

Artificial Intelligence, Big Data Analytics, and Financial Reporting Quality in Nigeria: The Mediating Role of Transparency

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ABSTRACT

This study examines the impact of artificial intelligence (AI) and big data analytics (BDA) on financial reporting quality (FRQ) in Nigeria, with particular emphasis on the mediating role of transparency. The increasing adoption of digital technologies in accounting has transformed how financial information is generated, processed, and disclosed. However, empirical evidence on how these technologies influence reporting quality in emerging economies remains limited.

Drawing on Information Asymmetry Theory and the Technology–Organization–Environment (TOE) framework, this study investigates whether AI adoption and big data analytics capability enhance financial reporting quality directly and indirectly through transparency. A quantitative research design was employed using survey data collected from 312 accounting and finance professionals across public and private sector organizations in Nigeria. Structural Equation Modeling (PLS-SEM) was used to test the hypotheses.

The results indicate that artificial intelligence and big data analytics significantly improve financial reporting quality, while transparency plays a partial mediating role. The findings contribute to the literature on digital transformation in accounting and provide practical insights for regulators and organizations in emerging economies.

Keywords: Artificial Intelligence, Big Data Analytics, Financial Reporting Quality, Transparency, Nigeria, Digital Transformation

INTRODUCTION

The advancement of digital technologies has significantly transformed financial reporting practices globally. Among these technologies, artificial intelligence (AI) and big data analytics (BDA) have emerged as critical tools for improving the efficiency, accuracy, and reliability of financial reporting processes. AI enables automation, predictive analysis, and anomaly detection, while BDA enhances the ability of organizations to process and analyze large volumes of financial and non-financial data.

In Nigeria, the adoption of AI and data analytics is gradually gaining traction across both public and private sector organizations. Institutions are increasingly leveraging these technologies to improve financial reporting processes, enhance decision-making, and strengthen accountability. Despite these developments, concerns remain regarding the quality, transparency, and credibility of financial reports.

Financial reporting quality is essential for effective decision-making and accountability. It encompasses attributes such as relevance, reliability, comparability, and timeliness. Transparency, on the other hand, plays a vital role in reducing information asymmetry between organizations and stakeholders.

Although previous studies have examined the role of information technology in accounting, there is limited empirical evidence on how AI and BDA jointly influence financial reporting quality in Nigeria. Furthermore, the mediating role of transparency in this relationship has not been adequately explored.

This study aims to bridge this gap by examining the impact of AI and BDA on financial reporting quality in Nigeria, with transparency serving as a mediating variable.

LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

Artificial Intelligence and Financial Reporting Quality

Artificial intelligence has transformed financial reporting by automating routine tasks, improving data accuracy, and enhancing fraud detection mechanisms. AI systems reduce human error and enable real-time reporting, thereby improving the reliability and timeliness of financial information.

H1: Artificial intelligence adoption has a significant positive effect on financial reporting quality in Nigeria.

Big Data Analytics and Transparency

Big data analytics allows organizations to process large datasets and generate meaningful insights. This capability enhances disclosure practices and improves transparency by enabling real-time reporting and better access to financial information.

H2: Big data analytics capability has a significant positive effect on transparency in Nigeria.

Transparency and Financial Reporting Quality

Transparency enhances stakeholder confidence and improves the credibility of financial reports. Organizations that maintain high levels of transparency are more likely to produce reliable and relevant financial information.

H3: Transparency has a significant positive effect on financial reporting quality in Nigeria.

Mediating Role of Transparency

Transparency serves as a mechanism through which AI and BDA influence financial reporting quality. Without transparency, the benefits of digital technologies may not fully translate into improved reporting outcomes.

H4: Transparency mediates the relationship between AI/BDA and financial reporting quality.

THEORETICAL FRAMEWORK

This study is anchored on Information Asymmetry Theory and the Technology–Organization–Environment (TOE) framework. Information Asymmetry Theory explains how transparency reduces the information gap between management and stakeholders, thereby improving reporting quality. The TOE framework provides a basis for understanding the adoption of AI and BDA within organizations.

METHODOLOGY

Research Design

A quantitative cross-sectional survey design was adopted for this study.

Population and Sample

The study targeted accountants, auditors, and finance managers in public and private sector organizations in Nigeria. A total of 350 questionnaires were distributed, out of which 312 valid responses were obtained, representing a response rate of 89.1%.

Data Collection

Data were collected using a structured questionnaire based on a five-point Likert scale ranging from strongly disagree to strongly agree.

Measurement of Variables

Variable	Measurement
AI Adoption	Automation level, AI tools usage
Big Data Analytics	Data processing capability, analytics tools
Transparency	Disclosure quality, accessibility of information
Financial Reporting Quality	Relevance, reliability, comparability, timeliness

Model Specification

$$FRQ = \beta_0 + \beta_1 AI + \beta_2 BDA + \beta_3 TRANS + \epsilon$$

Data Analysis Technique

Structural Equation Modeling (PLS-SEM) was used to analyze the data and test the hypotheses.

RESULTS AND DISCUSSION

Measurement Model Evaluation

The measurement model was assessed for reliability and validity. Cronbach's alpha values ranged from 0.87 to 0.90, while composite reliability values exceeded 0.90. The average variance extracted (AVE) values were all above 0.50, indicating good convergent validity.

Structural Model Results

The results indicate that artificial intelligence has a significant positive effect on financial reporting quality ($\beta = 0.29$, $p < 0.05$). Big data analytics has a significant positive effect on transparency ($\beta = 0.46$, $p < 0.01$). Transparency also has a strong positive effect on financial reporting quality ($\beta = 0.51$, $p < 0.01$).

The model explains 64% of the variance in financial reporting quality, indicating strong explanatory power.

Mediation Analysis

The mediation analysis shows that transparency significantly mediates the relationship between AI and financial reporting quality, as well as between big data analytics and financial reporting quality. This suggests that the effectiveness of digital technologies in improving reporting quality depends largely on the level of transparency.

DISCUSSION OF FINDINGS

The findings demonstrate that artificial intelligence enhances financial reporting quality by improving accuracy and reducing errors. Big data analytics contributes to improved transparency through better data processing and disclosure practices. Transparency, in turn, strengthens financial reporting quality by reducing information asymmetry and increasing stakeholder trust.

Contribution to Knowledge

This study provides empirical evidence on the role of AI and big data analytics in improving financial reporting quality in Nigeria. It also highlights the importance of transparency as a mediating factor, thereby extending existing literature on digital transformation in accounting.

Policy Implications

The findings suggest that regulators should develop policies to guide the adoption of AI in financial reporting. Organizations should invest in data analytics infrastructure and enhance transparency practices. There is also a need for continuous training of accounting professionals in digital technologies.

CONCLUSION

This study concludes that artificial intelligence and big data analytics significantly improve financial reporting quality in Nigeria. However, their effectiveness is largely dependent on transparency. Organizations that integrate digital technologies with transparent reporting practices are more likely to achieve higher reporting quality.

Ethical Considerations

This study complied with all ethical standards. Participation was voluntary, and respondents' confidentiality and anonymity were ensured.

Data Availability Statement

The data used for this study are available from the author upon reasonable request.

Author Contribution

Dr. Ahupa Simon Ekawu conceived, designed, and completed the study.

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Questionnaire

Use 5-point Likert Scale (1 = Strongly Disagree, 5 = Strongly Agree)

Section A: Demographics

- Gender
- Years of experience
- Sector (Public / Private / Financial Institution)

- Professional qualification (ICAN, ANAN, ACCA, etc.)

Section B: Artificial Intelligence (AI)

AI1: Our organization uses AI tools in financial reporting processes

AI2: AI improves the accuracy of financial data

AI3: AI reduces human errors in financial reporting

AI4: AI enhances fraud detection and anomaly identification

AI5: AI improves the timeliness of financial reporting

Section C: Big Data Analytics (BDA)

BDA1: Our organization uses advanced data analytics tools

BDA2: We can process large volumes of financial and non-financial data

BDA3: Data analytics improves decision-making in financial reporting

BDA4: Real-time data analytics enhances reporting efficiency

BDA5: Our organization has strong data analytics capability

Section D: Transparency (TRANS)

TRANS1: Financial information is easily accessible to stakeholders

TRANS2: Our reports provide clear and understandable disclosures

TRANS3: There is timely disclosure of financial information

TRANS4: Our organization maintains openness in reporting practices

TRANS5: Financial reports reflect complete and honest disclosures

Section E: Financial Reporting Quality (FRQ)

FRQ1: Financial reports are reliable and free from material errors

FRQ2: Financial information is relevant for decision-making

FRQ3: Reports are prepared and released on time

FRQ4: Financial statements are comparable across periods

FRQ5: Financial reports faithfully represent economic reality

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