Evaluation of the influence of data science on financial reporting quality: descriptive evidence from Nigeria

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Keywords
Data Science, Financial Reporting Quality, Data Visualization, Big Data Analytics, Cloud Accounting, Blockchain.

Abstract

Technology advances have made it much easier to amass data in huge quantities. Capitalizing on this data helps create value and growth, which is why organizations invest in people and technological capabilities to extract greater value from data. This study evaluates the influence of data science on financial reporting quality, descriptive evidence from Nigeria. Data visualization, big data analytics, cloud accounting and blockchain were used to proxy data science. Survey research design was adopted through a well-structured questionnaire, cluster random sampling was used. Frequencies and percentages were used for the descriptive analysis while multiple regression analysis was adopted for the test of hypotheses. Findings show that data visualization has a positive and significant effect with p value (0.049) and coefficient of 0.187; blockchain has positive and significant effect on financial reporting quality with p value (0.000) and coefficient of 0.389; Big data analytics shows a positive and statistically insignificant effect on financial reporting quality with p value (0.095) and coefficient of 0.095 while cloud accounting has negative and statistically insignificant effect on financial reporting quality with p value (0.074) and coefficient of 0.095. The study concludes that data science has contributed to the field of accounting and quality financial reporting This study therefore recommends the inclusion of graphs, tables and pictures suitable of enhance understanding and be better informed for an improved decision making. Accountants, auditors and all preparers of financial report should as a matter of policy be exposed to the knowledge of data science and such curriculum should be added to all financial reporting-related fields in our institutions. Government and organizations involve in Accounting, Finance, and Investment decisions should provide data science-enabling environment and invest in data science infrastructure. Cloud accounting users should be enlightened on its safety, security and usage.

Introduction

The total amount of data created, captured, reproduced, and consumed worldwide is projected to grow rapidly, global data generation is expected to exceed 181 zettabytes over the next five years, reaching a peak in 2025 (Bartley, 2024). This data can be captured and analyzed to provide valuable insights that can support future business growth. Consequently, businesses need to employ tools that can help them in converting data into usable information, which requires the use of data science tools (Bose et al, 2022). With the advent of data science, accounting and finance professionals can take advantage of several opportunities in this rapidly evolving, disruptive, but advantageous environment (Chartered Institute of Management Accountants [CIMA], 2022). Accountants have always exploited emerging technologies to help them to complete their tasks more accurately, quickly or simply: from the incised clay tablets of the Sumerian scribes, through the adding machines of the 19th century, to the calculators and computers of the 20th century. But all of these technology developments were simple propositions by comparison with the myriad technologies that are now rapidly reshaping the worlds of business and accountancy (ACCA, 2013)

According to Aziz (2023) technological advancements are rapidly changing overall business industries. A shift from manual accounting systems to advanced algorithms, digital accounting, and automated accounting systems is the outcome of technological advancements in the business sector. Technology advancements are rapidly adopted by large business organizations focused on improved business strategies and enhancement in accounting transparency systems. Publicly traded organizations are using automated

accounting and digital accounting systems to ensure the accuracy, accountability, and transparency of their accounting systems. In recent years, the field of accounting has been transformed by the rise of Big Data. Big Data refers to large and complex sets of data that cannot be easily analyzed using traditional data processing tools. These massive datasets are becoming increasingly common in the accounting profession, as businesses generate vast amounts of financial data that must be analyzed and interpreted (Theodorakopoulos et al, 2022).

Data is at the heart of accounting, and therefore big data can help accountants deliver more value to businesses (Institute of Chartered Accountants in England and Wales (ICAEW), 2019). As the Economist aptly put it in 2017, the world's most valuable resource is no longer oil, but data. Technology advances have made it much easier to amass data in huge quantities. Capitalizing on this data helps to create value and growth, which is why organizations are investing in people and technological capabilities to extract greater value from data. Data can enable businesses to base their decision-making more on hard evidence and fact, with less emphasis on guesswork and assumptions. Furthermore, the sheer volume and breadth of opportunities to use data is increasingly transforming the business environment and providing opportunities for disruptive new business models (ICAEW, 2019). Big data by itself doesn't get us very far. We need data science to help us make sense of it and gain insights from it. Data science tools have got more user-friendly, enabling more self-service in businesses and less reliance on technical experts to run queries. The costs have also come down, with all kinds of free or cheap tools increasingly available, often linked to cloud applications (ICAEW, 2019)

The Association of Chartered Certified Accountants [ACCA] and the Institute of Management Accountants [IMA] (2013) contend that big data, cloud, mobile, and social platforms are changing the landscape for accounting and finance professionals, and they must adapt to the challenges posed by cybercrime, digital service delivery, and artificial intelligence. Similarly, the Chartered Global Management Accountant [CGMA] (2013) stresses the significance of data science, arguing that it raises significant challenges for the future role of accounting and finance. The primary obstacle for businesses to leverage their data is a talent shortage. Businesses across industries require people with data analytics skills who are prepared to challenge norms. While accountants probably don't need to become expert data scientists, they do need greater data science and analytical skills in order to derive insights from data and to enable more effective decision making and control (IFAC, 2019).

This study evaluates the effect of data science on the financial reporting quality from the perspective of 'The Big 4' Accounting firms in Nigeria (Deloitte, Ernst & Young (EY), PricewaterhouseCoopers (PwC), and Klynveld Peat Marwick Goerdeler (KPMG)) Data science was proxy with data visualization, Big data analytics, cloud accounting and blockchain; while financial reporting quality is based on the underlying fundamental qualitative characteristics (i.e. relevance and reliable representation)

Review of Related Literature

Financial Reporting Quality (FRQ)

Financial reporting quality is a broader, multi-dimensional concept, as it has to do with the simultaneous assessment of different dimensions and proper evaluation of the decision usefulness of financial reporting (financial and non-financial information) as well the mandatory and voluntary disclosures included in the corporate reports (Braam & Beest, 2013). Hussain et al (2021) posited that qualitative characteristics, according to the International Accounting Standards (IASB) and International Financial Reporting Standards (IFRS) framework, are the characteristics that make the information contained in financial statements useful to users. There are four qualitative characteristics under Financial Accounting Standards Board (FASB) and International Accounting Standards (IASB) namely (1) relevance, (2) reliability, (3) understandability, and (4) comparability. The accounting information contained in the financial reports is considered to be of a quality if it possesses a set of these characteristics (Alasbahi & P I P, 2021). Reporting quality refers to the extent to which a company's financial reports communicate the underlying economic state and performance during the period of measurement, as stated by the Financial Accounting Standards Board (Greenwood et al., 2021).

According to Hamour et al (2024) the information in financial reports can be harmful because displaying unimportant details may hide material information and make financial reports challenging to

interpret. Therefore, users have a great need for high-quality information rather than quantity. Comparable, reliable, and understandable financial information can support markets' diverse transactions and operations. Transparency and relevance are characteristics of proper financial reporting. Many scholars have recently emphasized improving FRQ to reduce information asymmetry and enhance market transparency (Hanh et al, 2023). Financial reporting quality is vital to users of financial statements and practitioners, regulators, and accounting researchers.

Data Science

Technology advances have made it much easier to amass data in huge quantities. Capitalizing on this data helps to create value and growth, which is why organizations are investing in people and technological capabilities to extract greater value from data (IFAC, 2019). The McKinsey Global Institute (2012) conducted a survey and found that 51% of the global business leaders believe that big data and data science are top priorities in their current business function. Furthermore, the Chartered Global Management Accountant [CGMA] (2013) surveyed more than 2000 Chief Financial Officers [CFOs] and finance professionals around the world and concluded that data science would revolutionize the way businesses operate over the next decade.

New types of data arise such as real-time contents and the big data analytics (BDA) that help to solve issues between users and preparers of financial reporting and accounting (Ehioghiren & Addeh, 2023). Big data and data science are rapidly adopted by large business organizations focused on improved business strategies and enhancement in accounting transparency systems. Publicly traded organizations are using big data and data science systems to ensure the accuracy, accountability, and transparency of their accounting systems. By using data science technologies, they can minimize the risk of Fraud and manipulations in the accounting systems (Aziz, 2023)

The advancement of techniques like pattern recognition and natural language processing has increased the predictive capability of data science (Al-Omoush et al., 2021). Due to advancements in data collection and processing technology, the role of managers, accountants and auditors in producing, analyzing and encouraging information use has shifted away from simply providing accurate and reliable information and toward data analytics and providing a system that can be monitored and improved over time to provide accurate and reliable information (Balios et al., 2020; Abu Afifa et al., 2022). Additionally, accounting has evolved into a discipline capable of adapting to massive volumes of data due to its importance to enterprises and policymakers in acquiring information and data about economic events (Cappa et al., 2021).

Data Visualization (DV)

The Securities and Exchange Commission encourages the presentation of information or data in graphical form to improve users' ability to understand financial disclosures (Christensen et al, 2024). Data visualization has been acknowledged by researchers and practitioners as a means to enhance the quality of audit practices (American Institute of Certified Public Accountants [AICPA], Big data should be well-processed to gain meaningful insights through some techniques, including visualizing the analytic results (Mauludina et al, 2024). According to Eberhard (2020), "A visualization is defined as a visual representation of information or concepts designed to effectively communicate the content or message and improve understanding in the audience." Thus, utilizing visual elements such as charts, graphs, and infographics, data visualization can change raw data into easily understandable and visually appealing representations for the audience, particularly, investors. Data visualization is important for financial storytelling and it can transform the way organizations report and communicate financial information (Appeal, 2023)

Big Data Analytics (BDA)

Big data is described as an extremely vast and complicated collection of structured and unstructured data that are difficult to manage, handle, or analyze using typical data processing methods (Sihombing et al., 2023). According to Hasan et al. (2020), big data is knowledge that is too massive, complicated, and dynamic for traditional technologies, skills, and infrastructure to process in a reasonable amount of time. According to PWC (2017) traditional financial reporting methods have become time-consuming and cumbersome as they typically involve analyzing an organization's hundreds and thousands of transactions,

individually, to form conclusions. However, with data analytics, auditors are now able to streamline the analysis of an organization's massive document trove, ensuring a higher degree of accuracy and reduction in the chances of overlooking errors. Data analytics translate data into insights that enable finance teams to unlock new value. They can also help identify and track anomalies and outliers, which could indicate potential problems or the existence of fraud and need to be further examined (Shanawaz, 2024). According to Meiryani et al (2024) new types of data arise such as real-time contents and the big data analytics (BDA) help to solve issues between users and preparers of financial reporting and accounting. The purpose of big data in accounting is to collect, organize, and utilize data from a variety of sources to gain new business knowledge.

Cloud Accounting (CA)

According to Cloud Banking Forum (CBF) (2020) over the recent years, cloud computing has become a significant technological enabler for innovative service development. Cloud allows industries to tap into new service models, utilizing its technological advancement for new and better services to customers, improving productivity, cost-efficiency and flexibility of internal business processes. Cloud services embody redundancy, high availability and resiliency thanks to their distributed nature. Akpan et al (2023) posit that cloud accounting refers to the use of accounting software and tools that are hosted on remote servers and accessed over the internet, instead of being installed on a local computer. With cloud-based systems, multiple users can work simultaneously on the same set of data, ensuring that financial reports reflect the most current, reliable and comparable information. Cloud accounting can be seen as an important resource to improve enterprise competitiveness.

According to Christauskas and Miseviciene (2012) cloud-based accounting system is a way to manage business accounts entirely online and attained as a service, on-demand, acting similar to accounting software installed on users' computers, but performed on servers and accessible by users through their web browsers. The application of this technology in accounting offers an opportunity for the accountants to remodel their activity and practices and to be able to offer increased and relevant services (ACCA report, 2020).

Blockchain (BC)

A blockchain is a decentralized, cryptographically secured digital ledger that maintains a continuously growing list of ordered and thus immutable records of transactions (Gietzmann & Grossetti, 2021). Hailed as one of the most disruptive innovations over the last decade, blockchain has garnered much attention from academia, practitioners, and policymakers (Makarov & Schoar, 2022). Its application in the finance and business world is expected to bring about substantial change in the next-generation business processes by greatly enhancing transparency (KPMG, 2018). According to Financial Executive Research Foundation (FERF) Blockchain is a "distributed ledger" technology, meaning that all transactions recorded within a particular database are shared, synchronized, and approved across a network and verified by consensus using cryptographic algorithms. This is quite different from traditional financial ledger recording methods where transactions are recorded but are verified by a trusted third party

According to Fahdil et al (2024) blockchain technology is transforming numerous areas, including accountancy. Traditional financial reporting and auditing systems confront issues such as inefficiency, fraud risk, and a lack of transparency. Blockchain claims to solve these problems by implementing a decentralized, immutable ledger system. The rapid spread of blockchain technology brought about a new era in financial data management, which can completely transform the accounting ecosystem's efficiency, security, and transparency. Blockchain's core ideas of immutability, transparency, and cryptographic security are the keys to its revolutionary potential (Danach et al, 2024).

Theory of Innovation

The theory is by Schumpeter, who posited that innovators, who are independent inventors, could make more return with their innovations. Schumpeter (1934) asserts that innovations are always happening in the industry and at any instance of time, there is something new being innovated in the economy and for this reason, institutions needs to be cognizant of them and an accountant being expertise in data science is in

tune with this. It is due to this fact that there are a variety of innovations accountants adopt and implement in order to boost the quality of financial reporting.

Schumpeter (1934) posits that innovation is not just about innovative ideas but ability to increase their practical use. In other words, innovation is defined as astounding development by firms in approaching with innovative products or the application of new operation or processes in production (Anderson et al, 2014). Technological innovations are crucial tool for strategic transformation of financial reporting to cope with changes that are presented by the environment. Schumpeter (1939) categorized it into two major dimensions: product and service innovations. Product innovations consist of the creation of a new good or entirely new product, which more sufficiently satisfy existing or previously satisfied needs. Process innovation encompasses the adoption of a new or considerably improved operation or production.

According to Porter (1995), to compete successfully in international trade; a nation's businesses must constantly innovate and improve and upgrade their competitive advantages. For ensuring continues innovation and upgrading, it is important to make sustained investment in physical as well as intangible assets.

Empirical Review

Data Visualization and Financial Reporting Quality

Raggless et al (2024) explore best practices for designing effective data visualizations in annual reports, focusing on principles such as clarity, consistency, and audience relevance. Additionally, emerging trends such as interactive dashboards, storytelling through visual narratives, and the integration of sustainability metrics are examined. By analyzing case studies from diverse industries, the study highlights how organizations leverage visual tools to communicate financial performance, operational achievements, and strategic goals more effectively. The findings emphasize the need for balancing aesthetics with functionality, ensuring that visualizations align with organizational objectives and cater to diverse stakeholder needs

Uddin et al (2024) explore the efficacy of data visualization techniques in conveying complex financial data in annual reports for investment decision-making. Adopted questionnaires as a data collection method to get the perspective of investors after giving them an analysis of various companies' financial statements (JP Morgan, Apple Inc. HR Wallingford, Brac Bank, and ACLL Ltd) presented visually. The majority of the respondents indicated that data visualization helps them easily understand annual reports thereby helping them make informed investment decisions. The findings illustrate the significance of data visualization in annual reports for investors when they want to make investment decisions based on the financial reports presented visually.

Mauludina et al (2024) systematically review the role of big data visualization in the auditing field. Employing a qualitative approach. The study used 35 published articles extracted from different journals and reputed publishers, which served as the sample. The result showed a fluctuating pattern in the publication years, highlighting a relatively recent research area, with the highest volume noted in 2021. The findings indicated that most articles used qualitative methods, such as conceptual or case study research. The study identified nine of the main capabilities of data visualization to improve audit quality.

Christensen et al (2024) assert that The Securities and Exchange Commission encourages the presentation of information or data in graphical form to improve users' ability to understand financial disclosures. The study finds a dramatic increase in the disclosure of both qualitative and quantitative infographics in 10-K filings over time and substantial cross-sectional variation in firms' choices regarding image types, data content, and the placement of infographics within 10-Ks.

Anderson et al (2024) assert that audit standards demand revision to the audit plan and additional testing procedures whenever new information indicative of a possible material misstatement comes to light at any point during the audit. An appealing conjecture is that richer data visualizations that more transparently reveal client data abnormalities will generally facilitate these revisions. However, the study predicts using an experiment of more than 200 audit seniors, find that the extent to which auditors respond to data abnormalities revealed by richer visualizations depends on audit procedure categorization. The study manipulates audit procedure categorization by labelling otherwise identical interim audit work as risk assessment procedures or as substantive analytical procedures. Richer visualizations that more transparently reveal data abnormalities result in improved auditor judgment, but only when these

abnormalities arise from risk assessment procedures. When abnormalities arise from substantive analytical procedures, finding reveals no significant response by auditors to richer visualizations of material client data abnormalities.

Chy and Buadi (2023) show how a firm can convey financial information to users by utilizing data visualization tools. The study finds that while some improvements have been noticeable in filing proxy statements, there is still more room to use graphs and charts in 10-K and annual reports. Firms should use graphs and charts more frequently so that non-financial users can decipher the underlying meaning of numbers within the shortest possible time.

Al-Katheri (2023) investigates how the inclusion of charts and graph in financial reports influences stakeholders' perceptions, including investors, analysts, and managers, regarding the economic performance of commercial banks in Saudi Arabia. The study also explores the potential benefits and limitations of incorporating charts in financial reporting. A mixed-methods approach, combining qualitative and quantitative research methods, is employed. The research involves surveys administered to stakeholders and interviews with key informants, including financial analysts, managers, and regulators. The total participants were 317 responses. The majority of responses agreed that there is a significant effect of using charts in financial reports in commercial banks in Saudi Arabia.

Big Data Analytics and Financial Reporting Quality

Theodorakopoulos et al (2024) comprehensively explore the implications of Big Data within the realm of accounting, dissecting both its potential advantages and the hurdles it presents. Additionally, it seeks to identify and thoroughly examine the challenges impeding the seamless assimilation of Big Data into accounting methodologies. By delving into diverse applications, including Auditing, Cost Management, and financial reporting, the study shed light on the multifaceted nature of Big Data's role in accounting. The paper conducts a meticulous review and synthesis of existing literature. Findings reveal that Big Data exhibits the potential to substantially transform accounting practices, offering avenues for superior decision-making and analysis.

Shalhoob et al (2024) investigate the role of big data analytics (BDA) in promoting error detection and preventing fraud in accounting operations. Used secondary method of data collection (desk study) to explore the potential impact of BDA in enhancing error and fraud prevention on six key considerations including data quality and integrity; data privacy and security; real-time monitoring and alerts; integration with internal controls; ethical implications; and human experience. Analysis shows that the BDA enhances fraud detection by integrating data from multiple sources, using sophisticated algorithms to identify anomalies. Reduces false positives and improves accuracy. However, human expertise is essential for ethical standards and transparency.

E'leimat et al (2023) explain the impact of big data on the financial reporting quality of the industrial sector in Jordan. To achieve the manuscript goals and validate hypotheses, a field study was conducted by distributing a questionnaire to 325 financial managers in industrial companies listed on the Amman Stock Exchange during a specific period. Gathered data were analyzed using structural equation modeling (SEM). The manuscript concluded that the big data dimensions, including variety, volume, and velocity, had a positive impact on financial reporting quality.

Meiryani et al (2023) aim to determine the impact of big data analysis on the quality of financial statements in Indonesia. The data used in the study is primary data obtained from the study subject in the form of a questionnaire. The data obtained is then processed using Microsoft excel and SPSS 25. The results of the hypothesis test stated that the analysis of big data has an effect on the quality of the report. Aziz (2023) focused on the impact of business intelligence and data analytics in the field of accounting. Based on the information collected from scholarly sources, data analytics, and business intelligence is helpful for business organizations in the improvement of their accounting processes and enhancing accuracy in real-time data storing and analysis. The paper also highlighted three main benefits or advantages of data analytics and business intelligence adoptions in accounting systems which include: increasing accuracy, enhancing efficiency, and improvement in the decision-making processes.

Oluwagbade et al (2023) evaluated the effect of Big Data Analytics (BDA) on audit risk assessment, task competence and audit report filing by auditors. The survey research design was used in the research. The population comprised 72 auditors drawn from private limited firms in Awka. The study employed the census sampling technique and relied on primary data, which was generated from a structured questionnaire administered to the auditors. The reliability of the instrument was determined using Cronbach's alpha. The data were analysed using descriptive and inferential statistical techniques. The hypotheses were tested using Pearson Product Moment Correlation Coefficient (PPMC). The empirical results showed that there is a significant relationship between BDA and audit risk assessment ($p<.05$); there is a significant relationship between BDA and task competence ($p<.05$); and, BDA has influenced audit report filing by auditors in Awka, Anambra State.

Winoto et al (2023) examine the influence of big data on financial reporting with Quantitative Evidence from Indonesia. Adopted primary data obtained from the study subject in the form of a questionnaire. The data obtained is processed using SPSS 25. The results of the hypothesis test stated that the analysis of big data has an effect on the quality of the report. This means big data technology as a resource internally owned company can improve the company's financial performance

Bello (2023) explores how data analytics can identify and understand unbanked and underbanked populations, improve credit scoring and risk assessment through alternative data sources, personalize financial products and services, enhance financial literacy, and facilitate digital payments and transactions. Case studies from diverse emerging economies illustrate the practical applications and success stories, such as Kenya's mobile money platform M-Pesa, India's digital lending initiatives leveraging Aadhaar and UPI, and blockchain-based financial inclusion efforts in Africa. These examples highlight the transformative impact of data-driven solutions in bridging the financial inclusion gap.

Cloud Accounting and Financial Reporting Quality

Orji and Ojimini (2024) examined the effect of Cloud accounting and organizational performance: a study of Selected companies using cloud accounting in Port Harcourt Metropolis. The study aimed at achieving the following objectives; evaluating the effect of Quickbook online on the customers satisfaction of Thermocool Showroom as well as examining the effect of systems, applications and products in data processing (SAP) cloud platform on the employee's satisfaction of total exploration and production. By obtaining relevant data through a well-designed questionnaire administered on the sample size of 130 drawn from a population of 192 using Taro Yamane statistical formula. The data of the study were analyzed using Pearson's Product Moment Correlation (PPMC) technique. The test of hypotheses showed that Quickbook online has significant effect on customer satisfaction in Thermocool showroom as well as Systems, Applications and Products in data processing (SAP) cloud platform on employee satisfaction in oil exploration companies in Nigeria.

Agrawal and Jethy (2024) present a comprehensive literature review aimed at comparing various cloud-based accounting software platforms based on their features, performance, and user satisfaction. Through an analysis of existing research articles, the paper synthesizes key findings, identifies common trends, and highlights differences among different software solutions. The review provides valuable insights for businesses and practitioners in selecting the most suitable cloud-based accounting software for their needs. Najmaldin et al (2024) examine the literature using mixed methods to assess current information and knowledge gaps related to cloud accounting processes in SMEs. Therefore, from this point of view, cloud accounting is crucial for businesses because companies provide information to multiple parties and therefore require reliable and protected financial reporting.

Wahhab et al (2024) elucidate the significant impact of cloud accounting technologies as a type of innovation in information technology and its contribution to enhancing the financial reporting standard within the scope of international standards. The system comprises two axes, and the total number of questions reached 26. The distribution was conducted among a subset of employees in publicly traded corporations. 118 participants were included in the study conducted on the Iraqi Stock Exchange. The hypotheses were examined using descriptive statistics, the Pearson correlation matrix, and the structural equation modelling technique with the statistical software SPSS version 26. The findings demonstrated a

statistically significant influence of cloud accounting, namely at a rate of 26.6%, on attaining high-quality financial reporting.

Abdallah et al (2024) determine the effect of using cloud computing on the quality of financial reports in the banking sector, specifically Banque Misr in Egypt. The focus was on examining the relationship between the characteristics of cloud computing and financial reporting quality. A quantitative approach was adopted using a questionnaire distributed to 96 employees of Banque Misr. The findings showed cloud computing characteristics positively influence financial reporting quality, accounting for 49.7% of the variance. Specifically, measured service and broad network access had the strongest positive impacts. All cloud computing attributes were significantly correlated with a comparability of financial reports.

Oyewobi and Adeyemi (2024) examined cloud-based Accounting Information Systems (AIS) adoption and financial reporting quality within Nigeria's Information and Communication Technology (ICT) sector. The population of the study consists of all eight (8) Information and Communication Technology (ICT) enterprises that are listed on the Nigerian Exchange Group as of 31st December 2022. Over a decade-long period from 2013 to 2022. Utilizing a Panel Regression Technique (Random Effect Model), the study identifies a significant overall effect of Cloud-Based AIS on the Financial Reporting Quality of Listed ICT Firms in Nigeria. Moreover, it highlights the significant influence of Cloud Security Investment on financial reporting quality among ICT firms in Nigeria, while Cloud Expenditure Growth is found to have no statistically significant effect.

Kmaleh (2023) examine the impact of cloud computing on the quality of accounting information and its alignment with international financial reporting standards. The study combined theoretical exploration with practical examination of files and interviews with relevant stakeholders, such as managers and accountants. The study yielded That adoption of cloud computing positively influences the quality and credibility of accounting information. However, there are inherent risks associated with cloud computing, including security, contractual issues, and potential human errors. These risks must be addressed.

Fadipe (2023) evaluates the impact of Cloud Accounting on timeliness of financial reporting of selected firms in Nigeria; examine the effect of IaaS (Infrastructure as-a-Service), PaaS (Platform as-a-service) and SaaS (Software as-a-Service) on timeliness of financial reporting of selected firms in Nigeria. The study employed an ex-post facto approach and a survey research design. Mixed methodology was adopted. The cost associated with implementing cloud-based accounting systems, represented by the CAC coefficient, shows an almost negligible impact on FRQ. The analysis reveals that IaaS does not have a statistically significant impact on organizational performance in financial reporting. On the other hand, PaaS has a statistically significant and positive impact on organizational performance in financial reporting. SaaS also demonstrates a statistically significant and positive impact on organizational performance in financial reporting. Organizations that utilize SaaS tend to achieve better timeliness in their financial reporting.

Akpan et al (2023) examined the effect of cloud accounting on financial reporting quality of selected deposit money banks in Nigeria. Platform as a service (Paas), network as a service (Naas) and software as a service (Saas) were the cloud accounting proxies employed to ascertain their effects on financial reporting quality. The research design adopted in the study was the survey research design since primary data was used. The instrument for data collection was the researcher constructed five-point Likert questionnaire. Purposive sampling technique was used to select a sample size 120 staff members of selected deposit money banks in Nigeria. The robust least square regression technique was employed to analyze the data as well as test the three hypotheses formulated for the study. It was found out that platform as a service (Paas) has an insignificant effect on financial reporting quality. It was also found out that network as a service (Naas) and software ware as a service (Saas) have significant effect on financial reporting quality of selected deposit money banks in Nigeria.

Blockchain and Financial Reporting Quality

Fahdil et al (2024) investigate how blockchain can improve transparency, accuracy, and security in accounting practices, as well as to assess the implications for auditors and stakeholders. A comprehensive literature study was undertaken to cover recent breakthroughs and applications of blockchain in accounting. The study found that blockchain technology enhances the trustworthiness and transparency of financial information. Blockchain's immutability minimizes the danger of data tampering and fraud, with

85% of studied businesses reporting a drop in fraudulent activity. Smart contracts and automated verification methods simplify auditing procedures, resulting in a 30% reduction in audit time and a 20% decrease in audit costs. Approximately 70% of organizations reported a 25% improvement in data accuracy, with 65% reporting a 40% gain in process efficiency.

Danach et al (2024) explore the various ramifications of blockchain adoption in accounting, concentrating on how it affects regulatory compliance, audit trail integrity, cost-effectiveness, smart contracts, and financial reporting accuracy. It offers a thorough grasp of how financial reporting and auditing processes are changing in the blockchain era. The study also emphasizes the significance of understanding how blockchain technology changes traditional accounting practices as more companies incorporate it into their financial operations. It draws attention to the benefits of blockchain technology. Also, it emphasizes the need for flexibility and compliance with legal requirements to fully realize its potential in the fields of audit assurance and financial reporting.

Liao et al (2024) study the impact of blockchain technology on corporate financial reporting quality based on the staggered implementation of blockchain-based e-invoice systems by provincial and municipal governments in China since 2018. Using a difference-in-differences approach with a sample of listed firms in China from 2016 to 2022, find that the accrual quality and earnings informativeness improve post-adoption. This treatment effect is more pronounced for firms with more complex operations and those located in technologically advanced and market-oriented environments, but is similar across firms with varying earnings management incentives. Blockchain adoption is associated with fewer error-related accounting restatements, but not with non-error-related restatements or corporate tax avoidance.

Dashkevich et al (2024) presents Blockchain Financial Statements (BFS), an innovative accounting system designed to address accounting fraud, reduce data manipulation, and misrepresentation of company financial claims, by enhancing availability of the real-time and tamper-proof accounting data, underpinned by a verifiable approach to financial transactions and reporting. Incorporating a Design Science Research Methodology with Domain-Driven Design, the study constructs a BFS artefact that harmonizes accounting standards with blockchain technology and business orchestration. The resulting Java implementation of the BFS demonstrates successful integration of blockchain technology into accounting practices, showing potential in real-time validation of transactions, immutable record-keeping, and enhancement of transparency and efficiency of financial reporting.

Mirza (2024) assess the impact of blockchain technology on financial reporting in small and medium-sized enterprises (SMEs) in Pakistan. Adopted secondary data collection. Findings indicated that blockchain's decentralized ledger system enhances transparency and accuracy in financial data recording and reporting. It reduces the risk of fraud and manipulation due to its immutable nature, ensuring that transactions are securely recorded and traceable.

Aro et al (2024) observed that by utilizing blockchain decentralized ledgers, organizations can ensure that financial transactions and reporting are immutable, verifiable, and accessible in real-time. This enhances the reliability of financial data, mitigating risks associated with fraud and misreporting. The study includes case analyses of organizations that have successfully integrated blockchain into their governance frameworks, illustrating how these implementations have improved operational efficiency and stakeholder confidence. Key areas of focus include the use of smart contracts to automate compliance and reporting processes, the role of blockchain in enhancing shareholder engagement, and the impact of transparent reporting on investor relations.

Udeh et al (2024) explores the transformative potential of blockchain technology in green finance, aiming to assess how it enhances transparency, efficiency, and trust within the sector. Employing a systematic literature review and content analysis, the research scrutinizes peer-reviewed journals, industry reports, and case studies to elucidate blockchain's impact on sustainable financial practices. Key findings reveal that blockchain technology significantly contributes to the transparency and efficiency of green finance mechanisms, such as green bonds and sustainability-linked loans, by providing immutable, transparent, and secure transaction records. This technological integration fosters trust among stakeholders, including investors, regulators, and beneficiaries.

Methodology

The study adopted survey research design; the population is made up of the entire staff of" The Big 4" (Deloitte, Ernst & Young (EY), PricewaterhouseCoopers (PwC), and Klynveld Peat Marwick Goerdeler (KPMG)) as at 31st, January 2025. Cluster random sampling techniques was adopted to select 120 staff of each firm. The questionnaires were equally shared among" The Big 4" (Deloitte, PricewaterhouseCoopers, Ernst and Young and KPMG), their office at the major cities (Lagos, Portharcourt and Abuja). 10 questionaire each was distributed for each of the 3 branched for the 4 audit firms.

Data Analysis Technique and Model Specification

Frequencies and percentages are used to analysis the section A of the questionnaire and each item in the other section to review the raw data collected, while crobach's alpha was used to check the reliability of the instrument used. Multiple regression analysis was used to test the hypothesis formulated**.**

The broad of objective of the model will be to specify and estimate to examine the effect of data science on quality of financial reporting Multiple regression model will be adopted as stated below:

$QFR = \beta_0 + \beta_1 DV + \beta_2 BDA + \beta_3 CA + \beta_4 BC + e$

Where:

QFR= Quality financial Reporting

DV = Data visualization

BDA = Big data Analytics

CA = Cloud Accounting

BC = Blockchain

e = Stochastic term

β_0 ..... β_4 = regression coefficient

Data Presentation and Analysis

Table 1: Demography of Respondents

S/N	VARIABLE	FREQUENCY	PERCENTAGE %
1	**Gender:**		
	Male	80	64.4
	Female	37	31.6
	Total	**117**	**100**
2	**Age:**		
	Below 30years	44	37.6
	31-40years	37	31.6
	41-50years	29	24.8
	Above 50	7	6.0
	Total	**117**	**100**
3	**Highest Educational Qualification:**		
	ND/DIPLOMA/NCE	11	9.4
	HND/BSc.	56	47.9
	MSc.	35	29.9
	Ph.D	15	12.8
	Total	117	**100**
4	**Professional Status**		
	Qualified	83	70.9
	Not- Qualified	34	29.1
		117	**100**
5	**Marital Status**		
	Single	43	36.8
	Married	65	55.6
	Divorced	9	7.7
	Total	**117**	**100**
6	**Firm Name**		
	Deloitte	30	25.6

	PricewaterhouseCoopers	29	24.8
	Ernst and Young	29	24.8
	KPMG	29	24.8
	Total	**117**	**100**

Source: Field Survey, 2025 (SPSS 23)

From the table 4.2.1 above which shows the demographic presentation of the respondents. The gender of the respondents is 80(64.4%) and 37(31.6%) male and female respectively, we concluded that the number of males more than that of female respondents. The ages of the respondents as shown from the above table, 44(37.6%) were 30years and below, 37(31.6%) were between the ages of 31 to 40years, 29(24.8%) were between 41 to 50 years, 7(6.0%) respondents were between 50years and above. We confirmed that ages 30 and below were the highest among the respondents. The highest educational qualifications of the respondents shows that 11(9.4%) have ND/ NCE/ Diploma, 56(47.9%) have HND/BSc. /BA, 35(29.9%) have Masters and 15(12.8%) have Doctor of Philosophy. The professional qualification of the respondents was also included in the questionnaire, it shows that 83(70.9%) 0f the respondents were professionally qualified accountants while 34(29.1%) were not yet qualified. The firm name was included and it shows that 30(25.6%) of the respondents are staff of Deloitte, 29(24.8%) were from PricewaterhouseCoopers, 29(24,8%) are from Ernest and Young and 29(24.8%) are from KPMG. The marital status of the respondents shows that 43(36.8%) were single, 65(55.6%) were married and 9(7.7%) were divorced.

Table 2. Reliability Test (Cronbach's Alpha)

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.952	.953	20

Source: Field Survey, 2025 (SPSS 23) Output

Using the rule of Geory and Mallery (2003), the table 4.2.2 above which shows the reliability test of the variables. The result for the variable reveals an excellent result of 0.953. Therefore, the degree to which an instrument yields is consistent.

Question Analysis

Question One: To what extent has Data Visualization (DV) affects Quality of Financial Reporting?

Below are the description and presentation of the sampled respondents' answers to question one in table.3.

Table 3. Effect of Data Visualization (DV) on Quality of Financial Reporting

Data Visualization

SN	Statement	SA	A	UN	D	SD
DV1	Data visualization is important for financial storytelling and it can transform the way organizations report and communicate financial information.	65 (55.6%)	49 (41.9%	1 (0.9%)	2 (1.7%)	0 (0%)
DV 2	Data visualization has been playing a pivotal role in displaying complex raw data into easily understandable visual graphics	52 (44.4%)	63 (53.8%)	1 (0.9%)	1 (0.9%)	0 (0%)
DV 3	There still needs to be more use of data visualization tools to communicate with the financial and non-financial users of financial data	82 (70.1%)	32 (27.4%)	1 (0.9%)	2 1.7%)	0 (0%)
DV 4	Data visualization offers a powerful tool to help simplify and communicate complex financial information and data to ease its understanding by various consumers of the data such as investors	54 (46.2%)	61 (52.1%)	1 (0.9%)	1 (0.9%)	0 (0%)

Source: Field Survey, 2025 (SPSS 23) Output

From the table 2.2.3 above, it shows that most of the respondent shows a level of agreement with the statement that "*Data visualization is important for financial storytelling and it can transform the way organizations report and communicate financial information (DV1)"*, 55.6% (65) and 41.9% (49) for strongly agreed and agreed respectively, 0.9 % (1) were neutral and 1.7% (2) were disagreed. 44.4% (52) and 53.8 % (63) were strongly

agreed and agreed to the second statement "*Data visualization has been playing a pivotal role in displaying complex raw data into easily understandable visual graphics (DV2)"* while 0.9 % (1) were neutral and 0.9% (1) were disagreed. Also, 70.1 % (82) and 29.2% (56) are strongly agreed and agreed to the third statement "*There still needs to be more use of data visualization tools to communicate with the financial and non-financial users of financial data (DV3)" while 0.9 %(1) was neutral and 1.7%(2) were disagreed.* 46.2% (54) and 52.1% (61) were strongly agreed and agreed to the fourth statement *"Data visualization offers a powerful tool to help simplify and communicate complex financial information and data to ease its understanding by various consumers of the data such as investors (DV4)*" while 0.9% (1) undecided and 0.9% (1) disagreed.

Question Two: What is the effect of Big Data Analytics (DA) on Quality of Financial Reporting?

Below are the description and presentation of the sampled respondents' answers to question two in table 4.

Table 4. Effect of Big Data Analytics (DA) on Quality of Financial Reporting

Big Data Analytics

SN	Statement	SA	A	UN	D	SD
BDA1	Data analytics help auditors are now able to streamline the analysis of an organization's massive document trove, ensuring a higher degree of accuracy and reduction in the chances of overlooking errors	78 (66.7%)	32 (27.4%)	6 (5.1%)	1 (0.9%)	0 (0%)
BDA 2	The purpose of big data in accounting is to collect, organize, and utilize data from a variety of sources to gain new business knowledge.	69 (59.0%)	33 (28.2%)	13 (11%)	2 (1.7%)	0 (0%))
BDA 3	The use of Big Data in accounting has opened up new opportunities for accountants to gain insights into financial data and make better decisions	66 (56.4%)	49 (41.9%)	1 (0.9%)	1 (0.9%)	0 (0%)
BDA 4	Big data offers huge potential to improve financial decision-making, risk management, fraud detection, and operational efficiency	87 (74.7%)	29 (24.8%)	1 (0.9%)	0 (0%)	0 (0%)

Source: Field Survey, 2025 (SPSS 23) Output

From the table 4 above, it shows that most of the respondent shows a level of agreement with the statement that "*Data analytics help auditors are now able to streamline the analysis of an organization's massive document trove, ensuring a higher degree of accuracy and reduction in the chances of overlooking errors (BDA1)"*, 66.7% (78) and 27.4 %(32) for strongly agreed and agreed respectively, 5.1 %(6) were neutral and 0.9%(1) were disagreed . 59% (69) and 28.2 % (33) were strongly agreed and agreed to the second statement "*The purpose of big data in accounting is to collect, organize, and utilize data from a variety of sources to gain new business knowledge. (BDA2)"* while 11.1 % (13) neutral and 1.7% (2) disagreed. 56.4 % (66) and 41.9% (49) are strongly agreed and agreed to the third statement "*The use of Big Data in accounting has opened up new opportunities for accountants to gain insights into financial data and make better decisions (BDA3)" while 0.9 % (1) was neutral and 0.9 % (1) disagreed*. 74.7% (87) and 24.8% (29) were strongly agreed and agreed to the fourth statement "*Big data offers huge potential to improve financial decision-making, risk management, fraud detection, and operational efficiency (BDA4)*" while 0.9% (1) was undecided.

Question Three: To what extent has Cloud Accounting (CA) influence Quality of Financial Reporting?

Below are the description and presentation of the sampled respondents' answers to question three in table 5.

Table 5. Effect of Cloud Accounting (CA) on Quality of Financial Reporting

Cloud Accounting

SN	Statement	SA	A	UN	D	SD
CA1	Cloud allows industries to tap into new service models, utilizing its technological advancement for new and better services to customers, improving productivity, cost-efficiency and flexibility of internal business processes	63 (53.8%)	53 (45.3%)	1 (0.9%)	0 (0%)	0 (0%)
CA 2	With cloud-based systems, multiple users can work simultaneously on the same set of data, ensuring that financial reports reflect the most current, reliable and comparable information	91 (77.8%)	24 (20.5%)	0 (0%)	2 (1.7%)	0 (0%)

CA 3	The application of this technology in accounting offers an opportunity for the accountants to remodel their activity and practices and to be able to offer increased and relevant services	85 (72.6%)	30 (25.6%)	2 (1.7%)	2 (1.7%)	0 (0%)
CA 4	Cloud-based accounting software has gained significant traction in recent years as businesses increasingly transition towards digital solutions for their financial management needs	76 (65%)	40 (34.2%)	1 (0.9%)	0 (0%)	0 (0%)

Source: Field Survey, 2025 (SPSS 23) Output

From the table 5 above, it shows that most of the respondent shows a level of agreement with the statement that "*Cloud allows industries to tap into new service models, utilizing its technological advancement for new and better services to customers, improving productivity, cost-efficiency and flexibility of internal business processes (CA1)*", 53.8% (63) and 45.3 % (53) for strongly agreed and agreed respectively, 0.9 %(1) neutral. 77.8% (91) and 20.5 % (24) were strongly agreed and agreed to the second statement "*With cloud-based systems, multiple users can work simultaneously on the same set of data, ensuring that financial reports reflect the most current, reliable and comparable information. (CA2)*" while 1.7 % (2) disagreed. Also, 72.6 % (85) and 25.6% (30) are strongly agreed and agreed to the third statement "*The application of this technology in accounting offers an opportunity for the accountants to remodel their activity and practices and to be able to offer increased and relevant services (CA3)*" while 1.7 % (2) was neutral, 1.7% (2) disagreed. 65% (76) and 46.9% (34.2) were strongly agreed and agreed to the fourth statement "*Cloud-based accounting software has gained significant traction in recent years as businesses increasingly transition towards digital solutions for their financial management needs (CA4)*" while 0.9% (1) was undecided.

Question Four: How does Blockchain affect Quality of Financial Reporting?

Below are the description and presentation of the sampled respondents' answers to question three in table 6

Table 6. Effect of Blockchain on Quality of Financial Reporting

Blockchain

SN	Statement	SA	A	UN	D	SD
BC1	The rapid spread of blockchain technology brought about a new era in financial data management, which can completely transform the accounting ecosystem's efficiency, security, and transparence	65 (55.6%)	49 41.9%)	1 (0.9%)	2 (1.7%)	0 (0%)
BC 2	Blockchain is a digital ledger that allows capturing of transactions conducted among several parties on real-time and serves as a decentralized database where each participant keeps an identical copy of the ledger	65 (55.6%)	49 (41.9%)	1 (0.9%)	0 (0%)	2 (1.7%)
BC 3	Blockchain's decentralized ledger system enhances transparency and accuracy in financial data recording and reporting	63 (53.8%)	51 (43.6%)	1 (0.9%)	2 (1.7%)	0 (0%)
BC 4	Blockchain, with its decentralized and non-tamperable features, can effectively improve the informationization and intelligence of accounting bookkeeping and greatly enhance the quality of enterprise financial reports.	66 (56.4%)	47 (40.2%)	2 (1.7%)	2 (1.7%)	0 (0%)

Source: Field Survey, 2025 (SPSS 23) Output

From the table 2.2.6 above, it shows that most of the respondent shows a level of agreement with the statement that "*The rapid spread of blockchain technology brought about a new era in financial data management, which can completely transform the accounting ecosystem's efficiency, security, and transparence (CA1)*", 55.6% (65) and 41.9 %(49) for strongly agreed and agreed respectively, 0.9 %(1) were neutral, 1.7%(2) disagreed . 55.6% (65) and 41.9 % (49) were strongly agreed and agreed to the second statement "*Blockchain is a digital ledger that allows capturing of transactions conducted among several parties on real-time and serves as a decentralized database where each participant keeps an identical copy of the ledger (CA2)*" while 0.9 % (1) was neutral and 1.7% (2) strongly disagreed. Also, 53.8 % (63) and 43.6% (51) are strongly agreed and agreed to the third statement "*Blockchain's decentralized ledger system enhances transparency and accuracy in financial data recording and reporting (BC3)*" while 0.9 % (1) was neutral and 1.7% (2) disagreed. 56.4% (66) and 40.2% (47) were strongly agreed and agreed to the fourth statement "*Blockchain, with its decentralized and non-tamperable features, can*

effectively improve the informationization and intelligence of accounting bookkeeping and greatly enhance the quality of enterprise financial reports. (BC4)" while 1.7% (2) were undecided and 1.7% (2) disagreed.

Table 7 Effect on Quality of Financial reporting

SN	Question	SA	A	UN	D	SD
QFR1	Financial reporting quality is one of the main pillars in building modern business	68 (58.1%)	42 (35.9%)	6 (5.1%)	1 (0.9%)	0 (0%)
QFR 2	Reporting quality refers to the extent to which a company's financial reports communicate the underlying economic state and performance during the period of measurement, as stated by the Financial Accounting Standards Board	99 (84.6%)	14 (12%)	3 (2.6%)	1 (0.9%)	0 (0%)
QFR 3	It is essential to provide high-quality accounting information to influence users in making investment decisions, prediction, and to enhance market efficiency	78 (66.7%)	33 (28.2%)	4 (3.4%)	2 (1.7%)	0 (0%)
QFR 4	High quality financial reporting reduces information risks which is important for the safety of all the participants on the capital market, for the stability of the financial system, and for the lowering of the financial crisis risks	70 (59.8%)	44 (37.6%)	2 (1.7%)	1 (0.9%)	0 (0%)

Source: Field Survey, 2025 (SPSS 23) Output

From the table 7 above, it shows that most of the respondent shows a level of agreement with the statement that "*Financial reporting quality is one of the main pillars in building modern business (QFR1)"*, 58.1% (68) and 35.9 % (42) for strongly agreed and agreed respectively, 5.1 %(6) were neutral and 0.9%(1) were disagreed. 84.6% (99) and 12 % (14) were strongly agreed and 2.6%(3) were neutral and 0.9%(1) disagreed to the second statement "*Reporting quality refers to the extent to which a company's financial reports communicate the underlying economic state and performance during the period of measurement, as stated by the Financial Accounting Standards Board (QFR2)"* . Also, 66.7 % (78) and 28.2% (33) are strongly agreed and agreed to the third statement "*It is essential to provide high-quality accounting information to influence users in making investment decisions, prediction, and to enhance market efficiency (QFR3)*" while 3.4% (4) was neutral and 1.7% (2) disagreed. 59.8% (70) and 37.6% (44) were strongly agreed and agreed to the fourth statement "*High quality financial reporting reduces information risks which is important for the safety of all the participants on the capital market, for the stability of the financial system, and for the lowering of the financial crisis risks. (QFR4)*" while 1.7% (2) were undecided and 0.9% (1) disagreed.

Test of hypotheses

Table 8 Model Summary

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.542[a]	.294	.268	.44540	1.599

a. Predictors: (Constant), BC, BDA, CA, DV

b. Dependent Variable: QFR

From the table 8 above, The R value is 0.542 which indicated a good level of prediction of the independent variables (data visualization, big data analytics, cloud accounting and blockchain). Also, the R^2 which is the coefficient of determination, that is the proportion of dependent variable (quality financial reporting) that can be explain by the independent variables (data visualization, big data analytics, cloud accounting and blockchain). The value of the R^2 is 0.294 that is the independent variables can explain 29% of the dependent variable. Also, the Dubin-Watson test shows a value of 1.599 which is less than 2, this implies that the model is appropriate.

Table 9 Anova

ANOVA[a]

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	9.234	4	2.308	11.636	.000[b]
	Residual	22.219	112	.198		
	Total	31.453	116			

a. Dependent Variable: QFR

b. Predictors: (Constant), BC, BDA, CA, DV

From the table 9 above (the Anova table) which shows whether the overall regression model is of good fit or not. From the table the value of p is 0.000 which shows that the independent variables are statically significantly predict the dependent variable. This shows that the regression model is a good fit of the data.

Table 10

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	2.514	.526		4.781	.000
	DV	.187	.094	.208	1.986	.049
	BDA	.095	.110	.080	.866	.388
	CA	-.208	.115	-.184	-1.806	.074
	BC	.389	.099	.440	3.917	.000

a. Dependent Variable: QFR

H_{O1}: Data Visualization has no significant effect on the Quality of Financial Reporting

From the table 10, it can be seen that data visualization have a positive and significant effect on the quality of financial reporting, the p value (0.049) is less than 0.05 level of significance with a coefficient of 0.187. This shows that data visualization can increases the quality of financial reporting by approximately 19%. This means that data visualization may boast the quality of financial reporting. Based on this result we reject our null hypothesis that data visualization has no significant effect on the quality of financial reporting and accept the alternate hypothesis that data visualization has significant effect on the quality of financial reporting.

H_{O2}: There is no significant effect of Big Data Analytics on the Quality of Financial Reporting

From the table 10, it can be seen that big data analytics have a positive and insignificant effect on the quality of financial reporting, the p value (0.095) is greater than 0.05 level of significance with a coefficient of 0.095. Based on this result we accept our null hypothesis that big data analytics has no significant effect on the quality of financial reporting and reject the alternate hypothesis that big data analytics has significant effect on the quality of financial reporting.

$H0_3$ Cloud Accounting has no significant impact on the Quality of Financial Reporting

From the table 10, it can be seen that Cloud Accounting have negative and insignificant effect on the quality of financial reporting, the p value (0.074) is greater than 0.05 level of significance with a coefficient of 0.095. Based on this result we accept our null hypothesis that Cloud Accounting has no significant effect on the quality of financial reporting and reject the alternate hypothesis that Cloud Accounting has significant effect on the quality of financial reporting

H_{O1}: There is no significant effect of Blockchain on the Quality

From the table 10, it can be seen that **of** blockchain have a positive and significant effect on the quality of financial reporting, the p value (0.000) is less than 0.05 level of significance with a coefficient of 0.389. This shows that **of b**lockchain can increases the quality of financial reporting by approximately 39%. This means that **of b**lockchain may boast the quality of financial reporting. Based on this result we reject our null hypothesis that **b**lockchain has no significant effect on the quality of financial reporting and accept the alternate hypothesis that **b**lockchain has significant effect on the quality of financial reporting.

Discussion of Findings

From the analysis, the study found out that data visualization has positive and significant effect on financial reporting quality, the result is in line with the findings of Uddin et al. (2024) while to the best of the knowledge of the researcher no study has any contrary findings. Big data analytics has positive but insignificant effect on financial reporting quality, this was supported by the result of E'leimat et al. (2023), Saleh et al (2022), they found out that big data analytics has positive effect on financial information. While the study of Younis (2020) and Oluwagbade et al (2023) found significant effect of big data analytics on

accounting information and audit risk respectively. Cloud accounting has negative and insignificant effect on quality of financial reporting, majority of the study on cloud accounting and quality of financial reporting, among others are Wahhab et al. (2024), Abdallah et al. (2024) and Akpan (2023) found a significant and positive effect quality of financial reporting while no study has been discovered that has supported result with this study. Blockchain has positive and significant effect on quality of financial reporting, this finding was supported by Fahdil et al. (2024) and Liaoet at al. (2024) while no study has been discovered that contradict the findings.

Conclusion and Recommendation

In line with the findings of the study, data science is an important development that is relevant to accounting practices and reporting. therefore, we conclude that data science has contributed to the field of accounting and quality financial reporting, its application is of best practices for designing effective data visualizations in annual reports, focusing on principles such as clarity, consistency, and audience relevance; it explores the efficacy of data visualization techniques in conveying complex financial data in annual reports for investment decision-making. Through the use of big data analytics (BDA) data science promotes error detection and prevent fraud in accounting operations; increasing accuracy, enhancing efficiency, and improvement in the decision-making processes. Blockchain technology enhances the trustworthiness and transparency of financial information. Blockchain's immutability minimizes the danger of data tampering and fraud, improved operational efficiency and stakeholder confidence. Cloud accounting relies on multiple components, including customers, infrastructure, applications, and platforms and there are inherent risks associated with cloud accounting, including security, contractual issues, and potential human errors. Hence negative, though insignificant effect.

This study therefore recommends the inclusion of graphs, tables and pictures suitable of enhance understanding and be better informed for an improved decision making. Accountants, auditors and all preparers of financial report should as a matter of policy be exposed to the knowledge of data science and such curriculum should be added to all financial reporting related fields in our institutions. Government and organizations involve in Accounting, Finance and Investment decisions should provide data science enabling environment and invest in data science infrastructure. Users of cloud accounting should be enlightened on the safety and security of data and to encourage usage and application.

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