

Business Risks the Impact of Technological Advances in Auditing On Independent Audit in Commercial Banks**Kadir GÖKOĞLAN, Assoc. Prof.**

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Abstract

In the banking sector, effective risk management and supervisory processes are critical for ensuring financial stability and maintaining stakeholder confidence. Technological developments in recent years, particularly those pertaining to artificial intelligence, big data analytics, continuous auditing and blockchain, have radically transformed the nature of auditing practices. This article discusses the evolution of risk-focused supervision in commercial banks and explores the impact of technological advancements in business risk supervision on independent audit. The discussion commences with an examination of the theoretical underpinnings of risk-focused supervision within the banking sector, situating it within the extant literature. This is followed by a detailed exposition of artificial intelligence, big data, continuous auditing and blockchain applications in the domain of auditing. The subsequent evaluation assesses the impact of these technological advancements on the quality, effectiveness, auditor independence and ethical dimensions of independent audit. The conclusion drawn from these comprehensive reviews and assessments underscores the considerable potential of emerging technologies to enhance the efficacy of independent audit processes within banking institutions. However, for this transformation to be realised, it is imperative that auditors enhance their expertise, adhere to stringent ethical principles, and the regulatory framework must evolve to align with technological advancements.

Keywords: Auditing, Business Risks, Commercial Banks, Independent Audit, Technological Developments.

Introduction

The complex financial transactions and various risk factors in the banking sector make it imperative that supervisory activities are carried out meticulously. Especially since the 2000s, financial scandals and crises have led to a rethinking of supervisory approaches in banks. In this context, the risk-focused audit approach has emerged as an alternative to the traditional audit

approach and aims to direct auditors' limited resources to the areas with the highest risk (Knechel, 2007). International auditing standards have also evolved in this direction, requiring auditors to better understand the organization's internal and external environment, business model and risk factors and to formulate an audit plan accordingly (Basel Committee on Banking Supervision [BCBS], 2014). In particular, the guidance documents issued by the Basel Committee on Banking Supervision recommend the adoption of a risk-focused perspective in the external audit of banks and the adaptation of audit procedures to respond to bank-specific risks (BCBS, 2014). These developments have demonstrated that external audit of banks should not only be limited to detecting errors in financial statements, but also evaluate management and control processes in areas such as credit, market, operational and liquidity risks to which the bank is exposed.

Traditional audit approaches are largely based on a comprehensive review of historical data, where the auditor tests a sample of transactions over a period of time. In a risk-focused audit, the auditor focuses on the most critical areas according to a predetermined risk assessment, rather than examining the audit universe randomly or each account item in equal detail (Bell et al., 1997). This approach offers significant advantages in terms of efficient use of audit resources and increasing audit effectiveness. Indeed, risk-focused audit practices aim to proactively uncover potential material misstatements or control weaknesses by focusing on the areas where the bank is most vulnerable within the limited audit period (Purba et al., 2023; Knechel, 2007). In this way, it is stated that auditors add value to banks' risk management processes by assuming not only a detecting but also an advisory role. For example, as a result of a risk-focused audit, the auditor can contribute to the improvement of the institution's risk management capacity by reporting the deficiencies in the bank's methods of measuring and monitoring credit risk.

Technological developments are transforming the way of doing business in the banking sector and affecting the auditing profession. In particular, the proliferation of digital banking, large volumes of data generation and automation have brought the need for innovation in audit techniques to the agenda. The new audit paradigm, which is also called Audit 4.0 and adapts to digital transformation, includes elements such as artificial intelligence-supported analysis, continuous audit mechanisms and blockchain-based verification processes (Appelbaum, Kogan, & Vasarhelyi, 2017). While these innovations have the potential to accelerate, expand the scope and make audit processes more reliable, the knowledge and skills required for audit teams to use these technologies effectively are becoming increasingly important.

The purpose of this study is to analyze the theoretical basis and practical development of the risk-focused audit approach in commercial banks and to analyze the effects of recent technological innovations in the field of auditing on independent audit. This study will first examine the definition and characteristics of risk-focused auditing and why it is critical in the banking sector in the light of the literature; then the integration of technologies such as artificial intelligence, big data, continuous auditing and blockchain into the audit process will be detailed. Then, the contributions of these technologies to the quality and effectiveness of independent audit, auditor independence and professional ethics will be evaluated. In the conclusion, the findings will be summarized and future predictions and considerations for a successful digital transformation will be discussed.

Risk-Focused Audit Approach

Risk-focused auditing is an audit strategy that requires auditors to focus their attention and resources on the areas of greatest risk. This approach involves systematically assessing the components of audit risk (i.e., inherent risk, control risk, and detection risk) to determine the focus of audit work. Risk-focused auditing is based on the idea of prioritizing the elements and processes that threaten the objectives of the entity (Knechel, 2007). Accordingly, in the first stage of audit planning, the auditor analyzes the entity's operating environment, industry conditions and risk factors that may affect the financial statement items in particular from a broad perspective. In the case of banks, areas such as credit risk, market risk, operational risk, liquidity risk and compliance risk come to the fore; auditors are expected to consider the potential losses that the bank is exposed to in these risk categories and their effects on the financial statements (Van Greuning & Bratanovic, 2020)

With the introduction of the risk-focused approach to audit practices, audit firms have developed new methodologies called business risk auditing since the late 1990s (Bell et al., 1997; Knechel, 2007). These methodologies emphasized that auditors should understand the holistic risk profile of the entity and make assessments at the strategic level rather than focusing only on the accounting errors of the financial statements. For example, the Business Measurement Process model developed by Bell et al. (1997) at KPMG aimed for auditors to analyze the client's business strategy, industry conditions and competitive advantages to identify the areas where the risk of material misstatement in the financial statements is highest (Bell et al., 1997). As a result, audit

tests focus on risky issues, such as the valuation of the loan portfolio or accounting for derivative transactions in banks, and limited procedures are applied in areas that are considered less risky.

Adopting a risk-focused supervisory approach in the banking sector also provides significant benefits for the stability of the financial system. The Basel Committee's 2014 supervisory guidelines emphasize that in external audits of banks, supervisors should have a good understanding of bank-specific risks and adapt their audit procedures accordingly (BCBS, 2014). In this way, weaknesses in, for example, credit risk management can be identified and reported at an early stage in a bank's audit and banking authorities can be informed for necessary improvements. Research shows that risk-focused supervision, when properly implemented, increases the effectiveness of the audit process because auditors can focus on the most important areas and avoid wasting time and resources (Purba et al., 2023). It is also stated that this approach contributes to the strengthening of corporate governance and the development of a risk culture in banks. This is because the independent auditor not only certifies the accuracy of the financial statements, but also plays a proactive role by communicating observations on risk management practices to senior management and the audit committee (Olagunju, 2011).

Technological Developments in Auditing

Technological innovations that have emerged in recent years have brought radical changes in the audit profession. Artificial intelligence (AI), big data analytics, continuous auditing and blockchain technologies affect every stage of audit processes from planning to evidence gathering and reporting. This section discusses the use of these technological developments in auditing and their advantages over traditional audit methods.

Artificial intelligence and Machine Learning: Artificial intelligence, especially through machine learning algorithms, enables automatic analysis of audit data and anomaly detection. While in traditional auditing, auditors work by selecting samples from large data sets, AI-enabled audit tools can scan the entire data population and identify unusual or risky transactions (Al-Ateeq et al., 2022). For example, a commercial bank's customer account transactions, which include millions of transactions, can be analyzed in a short time thanks to machine learning algorithms to detect unusual patterns or relationships. The use of artificial intelligence applications in auditing makes it possible to reach a scope that significantly exceeds human ability in fraud and error detection (Aitkazinov, 2023). Indeed, the audit literature predicts that artificial intelligence will automate

routine and repetitive audit tests and direct auditors' time to more value-added areas, thereby improving audit quality (Appelbaum, Kogan, & Vasarhelyi, 2017). In addition, natural language processing techniques expand the scope of audit evidence by enabling the examination of unstructured data such as contracts, reports and correspondence.

Big Data and Data Analytics: Banks generate massive amounts of data, such as millions of customer transactions, financial instruments and market data. Big data analytics enables these massive data pools to be effectively processed and transformed into audit-relevant information. While traditional audit approaches are often limited to sampling techniques due to the volume and variety of data, today's advanced data analytics tools make it possible to audit all transaction records (Al-Ateeq et al., 2022). For example, all of a bank's loan transactions or transfers in a certain period can be analyzed and the transactions that do not meet the specified criteria or are deemed risky can be filtered. In this way, the expansion of the audit scope increases the reliability of the audit because errors or fraudulent transactions that may be missed by random sampling can be revealed by big data analytics (Lutfi and Alqudah, 2023). In addition, data visualization techniques make complex financial relationships and trends more understandable, making it easier for auditors to interpret the findings. Another benefit of using big data is the possibility of real-time or near real-time auditing. By continuously monitoring and analyzing data flows, auditors are able to detect problems as they occur rather than retrospectively at the end of the period.

Continuous Auditing: Continuous auditing refers to the continuous or high-frequency execution of audit procedures throughout the year with the opportunities provided by information technologies. In particular, audit modules integrated into banks' information systems enable real-time monitoring of certain control mechanisms or account reconciliations (Vasarhelyi and Halper, 1991). The concept of continuous auditing was first introduced in the 1990s and its aim was to establish a continuous assurance mechanism instead of periodic audits by auditors (Vasarhelyi and Halper, 1991; Alles, Kogan and Vasarhelyi, 2008). Today, continuous supervision has become more feasible due to banks' sophisticated information technology infrastructure and instant data generation. For example, control points of a bank's loan approval process can be tested instantly on the information system and violations can be reported; or warnings about whether daily transaction limits have been exceeded can be transmitted to the audit unit instantly.

Continuous auditing enables auditors to obtain real-time alerts and findings, shortening the response time to problems and enabling early correction of financial reporting errors (Alles et al., 2008). However, as continuous audit practices require intensive IT support, it is imperative that audit teams are competent in information systems and data analytics. The concept of continuous auditing was first introduced in the 1990s and its aim is to establish a continuous assurance mechanism instead of periodic audits by auditors (Vasarhelyi & Halper, 1991; Alles, Kogan, & Vasarhelyi, 2008).

Blockchain: Blockchain technology makes it possible to record transactions in a transparent, unalterable and secure manner thanks to its distributed ledger structure. The realization of financial transactions on the blockchain creates a new verification environment for auditors. In blockchain-based accounting systems, auditors have direct access to the integrity and time-stamped records of these transactions, as, for example, a bank's money transfers or derivatives transactions are recorded in blocks with the agreement of all authorized parties in the network (Bonsón & Bednárová, 2019). This can facilitate the process of gathering audit evidence, as instead of third-party confirmations or lengthy reconciliation procedures, the immutable records on the blockchain serve as a reliable source of information for the auditor (Hashem, Mubarak, & Abu-Musa, 2023). In the literature on the possible effects of blockchain on auditing, especially in high transaction volume sectors such as banking, it is predicted that auditors will be able to provide assurance on the financial position in near real-time instead of financial statements available at a specific time (Rozario and Vasarhelyi, 2018, p. 8). Moreover, through smart contracts, when transactions are automatically executed based on the fulfillment of certain conditions, auditors can examine the code and output of these contracts to assess their impact on financial reporting. Moreover, when smart contracts automatically execute transactions subject to the fulfillment of certain conditions, auditors can examine the code and output of these contracts to assess their impact on financial reporting. However, the widespread use of blockchain requires adaptation in auditing approaches. It is essential for auditors to understand the working principles of blockchain technology, cryptographic verifications and potential vulnerabilities in order to perform effective audits in this new environment (Bonsón and Bednárová, 2019).

Effects of Technological Developments on Independent Audit

The technological developments discussed above affect the quality and output of independent audit activities in various ways. This section examines the effects of new technologies on audit quality and efficiency, and the issues arising in the context of auditor independence and ethical responsibilities.

Audit Quality and Scope: Integrating technological tools into audit processes has the potential to improve audit quality. Artificial intelligence and big data analytics enable auditors to examine a much larger data set, overcoming constraints such as sampling bias or limited test coverage. This increases the likelihood of detecting material errors or irregularities in financial statements. Indeed, a recent study found that integrating the use of blockchain and artificial intelligence into audit processes strengthens auditors' ability to detect fraud and increases the reliability of financial reporting (Qader and Çek, 2024). In the aforementioned study, the analysis of companies in Turkey indicated that audit quality improved in companies that use blockchain and artificial intelligence in their financial systems, as auditors were able to detect irregularities more effectively with the help of these technologies (Qader & Çek, 2024). These findings suggest that technological adaptation can positively affect audit effectiveness. In addition, spreading audit activities throughout the year through continuous audit approaches prevents significant risks from accumulating at the end of the period and enables early detection of errors and fraud (Alles et al., 2008). Improving audit quality also increases the credibility and value of audit reports in the eyes of stakeholders. Stakeholders have higher confidence that financial statements that have undergone a higher quality audit are accurate and complete (Hashem, Mubarak, & Abu-Musa, 2023).

Efficiency and Time Management: Integrating technology into audit processes significantly improves the efficiency of audit work. Traditionally labor-intensive and time-consuming tasks such as reconciliation, account control, and data entry can be performed much faster and error-free with automation and artificial intelligence (Aitkazinov, 2023). For example, while an audit team normally has to spend tens of man-hours analyzing a large data set in Excel, an advanced data analytics software can complete the same process in minutes. This allows auditors to devote their time to interpreting findings and risk analysis rather than editing documentation. AI-driven automation also improves the consistency of audit procedures, as inconsistencies due to human error are minimized (Liu et al., 2021). In addition, the digitalization of audit work and the use of

cloud-based audit platforms have increased efficiency by facilitating remote and simultaneous work of audit teams. Especially during the COVID-19 pandemic, the importance of digital audit tools increased, and according to a study, audit firms with a strong technology infrastructure conducted remote audits more effectively and minimized time losses (Lutfi & Alqudah, 2023).

Auditor Independence and Ethics: While examining the effects of technological developments on independent auditing, new challenges to auditor independence and professional ethics should also be taken into consideration. Although artificial intelligence and automation lighten the burden of auditors and provide objective analysis, they cannot take over the auditor's decision-making responsibility. Auditor independence is one of the most fundamental elements in providing assurance to users of financial statements, and this independence is not only about avoiding financial conflicts of interest, but also about evaluating audit findings in an objective frame of mind.

The results produced by AI tools should also be subject to the auditor's professional judgment. For example, when a statistical anomaly detection system flags a transaction as “high risk”, the auditor should not blindly accept this result, but should make his/her own independent assessment and reach a conclusion. Otherwise, there is a risk that the use of technology may undermine audit independence, as the principle of professional skepticism may be compromised if the auditor overly relies on algorithms that operate like a black box instead of their own expertise (Janssen et al., 2021). Another important ethical consideration is data privacy and security. When auditors use cloud computing or third-party software to process large volumes of data from banks, they may face client privacy and data security risks. At this point, it is essential that audit teams both comply with international data protection regulations (e.g. KVKK, GDPR) and protect audit data from unauthorized access. The ethical dimension of technology use is also the responsibility of audit firms; the artificial intelligence models developed should be free of bias and produce fair and explainable results.

For example, if a machine learning model incorrectly classifies certain types of transactions as high risk due to systematic errors in historical data, this could lead to false alarms and unnecessary interventions. The international code of ethics for the audit profession (IFAC, 2018) recommends that auditors should exercise sufficient care and professional skepticism in the use of technological tools, as well as seek appropriate advice in specialized areas, knowing the limits of their

competence. This means that, for example, in a blockchain-related audit, it may be ethically and professionally necessary to seek external expert support if the audit team does not have an expert who is familiar with this technology. On the other hand, audit firms also play an important role in maintaining auditor independence in a technology-enabled audit environment. If an audit firm sells or applies artificial intelligence or data analytics software to its clients within the scope of both audit and consultancy services, this may raise conflicts of interest. Therefore, it has become important to unbundle the services provided by audit firms and address threats to independence. For example, if a large audit firm provides banks with an artificial intelligence system for internal audit and at the same time conducts the independent audit of those banks, the objectivity of the auditor may become questionable. In such cases, the limits set by professional organizations and regulators must be meticulously observed in the context of technology. In such cases, the limits set by professional organizations and regulators should be rigorously applied in the context of technology.

Transformation of the Audit Profession: Technological developments are changing the traditional role definitions of independent auditors, requiring a new skill set and approach. Auditors are now expected to have not only a good command of accounting and auditing standards, but also data analytics, information systems, and even basic programming skills (Afsay, Tahriri, & Rezaee, 2023). As emphasized by associate professors specialized in auditing, universities and professional training programs need to be updated accordingly. Otherwise, the pace of technological advances may cause the audit profession to lag behind and audit quality may not be maintained at the desired level. On the other hand, the combination of technological expertise and audit knowledge will create a significant competitive advantage for future auditors. Especially in sectors such as banking, where digital transformation is intensive, the level of knowledge of audit teams on financial technologies will be decisive on the depth and validity of audit findings.

Conclusion and Evaluation

This study emphasizes the importance of the risk-focused audit approach in commercial banks and comprehensively discusses the effects of technological developments that have shaped the audit processes in recent years on independent auditing. Risk-focused supervision determines the focus of supervisory activities by taking into account the complex risk profiles of banks, thereby increasing both the effectiveness of supervisory activities and the confidence they create in the

financial system. The adoption of this approach in the banking sector accelerated after the 2008 global financial crisis and was supported by regulatory authorities. Revisions in auditing standards have made it mandatory for auditors to focus on the risk of material misstatement by more closely assessing banks' business model, risk management practices and internal control systems (BCBS, 2014).

On the technological developments front, innovations such as artificial intelligence, big data, continuous auditing and blockchain are gradually transforming the audit profession into a digital transformation. While this transformation has the potential to improve the quality and speed of independent audit, it also brings new risks and challenges. While the proper use of artificial intelligence and data analytics can expand audit coverage and increase the likelihood of error detection, there is a risk of erroneous conclusions if auditors use these tools without understanding them or rely on them too much. While blockchain offers a revolutionary opportunity to obtain audit evidence, its complexity and lack of standards may create uncertainties in its integration into audit processes. A continuous audit approach can be a game changer in financial reporting by providing real-time assurance, but this requires both the information systems of audited entities and the infrastructure of audit firms to be adapted to this model.

Looking to the future, it can be predicted that audit activities will become more intertwined with technological innovations and audit automation and human expertise will merge in a hybrid structure. In an environment where artificial intelligence takes over routine audit procedures and blockchain-based continuous reporting becomes standardized, the role of auditors may evolve more into interpreting exceptions, providing expert opinions in complex areas and providing ethical oversight. In this context, the audit profession's training programs, ethical regulations and standards should be continuously updated. For example, international bodies that set auditing standards should develop guidelines on how to evaluate analyses performed by artificial intelligence as audit evidence or the nature of audit testing in a blockchain environment. Likewise, audit teams should be encouraged to have multidisciplinary competencies, with mixed teams of accountants, data scientists and IT specialists assigned to audit banks.

In conclusion, while technological advances have opened new horizons in business risk auditing, their impact on independent audit is twofold. On the one hand, they provide tools that increase the depth, speed and reliability of audits; on the other hand, they test the adaptability of audit teams

and regulators. The critical success factor for independent auditors operating in the banking sector is to combine a risk-focused approach with digital skills to both accurately assess existing risks and manage emerging technology risks. Achieving this balance will contribute significantly to the transparency of banks' financial reporting and confidence in the overall financial system.

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