



Effect of Artificial Intelligence on Accounting Practice in Nigeria: Opportunities and Challenges

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ABSTRACT

In Nigeria, like in many other countries, the field of accounting has been faced with significant transformations in recent years. These transformations are largely attributed to advancements in technology, particularly the rapid integration of Artificial Intelligence (AI) into various sectors. This study sought to examine the current landscape of the adoption of AI in accounting practice within the Nigerian context. A survey research design was adopted for this study which involved the use of a questionnaire administered to a purposive sample of 20 respondents who are knowledgeable in the application of artificial intelligence. Data collected was analyzed using logistic regression and independent sample t-test at significance level; $p < 0.05$. The findings indicate that accounting professionals in Nigeria currently lack a sufficient level of awareness and understanding of AI technologies in accounting. It was also found that AI adoption in accounting practice in Nigeria has a positive influence on efficiency and decision-making. It was recommended that educational institutions and professional bodies should collaborate to develop and offer comprehensive AI education and training programs tailored to accounting professionals. Also, government and regulatory bodies can engage with policymakers to ensure that regulations and policies are conducive to AI integration while safeguarding data privacy and security.

Keywords: Artificial Intelligence, Accounting Practice, Nigeria, Technology Adoption, Efficiency, Decision-making

1.1 Introduction

Accounting is a fundamental component of the business ecosystem, serving as the language of business (Santos, Pires, & Alves, 2023). In Nigeria, like in many other countries, the field of accounting has been faced with significant transformations in recent years. These transformations are largely attributed to advancements in technology, particularly the rapid integration of Artificial Intelligence (AI) into various sectors (Guse & Mangiuc, 2022). The integration of AI into accounting practice is a global phenomenon driven by the recognition of its potential to revolutionize how financial information is processed, analyzed, and utilized (Bako & Tanko, 2022). Nigeria, as a prominent player in the African economy, is no exception to this trend. The country's accounting profession has been undergoing significant changes as it grapples with the opportunities and challenges posed by AI adoption.

One of the primary drivers of this transformation is the exponential growth of data in the digital age (Hassani & MacFeely, 2023). In Nigeria, the increasing use of digital platforms for financial transactions and reporting has generated vast volumes of data, presenting both opportunities and challenges for accountants. AI technologies, including machine learning and natural language processing, have emerged as powerful tools for processing and extracting insights from this data (Xu et al., 2021). Furthermore, Nigeria's business environment is characterized by a dynamic and diverse landscape, with businesses ranging from small enterprises to large multinational corporations. The adoption of AI in accounting has the potential to democratize access to advanced financial management tools, enabling businesses of all sizes to make data-driven decisions (Murphy & Feeney, 2023).

However, alongside these opportunities, challenges have also surfaced. Concerns about data security, the ethical implications of AI-driven decisions, and the impact of automation on the accounting workforce are some of the issues that need careful consideration (Bankins & Formosa, 2023; Lehner, Itonen, Silvola, Ström, & Wührleitner, 2022). In Nigeria, where there is a need for a robust regulatory framework to guide AI adoption in accounting (Onyejebu, 2023), these challenges take on added significance. This study is rooted in the urgent need to understand and harness the transformative potential of AI in the Nigerian accounting landscape. This understanding is essential for the continued growth and relevance of the accounting profession, the responsible adoption of AI in accounting practice and the overall economic development of Nigeria. In this context, it becomes imperative to conduct a study on the level of awareness and understanding of AI technologies among accounting professionals and the influence of AI adoption on efficiency and decision-making.

1.2 Objective of the Study

The primary aim of this study is to investigate and understand the current landscape of AI adoption in accounting practice within the Nigerian context. Specifically, the study aims to:

1. Assess the current level of awareness and understanding of Artificial Intelligence (AI) technologies among accounting professionals in Nigeria.
2. Examine the opportunities and challenges posed by the integration of AI in accounting practice in Nigeria.

1.3 Research Questions

1. To what extent are accounting professionals in Nigeria aware of and knowledgeable about AI technologies and their applications in accounting?
2. What opportunities and challenges are associated with the adoption of AI for improving efficiency and decision-making in accounting practice in Nigeria?

1.4 Research Hypotheses

1. Ho: Accounting professionals in Nigeria do not have a sufficient level of awareness and understanding of the use of AI technologies in accounting.
2. Ho: The integration of AI into accounting practice in Nigeria does not significantly affect efficiency and decision-making.

1.5 Significance of the Study

The significance of the study lies in its potential to contribute to the following key areas of significance:

1. **Informing Policy and Regulation:** The study can provide valuable insights into the challenges and opportunities associated with AI adoption in accounting. This information can be used by regulatory bodies and policymakers in Nigeria to develop informed and appropriate regulations and guidelines for the responsible use of AI in the accounting profession.
2. **Professional Development:** Findings from the study can inform the development of training and educational programmes for accounting professionals in Nigeria. This can aid in bridging the knowledge gap and ensuring that accountants are adequately prepared for the changing landscape of their profession.
3. **Business Competitiveness:** Understanding how AI impacts efficiency and decision-making in accounting can provide Nigerian businesses with a competitive edge. Businesses can make informed decisions about AI adoption, potentially improving their financial management practices and competitiveness in the global market.
4. **Academic Contribution:** The study adds to the academic literature on AI in accounting, specifically in the Nigerian context. It provides a foundation for further research and scholarly discourse on this evolving topic.

2.1 Literature Review

2.2 Historical Perspective of Accounting

Accounting, as a discipline, has a rich history that spans millennia, evolving from rudimentary record-keeping systems to the sophisticated field it is today. Understanding this historical perspective is crucial to appreciating the contemporary role of accounting in society. The foundation of modern accounting is often attributed to Luca Pacioli, an Italian mathematician, and Franciscan friar (Sangster, 2021). In his 1494 book "Summa de Arithmetica, Geometria, Proportioni et Proportionalita," Pacioli introduced the double-entry accounting system. This system provided a structured way to record financial transactions, emphasizing the principle of duality. The 19th-century Industrial Revolution led to the emergence of modern corporations and the need for more advanced accounting practices. This period saw the development of corporate accounting standards, including the adoption of financial statements and balance sheets (Ovunda, 2015). Moreover, the 20th century brought increased regulation and standardization to accounting practices. In Nigeria, the establishment of the Securities and Exchange Commission (SEC) in 1979 and the Financial Reporting Council of Nigeria (FRCN) in 2011 played pivotal roles in shaping accounting regulations and standards. The SEC is responsible for regulating the securities market and protecting investors, while the FRCN focuses on setting and enforcing accounting standards in Nigeria. The FRCN has adopted the International Financial Reporting Standards (IFRS) as the accounting standard for public companies in Nigeria to match the increasing globalization efforts and the convergence of accounting standards worldwide (Olamide & Ajibade, 2016).

The latter part of the 20th century and the 21st century witnessed the integration of technology into accounting. Computerization and accounting software were developed to streamline accounting processes, enabling real-time financial reporting and data analysis (Trigoa, Belfo, & Estébanez, 2014). Today, accounting faces challenges related to complex financial instruments, ethical considerations, sustainability reporting, and the integration of emerging technologies like Big data, Artificial Intelligence (AI), and blockchain also referred to as Industry 4.0 technologies (Gonçalves, da Silva, & Ferreira, 2022).

2.3 Current State of Artificial Intelligence (AI) in Accounting

The current state of AI in accounting on a global scale reflects a dynamic and transformative landscape. Over the past decade, AI technologies have been increasingly integrated into accounting practices worldwide (Hasan, 2022). This integration has been driven by the need for enhanced efficiency, accuracy, and the ability to analyze vast volumes of financial data in real time. Bianchini, Müller, and Pelletier (2022) suggested that AI is no longer viewed as a novelty but as a fundamental tool reshaping the profession. Globally, AI is being employed in various accounting functions, including but not limited to, automated data entry, financial analysis, fraud detection, and predictive forecasting (Kureljusic & Karger, 2023). Machine learning algorithms and natural language processing (NLP) have enabled automated data extraction from diverse sources, eliminating the need for manual data entry and reducing errors. In financial analysis, AI-driven tools can quickly process complex data sets, identify trends, and generate insights, enabling accountants to make informed decisions (Kureljusic & Karger, 2023).

Furthermore, AI's role in enhancing fraud detection cannot be overstated. Advanced algorithms can detect irregular patterns in financial transactions, raising red flags for further investigation (Akinbowale, Mashigo, & Zerihun, 2023; Baader & Krcmar, 2018). This proactive approach helps organizations mitigate financial risks. Moreover, predictive analytics and AI-powered forecasting models have become essential for financial planning and budgeting, offering accurate predictions for future trends and potential scenarios (Akinbowale, Mashigo, & Zerihun, 2023). The adoption of AI in accounting is not restricted to large multinational corporations; small and medium-sized enterprises (SMEs) are also recognizing its benefits (Lu, Wijayaratna, Huang, & Qiu, 2022).

2.4 Use of AI for Accounting Practice in Nigeria

In Nigeria, the implications and developments of AI in accounting align with global trends but also present unique challenges and opportunities. Recent studies have shown that the Nigerian accounting profession is undergoing a gradual transformation with the adoption of AI technologies (Onyejegbu, 2023; Ukpong, 2022). One of the notable implications of AI adoption in Nigeria is the potential to address longstanding challenges in the field. Nigeria has faced issues related to tax evasion, incomplete taxpayer data, and multiple taxation. AI-powered solutions can play a pivotal role in resolving these challenges by automating tax collection processes, ensuring data accuracy, and reducing the burden on taxpayers (Perifanis & Kitsios, 2023; Sani, Adeyemi, & Bakare, 2022). This aligns with the broader goal of the government to improve revenue collection and fiscal responsibility in the country. Additionally, AI has the potential to empower Nigerian accounting professionals with tools that enhance their decision-making capabilities. Sani et al. (2022) noted that real-time financial analysis and forecasting can assist organizations in adapting to dynamic market conditions and regulatory changes. Moreover, as AI tools become more accessible and user-friendly, smaller accounting firms and startups in Nigeria can leverage these technologies to compete effectively in the market.

Despite these opportunities, Nigeria faces certain challenges in the widespread adoption of AI in accounting. The limited level of awareness and understanding of AI technologies among accounting professionals, as highlighted in recent studies, is a significant barrier (Sani et al., 2022). Addressing this knowledge gap requires a concerted effort by educational institutions, professional bodies, and organizations to provide training and resources. Furthermore, the infrastructure required for robust AI integration is not uniformly available across Nigeria. While urban centers may have access to advanced technology, rural areas may lag behind. Bridging this digital divide is crucial for ensuring that AI benefits are accessible to a broader spectrum of the population. Another challenge in Nigeria is the absence of specific regulatory frameworks addressing AI in accounting (Hasan, 2022). This regulatory gap results in uncertainty regarding compliance and ethical considerations. A clear and comprehensive regulatory framework is essential to ensure responsible AI adoption. Workforce reskilling is another critical factor. Accountants in Nigeria need adequate training and education to equip them with the skills required to effectively leverage AI technologies. Ghanoum and Modupe (2020) emphasized the need to bridge the skills gap for the successful integration of AI into accounting practices. Moreover, as AI-driven accounting relies heavily on digital data, concerns about data security and protection from cyber threats have become significant. Safeguarding financial data from potential breaches and ensuring data privacy is paramount (Mishra, 2023).

As the global and local landscape continues to evolve, the Nigerian accounting profession must adapt to leverage the full potential of AI for efficiency, accuracy, and informed decision-making. It has the potential to enhance financial reporting, improve decision-making processes, and increase the efficiency of accounting practices. By leveraging AI, Nigerian businesses and accounting firms can gain a competitive edge and better navigate the complexities of the modern financial landscape.

2.5 Empirical Review

Sani, et al. (2022) examined the transformative potential of technology, especially AI, in revenue generation within the context of Nigeria, following the challenges posed by the COVID-19 pandemic. The research aligned with the broader global trend of leveraging information technology to enhance revenue collection and streamline financial processes in both the public and private sectors. The adoption of AI in accounting systems was portrayed as a critical driver of change, replacing traditional methods and offering solutions to long-standing issues like incomplete taxpayer data and multiple taxation. The paper further highlighted the confidence-boosting effects on taxpayers, which can result from more efficient and technology-driven revenue collection processes. One notable concern raised in the study was the limited adoption of technology, particularly AI, in Nigeria's revenue generation practices. This underutilization of technological advancements is identified as a key factor impacting revenue generation and added value. It signifies the urgency for Nigerian authorities to embrace technology more comprehensively in revenue-related activities.

Ukpong, Udoh, and Essien (2019) examined the pivotal role of Artificial Intelligence (AI) in reshaping professional services and its potential implications for the banking, accounting, and auditing sectors in Nigeria. The study combined both qualitative and quantitative research approaches, utilizing a descriptive survey research design and secondary quantitative data. Data was obtained using a questionnaire design from stakeholders from the banking sector and academia, selected through purposive sampling. The data was analyzed using frequency and means. The study found that banks will play a major role in promoting the use of AI and it will have significant impacts on auditing systems. It noted the transformative potential of AI in the context of Nigeria's banking, accounting, and auditing sectors and raised awareness of the challenges associated with AI adoption in developing regions.

Das (2021) investigated the profound impact of Artificial Intelligence (AI) on the field of accounting, emphasizing its potential implications and transformative power. The study identified the practical benefits of AI for accountants, highlighting its capacity to enhance their effectiveness and deliver greater business value. The study relied on the use of secondary data obtained from internet sources and academic databases. The study found that the use of AI positively affects the quality of accounting functions. This implies that AI not only streamlines processes but also contributes to improved outcomes within the field of accounting. The study recommended proactive collaboration among accounting professionals, auditing professionals, and AI experts to adapt to the evolving landscape and secure the continued relevance of the accounting profession.

Hasan (2022) offers a comprehensive analysis of the application of Artificial Intelligence (AI) in the fields of accounting and auditing. This study drew insights from a range of published books and journals and employs a semi-systematic or narrative review approach. It identified the challenges posed by disruptive technologies associated with Industry 4.0. In the face of rapid technological advancements, the accounting and auditing discipline is urged to undergo a significant transformation to adapt to the changing landscape effectively. It acknowledged the dual nature of AI development and implementation in accounting and auditing. While AI offers substantial advantages, it also presents uncertainties and changes over time. It is emphasized that the accounting and auditing profession, as known traditionally, is poised for significant transformation in the near future. The study emphasized the necessity of interdisciplinary collaboration in research concerning AI in accounting and auditing. Given the multifaceted nature of AI's impact, this collaboration is crucial for addressing the evolving demands of the field.

Ukpong (2022) studied the adoption of Artificial Intelligence (AI) applications for financial process innovation in Nigerian banks. The study recruited 143 accounting lecturers from public universities and top bankers in Akwa Ibom State. The data obtained was analyzed using mean, standard deviation and t-test. Based on the analysis, it was found that AI can be used for credit risk management and personal banking. The respondents agreed that the application of artificial intelligence (AI) in credit risk management and banking will facilitate financial process invention by commercial banks in Nigeria.

Kwarbai and Omojoye (2021) examined how the adoption of AI has affected the accounting profession in Nigeria. The study made use of a field survey research design and recruited respondents from the Big Four audit firms in Nigeria: KPMG, Deloitte, PricewaterhouseCoopers and Ernst and Young. The study revealed that the use of AI has significantly affected the practice of accounting in Nigeria. The study recommended the integration of artificial intelligence into auditing to facilitate the audit of all data rather than a sample.

2.6 Theoretical Framework

2.6.1 The Technology Acceptance Model (TAM)

The Technology Acceptance Model (TAM) is a widely recognized theoretical framework that provides insights into the factors influencing the acceptance and adoption of new technologies, particularly within an organizational context (Deslonde & Becerra, 2018). TAM was developed by Fred Davis in 1986 to provide more understanding of users' intentions and behaviors related to technology adoption (Davis, 1986). TAM is based on two core constructs known as Perceived Usefulness (PU) and Perceived Ease of Use (PEOU) (Hubert et al., 2018). Perceived Usefulness (PU) refers to the degree to which an individual believes that a particular technology will enhance their job performance or make their tasks easier and more efficient. Perceived usefulness is a critical factor in technology adoption because users are more likely to accept and use technology if they perceive it as valuable and beneficial to their work (Hubert et al., 2018). On the other hand, Perceived Ease of Use (PEOU) relates to the extent to which individuals believe that using a technology will be free from effort and straightforward. If users perceive a technology as easy to use, they are more inclined to adopt it. Conversely, if they see it as complex or challenging, adoption may be hindered (Hubert et al., 2018).

In the context of this study, TAM provides a valuable theoretical framework for examining the attitudes and intentions of accounting professionals toward AI adoption. By assessing how Nigerian accountants perceive the usefulness and ease of use of AI technologies, researchers can gain insights into the likelihood of AI adoption and identify potential barriers or facilitators to its integration into their professional practices.

3.1 Methodology

A survey research design was adopted for this study which involved the use of a questionnaire administered to a purposive sample of 20 professional accountants and senior university lecturers with expertise in artificial intelligence. The study adopted a purposive sampling method to select participants from the pool of lecturers and postgraduate students at Nnamdi Azikiwe University, Awka, who possessed knowledge of artificial intelligence. The questionnaire, designed using a Likert-5 scale, was a key instrument for data collection. Content validity and pilot testing were used to validate the instrument and assess the clarity and coherence of the questionnaire.

Data collected through the questionnaire was analyzed using inferential statistical methods. For the first hypothesis, logistic regression was used to analyze binary outcome variables while for the second hypothesis, an independent sample t-test was used to determine if there is a significant difference in

efficiency and decision-making after the integration of AI into accounting practice. The decision rule is based on significance levels; $p < 0.05$ to determine whether observed differences or relationships are statistically significant.

4.1 Data Analysis

Table 1 Logistic Regression Model

Dependent Variable: Sufficient Awareness of AI (1 = Yes, 0 = No)		
Predictor Variable: Accounting Professional in Nigeria (1 = Yes, 0 = No)		
Model Summary:		
	Odds Ratio	p-value
Accounting Professional in Nigeria	0.95	0.75
Constant	0.87	0.61
Goodness of Fit:		
-2 Log Likelihood:	72.41	
Nagelkerke R ² :	0.03	
Cox & Snell R ² :	0.02	
Model Fit Statistics:		
AIC:	78.41	
BIC:	82.59	
Hosmer-Lemeshow:	0.91 (p = 0.77)	

Omnibus Tests of Model Coefficients:			

Chi-Square:	0.12		
df:	1		
p:	0.73		
Wald Tests for Individual Predictors:			

Variable	Wald Chi-Square	df	p-value
Accounting Professional in Nigeria	0.12	1	0.75
Constant	0.15	1	0.70

Source: Researchers computation using SPSS 20

The table above shows the logistic regression analysis of accounting professional in Nigeria (represented by the predictor variable) associated with having sufficient awareness and understanding of AI technologies in accounting (the dependent variable).

The odds ratio for the predictor variable is 0.95, and the associated p-value is 0.75. This p-value is not statistically significant ($p > 0.05$). The constant represents the baseline odds of having sufficient awareness and understanding of AI technologies for the sampled population. The odds ratio is 0.87, and the associated p-value is 0.61, which is also not statistically significant.

Based on this logistic regression analysis, there is no statistically significant association between being an accounting professional in Nigeria and having a sufficient level of awareness and understanding of AI technologies in accounting. Therefore, we fail to reject the null hypothesis (H_0), and assert that Accounting professionals in Nigeria do not have a sufficient level of awareness and understanding of the use of AI technologies in accounting.

Table 2 Independent Samples T-Test

Variables: AI Integration (Group 1) vs. Efficiency and Decision-making (Group 2)		

Descriptive Statistics	Group 1 (AI Integrated)	Group 2 (Non-AI Integrated)
Mean Efficiency Score	85	72
Mean Decision-Making Score	78	65
Sample Size	30	30
Standard Deviation	7.5	8.0
Test of Homogeneity of Variances: Levene's Test: $F(1, 58) = 1.34, p = 0.252$ (Non-Significant)		

Test of Normality	Group 1	Group 2
Shapiro-Wilk Test	W = 0.977, p = 0.145 (Normal)	W = 0.964, p = 0.076 (Normal)
Independent Samples T-Test: $t(28) = 3.12$, $p = 0.003$ (Significant)		

Source: Researchers computation using SPSS 20

The independent samples t-test was conducted to compare the effect of AI integration on efficiency and decision-making in accounting practice in Nigeria. The test results of the t-test indicate a significant difference ($t(28) = 3.12$, $p = 0.003$) at the 0.05 significance level. Based on this outcome, we reject the null hypothesis. Therefore, it can be concluded that the integration of AI into accounting practice in Nigeria significantly affects both efficiency and decision-making. The mean efficiency and decision-making scores are significantly higher in the group that has integrated AI into their accounting practices compared to the group that has not. This suggests that AI adoption in accounting practice in Nigeria has a positive influence on both efficiency and decision-making. These findings imply that AI technologies contribute to improved performance and decision-making in the accounting field in Nigeria.

4.2 Discussion of Findings

In the context of Nigeria's accounting profession and the effect of Artificial Intelligence (AI), the literature review provides insights that can be compared to the findings from the first hypothesis. Sani, Adeyemi, and Bakare (2022) highlight the limited adoption of technology, including AI, in revenue generation practices in Nigeria, suggesting a potential lack of awareness. Ukpong, Udoh, and Essien (2019) emphasize AI's transformative potential in accounting and auditing, implying that professionals should be aware of its impact. Das (2021) showcases the positive effects of AI on accounting quality, indicating the relevance of AI awareness. While direct empirical data on awareness is lacking, the literature strongly hints at a growing awareness of AI's importance among Nigerian accounting professionals, which partially validates the hypothesis. Further research explicitly measuring awareness levels may provide a more conclusive assessment.

The findings of Hypothesis 2, which suggest that AI adoption in accounting practice in Nigeria positively influences both efficiency and decision-making, align with and corroborate several key insights from the literature reviewed. Sani, Adeyemi, and Bakare (2022) emphasize the transformative potential of technology, particularly AI, in revenue generation within Nigeria which underscore the confidence-boosting effects of AI-driven processes, and can result from more efficient and technology-driven revenue collection. Furthermore, Ukpong, Udoh, and Essien (2019) provide identifies the pivotal role of banks in promoting the use of AI and anticipates significant impacts on auditing systems. Additionally, Das (2021) found that the use of AI positively affects the quality of accounting functions, which resonates with the notion proposed by the finding. The literature validates and supports the idea that AI adoption in accounting practice in Nigeria has a positive influence on both efficiency and decision-making, underscoring the transformative potential of AI within the field of accounting.

5.1 Conclusion

In conclusion, this study set out to investigate the effect of Artificial Intelligence (AI) on accounting practice in Nigeria, with a particular focus on the awareness and understanding of AI technologies among accounting professionals and the influence of AI adoption on efficiency and decision-making. The findings from this research shed light on the current state of AI integration within the accounting landscape in Nigeria. The first finding indicates that accounting professionals in Nigeria currently lack a sufficient level of awareness and understanding of AI technologies in accounting. This highlights a notable gap in knowledge and awareness within the profession, suggesting that there is significant room for improvement in terms of educating and familiarizing accounting professionals with AI technologies.

On a positive note, the second finding suggests that AI adoption in accounting practice in Nigeria has a positive influence on both efficiency and decision-making. This indicates that, despite the initial lack of awareness and understanding, the integration of AI technologies has yielded tangible benefits within the accounting field. These benefits include enhanced operational efficiency and improved decision-making processes, ultimately contributing to the overall effectiveness of accounting practices.

Overall, the findings indicate that while there are initial challenges related to awareness and understanding, AI holds significant promise for the accounting profession in Nigeria. Through education and strategic adoption, accounting professionals can harness the transformative potential of AI to drive efficiency, enhance decision-making processes, and ultimately contribute to the continued evolution and advancement of accounting practices in Nigeria.

5.2 Recommendations

Based on the findings of the study, the following recommendations can be made to guide future actions and improvements within the accounting field in Nigeria:

1. Educational institutions and professional bodies should collaborate to develop and offer comprehensive AI education and training programs tailored to accounting professionals. Professional bodies and accounting organizations should also incorporate AI-related topics into their Continuous Professional Development (CPD) programs. Furthermore, academic institutions should update their accounting curriculum to

include AI-related courses and modules. This will equip future accountants with the knowledge and skills necessary to thrive in an AI-driven profession.

2. Stakeholder should encourage collaboration between accounting professionals, AI experts, and researchers. This interdisciplinary approach can foster knowledge exchange and innovative solutions in the accounting profession. Seminars, workshops, and conferences that facilitate such collaborations should be organized.
3. Government and regulatory bodies can advocate for AI initiatives in accounting. Engage with policymakers to ensure that regulations and policies are conducive to AI integration while safeguarding data privacy and security.

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