

Disruptive Technology and the Accounting Profession in Nigeria: Evidence from the 21st Century

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Abstract

As disruptive technology continues to reshape industries, the accounting profession stands at a crossroads in the 21st century. This study investigates the intricate dynamics between disruptive technology and the proficiency of accounting professionals in utilizing technological advancements. Employing a quantitative methodology, surveys were administered to gather insights from accounting professionals. The study examined the perceived impact of disruptive technology, adaptability to technological changes, and the valuation of traditional accounting knowledge. Through descriptive statistics, correlations, and a multiple linear regression model, the study uncovers the interconnected influences of these factors on proficiency in accounting technology. The findings underscore that acknowledging the impact of disruptive technology, remaining adaptable, and valuing traditional knowledge contribute synergistically to proficiency. The study offers implications for practitioners, educators, and organizations, advocating for a balanced integration of tradition and technology in navigating the evolving accounting landscape.

Keywords: Accountant, Big Data, Blockchain, Cloud, Disruptive Technologies,

1. Introduction

The business environment of the twenty-first century is being altered by a mix of forces that have challenged the very basis of corporate operations. Included in these forces are market volatility, globalization, and transformative innovation. The impact of these difficulties is exacerbated by rapid developments in science and technology, demographic upheavals, and disruptive new business models, all of which inevitably inspire fierce rivalry and the struggle for corporate sustainability and relevance (ACCA, 2012). It is important to note that the dynamism and volatility of the corporate environment of the 21st century are also influenced by a number of recent worldwide developments within and beyond the accounting profession (Jeremiah & Daferighe, 2019).

The characteristic of these 21st-century advancements is that the accountant is no longer responsible for traditional bookkeeping, internal controls, reconciliation, post-mortem reporting, and authentications. He is now confronted with a work description that is more ambiguous and fluid (Ahannaya, Gandolph, Adegbe & Ajibade, 2022). The accountant has been removed from the scorekeeping function, placing

him in a similar position to that of a traditional scorer in a competition who has nothing to contribute to the process other than waiting for the end of the contest to announce the scores "as of..." and "for the year ended..."; only with some advice that may or may not be implemented.

The rapid pace of technological change continues to upset established practices in all fields, including accounting (Akintoye and Adewoyin 2008). The authors investigated the potential effects that disruptive technologies will have on accounting education and the profession as a whole. This will assist educators and colleges with recommendations on how to adapt their curricula to the changing environment (Li Zhang, & Miklos, 2017). It is anticipated that the typical mix of occupations in accounting firms will shift significantly, and accountants will need to acquire new skills as more traditional operations become automated and the technical maintenance and analytic requirements of the work expand significantly. With the emergence of distant education, numerous forms of non-traditional training, and a vast array of new learning requirements, a significant wave of educational transformation is also emerging (Rana, 2021).

Recent disruptive technologies such as robotic process automation (RPA), artificial intelligence (AI), blockchain, smart contracts, and advanced analytics have reshaped existing business models and enabled the emergence of new ones in which repetitive and mundane tasks are becoming less important and the demand for high-level skills is rising (Manyika, James & John 2017). Although it will take some time before these technologies have a big impact on the workplace, it is possible that the existing "entry-level" employment that require little or low-level cognitive skills could disappear in the future. It is projected that at least 50% of the work performed by accountants and other professionals can be automated using currently available technology, with an additional 15% automatable using future technologies (Tamunomiebi&Miebaka, 2021).

Accounting's disruptive technologies constitute a new evolutionary phase influenced by the Industrial Revolution's rising technology. the significance of developing technologies, their potential, and the opportunities they present for the accounting profession attract rapid research efforts from both academia and professionals. This article examines the impact of disruptive technology on professional accountants in Nigeria during the 21st century. In light of this, the study poses the following questions: How does the usage of automated accounting processes impact professional accountants in the twenty-first century? How has artificial intelligence affected the professional accountant in Nigeria in the twenty-first century? The primary purpose of this study is to investigate disruptive technologies and professional accountants in the twenty-first century. Hence, the remainder of the article included the literature, disruptive technology theory, conclusion, and recommendation.

2. Literature Review

In accounting, for example, integrated systems, software robots, cloud solutions, blockchain technology, artificial intelligence (AI) and smart digital technology have changed or will change the workflow and processes of accounting. The future of automation in accounting could be seen in the increased use of self-learning AI-based integrated systems, which access actual data in real-time and independently develop solutions, suggestions, forecasts and trends (Leitner-Hanetseder, Lehner, Eisl, &Forstenlechner, 2021)

2.1 Disruptive Technology and the Professional Accountants

Numerous technologies have replaced the traditional work of accountants and further technology establishment potentially reduces its dependency on accountants' work. However, business still needs the accounting profession even though plenty of technological software or programs have been introduced (Suryahadi, Sugiarto &Ritchie, 2022). In these scenarios, accounting practitioners necessarily need to develop and enhance their new skills to keep up with the emergence of technology. A

technological shift has made changes to any profession including the accounting sector. Accordingly, the disruption includes keeping up with the technological pace and convenience to only employees that have both accounting and technologies which are difficult to find. In addition, the impact of emerging technology can lower cost and enhance automated accounting but still, there is a skill gap for the sector.

Further, the synergy of accounting and technology is also to support Industrial development which gives an extra task to reshaping the governance in the disruptive space, demanding a flexible, multiple framework and agile governance. The study of Feng (2019) suggested the disruptive impact were greatly derived from the implementation of Big Data, cloud computing, artificial intelligence and blockchain. Through blockchain, there has been access to the ledgers transactions and cloud tools supported by Big Data. The improvement of technologies is greatly improving the visibility of financial and non-financial data that represented the accounting perspectives. Nevertheless, technological adoption may reduce the burden of accountants and is intertwined with the professions role and legitimacy (Raghavan & Thomas, 2014).

In addition, the complexity of disruptive technology results from both business model and technology that can be obsolete in a short time frame (Oladejo & Jack, 2020). Also, research has started providing an interlinked between governance and disruptive technologies, hoping that it will give an impact to a complex and dynamic decision-making process. A complex decision-making procedure could lead to issues related to disclosure, transparency, and governance procedure accountability. Thus, it also highlighted the issues which include the possibility of having loose governance practices and lowering the quality of assurance.

2.2 Automation and Professional Accountants

Emerging automation technologies exist within the workplace along with accounting, auditing and compliance practices showing a possibility of replacing humans. The digital technologies such as big data, cloud, blockchain and artificial intelligence are distinctly possible influencers to the accounting sector, auditing and financial procedures in the future (Ibrahim, Yusoff & Rashid 2021). Therefore, the digital disruptions are believed to be on an enormous transition within the work of accounting practitioners (Ibrahim et al., 2021). The digital disruption identified is to show the impact of emerging technological developments which are greatly considered as disruptive and the reaction of accounting practitioners to this disruption. As digital development become vibrant, there will be a transition within the accounting sector to support the emerging programs, including big data and artificial intelligence.

2.3 Block chain and the Professional Accountants

The blockchain is a digitized, decentralized distributed ledger technology (DLT) providing a platform for other digital technologies, such as, internet of things (IoT), artificial intelligence (AI), big data and cloud accounting (Kubiak, 2015). Blockchain has institutional characteristics and has the potential to change the way the accounting profession operates. Digitalization may have a significant effect on the accounting profession leading to functional and structural changes (Bakshi, 2021) such as changes in the auditing process and activities, the way auditing rules and guidelines work. Blockchain technology can contribute to resolving a lot of problems currently faced by the accounting professional, especially cost and quality issues (Yermack, 2017).

Blockchain technology is claimed to be a disruptive technology in auditing and accounting. This study applies the concept of disruptive technology devised by Cristiano et al. (2015) and the concept of Schumpeterian creative destruction. The essential meaning of disruptive technology is that it offers

services that are price competitive, simplified, and convenient compared to existing traditional auditing systems. Since disruptive technology is decentralized, immutable and programmable, it has a vast potential to automate the entire double-entry bookkeeping systems which may affect the entire accounting and auditing cycle (Fanning & Centers, 2016).

2.4 Disruptive Technology and Accounting Profession in the 21st Century

Atanasovski and Tocev (2021) identified five emerging technologies through literature review and elaborated in detail how they can change and advance the accounting profession. The research was conducted using bibliometric analysis to examine the level of coverage of each of the technologies in the period from 2016 to 2020 by analyzing the published articles by the Big Four accounting firms, professional accounting associations and institutions and high-ranking academic journals. The purpose of the research was to identify a potential gap in research preferences related to selected technologies between academia, development professionals and experts in the field. The findings highlight that there are no significant discrepancies or different views of academia and practitioners. It is a positive result indicating that the academia and scientific researchers exploit in the same direction as practitioners, thus providing support for adaptation and alignment to technology trends.

Disruptive technology offers both opportunities and challenges for intensifying the organizational governance within the lens of the accounting sector. A collaborative decision making becomes necessary for competent and beneficial governance across the accounting sector. Through paradigm shift across the sector, the thinking of how to form a new governance from a repercussion of disruptive technology facing the sector is crucial. According to Ibrahim et al. (2021) disruptive technology occurs from progressing Big Data, cloud, and artificial intelligence which is currently allocated to the transactions in the ledgers, these have control over an unprecedented shift and frequently disrupting the works of accounting practitioners. The capabilities to manage and control a huge amount of digitized data in the complex and expeditious journey within this digital age has also promoted the accounting sector to become flexible, with good networking and a multi-platform that can support these emerging technologies and the Industrial. Therefore, the sector crucially needs a knowledgeable and proactive personnel surrounding so as to control outstanding pressure to support futuristic and agile governance practices. The review of this study has a great focus on big data, cloud, artificial intelligence and blockchain within management accounting, auditing & accounting sector with respect of these emerging technologies.

2.5 Theoretical Consideration

First coined by Bower and Christensen in their 1995 book titled *Disruptive Technology: Catching the Wave*. The term "disruption" has now become common parlance. The two writers noted that many once-dominant organisations had their market share reduced because of technology advancements, and they coined the word "disruption" to characterize the process by which new entrants threaten existing enterprises. Inspired by this pioneering research, Clayton Christensen released his famous book *The Innovator's Dilemma* in 1997, where he first defined the notion of disruptive innovation. In this book, the author examines the evolution of three distinct industries—computer hard disc drives, mechanical excavators, and motorcycles—to identify and distinguish between two distinct forms of technical evolution: sustainable technology and disruptive technology.

The term "sustainable technology" is used to describe innovations that "increases the performance of current products, along the dimensions of performance that mainstream customers in key markets have historically valued" (Christensen, 1997). Yet, the value proposition that disruptive technology offers is not one that has been widely recognized by the mainstream market, and it may even cause the current

mainstream product to underperform in the short term. When the performance of disruptive technology increases, it will be able to meet the needs of mainstream customers and replace mainstream products. In their second book in the Disruptive Innovation series, *The Innovator's Solution*, published in 2003, Christensen and Raynor renamed the concept from disruptive technology to disruptive innovation to more accurately reflect the breadth of its applicability, which now includes not only products but also services and business model innovations. In this book, Christensen divides disruptive innovation into two subcategories: low-end disruption, which focuses on serving the most price-sensitive clients in established value networks, and new market disruption, which seeks to attract customers to entirely new value networks (Christensen & Raynor, 2003). The foundation of the idea of disruptive innovation had been laid.

By expanding on the idea of disruptive innovation and emphasizing its predictive power, Christensen developed Disruptive Innovation Theory in 2006. Since then, he and his colleagues have tested the theory in a variety of industries and settings, including retail (Christensen & Tedlow, 2000), education (Christensen & Eyring, 2011), management consulting (Christensen, 2013), and transportation (Christensen et al., 2013). As a framework for understanding and responding to rapid technological change, Disruptive Innovation Theory has had a profound effect on business leaders ever since it was first proposed. These days, the word "disruptive innovation/disruption" can be used to refer to any new type of danger to a company. As a "guiding light" for bringing about industry disruption, Disruptive Innovation Theory is most often used by the heads of small, entrepreneurial businesses (Christensen, Raynor & McDonald, 2015). In response to this need, the author of this study used the Disruptive Innovation Theory as a theoretical framework for investigating the impact of digital disruption on the field of accounting. Due to increased competition, firms in recent years have and are making efforts to improve their market position, business performance and competitive advantage by developing new capabilities within their businesses through the accumulation of new resources, such as investing in new technologies, hiring new expertise, adopting new production lines and product diversification (Akintoye, Taiwo & Owolabi, 2020)

2.6 Literature Gap

Initially, the published literature on disruptive technology was primarily from the branches of economics, which involves studying various institutions such as accounting practices using economic principles and theory (North, 1990, Davidson et al., 2016; MacDonald et al., 2016; (Ruta, Scioscia, Ieva, Capurso, & Di Sciascio, 2017; van Rossum, 2017; Z. Zheng, Xie, Dai, Chen, & Wang, 2017). The sociology of the technology in the context of accounting and auditing is missing. Therefore, there is a lack of research on the potential effects of disruptive technology on the accounting profession in Nigerian context (Islam, 2017). Most of the recent literature related to disruptive technology and accounting profession is based on the perception of the researcher. For example, (Jeremiah & Daferighe, 2019; Oladejo & Jack, 2020), developed four narratives of an app-based auditing leveraging disruptive technology; however, the validity could be only studied when scientific case studies were performed (O'Leary, 2017). Therefore, there is a gap between theory and practice. This study seeks to fill the research gap by thoroughly describing the implications of disruptive technology in Nigerian accounting profession context. Information from professional accountants employed by large, medium and small audit firms will be leveraged to investigate the phenomena.

3. Methodology

The methodology employed in this study to investigate the impact of disruptive technology on the accounting profession in the 21st century involved a quantitative approach. Data was collected through surveys administered to a sample of accounting professionals, gathering their perceptions of the impact

of disruptive technology, adaptability to technological changes, and valuation of traditional accounting knowledge. Descriptive statistics were used to summarize the survey results, providing insights into the participants' proficiency levels and perceptions. Correlation analysis examined the relationships between variables, revealing interdependencies. A multiple linear regression model assessed the influence of the predictors - perceived impact of disruptive technology, automation, and block-chain technology - on the dependent variable, accounting profession. The methodology aimed to provide a comprehensive understanding of how these factors collectively influence the accounting profession's response to technological disruption. A total of 80 responses were envisaged but a total of 69 were received. These were administered using Google forms. The link to the questionnaire was sent to respondents identified for the study.

4. Results and Discussion

Table 1
Descriptive Statistics

Variable	N	Minimum	Maximum	Mean	Std. Deviation
PAT	69	1.00	5.00	4.0522	0.7551
DT	69	1.00	5.00	4.3014	0.7026
AT	69	1.00	5.00	4.1739	0.7128
BKC	69	1.00	5.00	3.8812	0.7415

Source: SPSS 25 Output file, 2023.

Table 1 showed the variable (PAT) which measures the skill level of individuals in using accounting technology. With a mean proficiency score of 4.0522 and a relatively low standard deviation of 0.75510, it's evident that those surveyed have a strong grasp of accounting technology tools. This high proficiency underscores the necessity for modern accountants to be well-versed in utilizing technological solutions that streamline processes, enhance accuracy, and optimize data analysis. In an era of rapid technological advancements, a proficient workforce can effectively harness the potential of technology to improve accounting efficiency and decision-making.

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Also, the variable (DT) indicates how respondents perceive the effect of disruptive technology on the accounting profession. With a mean score of 4.3014 and a relatively low standard deviation of 0.70262, it's evident that those surveyed believe that disruptive technology has a substantial impact on the accounting field. This acknowledgment reflects the paradigm shift in accounting practices brought about by technologies such as artificial intelligence, automation, and blockchain. The consensus among respondents about the magnitude of impact suggests that the accounting profession is undergoing transformative changes, necessitating adaptive strategies to stay relevant in this evolving landscape.

Automation and the Accounting Profession in the 21st Century

In addition, the variable (AT) measures the ability of individuals to adjust to technological shifts in accounting. With a mean score of 4.1739 and a standard deviation of 0.71283, it is evident that, on average, respondents perceive themselves as being relatively adaptable to these changes. This adaptability is crucial, as the pace of technological change in the accounting field demands continuous learning and flexibility. The moderate standard deviation implies that while the majority of respondents are adapting well, there are still variations in how individuals perceive their own adaptability. This might reflect differences in personal learning preferences and the willingness to embrace new technologies.

Block-chain Technology and the Accounting Profession in the 21st Century

The variable (BKC) likely reflects the ongoing importance of foundational accounting skills and knowledge amidst technological disruption. With a mean score of 3.8812 and a standard deviation of 0.74148, respondents, on average, seem to recognize the continued relevance of block-chain technology. This balanced score indicates that while embracing technology is critical, traditional accounting principles still hold value. The standard deviation suggests that there are differing opinions among respondents regarding the relative importance of traditional skills in light of technological advancements. This balance underscores the need for accountants to strike a harmonious blend between technological fluency and core accounting competencies.

Correlation Matrix

The correlation matrix highlights the interconnectedness of these variables within the context of the impact of disruptive technology on the accounting profession. It suggests that a balanced approach, where professional accountant is coupled with adaptability and an appreciation for block-chain technology, is beneficial for accountants aiming to navigate the challenges and opportunities posed by disruptive technological changes.

Table 2
Correlation Matrix

Variable	PAT	DT	AT	BKC
PAT	1			
DT	0.465**	1		
AT	0.762**	0.820**	1	
BKC	0.742**	0.721**	0.805**	1

Source: SPSS 25 Output file, 2023.

(**. Correlation is significant at the 0.01 level (2-tailed)).

The positive correlations between PAT and the other variables indicate that individuals with higher professional accountant also perceive a higher impact of disruptive technology, possess greater automation, and value block-chain technology. This suggests that those who are more technologically adept tend to be more aware of the changes brought about by disruptive technology and are better at adapting to those changes while still recognizing the importance of foundational accounting skills.

The positive correlations between DT and the other variables reveal that individuals who perceive a greater impact of disruptive technology also tend to have higher levels of automation and, to a slightly lesser extent, value block-chain technology. This suggests that those who recognize the impact of disruptive technology are more likely to embrace changes and possess a more flexible attitude toward technological shifts.

The strong positive correlation between AT and BKC indicates that individuals who are more adaptable to technological changes also tend to value block-chain technology. This suggests that individuals who are open to embracing new technologies are not neglecting the importance of foundational accounting skills. Instead, they recognize that a blend of both traditional and modern competencies is necessary for success in the evolving accounting landscape.

Table 3
Validity and Reliability

Variable	Scale Mean	Scale Variance	Total Corr.	Cronbach's Alpha
PAT	12.3565	3.976	0.818	0.915
DT	12.1072	4.131	0.835	0.909
AT	12.2348	4.008	0.874	0.896
BKC	12.5275	4.026	0.818	0.914
Overall				0.930

Source: SPSS 25 Output file, 2023.

Table 3 offer insights into the data reliability of each individual item (question) on the survey in the context of the impact of disruptive technology on the accounting profession. Cronbach's alpha is a measure of internal consistency, indicating how well the items in the scale (or survey) hang together as a reliable measure. This statistic assesses how removing a specific item would affect the overall reliability of the scale. The values indicated (ranging from approximately 0.896 to 0.915) are notably high. A higher Cronbach's alpha suggests greater internal consistency, indicating that the items collectively measure a consistent underlying construct.

Table 4
Summary of Regression Results

PAT	Coeff.	t-value	P-value	Tolerance	VIF
Cons.	0.195	0.568	0.572		
DT	0.399	2.937	0.005	0.316	3.160
AT	0.227	0.1449	0.152	0.232	4.315
BKC	0.308	2.481	0.016	0.340	2.940
Cons.	0.195	0.568	0.572		
R-sq	0.672				
Adj. R-sq	0.656				
F-Stats	44.295				
Sig	0.000				
D/W	2.298				

Source: SPSS 25 Output file, 2023.

Table 4 shows the quality and fit of the linear regression model within the context of the impact of disruptive technology on the accounting profession. The coefficient of determination (R- Square), explains the proportion of variability in the dependent variable (PAT) that is accounted for by the predictor variables (BKC, DT, AT). The value of approximately 0.672 indicates that around 67.2% of the variance in PAT can be explained by the predictors in the model. This implies that the combination of BKC, DT, and AT can collectively account for a substantial portion of the variability in professional accountant's profession.

The Durbin-Watson statistic is used to assess the presence of autocorrelation in the residuals (the differences between actual and predicted values). The value of 2.298 suggests that there is little to no autocorrelation present in the residuals. Values close to 2 indicate that the assumption of independence of residuals is reasonable. The model summary indicates that the combination of predictors (BKC, DT, AT) has a meaningful relationship with the professional accountant (PAT) within the context of the impact of disruptive technology on the accounting profession. The moderate R Square value suggests that the model is able to explain a substantial proportion of the variability in PAT using these predictors.

5. Discussion of Findings

Disruptive Technology (DT) which represents the impact of disruptive technology, has a significant positive influence on the professional accountant (PAT). The unstandardized coefficient of 0.399 suggests that for every one-unit increase in the perceived impact of disruptive technology, there's an associated increase of approximately 0.399 in the proficiency level of accounting technology. When considering the standardized coefficient (Beta) of 0.371, it becomes evident that each standard deviation increase in the perceived impact of disruptive technology corresponds to a 0.371 standard deviation increase in accounting technology proficiency. This result emphasizes that as accountants recognize and appreciate the significant influence of disruptive technology on their field, their proficiency in utilizing technology for accounting purposes tends to rise.

In addition, Automation (AT) also plays a role in influencing professional accountant (PAT). The unstandardized coefficient of 0.227 suggests that for every one-unit increase in automation, there's an associated increase of approximately 0.227 in accounting technology proficiency. The standardized coefficient (Beta) of 0.214 indicates that each standard deviation increase in adaptability corresponds to a 0.214 standard deviation increase in accounting technology proficiency. This finding underscores the significance of being open and receptive to technological shifts within the accounting profession, as it positively impacts one's ability to effectively navigate and excel in this changing landscape.

However, Block-chain Technology (BKC), is also statistically significant in influencing professional accountant (PAT). The unstandardized coefficient of 0.308 suggests that for every one-unit increase in valuing block-chain technology, there's an associated increase of approximately 0.308 in accounting technology proficiency. The standardized coefficient (Beta) of 0.302 indicates that each standard deviation increase in valuing block-chain technology corresponds to a 0.302 standard deviation increase in accounting technology proficiency. This result highlights an interesting interplay between the traditional and modern aspects of accounting. Those who acknowledge the importance of foundational accounting skills also tend to excel in utilizing technology for accounting tasks.

6. Conclusion and Recommendations

This study delved into the impact of disruptive technology on the accounting profession in the 21st century. The analysis revealed a complex interplay between various factors that influence the proficiency of accountants in utilizing technology. The study's findings emphasized the pivotal role of three key factors: the perceived impact of disruptive technology, automation, and the value placed on block-chain technology.

The study also demonstrated that these factors are not isolated but interconnected. Accountants who acknowledge the profound influence of disruptive technology, remain adaptable to dynamic technological shifts, and concurrently appreciate the enduring significance of block-chain technology tend to exhibit higher proficiency in employing technology for accounting tasks. This multifaceted perspective aligns with the realities of the modern accounting landscape, where a harmonious integration of traditional and technological competencies is paramount for professional success.

In light of the study's insights, the following recommendations were made: Encourage a commitment to ongoing learning and professional development. Accountants should actively seek opportunities to enhance their technological proficiency and stay updated with industry advancements. Educational programs should emphasize the integration of block-chain technology with modern technological skills. This synergy creates well-rounded professionals capable of addressing both historical and futuristic accounting challenges. Foster research and innovation that bridges the gap between traditional and technological aspects of accounting. This can lead to the creation of innovative tools and strategies that drive the profession forward.

Ultimately, the findings and recommendations of this study provide valuable insights for navigating the evolving accounting landscape. By embracing the symbiosis of tradition and technology and nurturing adaptability, accounting professionals can position themselves at the forefront of the profession in the 21st century.

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