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Digital Bookkeeping and Application of Distributed Ledger Technology In Financial Transparency In Nigeria

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ABSTRACT: The study examined digital bookkeeping and application of distributed ledger technology in financial transparency in Nigeria. The paper adopted descriptive survey research design and content analysis, it is an opinion paper. The study revealed that, in order to maintain competitive position, financial transparency and comparability, willingness to change needs to be part of organizational culture's trend. Increasingly, innovation in ways of working, knowledge-based activities and operational use of financial information will produce more sophisticated electronic records that can only be managed electronically. The study recommended among others that challenges brought about by new technologies in general and distributed ledger technology e-bookkeeping management in particular require that records and financial managers be equipped with new skills and competencies through training or retraining to be able to effectively operate and undertake projects in an e-environment.

Keywords: Digitization, Digitalization, Transparency, Blockchain, DLT

INTRODUCTION

Globalization today has created a network of connections between countries in different sectors, such as finance and trade. This globalized world has made multinational entities (MNE) interdependent and thus non-compliant to the forces that embrace isolation and self-dependency. The term chained globalization best describes this interdependency between MNEs. Chained globalization has, through competition and dependency on other MNEs, which includes rival entities, created a vulnerability that many entities try to avoid or break through (Parsapour, 2024). In some of the vulnerabilities, they tried to avoid interference

in their financial data. Privacy is preached, but the global world is open, even to global value chain.

According to Fitzgerald (2019), the nature of global commerce has changed dramatically over the past four decades, with the meteoric rise of global value chain trade. In other words, countries and entities make goods differently today than in the past. There is in the 21st century, the 'made in the world' global production revolution. This phenomenon has been made possible by innovations in communications and transportation technologies, together with institutional and market reforms that have allowed scores of nations to join (or rejoin) the global economic landscape. While digital bookkeeping has always been disruptive, they are particularly expensive and divisive in the globalization era.

However, with globalization becoming more and more common, the essence of digital recordkeeping or digital bookkeeping in financial reporting system as a result of distributed ledger technology or the advent of blockchain technology has become so essential in accounting system. The technology of accounting might benefit through consideration of the relationships between financial reporting and transparent utilization of accounting information. Information technologies have tremendously transformed all spheres of human endeavours and the art of bookkeeping is not left out. Financial entities and institutions started keeping records in electronic formats with the proliferation of computers in the early 1970s (Akporhonor, 2020). The increasing pervasiveness of computers and its peripherals contribute immensely to accountable digital bookkeeping precisely because computers are seen as so important to business and daily life.

Information technologies are considered by many to be 'the solution' to financial information management problems, and often computer equipment is installed in entities with little consideration for what tasks they will perform and how the products of those actions (Akporhonor, 2020). The increasing use of ICTs, especially the Internet, in operations around the world driven by reforms, has given impetus to the generation of e-bookkeeping, touted as strategic assets vital to the functions of financial experts and entities. Like traditional paper records, e-records support the day-to-day operations of entities and interactions with customers/clients, private and public sector partners (Akporhonor, 2020).

Nevertheless, the world is heading towards a "paperless office" whilst this may not be occurring quickly, many now work in an environment where paper and digital records co-exist. Digital and electronic records have now come to the fore and these are the records that we need to manage to make sure that we can access them in the years to come (Recordkeeping for Good Governance Toolkit, n.d.), to ensure comparability and reliability. A record created, communicated and/or maintained by means of electronic equipment is generally refers to as records held in digital form on magnetic or optical computer storage media. A record created and/or maintained by means of digital computer technology, includes records that are 'born digital' (created using computer technology) or have undergone conversion from a non-digital format from their original format (eg scans of paper documents). As with other records electronic records are created as evidence of financial transaction of business activity. Entities are responsible for creating, managing and preserving their electronic records for as long as they are required (Recordkeeping for Good Governance Toolkit, n.d.).

Computerization has led to rapid and dynamic changes in the way financial transactions and businesses operate. Bookkeepers and financial managers today encounter a much wider range of records, paper-based and electronic, than they dealt with even a decade ago. Even the strategies adopted for integrating and managing paper and electronic records has been subjected to change over time. The use of information and communications technology is transforming the way entities work. The lack of digital records management system hinders operational and administrative procedures and makes accessibility to financial information difficult. The incidence of misfiling and (in some cases) complete loss of records characterized the earlier manual system (Nyampong, 2015).

Odeyemi, Okoye, Ofodile, Adeoye, Addy, & Ajayi-Nifise (2024), opines that, in today's rapidly evolving digital landscape, ensuring security in financial services is paramount to safeguarding sensitive data, transactions, and assets. With the proliferation of digital transactions and the increasing sophistication of cyber threats, financial institutions are continuously seeking innovative solutions to enhance security and mitigate risks, and digitial bookkeeping through the application of distributed ledger technology is one of the measures (See also Abdel-Rahman, 2023,

Kafi, & Akter, 2023; Romanello, 2021; Eghe-Ikhurhe, Roni, Mandella & Xihui, 2023).

The digital bookkeeping may be based on blockchain technology and may equally differ from the ordinary digital recordkeeping of public blockchain. The transactions of digital bookkeeping use distributed bookkeeping network system, which can monitor each transaction step well. The distributed bookkeeping technology creates blocks for each transaction data, and the blocks are tightly linked by algorithms, providing a high level of privacy and security (Jiang, 2023). This security and privacy makes the manipulation of account very difficult. According to Susmus and Demirhan (2013) account manipulation as an ability to increase or decrease reported net income at will. Stolowy and Breton (2000) developed a framework classifying the activities of accounts manipulation in relationship with the two aspects of risk (systematic risk and financial risk) and categorized these activities as earnings management and creative accounting (see Ukaegbule, Akpelu, & Obiah, 2025).

LITERATURE REVIEW

Conceptual Review

Some basic concepts in this research are to be used simultaneously or interchangeably to ensure free flow of the study. Words like digital recordkeeping and bookkeeping, and blockchain technology and distributed ledger technology (DLT). Since 2009, digitization has gone from little known, niche technological interests to rapidly proliferating financial recordkeeping that are the subject of intense public interest (Perkins, 2018). Digitization and digitalization are the major source and concepts in the digital bookkeeping. Digitization is the process of changing information from analogue to digital form.

Digitalization is the use of digital technologies to change a business model and provide new revenue and value, producing opportunities (BIS, 2021). This is broadly thanks to blockchain-utilizing distributed ledger technology that can drive a new era of digitization (Johnston, 2024), in financial system. This digitization embodies the technology that ‘enables automated processing by means of smart contracts, in which real goods and services are represented as tokens. A blockchain is a history of events (transactions or otherwise) that uses cryptography to link timestamped batches of events together in order to make it evident if tampering has occurred. This type of data structure enables the creation of new

applications that use a blockchain as a trustworthy public database (Johnston, 2024; Obiah, Ukaegbule & Adioha, 2025).

Digitization of bookkeeping requires digital infrastructure, which not all areas in Nigeria have a sufficiently robust digital architecture that includes optimal, let alone reliable and affordable, internet connectivity and comprehensive access to digital devices (Jiang et al, 2022). Hence, digital records are also often called electronic or e-records, although technically the two are not the same. Records have always needed documentation about their content, context and structure. The term 'digital recordkeeping' refers to the different activities and processes involved in managing a digital record over the course of its life with the benefits, ranging from more consistent and efficient financial transaction processes to improved public confidence and trust. If work is being carried out using automated systems, then it makes sense for the records of that work to be made and kept in digital form (Recordkeeping for Good Governance Toolkit, n.d.). Digital records are records created, communicated and maintained by means of computer technology. E-records are recorded information, documents or data that provide evidence of policies, transactions and activities carried out in e-government and e-commerce environments (IRMT, 2004 in Nyampong, 2015).

Digital bookkeeping refers to using electronic systems, such as software or cloud-based tools, to manage and record financial transactions instead of traditional manual methods. It offers benefits like automation, improved accuracy and ease of access to enhance transparency and comparability. All financial records including invoices, receipts and ledgers are stored and managed digitally. Many digital bookkeeping systems automate tasks like invoice generation, payment processing, and reconciliation, saving time and reducing errors. Entities create and store digital records in a variety of ways including word-processed documents, spreadsheets, multimedia presentations, email, websites and online transactions. However, digital records can be found in many systems throughout an entity, including databases and business information systems, shared folders and hard drives (National Archives of Australia, 2004). Similarly, Nyampong (2015), opines that e-records may be categorized as text files (files produced by word processing programmes or by other software); data files (computer processable files that store numeric and sometimes textual information as quantitative

values so that, numbers can be manipulated using arithmetic processes); analogue audio and visual records (sound documents and images to be played back); disaggregated data (information collected through remote sensing systems); databases (structured collection of interrelated data); machine instruction sets (records created by the action of intelligent machines); image files (records containing computer processable images that generally exist as hard copy before being converted into images) and digital documents (files consisting of numeric data, images or sound recorded digitally in one uniform structure).

On the other hand, blockchain is a DLT that utilizes a decentralized network of nodes that provide a level of trust (also known as consensus) instead of a utilizing a third-party to verify transactions (Phan, Li, & Mentzer, 2019). The technology relies on cryptography as a means of security some utilizes the Elliptic Curve Digital Signature Algorithm (ECDSA), which is a cryptographic algorithm that creates a set of public and private keys, to ensure the authenticity of the transactions (Alcazar, 2017). It is a digitized, decentralized, public ledger of all cryptocurrency transactions. It allows transactions to be recorded and added to the block in chronological order and keeps track of the digital currency transactions without central recordkeeping (Yun, 2020).

A DLT is defined as a distributed database (ledger) that maintains a permanent and tamperproof record of transactional data. A DLT is completely decentralized by relying on a peer-to-peer network. More precisely, each node of the network maintains a copy of the ledger to prevent a single point of failure. All copies are updated and validated simultaneously (Hammi, Hammi, Bellot, & Serhrouchni, 2018). The blockchain ledger is composed of multiple blocks, and each block is composed of two parts. The first part represents the transactions or facts (that the database must store), which can be of any type such as monetary transactions, health data, system logs, traffic information, and so on. The second part is called the header and contains information about its block (e.g. timestamp, hash of its transaction, as well as the hash of the previous block) (Hammi, Zeadally, Adja, Giudice, & Nebhen, 2022).

Idehen and Mayor (2021), explained that a blockchain is essentially a digital ledger of transactions that is duplicated and distributed across the entire network of computer systems on the blockchain. Each block in the chain contains a number of transactions that are

linked together using cryptography and every time a new transaction occurs in the blockchain, a record of that transaction is added to every participant's ledger. For clarity, each block contains a cryptographic hash of the previous block, a time stamp and transaction data. The time stamp proves that the transaction data existed when the block was published in order to get into its hash. Anisiuba (2020), simply describe DLT as a chain of blocks that contains information. The data, which is stored inside a block, depends on the type of blockchain. The real purpose of blockchain is to address the problems of double records without need of a central server (see Igwe, Inweregbu, Eke & Obiah, 2025).

Transparency is simply an openness to public scrutiny. It is widely considered to be central to best practice in corporate governance and corporate social responsibility (O'Regan, 2004). Therefore, financial transparency is the practice of sharing financial information with stakeholders, which prompts a transformative shift in culture, equipping stakeholders with the knowledge and tools to participate in entity's financials and productivity metrics or performance. Financial transparency allows stakeholders to access financial information clearly, which in turn increases accountability and public trust. Because the digital bookkeeping uses blockchain technology, the decentralized nature of synchronized distributed ledger technology and the centralized management model of the financial recordkeeping, unlike the characteristics of private digital recordkeeping, has the characteristics of incomplete anonymity: controlled anonymity, the characteristics of "small amount of anonymity, a large amount of traceability (Jiang et al, 2022). The traceability, privacy and security are the key goals for financial transparency by DLT in digital bookkeeping.

Contrarily, Duranti (1999) in Nyampong (2015) observes that widespread use of digital technologies by individuals and entities in the usual and ordinary course of their activities is generating more information than in any previous decade of human activity. The majority of this information, however, is less reliable, retrievable, or accessible than ever before. Software systems generate, manage, and store digital data using proprietary technologies and media that are not developed to segregate different types of information, to prevent manipulation or tampering, or to establish and maintain an intellectual order, and that are subject to the dynamism of the computer industry (MacCarn, 1998). The

digital information produced by and maintained in most of the systems presently used cannot be considered trustworthy and is easily lost in a self-perpetuating and expensive cycle of obsolescence and incompatibility (Duranti, 1999). But this can be mitigated or prevented using cloud-based data storage infrastructure or encrypt method, which distributed ledger technology can offer. Most entities apply metadata as data describing the context, content and structure of records which enables their discovery, use, management and preservation through time, by creating and maintaining complete, accurate and reliable evidence of business transactions in the form of recorded information.

Theoretical Framework

This study adopts two important theories as relates to financial reporting to stakeholders: information theory and decision-usefulness theory.

Information Theory

Information theory was originally propounded by Claude E. Shannon in 1948. However, its application to accounting and financial reporting evolved through the works of later scholars who adapted Shannon's concepts to economics and financial communication. Theses thinkers interpreted financial reports as communication tools, where the firm (sender) communicates useful economic information to stakeholders (receivers), and the quality of that communication (e.g., relevance, timeliness, and understandability) impacts stakeholders' decision-making. Information theory in financial reporting views financial statements as channels for transmitting information from the management of a company to its stakeholders (investors, creditors, regilators, etc.). According to this view, the preparer of the financial report acts as the sender; the financial statements are the communication channel; the stakeholders are the receivers. The objective is to minimize noise (misunderstanding, complexity) and maximize signal clarity (usefulness, relevance).

Accountants should be particularly interested in a body of knowledge that has been developing in recent years, and which has become variously known as information theory, information science, and information technology. This body of knowledge has been concerned with information in general. More specifically, it has been concerned with the meaning of the term "information", and with the measurement and valuation of the

informational content of messages, its transparency and credibility. However, the dominant nature of accounting lies in an information communication system. More precisely, accounting is an application of the general theory of information to the efficient economic operations. The significance of information theory to accounting lies in the fact that it is a part of the decision making process that reduces uncertainty and thereby provides a means to improve the quality of decision. Chambers (1961) points out, the function of information is to reduce the doubt of an actor (decision maker). But accounting being a measurement discipline as well as an information communication system, we can define information as a data that adds to the receiver's knowledge, reduces uncertainty, and communicates a message to influence the user's behaviour in his decision-making process.

According to Bedford, however, a data becomes accounting information only when it is measured and is bounded by the criteria of relevance, verifiability, freedom from bias and quantifiability. The terms, relevance, verifiability, freedom from bias and quantifiability may be regarded as the attributes that provide internal boundary of the accounting information. Under this theory, information is regarded as a resource, the collection, processing and transmission of which involve a cost. Such costs accelerate with the increase in the volume of information. For Bailey (1970) information theory is directly related to cybernetics. Cybernetic systems require communication or flow of information to achieve self-regulation.

Therefore, the concept of a financial information system as a part of a total information system, and the application of communication theory to these concepts, must be structured by reference to some underlying reality observable in firms and other economic units, and not by analogies with the natural and other social sciences. Since information is defined as "purpose-oriented organized data," and, since we require both a defined purpose and certain beliefs about the realities to be planned if we are to utilize the idea of a "system," the computer has to be programmed accordingly. Information theory, therefore, defines information in a specific sense and depicts the flow of information as a statistical process which can be described in terms of mathematics of probability theory. The informational content of a message is its potential to evoke a response to bring about a change in the state of mind of the decision-maker in a specific situation. For such to

happen, the information must be transparent, comparable, credible, verifiable and relevance.

Decision-Usefulness Theory

The Decision-Usefulness Theory was propounded by Ball, R. & Brown, P. (1968). The theory in financial reporting focuses on how accounting information helps users make informed economic decisions, especially decisions related to resource allocation (e.g., buying shares, lending money).It moves away from merely reflecting a "true and fair view" and instead prioritizes whether the information is useful to stakeholders, especially investors, creditors, and analysts. Key qualitative characteristics of useful information as per the theory and later codified in the IASB Conceptual Framework, include: relevance, faithful representation, comparability, verifiability, timeliness, understandability. The needs of investors and other capital market participants take center stage, meaning financial reports must reduce information asymmetry. Financial information is useful if it: Helps users predict future cash flows or performance; helps users confirm or correct past predictions.

Nigeria has aligned with IFRS (International Financial Reporting Standards) since 2012, which are based largely on the Decision-Usefulness Framework. Listed companies on the Nigerian Exchange (NGX) are expected to report in a way that helps investors evaluate the risk and return of their investment decisions. Regulatory bodies like FRCN and SEC Nigeria emphasize timely and relevant reporting, particularly through the publication of audited annual reports, interim statements, and disclosures on significant events. The theory supports Nigeria's move toward a more investor-focused disclosure environment, improving capital market transparency.

Decision-usefulness aligns with good governance by: promoting transparency and accountability, ensuring that financial reports serve the information needs of stakeholders, not just compliance requirements, supporting shareholder rights by providing decision-relevant data for voting, investment, or divestment decisions. The focus is on the relevance of information being communicated to decision makers and the behaviour of different individuals or groups as a result of the presentation of accounting information (Schiehll, Borba & Murcia, 2007). With digital bookkeeping, this information can be readily accessible to users of the accounting information, thereby ensuring credibility and transparency.

The decision usefulness approach started in the 1960s. A Statement of Basic Accounting Theory (ASOBAT), an influential publication by the American Accounting Association (AAA) issued in 1966, is regarded as the starting point of this approach. ASOBAT defines accounting as the process of identifying, measuring, and communicating economic information to permit informed judgments and decisions by users of information. Although this definition still refers to accounting as a process, it introduces the purpose of the communication process: "to permit informed judgments and decisions by users of information". The Trueblood Commission Report in 1973 reinforced the decision-usefulness approach by asserting that the basic objective of financial statements … is to provide information useful for making economic decisions. These developments resulted in both the Financial Accounting Standard Board (FASB) and International Accounting Standard Board (IASB) adopting the decision usefulness objective in their conceptual frameworks. However, a stronger decision usefulness emphasis, with its continuing emphasis on the information needs of finance providers, is currently gaining new ground with the initial chapters in the conceptual framework that the IASB and the FASB have recently published (IASB, 2006). Unlike in previous eras, this new framework seems set to expunge stewardship reporting and remains largely indifferent to the information needs of any other stakeholders apart from finance capitalists. The argument for accepting the decision usefulness approach was that if theoretically correct financial statements cannot be prepared then they should at least be more useful.

However, decision usefulness can also take into consideration the effect of external reports on the decisions of management and the feedback effect on the actions of accountants and auditors. According to Chambers (1961), the objective of accounting is to provide financial information about the economic affairs of an entity to interested parties for use in making decisions. In other words, accounting reports are not an end in themselves but exist to be used. It can be useful in making decisions, financial information must possess certain normative qualities such as relevance, reliability, objectivity, verifiability, freedom from bias, accuracy, comparability, understandability, timeliness and economy. It must also provide for the development of the theory on the basis of knowledge of decision processes of investors, tax authority, negotiating regulating agencies and other external users of

accounting as well as managers (Osho & Adebamba, 2018).

According to Bailey (1970) the idea that the basic objective of accounting is usefulness is certainly not new, but neither is it the subject of full agreement. A sampling of articles in the Accounting Review provides the following statements in favour of usefulness as the objective of accounting: …The criterion of usefulness occupies the highest level of the accounting information criteria hierarchy; any significant exposition of accounting theory must start with the recognition that the purpose of accounting is usefulness; and accounting is utilitarian … underlying accounting standards represent the concept of usefulness. Other accounting writers, however, reject usefulness as the basic accounting objective. In Accounting Research Study No. 1, Moonitz (1961) excludes usefulness from his list of accounting postulates, on the ground that it is vague and perhaps dangerous. General systems theory, however, provides a standard which gives usefulness the substance required for its use as the objective of accounting. In the systems framework, accounting must provide output useful in directing its supra system toward self-regulation to the meeting of its objectives, the objectives in turn being stated in terms of output to the next higher system. Therefore, if a system is to survive, its outputs must be acceptable i.e., useful to its supra system and it must be available when needed in digital platform. Usefulness must be the active motivating force which shapes the output of accounting at all times (Bailey, 1970).

Empirical Review

Igwe, Inweregbu, Eke and Obiah (2025), investigated digital currency and blockchain technology in the 21st century financial ecosystem. The empirical study adopted a descriptive survey design. A questionnaire was used for data collection in a sample size of 121 selected randomly from the staff and students of Abia State Polytechnic, Aba. The data collected from the respondents were analyzed with the frequency distribution table and chi-square (x2) statistical technique. The findings revealed the imperativeness of digital currency and blockchain technology in the 21st century financial ecosystem. In other words, digital currency and blockchain technology has significant effect with financial ecosystem.

Aliyev (2019), in his paper, delves into the reliability of blockchain technology as a tool for anticorruption. The author looks at how

this tool can be utilized to reduce corruption in public administration. The author adopted two-round Delphi Method, the author engaged the services of 17 blockchain experts to assess the potential of the blockchain, the benefits and barriers of blockchain technology in the anti-corruption process. The author addresses the research question of to what extent newly emerging blockchain can be implemented in anti-corruption activities.

Ikegwuru and Nwokah (2022), examined the impact of block chain technology application on supply chain collaboration of energy companies in Rivers State of Nigeria. The population of the study consisted of 295 registered energy companies operating in Rivers State of Nigeria. To obtain the sample size, the Krejcei and Morgan's formula was used to determine a sample size of 169 Energy companies. The simple random sampling technique was used to obtain two (2) executives from each of the 169 companies under study, to turn up 338 management staff for the whole sample. A 4-point likert-scale structured questionnaire was distributed to the respondents, of which out of the 338 copies of structured questionnaire distributed, 246 copies accounting for 73% were retrieved from the respondents, and after data cleaning, 202 (82%) of the questionnaire were found useful for analysis. The analysis was carried out using the simple regression technique to test the hypotheses at 0.05 level of significance. The findings revealed that, BTC-enabled visibility strongly, positively and significantly influence supply chain collaboration. It was also, found that BTC-enabled traceability moderately, positively and significantly influences supply chain collaboration. The study therefore, concludes that blockchain technology application positively and significantly influences supply chain collaboration of energy companies in Rivers State.

Dinesh, Manoj and Anandh (2020), investigated blockchain technology in food supply chain security in India using the methods of information science, management science, system science and other theories and empirical research methods, chiefly by means of the PEST analysis, compare and exhibit studying the appliance of Blockchain in the food supply chain. It was established that, transactions are cryptographically secured by means of double SHA 256; Bit algorithm guarantee immutability, transparency, distributed and easy to uphold; blockchain transaction secured cryptographically by means of Hashing Algorithm Double SHA 256; the blockchain can keep the information

secured void of manipulation. The blockchain technologies realize multifaceted enterprise of the food supply is the government demand, through the system of food market transaction record. (see also, Wu & Liang, 2017; Nowiński & Kozma, 2017; Casino, Dasaklis, & Patsakis, 2018; Phan, Li, & Mentzer, 2019).

Similarly, Obiah, Ukaegbule, Ali and Adioha (2025), analyzed the incidence of fraud in the Nigeria public sector and the means of achieving a successful management of such fraud. The study is quantitative research. The population of the study consisted of thirty (30) ministries in Nigeria from which sample size was drawn to twenty-eight (28) ministries through judgemental sampling. Three hundred and ninety-two (392) copies of the questionnaire were distributed and three hundred and fifty (350) were filed and retrieved. The analysis of variance (ANOVA) was used in testing the hypotheses with the aid of SPSS17.0. It was found that, there is positive and significant relationship between management policies and Nigeria public sector fraud, fraud prevention and detection methods have influence on Nigeria public sector fraud, there is no strong internal control system in the Nigeria public sector and management integrity has influence on fraud prevention in the Nigeria public sector.

METHODOLOGY

Descriptive survey design research method will be used for the study, usually descriptive or exploratory research is associated with the case study, and this might be particularly useful when the phenomenon under investigation is difficult to study outside its natural setting. Using descriptive design research method is also helpful when the concepts and variables need to be considered where experimental or survey methods are regarded to be inappropriate. Case study is used particularly in looking at the specific questions such as "how and why" that is set in the contemporary environment. Secondary data provide a major source of necessary information, as the research study, is descriptive, it is better to use compiled data that have already been sorted or summarized from internet, journals, textbooks, etc. (Nyampong, 2015).

IMPLICATIONS TO RESEARCH AND PRACTICE

Digital recordkeeping and application of bookkeeping distributed ledger technology in financial transparency in Nigeria is an unexhausted area, as such, researchers can find it a veritable area to further their interest, particularly as technology evolves. Financial system is so dynamic that it requires

continuous update of information and knowledge to keep abreast with the trends. In financial sector and audit precisely, Akporhonor (2020) Auditing Control Environment (ACE) is used as a system that incorporates a new methodology to address the integrity of long term archives using rigorous cryptographic techniques. ACE continuously audits the contents of the various objects according to the policy set by the archive, and provides mechanisms for an independent third-party auditor to certify the integrity of any object. ACE consists of two components, the first an Audit Manager (AM) that checks files locally to ensure they have not been compromised. The second part, the Integrity Management Service (IMS), issues tokens that the AM can use to verify that its local store of file digests has not been tampered with." It is a system that provides a scalable, auditable platform for ensuring the integrity of digital archival holdings. The core aspect of ACE is a small integrity token issued for each monitored item, which is part of a larger, externally auditable cryptographic system. In essence, the ACE allows for the monitoring of collections on a variety of disk and grid-based storage systems, on which the monitoring is based on a customizable policy. Digital bookkeeping is an indispensable element of transparency, and thus of accountability, both within an entity and externally as they are consulted as proof of activity by senior managers, auditors, members of the public or by anyone inquiring into a decision, a process or the performance of an entity or an individual (National Archives of Australia, 2004).

Furthermore, digital records are more difficult to ensure that the content, context and structure of records is preserved and protected when the records do not have a physical existence. This has important implications for the authenticity, reliability, and trustworthiness of records. The integration of digital bookkeeping and blockchain technologies offers a robust and scalable approach to enhance financial transparency in dynamic and increasingly digital financial ecosystems (Familoni, & Shoetan, 2024; Bello, 2022). Digital bookkeeping with cloud-based systems enables easier collaboration with bookkeepers, accountants and other stakeholders, reducing cost and represents a modern approach to managing financial records.

CONCLUSION

The study has examined digital recordkeeping and application of bookkeeping distributed ledger technology in financial transparency in

Nigeria, as a new trend in the globalization era. The paper revealed that, in order to maintain competitive position, financial transparency and comparability, willingness to change needs to be part of organizational culture's trend. Increasingly, innovation in ways of working, knowledge-based activities and operational use of financial information will produce more sophisticated electronic records that can only be managed electronically. Therefore, e-bookkeeping management require significant commitment by all involved, as well as the allocation of adequate resources to planning, managing, training and evaluating strategies and related actions aimed at achieving these objectives at government, social partner, corporate entity and individual staff levels.

The challenges brought about by new technologies in general and distributed ledger technology e-bookkeeping management in particular require that records and financial managers be equipped with new skills and competencies through training or retraining to be able to effectively operate and undertake projects in an e-environment. In introducing digital bookkeeping in an entity, digital recordkeeping framework should incorporate arrangements for compliance with relevant standards and legislation, formal written policies, procedures and guidelines, identification of key roles and responsibilities, design and implementation of bookkeeping systems and user education and training.

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