EXPLORING THE FEASIBILITY OF CONTINUOUS AUDITING FOR A DIGITALIZED NIGERIA

Josephine C. Ene
Department of Accounting and Finance, Baze University, Abuja

Abstract

The overarching goal of auditing has been the provision of assurance about the quality and credibility of financial information upon which important decisions are made. Undoubtedly, before the intrusion of disruptive technologies, the traditional auditing procedure had adequately provided this assurance. However, with the emerging technologies reengineering business processes and redefining numerous aspects of the workplace, there is an undeniable pressure on the accounting discipline to update its procedures especially the auditing domain. The resultant increase in real-time processes and generation of enormous data as an aftermath of the deployment of these technologies has created the need for an ongoing, timely and real-time assurance as a support mechanism. Therefore, this study explores the potential of continuous auditing (CA) as an integral component of the accounting system in a digital era using survey method. Even though the percentile analysis of the questionnaires administered revealed a general acceptance of the potentials of CA, it also indicated limited insight of CA tools as a significant reason for its low adoption in Nigeria. The study then recommended trainings that increase knowledge of CA tools.

Keyword: ***Auditing, Digitalisation, Disruptive technology, Accounting, Nigeria***

1. Introduction

The central function of financial reporting is the communication of information about the operations and underlying circumstances, including the performance of an organization to stakeholders. Such information *enables effective* assessment of transactional relations with the organization as it provides the framework for proper articulation of the financial position of an organization by managers, investors, creditors, and other *interested parties*. These interactions presume the accuracy, reliability, and relevance of these reports. Even though this vital and crucial presumption of these required qualitative attributes is rigorously pursued by standard setting, it is actuated by the function of auditing. While the standards lay down the terms and conditions of accounting policies and practices, auditing ensures conformance with regulatory norms and rules and regulations. Explicitly, the degree of confidence on the financial statements has overtime been enhanced by the audit function.

However, the effectiveness of the fiduciary role of the audit function is not immune to the significant implications generated by the continued integration and implementation of technology platforms and processes within the contemporary business environment (Gepp, Linnenluecke, O'Neill, & Smith, 2018). The vital implication of the proliferation of technological platforms, as noted by Chiu, Qi and Miklos (2018), is the generation of large amount of continuous real time financial information. This has induced fundamental and

structural transformation in the processing of financial records and created the demand and opportunity for audits to be performed automatically, continuously and in virtually real time consequently diminishing the relevance and applicability of conventional manual audit and computer-based auditing (Chiu, et al.). The prevailing situation provided the impetus for a noticeable heightened interest in adjusting the practice of auditing to align with the real time economy by embracing a continuous perspective to auditing (Eulerich, Lopez-Kasper & Sofla, 2021).

Justifying the proclivity towards continuous auditing, Barr-Pulliam (2018) and Chiu, et al. (2018) highlighted its proactive role in ensuring reliability of financial information by satisfying the quality of timeliness and sufficiency of audit evidence. Specifically, Chiu, et al. observed that continuous auditing mitigated the danger of allowing material errors, omissions, or fraud to go undetected for months before detection by the traditional audit process, while Barr-Pulliam elaborated on the sufficiency of quantity of evidence examined relative to total population of financial transactions. Hazar (2021) also substantiated the need for a more frequent or continuous-based audit in the face of advanceents in information technologies, high risk factors, increased regulatory demands related to antifraud measures, the volume and variety of data being created. These studies further illustrated the vital deterrence effects of continuous auditing and stressed the need for development of real time assurance by leveraging on the use of technology, automation and the methodologies of continuous auditing to make audit process more efficient and effective consequently enhancing the reliability of real time financial information.

Responding to the imminent revolution of audit procedures and the exigency for academic research support for continuous auditing, studies such as Sani and Nwite (2021), Pall and Peter (2019), and Walter and Naphta (2016) proposed and substantiated the need for a more frequent or continuous-based audit. However, despite the ground covered by these studies and the proliferation of technologies that have created an undeniable need for a continuous perspective to auditing, Mokhitli and Kyobe (2019) still identified a deficiency in the utilization of continuous auditing especially in developing nations such as Nigeria. Therefore, this study examined the multi-faceted attributes of continuous auditing literature with the ultimate aim to establish the probable reasons for its low adoption in Nigeria.

The next section outlines the conceptual framework of continuous auditing. Thereafter, the methodology of the study is discussed. After which, the next section presents the results and discussion while the final section provides the conclusion and recommendations.

2. Literature Review

2.1 Conceptual Framework

2.1.1 Continuous Auditing

Auditing is a systematic process of objectively obtaining and evaluating evidence regarding assertions about economic actions and events to ascertain the degree of correspondence between the assertions and established criteria and communicate the results to interested users (Louwers, Blay, Sinason, Strawser & Thibodeau, 2018). It is the accumulation and evaluation of evidence

about information to determine and report on the degree of correspondence between the information and established criteria (Arens, Elder, Beasley, Hogan & Arens, 2020). Providing a procedural definition of auditing as a means to an end, Omoteso (2012) stated that auditing comprised of an information-intensive set of activities involving gathering, organizing, processing, evaluating and presenting data with a view to generating a reliable audit opinion. Summarily, when auditing, auditors focus on ascertaining the extent recorded financial information aptly reflects the economic events that transpired within an accounting period.

The auditing function is broadly categorized into external audit and internal audit. Differentiating both forms, Chiu, Liu and Vasarhelyi (2014) explained that while external auditors assured the credibility of financial statements in accordance with GAAPs, internal auditors evaluated operational effectiveness and efficiency in connection to risk, internal controls and governance processes. Implicitly, the central theme of auditing is to provide a reliable supposition on the truth and fairness of financial information being presented by the management and the compliance of this information with applicable accounting standards and relevant legislation.

The typical traditional audit had hitherto relied heavily on manual audit procedures that are labor intensive and time consuming, however the practice of audit has had to evolve significantly by increasingly employing computerisation to enhance the efficiency and effectiveness of processes and procedures. Notwithstanding, with the increase in demand for real time reporting and assurance, Chiu, et al. (2018) noted that a simple computerization of traditional audit may not be adequate for current business space and argued in favour of a progressive integration of the continuous auditing paradigm. The inevitability of the dominance of continuous auditing is further accentuated by the challenge created by the volume and variety of data being created daily (Hazar, 2021).

Continuous auditing as defined by Chan, Chiu and Vasarhelyi (2018) is a comprehensive electronic audit process that enables auditors to provide some degree of assurance on continuous information simultaneously with, or shortly after, the disclosure of the information. Similarly, the CICA/AICPA (1999) stated that continuous auditing was

> *"a methodology that enables independent auditors to provide written assurance on a subject matter, for which an entity's management is responsible, using a series of auditors' reports issued virtually simultaneously with, or a short period of time after, the occurrence of events underlying the subject matter".*

Barr-Pulliam (2018), defined Continuous auditing as use of technology to perform real time assurance activities like identifying anomalies, analyzing transaction patterns, and dual-purpose tests that also evaluate the operating effectiveness of internal controls. Succintly, Eulerich and Kalinichenko (2018) stated that it was a near real-time automated audit process that allows relevant business events, transactions, and/or processes to be monitored continuously for compliance with defined internal control criteria. These definitions invariably surmise that the regularity of audit, emphasis on automated processes, and the distinct concept of audit by exception are the distinguishing features of continuous audit. However, ultimately the obvious

dissimilarity is that unlike the traditional audit, where accounting information is audited at specified intervals, continuous audit occurs on a more frequent or ongoing basis.

2.1.2 Benefits of Continuous Auditing

This associated attribute of frequency, automation and comprehensiveness of continuous auditing provides the fulcrum for its potential positive effect on the efficiency and effectiveness of audit functions (Verver, cited in Tronto & Killingsworth, 2021). Specifically, studies identified that CA approach enhanced time efficiency and lowered cost of audit (Rezaee, Sharbatoghlie, Elam & McMickle, 2018), improved the quality of organizational information for decision making (Mokhitli & Kyobe, 2019), reduced information asymmetries between the parties (Cardinaels & Jia, 2016), propelled less conscientious individuals to comply with internal control structure (Eulerich & Kalinichenko, 2018), diminished opportunism and probably mitigated opportunistic earnings manipulation (Barr-Pulliam, 2018), provided a more comprehensive and robust audit (Bumgarner & Vasarhelyi, 2015) and ultimately brought auditing closer to the operational process (Alles, Kogan & Vasarhelyi, 2018). Expansively, Hazar (2021) explained that time efficiency and cost reduction were achieved as continuous auditing allowed remote access to company data, while Barr-Pulliam posited that the enhanced timeliness of continuous auditing resulting from shorter audit cycle times improved the quality and relevance of financial reports. Validating the argument of the aptness of continuous auditing in real time economy, Chiu, et al. (2014) stated that the continuous auditing methodology enabled a reduction in the time lag between economic event and associated audit assurance

2.1.3 Challenges of Implementing Continuous Auditing

Bearing in mind that disruptive technology is exposing the inaptness of conventional audit strategies and motivating the necessity for information advancement, it would be imprudent to ignore the potentials of CA. However, Kogan, Sudit and Vasarhelyi (2018) maintained that as long as its practicability remains debatable, the interest in CA may remain purely academic. The question on its applicability is founded on the substantial preliminary set-up cost of the continuous audit software and relatively high level of expertise demand. On the issue of cost, Hazar (2021) argued that in the long run, the repeated utilization of the same modules lowers the cost of continuous auditing, while Kogan, Sudit and Vasarhelyi observed the availability and affordability of the networking infrastructure. Another challenge in the implementation of CA as identified by Rezaee, et al. (2018) is the complexity of standardization of data which is essential for creating an information technology infrastructure for accessing and retrieving data with diverse file types and record formats from different systems and platforms. Although the hurdle of complexity may be true, Kogan, et al. explained that it will be surmounted by recent predilection toward more standardization and better integration of related subsystems in enterprise information systems.

Notwithstanding the resilient call for inventive knowledge management systems, the degree of CA implementation would require a thorough cost-benefit analysis. Equally important, the company must consider its perceived utility i.e the extent its deployment will improve the

timeliness and relevance of financial information and consider its perceived ease of use (Lois, Drogalas, Karagiorgos & Tsikalakis, 2020).

Even though there is a widespread adoption of continuous auditing in developed economies like USA, the adoption and implementation of the auditing approach remains low in developing nations like Nigeria (Nolie & Nochie 2019). This may be based on its technological feasibility and economic feasibility. The study noted inadequate technological and access issues to records of operation as the main barriers to the implementation of CA by enterprises. The findings of Nolie and Nochie are consistent with the work by Ilemona and Nwite (2021), which also identified inadequate technology as an impediment to adoption of CA in Nigeria. Invariably, in Nigeria, it can be inferred that 'perceived ease of use' is a vital and significant factor. This is because infrastructural development, which is indispensable for technological advancement, is relatively low.

2.2 Theoretical Framework

2.2.1 Lending credibility theory: According to Hayes, Gortemaker and Wallage (2015), lending credibility theory postulates that the pre-dominate role of auditors is to augment the credibility of financial reports. This theory also explains that the fundamental benefit of the audit is to strengthen the reliability of financial statements (Tjeng & Nopianti, 2021). Succinctly put, lending credibility theory is about the responsibility of an auditor to add credibility and improve the reliability of the financial statements.

These statements serve as proof of performance and report of stewardship upon which investments decisions are based hence as observed by Owolabi and Olagunju (2020), it is expedient that auditors' endeavor to meet the growing demands of audit services to increase the reassurance. The study also stated that as businesses become more-technology driven, corporate transactions turned more complex and stakeholders require spontaneous information for faster decision-making, the need for all-round auditing procedures capable of providing credible information is further accentuated.

The credibility of the report is majorly perceived by the sufficiency and appropriateness of audit evidence. Sufficiency is the measure of the quantity of audit evidence while appropriateness is the measure of the quality of audit evidence especially in terms of relevance and reliability.
Under the traditional auditing procedure, it is typical for auditors to select samples for testing as examining all available data available would be impractical and prohibitively costly; however continuous auditing provides a mechanism for examining a larger amount and sometimes all transaction data thereby providing sufficient audit evidence. Furthermore, audit is carried out almost immediately after a transaction has occurred thereby greatly enhancing the timeliness of feedback. Timeliness has a positive effect on relevance and reliability of reports. Hence, it presupposes that continuous auditing furnishes a rational foundation and justification for its practices and procedures to improve the credibility of financial reports.

Though lending credibility theory is obviously germane, Sijpesteijn (2011) observed that the theory does not explain other functions of performing audit services hence the author argued that it had limited explanatory power.

3. Methodology

This study adopted a survey method using a 13-questions structured questionnaire. The data obtained from the different sections of the questionnaires were analysed using SPSS to generate frequency tables and percentile analyses. The questionnaire used a 5-point likert scale ranging from Strongly Disagree (1) to Strongly Agree (5).

To ensure validity and completeness of information provided by each sampled organisation, a minimum of four qualified accountants, primarily from accounts/audit departments of the organization, were selected as respondents.

Table 1: List of Observations on Questionnaire

Construct	No.	Observation	Symbol
The perceived need for revolution of auditing	1	The real time processes and big data have brought a demand for fresh perspective in auditing practice	OB1
	2	Traditional auditing is no longer able to effectively fulfill the demand of the contemporary business financial activities	OB2
	3	CA ensures the continued relevance and necessity of the audit function in the face of disruptive technologies.	OB3
Benefits of CA	4	CA aims to bring comprehensive assurance with greater coverage across the organization	OB4
	5	CA enhances the decision usefulness of financial information to stakeholders	OB5
	6	CA improves the ability of organisations to manage risks and opportunities.	OB6
Possible reasons why your organisation is yet to adopt or fully implement CA	7	Organisation not familiar with/does not sufficiently understand the potentials of CA	OB7
	8	Lack of knowledge and experience regarding CA tools	OB8
	9	Lack of staff to support CA implementation	OB9
	10	Limited commitment/awareness at board /senior management level	OB10
	11	Limited suitability of IT infrastructure to apply CA	OB11
	12	Limited suitability to apply CA to this type of organization	OB12
	13	Preliminary set-up Cost	OB13

4.0 Results and Discussion

Table 2 below presents the breakdown of the types of companies that participated in the study:

Table 2: Analysis of Participating Organisations and Response rate

Organisation	No. of organisation		No. of questionnaires		Response rate	%
	Contacted	Participated	Administered	Received		
Accounting firm	24	16	64	56	88%	26%
Public sector	20	20	80	68	85%	31%
Corporate	30	25	100	92	92%	43%
Total	74	61	244	216	89%	100%

After analyzing their responses with SPSS, the Cronbach's alpha was found to be .87, which suggested strong internal consistency, the frequency tables were then generated.

Table 3: Summary of responses on Construct A (Perceived need for revolution of auditing)

Rsp	OB1		OB2		OB3	
	Frequency	Percent	Frequency	Percent	Frequency	Percent
Strongly Diasgree	17	7.9	2	.9	19	8.8
Disagree	53	24.5	62	28.7	46	21.3
Undecided	20	9.3	32	14.8	22	10.2
Agree	64	29.6	84	38.9	66	30.6
Strongly Agree	62	28.7	36	16.7	63	29.2
Total	216	100.0	216	100.0	216	100.0

As depicted in Table 3, 55% of the respondents realize the inaptness of traditional auditing while 60% have indicated that the predilection should be towards CA. These results suggest that respondents do understand the need for a paradigm shift in auditing practice.

Table 4: Summary of responses on Construct 2 (Benefits of CA)

Rsp	OB4		OB5		OB6	
	Frequency	Percent	Frequency	Percent	Frequency	Percent
Strongly Disagree	2	.9	8	3.7	13	6.0
Disagree	16	7.4	16	7.4	17	7.9
Undecided	55	25.5	36	16.7	59	27.3
Agree	106	49.1	94	43.5	93	43.1
Strongly Agree	37	17.1	62	28.7	34	15.7
Total	216	100.0	216	100.0	216	100.0

As depicted in Table 4, 66%, 72% and 59% of the respondents realize that CA aims to bring comprehensive assurance, increase decision usefulness of financial reports and improve the ability of the organisation to manage risk and opportunities respectively. Clearly, respondents understand the benefits of CA.

Table 5: Summary of responses on Construct 3 (Possible reasons why your organisation is yet to adopt or fully implement CA)

Rsp	**OB7**		**0B8**		**OB9**		**OB10**		**OB11**		**OB12**		**OB13**	
	Freq	**%**	**Freq**	**%**	**Freq**	**%**	**Freq**	**%**	**Freq**	**%**	**Freq**	**%**	**Freq**	**%**
SD	49	22.7	33	15.3	34	15.7	37	17.1	22	10.2	4	1.9	31	14.4
D	67	31.0	41	19.0	24	11.1	62	28.7	45	20.8	62	28.7	27	12.5
UD	51	23.6	23	10.6	49	22.7	49	22.7	49	22.7	35	16.2	33	15.3
A	33	15.3	67	31.0	57	26.4	55	25.5	57	26.4	45	20.8	57	26.4
SA	16	7.4	52	24.1	52	24.1	13	6.0	43	19.9	70	32.4	68	31.5
Total	216	100.0	216	100.0	216	100.0	216	100.0	216	100.0	216	100.0	216	100.0

Table 6 shows that respondents consider Preliminary set-up cost and the limited knowledge and experience regarding the CA tools available on the market as the largest barrier to the adoption of CA. Furthermore, limited suitability to apply CA to this type of organisation and limited suitability of IT infrastructure ranked as 3rd and 4th issues.

It is important to note that that most of the respondents did not consider insufficient understanding of potentials implying that the potentials of CA is generally known and acknowledged. This validates the results on the benefits of CA.

Table 6: Ranking of Barriers to Adoption/Full Implementation of CA

Observations	A	SA	Total	Rank
Preliminary Set-up Cost	26.4	31.5	57.9	1st
Lack of knowledge and experience regarding CA tools	31.0	24.1	55.1	2nd
Limited suitability to apply CA to this type of organisation	20.8	32.4	53.2	3rd
Lack of staff to support CA implementation	26.4	24.1	50.5	4th
Limited suitability of IT infrastructure	26.4	19.9	46.3	5th
Limited commitment/awareness at board /senior mgt level	25.5	6.0	31.5	6th
Insufficient understanding of potentials	15.3	7.4	22.7	7th

The percentage of respondents affirming the presence of barriers provide the probable reason for the gap between acknowledgement of a need for a paradigm shift and the recognition that CA potential and the relative low level of adoption of CA in Nigeria.

5. Summary and Conclusion

With the emergence of disruptive technology, it is apparent that auditing practices must explore effective ways to ensure the timeliness and relevance of financial information. The concept of CA has been around for many years but its resurgence in academic research and discourse stems from its perceived ability to keep pace with real time financial transaction and big data so as to effectively situate the auditing profession in this digital era. Even though, some studies have proven that CA approach may be the sustainable, cost-effective, and resource-efficient solution, its economic and technological feasibility remains a clog in its applicability especially in developing economies. Nevertheless, these challenges can be addressed by the creation of knowledge on the CA concept and government commitment to upgrade infrastructural development. Finally, the deployment of CA which is a highly sophisticated audit approach can be impeded by the lack of skill and knowledge hence the employees involved, such as auditors and IT staff, must be trained to obtain an appropriate level of skills and knowledge in various disciplines. Future research may focus on detailing the technologies involved in CA approach to auditing and the possible problems arising from them in a developing nation context.

References

Alles, M., Kogan, A., & Vasarhelyi, M. A. (2018). Putting continuous auditing theory into practice: Lessons from two pilot implementations. *Journal of Information Systems, 22(2*), 195 - 214.

Arens, A. A., Elder, R. J., Beasley, M. S., & Hogan, C. E. (2020). *Auditing and assurance services: an integrated approach (17th ed.*). Upper Saddle River, NJ: Pearson Prentice Hall.

Barr-Pulliam, D. (2019). The effect of continuous auditing and role duality on the incidence and likelihood of reporting management opportunism. *Management Accounting Research*, *44*, 44-56.

Bumgarner, N., & Vasarhelyi, M. A. (2018). *Continuous Auditing - A New View in Continuous auditing*. Emerald Publishing Limited.

Cardinaels, E., & Jia, Y. (2016). How audits moderate the effects of incentives and peer behavior on misreporting. *European Accounting Review* 25. 1-22. 10.1080/09638180.2015.1042889.

CICA/AICPA. (1999). Continuous auditing research report. Canadian Institute for Chartered Accountant and American Institute of Certified Public Accountants.

Chan, D. Y., Chiu, V., & Vasarhelyi, M. A. (Eds.). (2018). *Continuous auditing: theory and application*. Emerald Group Publishing.

Chiu, V., Liu, Q. & Vasarhelyi, M. A. (2014). The development and intellectual structure of continuous auditing research. http://dx.doi.org/10.1016/ j.acclit.2014.08.001

Eulerich, M., & Kalinichenko, A. (2018). The current state and future directions of continuous auditing research: An analysis of the existing literature. *Journal of information systems*, *32*(3), 31-51.

Eulerich, M., Lopez-Kasper, V., & Sofla, A. (2021). The effects of COVID-19 and continuous auditing on employees' compliance with the internal control system: The moderating role of conscientiousness. *Available at SSRN 3873799.*

Gepp, A., Linnenluecke, M., O'Neill, T. & Smith, T. (2018). Big data techniques in auditing research and practice: Current trends and future opportunities. *Journal of Accounting Literature, 40(), 102–115*

Hayes, R. S., Gortemaker, H., & Wallage, P. (2015). *Principles of Auditing: An Introduction to International Standards on Auditing, 3rd Ed*. Harlow: United Kingdom: Pearson

Hazar, H. B. (2021). New paradigm in auditing: Continuous auditing. *Ethics and Sustainability in Accounting and Finance, 2,* 253-268. Springer, Singapore

Kogan, A., Sudit, E., & Vasarhelyi, M. (2018). Continuous online auditing: a program of research. *Journal of Information Systems*, 13(2), 87 -103

Ilemona A. S., & Nwite S. (2021). Accounting code of ethics: severity analysis of threats to compliance of auditors in Nigerian business environment. *Journal of Finance and Accounting*, 9 (1), 16–22.

Lois, P., Drogalas, G., Karagiorgos, A., & Tsikalakis, K. (2020). Internal audits in the digital era: Opportunities risks and challenges. *EuroMed Journal of Business*.

Louwers, T. J., Blay, A. D., Sinason, D. H., Strawser, J. R., & Thibodeau, J. C. (2018). *Auditing and assurance services, (*7th ed.). New York, NY: McGraw-Hill Education

Mokhitli, M., & Kyobe, M. (2019). Examining factors that impede internal auditors from leveraging information technology for continuous auditing. In *2019 Conference on Information Communications Technology and Society (ICTAS)*, 1-6, IEEE.

Nolie, E. S., & Nochie, A. (2019). How to make continuous auditing work in the Nigerian business environment. *Journal of Accounting and Entrepreneurship*, 1(1), 31-43

Omoteso, K. (2012). The application of artificial intelligence in auditing: Looking back to the future. *Expert Systems with Applications, 39*(9), 8490-8495.

Owolabi, S. A., & Olagunju, A. O. (2020). Historical Evolution of Audit Theory and Practice. *International Journal of Management Excellence, 16* (1), 2252-2259

Pall, R., Kishore, S., & Peter, B. (2019). Exploring continuous auditing solutions and internal auditing: A research note. *Journal of Accounting and Management Information Systems*, 18(4), 614-639

Rezaee, Z., Sharbatoghlie, A., Elam, R., & McMickle, P. L. (2018). Continuous auditing: building automated auditing capability. *Continuous Auditing*. Emerald Publishing Limited.

Sani, A. I., & Nwite, S. (2021). The imperatives of continuous auditing implementation for performance evaluation of businesses in Nigeria: a qualitative examination. *Journal of Contemporary Issues in Accounting*, *1*(1), 91-100.

Sijpesteijn, F. K. (2011). *The value relevance of auditors' communications; Financial statement users' understanding of the messages in the audit report*. A thesis submitted at Erasmus School of Economics for MSc in Accounting, Auditing and Control.

Tjeng, P. S., & Nopianti, R. (2021). The effect of auditor's technical abilities on the quality of financial statement information. *International Journal of Economics and Finance; 13*(6), 129-142.

Tronto, S., & Killingsworth, B. L. (2021). How internal audit can champion continuous monitoring in a business operation via visual reporting and overcome barriers to success. *The International Journal of Digital Accounting Research*, *21*(27), 23-59.

Walter, H. O. & Naphta, P. T. (2016). Continuous auditing model and practice in business: A factor for success. *Journal of Auditing and Business Finance*, *3*(1), 48-51.