheduling in colleges of education in Kaduna State. | Lecturers<br>SMgt. Staff | 1<br>1 | 111<br>100 | 26<br>22 | 18<br>24 | 24<br>19 | 3.261<br>3.241 | 1.100<br>1.085 | Positive |
| 7. | Trevor AI facilitate automatic schedule plan for action in colleges of education in Kaduna State. | Lecturers<br>SMgt. Staff | 1<br>8 | 70<br>45 | 50<br>21 | 19<br>35 | 40<br>57 | 2.850<br>2.469 | 1.179<br>1.333 | Negative |
| 8. | Clara artificial intelligence enhance automation of end-to-end meeting scheduling in colleges of education in Kaduna State. | Lecturers<br>SMgt. Staff | 1<br>10 | 93<br>51 | 36<br>33 | 33<br>44 | 17<br>28 | 3.155<br>2.825 | 1.040<br>1.210 | Negative |
| 9. | Reclaim AI-powered calendar tool automatically schedule tasks in colleges of education in Kaduna State. | Lecturers<br>SMgt. Staff | 3<br>- | 72<br>100 | 34<br>27 | 30<br>23 | 41<br>16 | 2.811<br>3.271 | 1.231<br>1.029 | Positive |
| 10. | Kronologic AI enhance scheduling and lead conversion in colleges of education in Kaduna State. | Lecturers<br>SMgt. Staff | 3<br>- | 68<br>88 | 34<br>22 | 63<br>40 | 12<br>16 | 2.927<br>3.096 | 1.030<br>1.074 | Positive |
| | | | Average Mean | | | | | 3.07 | 1.13 | |

Table 1 reveals that artificial intelligence technologies have a significant impact on the automation of appointment scheduling in educational institutions in Kaduna State, Nigeria. The average response mean of 3.07 exceeds the rating mean of 3.0, suggesting that the integration of AI technologies positively influences appointment scheduling. Most of the items addressed in this study had response means above the rating mean of 3.0, indicating strong participant agreement regarding the beneficial effects of AI on appointment scheduling automation.

Research Question Two: What is the impact of artificial intelligence tools on report generation in colleges of education in Kaduna State, Nigeria?

Table 2: Impact of Artificial Intelligence Tools on Report Generation in Colleges of Education in Kaduna State, Nigeria

| SN | Item Statements | Respondents | SA | A | U | D | SD | Mean | SD | Remark |
|---|---|---|---|---|---|---|---|---|---|---|
| 11. | Artificial intelligence tools facilitate report generation in colleges of education in Kaduna State. | Lecturers<br>SMgt. Staff | 4<br>5 | 88<br>59 | 24<br>11 | 43<br>39 | 21<br>52 | 3.061<br>2.554 | 1.134<br>1.332 | Negative |
| 12. | Copy.ai enhance report generation in colleges of education in Kaduna State. | Lecturers<br>SMgt. Staff | 4<br>22 | 99<br>33 | 34<br>21 | 5<br>37 | 37<br>53 | 3.200<br>2.602 | 1.347<br>1.443 | Negative |
| 13. | Taskade AI enhance report compilation in colleges of education in Kaduna State. | Lecturers<br>SMgt. Staff | 1<br>1 | 97<br>78 | 40<br>34 | 18<br>36 | 24<br>17 | 3.183<br>3.060 | 1.080<br>1. 060 | Positive |
| 14. | Storydoc artificial intelligence enhance report generation in colleges of education in Kaduna State. | Lecturers<br>SMgt. Staff | 1<br>8 | 76<br>60 | 45<br>17 | 39<br>31 | 19<br>50 | 3.005<br>2.668 | 1.043<br>1.359 | Negative |
| 15. | Texta AI boost report generation in colleges of education in Kaduna State. | Lecturers<br>SMgt. Staff | 6<br>23 | 76<br>59 | 36<br>19 | 47<br>42 | 15<br>23 | 3.061<br>3.102 | 1.073<br>1.310 | Positive |
| 16. | ChatGPT AI automatically generates personalized reports in colleges of education in Kaduna State. | Lecturers<br>SMgt. Staff | 6<br>3 | 96<br>59 | 32<br>26 | 10<br>44 | 36<br>34 | 3.144<br>2.716 | 1.228<br>1.200 | Negative |


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| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 17. | Gemini (Google Bard) enhance automation of report generation in colleges of education in Kaduna State. | Lecturers<br>SMgt. Staff | 3<br>8 | 17<br>54 | 9<br>27 | 56<br>34 | 95<br>43 | 1.761<br>2.698 | 1.026<br>1.295 | Negative |
| 18. | Wrtiesonic AI facilitate report generation in colleges of education in Kaduna State. | Lecturers<br>SMgt. Staff | 3<br>15 | 90<br>53 | 35<br>20 | 40<br>38 | 12<br>40 | 3.177<br>2.789 | 1.014<br>1.356 | Negative |
| 19. | Scalenut AI enhance report generation in colleges of education in Kaduna State. | Lecturers<br>SMgt. Staff | -<br>8 | 94<br>44 | 45<br>17 | 35<br>65 | 6<br>32 | 3.261<br>2.584 | 0.886<br>1.206 | Negative |
| 20. | Simplified artificial intelligence enhance report generation in colleges of education in Kaduna State. | Lecturers<br>SMgt. Staff | 10<br>17 | 76<br>36 | 58<br>21 | 27<br>67 | 9<br>25 | 3.283<br>2.716 | 0.958<br>1.249 | Negative |
| | | | Average Mean | | | | | 2.88 | 1.18 | |

Table 2 reveals that the perceived impact of artificial intelligence technologies on the automation of report generation in educational institutions across Kaduna State, Nigeria, is minimal. The overall mean response score of 2.88 falls below the benchmark rating of 3.0, suggesting a general lack of agreement among respondents regarding the effectiveness of AI in this area. This indicates that, on average, participants view the role of AI in automating report generation as limited or ineffective. Furthermore, the majority of item-specific mean scores in the study were also below the threshold value of 3.0, reinforcing the conclusion that stakeholders do not perceive AI technologies as significantly enhancing report automation processes within these institutions.

Hypothesis One: There is no significant difference in the impact of artificial intelligence tools on scheduling of appointment in colleges of education in Kaduna State, Nigeria.

Table 3: Summary of Chi-square test on Impact of Artificial Intelligence Tools on Scheduling of Appointment in Colleges of education in Kaduna State, Nigeria

| Number | $\chi^2$ cal. | $\chi^2$ crit. | $\alpha$ | df | P-value | Decision |
|---|---|---|---|---|---|---|
| 346 | 51.048 | 22.751 | 0.05 | 36 | .004 | Rejected |

Table 3 shows that the calculated chi-square value of 51.048 surpasses the critical chi-square value of 22.751 at 36 degrees of freedom and a significance level of 0.05. This result suggests a significant difference in the impact of artificial intelligence technologies on appointment scheduling at educational institutions in Kaduna State, Nigeria. As a result, the hypothesis, which posited no significant difference in the influence of AI technologies on appointment scheduling at these institutions, is rejected.

Hypothesis two: There is no significant difference in the impact of artificial intelligence tools on report generation in colleges of education in Kaduna State, Nigeria.

Table 4: Summary of Chi-square test on the Impact of Artificial Intelligence Tools on Report Generation in Colleges of Education in Kaduna State, Nigeria

| Number | $\chi^2$ cal. | $\chi^2$ crit. | $\alpha$ | df | P-value | Decision |
|---|---|---|---|---|---|---|
| 346 | 22.614 | 57.421 | 0.05 | 36 | .100 | Retained |

Table 4 presents a calculated Chi-square value of 22.614, which is less than the critical Chi-square value of 57.421 at 36 degrees of freedom and a 0.05 level of significance. This outcome indicates that there is no statistically significant difference in the perceived impact of artificial intelligence technologies on report generation across educational institutions in Kaduna State, Nigeria. Consequently, the null hypothesis—which states that there is no significant variation in the influence of AI on report creation among these institutions—is upheld.


*Cite this article as:*
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**Discussion**

The results of the study demonstrate that artificial intelligence technologies have a significant effect on appointment scheduling within educational institutions in Kaduna State. As a result, the hypothesis suggesting no meaningful difference in perceptions regarding the impact of AI on appointment scheduling in Colleges of Education was rejected. This finding aligns with the assertion by Igbokwe (2023), who emphasized that AI tools contribute to improved administrative efficiency in academic settings. AI-powered systems can automate routine administrative tasks such as scheduling and record-keeping, thereby allowing educators to focus more on core responsibilities like lesson planning and student engagement. Supporting this view, Nulletla (2024) noted that AI algorithms are capable of optimizing class timetables, managing appointments, allocating institutional resources, and coordinating activities to minimize scheduling conflicts. These technologies also assist in automating functions such as organizing meetings and sending timely reminders, thereby freeing up time for more meaningful academic and administrative interactions.

The results gathered from the opinions of research participants revealed that artificial intelligence technologies do not significantly impact report generation at educational institutions in Kaduna State. As a result, the hypothesis that there is no notable variation in opinions regarding the influence of AI technologies on report creation at educational institutions in Kaduna State, Nigeria, was upheld. This finding is in agreement with Aleru's (2023) claim that AI tools enable the automation of data collection, analysis, and report generation, thereby streamlining accreditation processes and allowing administrators to focus on maintaining or improving their institution's accreditation status, which enhances their performance and the institution's reputation. Additionally, the results align with Bobro, N. (2024) assertion that AI-powered analytics tools can generate comprehensive management reports by aggregating and analyzing data from multiple organizational sources. These reports offer valuable insights into enrolment trends, faculty workload, budget allocation, and resource utilization, helping decision-makers make informed strategic decisions. Ultimately, the findings support Nellutla's (2024) view that AI technologies can produce reports, dashboards, and visualizations that help instructors track student progress, identify areas needing improvement, and make data-driven decisions. The non-significant impact of AI on report generation may stem from infrastructural deficits, limited staff training, low awareness, and resistance to change. Concerns over data privacy and ethical risks also contribute. These factors hinder effective adoption and integration of AI tools in administrative reporting within Colleges of Education in Kaduna State.

**Conclusion**

In view of the findings from this study, it was concluded that:

1. **Artificial Intelligence and Appointment Scheduling**: The use of Artificial Intelligence (AI) techniques in appointment scheduling within educational institutions in Kaduna State, Nigeria, carries significant implications for educational administrators, policymakers, staff, and students. Key benefits include enhanced time management, improved administrative efficiency, increased accessibility, and greater user satisfaction. By automating scheduling tasks, AI minimizes human errors and optimizes the use of resources, contributing to more streamlined operations.
2. **Artificial Intelligence and Report Generation**: AI technologies also have a transformative effect on report generation in these institutions. By reducing human errors in data compilation and analysis, AI ensures greater accuracy and consistency in the results. This improvement enhances the reliability of institutional data, which is vital for academic audits, assessments, and strategic planning. Furthermore, AI enables the rapid generation of administrative and academic reports, including student performance, staff effort, and financial summaries. This facilitates more agile educational management by ensuring timely and accurate reporting.

**Recommendations**

Recommendations were made in the study that:

i. To fully leverage the benefits of artificial intelligence in appointment scheduling, educational institutions must invest in continuous professional development for administrative staff. Such training initiatives are essential for enhancing digital literacy and ensuring the effective use of AI-based scheduling tools.

ii. Furthermore, the successful deployment of AI-driven scheduling systems is contingent upon the availability of a robust digital infrastructure. Institutions should prioritize investment in reliable


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hardware, software, and internet connectivity to support the seamless integration and functionality of AI technologies.

iii. In the context of report generation, educational institutions must establish comprehensive data governance frameworks. These frameworks are critical for ensuring the accuracy, privacy, and security of both student and institutional data. Clear guidelines must be implemented regarding data access, storage, and usage to mitigate risks and prevent misuse of sensitive information.

iv. Beyond report generation, AI should also be utilized for predictive analytics. This will enable institutions to identify patterns in student performance, faculty workload, or financial health, fostering more informed and proactive decision-making.

v. Additionally, institutions should aim to integrate AI-driven report generation tools with existing administrative systems, such as student records and financial management systems. This integration will enhance the efficiency and timeliness of report production, ensuring that key stakeholders have immediate access to up-to-date and accurate data.

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