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How Artificial Intelligence Transforms Conventional AML Audit Framework and Approach In Auditing Transaction Monitoring

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1. Executive Summary

Audit process has always been deemed as excessively administrative and inefficient, and there are questions about quality and accuracy of findings. Unlike other audits, which focus primarily on number reconciliations and crunching, AML audits require analytics and evaluation from a dynamic perspective. Effectiveness is measured by the ability to fulfil objectives through its own established processes and procedures. In other words, effective AML audits require competence of the AML auditor in understanding the AML program, solutions, and tools through pertinent information regarding procedures. Efficiency in time and cost, as well as quality of the audit work, are always challenges.

There is an increasing number of discussions on how Artificial Intelligence (AI) can reinforce the quality of the audit and how auditing standards will evolve as a result. AI and digitisation pose significant benefits for audit quality, but also imply a certain level of risk throughout the audit process. One of those forces is the explosion of data, which is fuelling digital disruption. Another force is the acceleration of the pace of change, which is bringing additional complexity in managing trust in an environment that is more and more uncertain.

This white paper explores the feasibility of adopting AI in AML audit on transaction monitoring. How does AI transform the conventional AML audit framework and the approach in auditing transaction monitoring? Furthermore, this paper demonstrates to what extent AI takes over and illustrates what additional value the AML auditor brings alongside technology. It also addresses the change of the role of the auditor in adapting their skills and experience in this evolving space.

To what extent can AI take over? What additional value can the AML auditor bring alongside technology?

What is the change of the role of the auditor in adapting their skills and experience in this evolving space?

2. Background

2.1 What Can AI Do Better?

Auditing has always been deemed as a mandatory annual exercise to manually review a large corpus of data looking for risk and controls.[1] Furthermore, typical challenges of audits are lack of quantifiable overview, which is not available, as numbers are hard to generate, or it is often misleading. Analysis is done manually based on sampling. Besides, the process depends heavily on non-quantifiable human decisions, which can be biased toward the auditor's background and experience to justify if the risk has been "properly" identified and the control effectively associated. Other criticisms lie within the audit reports' accuracy or quality of the findings, or, some are being deemed as executed as a box-ticking exercise.

[1] https://towardsdatascience.com/better-internal-audits-with-artificial-intelligence-53b6a2ec7878?gi=db813599cf5e

Auditors are human beings and therefore have limitations in the way they process information. As such, auditing heavily relies on human judgment, which is subject to cognitive limitations that hinder the quality and efficiency of the audit.

Previous research has suggested various limitations from traditional audit processes in relation to the limitation of the traditional manual audit process.

Overload information: Research has suggested that the amount of information processed in an audit is massive, and overload contributes to suboptimal audit-related decision making. Challenges include how the auditor recognises correlations between details and overall perspective in settings involving information overload; and also, how to minimise individual bias.

Information relevance: With the vast amount of information, it is challenging for humans to disregard irrelevant information as AI does, as a result of dilution effect—difficulty focusing on relevant information and deriving reliable and accurate analysis.

Ambiguous analysis: Studies have found that, in general, individuals differ in how they can handle ambiguity, and big data introduces some ambiguity for a variety of reasons. There are ambiguity-intolerant and ambiguity-tolerant individuals. Ambiguity-intolerant individuals tend to seek certainty and prematurely stop investigation, because it becomes overwhelming.

The objective of an audit is completeness, better report investigation, and ensuring best practices during the audit. Technology and digitisation have been widely employed in the field, while AI has been considerably improving the efficiency and accuracy in the end-to-end audit framework.

A survey from EY found that 74 percent of CEOs were claiming to have no strategic plans on AI, while a year after, exactly the same survey results demonstrated that 73 percent of CEOs are already adopting AI or plan to adopt it in the next two years.[2]

Seventy-four percent of CEOs were claiming to have no strategic plans on AI, while a year after, exactly the same survey results demonstrated that 73 percent of CEOs are already adopting AI or plan to adopt it in the next two years.

Considering the more demanding market and the future trend of corporations, the conventional manual audit framework and process have been opened up. Cognitive technologies are among the products populated from AI, able to perform tasks that only humans used to be able to do.[3] The three major capability building blocks adopted in the audit field are:

[2] https://www.accaglobal.com/gb/en/technical-activities/technical-resources-search/2018/december/impact-of-digital-and-ai-on-audit-.html
[3] https://www2.deloitte.com/content/dam/insights/us/articles/what-is-cognitive-technology/DUP_1030-Cognitive-Technologies_MASTER.pdf

i) Computer Vision, Recognition, and Classification

This involves the capability of computers to identify scenes, objects, and even activities in images by adopting sequences of imaging processing operation to decompose the information and perform classification, recognition, and analysis. This is commonly applied to comprehend unstructured data into meaningful, analysable data sets, enhancing the efficiency of field work. The larger scale of automation replaces manual work of data input and classification, while data recognition, classification, and analysis is not only applicable to figures but also to process, unstructured, or text data, such as policies, governance documentation, financial statements, management information reports, etc. for further analysis or deriving risk assessment.

It is especially relevant in AML audit, as auditors are required to read and process vast amounts of unstructured data in different shapes and forms to understand the AML programme.

ii) Natural Language Processing

This describes the capability of the AI system to process words the way humans read and extract meaning from text, and even to generate responses and conclusions. Natural language systems manipulate text in a sophisticated way so one can, for instance, identify all the subjects and actions stated in a document, conclude key themes, or even extract and tabulate the terms and conditions in a stack of contracts.

This functionality drastically reduces the reading time auditors spend on piles of documents before performing any data analysis. This facilitates a more efficient and accurate risk assessment through a more sophisticated way of analysing text without limitation from humans, such as misinterpretation, fatigue, or language incompetence, e.g., multinational corporates.

The quality of audits is improved by allowing auditors to analyse larger volumes of audit-relevant data for a more in-depth understanding of financial close and business operations as to derive more meaningful insights. Furthermore, advanced analytics enable auditors with forward-looking capabilities through integrated cognitive technology such as machine learning, which enhances the ability to predict outcomes through scenario analysis and forecasting.

iii) Machine Learning

This refers to the capability of decision making, problem solving, reasoning, and prediction through supervised and unsupervised learning. Supervised learning takes place as a result of recognisable inputs or patterns through inclusion of external or existing experience, while unsupervised learning takes place through self-organised knowledge without introducing any external input or classification.

Typical examples are using AI for process optimisation or automating complex decisions and trade-off with resource constrains. Auditors are adopting AI from planning and scheduling to project management. More importantly, machine learning facilitates auditors to generate insights and typologies in a more systematic way.

How does this advanced technology, AI, actually transform the conventional audit framework?

2.2 The Bigger Picture: AI In Audit Framework

AI has been deployed to improve the outcome in four major aspects in AML audit framework: audit process (quality review and reporting); risk assessment (identifying risk through data); audit delivery (identifying new typologies); and first line (continuous monitoring and alert system).

i) Audit Process

Conventional audit testing approach to vast quantitative data is done through sampling instead of the entire dataset; this often requires multiple back and forth with the clients when information is not adequate during fieldwork. This often leads to an endless extension of the audit cycle.

The conventional correspondence between auditor and clients takes a decent amount of time and resources. Digitisation, which is a prerequisite to cognitive technology, enables a more efficient way of collecting data and monitoring performance in a certain structure. Workflow technology eliminates manual labour and improves cycle time and consistency through automation processes. This has been employed by auditing firms in the confirmation process within an audit through an integrated digital platform to prepare, authorise, distribute, collect, manage, and evaluate.

Further, the AI-enabled auditing technology, which is widely used in the industry, enables clients to accept and confirm audit requests and process and provide the auditors with the relevant documentation for final analysis and judgment. However, structured interviews with AML officer and AML staff are also essential in developing and implementing sufficient testing plans for controls, processes, and monitoring.

ii) Risk Assessment: Testing

Conventionally, auditors operated with the principle of “reasonable assurance,” too much data, and too little time to provide absolute and guaranteed assurance on the findings, which requires the use of professional judgement.

Leading consulting and accounting firms are adopting AI algorithms to detect misstatements and determine abnormality, as well as provide insights on financial health for clients. The feature of nature language process enables vase amount of data sets to be processed more efficiently and accurately.

AI is able to ingest and analyse vase amounts of quantitative as well as qualitative data so as to improve assurance. The capability of processing a large amount of data quickly democratised human knowledge at scale to identify issues that are possibly being missed out on by conventional audit approaches. This allows the more routine auditing tasks, such as data classification, to be done by machine, while auditors are to focus on more valuable and advanced tasks. The machine learning-based software program introduced to the lease contracts process by EY can read hundreds of pages of contract documents, which reduces auditors’ review time from hours to minutes.

This significantly frees up resources to focus on more interesting questions about contracts, such as the risks associated with them.

Data analytics helps auditors to easily establish the scope of audit and carry out risk assessment.

A pilot conducted by EY showed that AI tools are able to review up to 70 percent – 80 percent of a simple lease's contents electronically, leaving the remaining 20 percent to the auditor. With more complex leases (in real estate, for instance), that figure would be more like 40 percent, but as the tools improve, and the machines learn, it is likely that more complex contracts and data can be read, managed, and analysed.[4]

The competency of natural language and unstructured data comprehension can be used to assist with revenue and lease contract reviews.

AI-based analysis enables samples to be run on materiality limits, to extract medium- and high-risk items already, providing a health check for clients' references; even abnormalities are not material.

iii) Audit Delivery & Continuous Auditing

AI carries the nature of constant machine learning and ability to identify patterns in data; the more the system learns about the data, the more it is able to perform analysis on secondary data and cross-related variables. "Expert system" is a classical AI method that draws on the knowledge of real-world professionals and practices to identify unusual patterns. Such a system can be built to learn the interactions of hundreds of accounts and their underlying associated concerns by working with auditors to understand suspicious and abnormal transactions—with empirical methods leveraging the science of determining normality and inferring patterns in data for new typologies.

While robotic process automation and analytics facilitate more accurate record tracking for the audit for routine transactions, it is cognitive computing, AI, and predictive analytics that cover more complex and non-routine transactions that require estimates and judgements.

Auditors can then be more agile in leveraging controls and forward-looking on the insights they can bring to decision makers; and more importantly, enhance sustainability within the business processes through typologies and insights across the board. In terms of sustainability, AI can make handling data seamless from one system to another in a way that it is beyond carrying out audit 12 times a year, but more about ongoing monitoring incrementally and automatically.

[4] https://emerj.com/ai-sector-overviews/ai-in-the-accounting-big-four-comparing-deloitte-pwc-kpmg-and-ey/

Moreover, AI triggers real change in client experience, as auditors are able to offer more real-time, responsive, and future-oriented services; this also drives accounting firms to deliver audit or compliance services that incorporate advisory services, which is a great value added to the industry.

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Ongoing discussion took place around continuous audit being the industrial future. AI is deemed to be the enabler to shift the value of audit to a service providing real-time insights and fostering business.

A case of transaction monitoring is used to illustrate the application of AI in AML audit practice.

3. Solution: How Can AI Facilitate Audit Work In Transaction Monitoring?

AI has been increasingly employed in financial audit in leading account and consulting firms in the past decades,[5] however limited literature is looking into adopting AI in AML audit. In the conventional AML audit framework, the four common challenges are: audit process being very labour intensive; risk assessment takes a long time due to the amount of data and client correspondence; audit delivery fails to identify the risk pattern due to limitation in scoping and sampling; and finally, in addition to that is a lack of sustainability to recognise data trends, abnormalities, gaps, and more importantly the lack of clarity and accuracy in audit reports while continuous monitoring is hard to apply.

The complexity of auditing transaction monitoring demonstrates how inefficient conventional AML audit can be. By analysing the common challenges in auditing transaction monitoring programs, we will be able to see how AI can facilitate better or worse than a conventional framework and approach.

The application of AI: computer vision, recognition, and classification; natural language processing and machine learning are illustrated through different transaction monitoring audit phases.

3.1 Audit Planning and Scoping

Engaging the client and identifying the scope of transaction monitoring, an end-to-end transaction monitoring includes both automated and manual monitoring systems, i.e., investigation and SARs filing is the first and foremost stage.

Based on the auditor's knowledge of the organisation, business prospect, and the associated risks, the auditor is expected to assemble a plan including specific documentation required, such as analyses and conclusions from previous

[5] https://emerj.com/ai-sector-overviews/ai-in-the-accounting-big-four-comparing-deloitte-pwc-kpmg-and-ey/

examinations; management's responses, including the current status of issues, regarding independent testing or audit results and examination findings, then outlining the audit plan and approach; drafting and presenting the audit results and findings. The AML department will then execute the requested documentation and seek clarification from the AML auditor where requests are unclear or require further definition. The initial documentation aims to provide the auditor with the transaction monitoring program's framework and structure, which can assist the auditor in identifying potential areas that may require additional focus, documentation, and review. This stage however, is usually a lengthy and time-consuming process.

Leveraging on the cognitive technology, the end-to-end planning and scoping can be automated; this can largely improve the efficiency and quality on data request and approval. AI will perform the initial analysis on the client's transaction monitoring model through computer classification and recognition on unstructured data, like policies, previous reports, and governance documents, and recommend preliminary scope and timeline. Due to the rapid digitisation of transaction monitoring system and approach in the industry, it is demanding for auditors to cope with the fast-paced evolution, to appreciate the complexity of very different transaction monitoring systems, and to identify risk-focus scoping. A risk-focus examination scope shall be able to assess the adequacy of the effectiveness of the transaction monitoring system and more importantly its compliance with BSA regulatory requirements.[6] Although AI enhances the efficiency, the outcome is largely driven by the auditor's proficiency according to IIA Standard 1210, and the auditor must possess the knowledge, skills, and other competencies needed to perform.

Through digitisation and automation, the auditor's role can concentrate on more risk focus analyses and result in more effective scoping within limited time and resources. By Adopting AI, auditors will be more informed to suggest the most appropriate breadth and depth of an effective audit plan; for instance, if the audit shall focus on the quality of the alerts or operation of alert management or governance of the rule-based system with the aid of the next stage of audit: risk assessment.

3.2 Risk Assessment

An audit plan that includes every possible auditable item is far from ideal, as it is unrealistic; a precise risk assessment shall detail the risk profile, which will subsequently drive the level of audit coverage as well as the extent of testing. The information obtained through data requests shall provide a comprehensive base of risk assessment.

The key objective is for auditors to identify the potential transaction monitoring control gaps and pinpoint areas warranting immediate escalation or further testing. Further, auditors will risk rate current transaction monitoring control gaps and weaknesses to facilitate businesses in planning and prioritising resources. The risk and control assessment system may vary from organisation to organisation, so the auditor is required to become familiar not only with the transaction monitoring but

[6] FFIEC Bank Secrecy Act / Anti-Money Laundering Examination Manual, 2020, p. 4

also the risk and control model and relevant systems used in a short period of time. Also, the risk assessment outcome sometimes is subject to individual bias.

Natural language processing and machine learning automates risk assessment analytics, which can be used to perform data analysis to understand patterns and make predictions. An iterative approach can be adopted to trigger machine learning from input-analysed data even for unstructured data like AML policies, procedures, and processes of transaction monitoring as well as relevant previous findings obtained. As the machine is exposed to increasing amounts of data, the more complex and advance analysis can be resulted. This learning is automated and continuous. It enables auditors to avoid the trade-off between speed and quality,[7] as machine learning algorithms can "learn" from previous conclusions on specific items, i.e., previous findings in transaction monitoring control gaps and typologies in common inadequacy of the transaction monitoring program in the industry, and apply the same logic to other items with similar characteristics. AI facilitates auditors to perform a more precise risk assessment among all transaction monitoring controls; by demonstrating adequate knowledge of the transaction monitoring risk and control environment, the AML officers tend to be more cooperative and recognise a more consultative rather than inspective role of the auditor. It helps with a smoother business engagement and subsequently a more cost-effective testing plan.

3.3 Independent Testing

This phase includes four key elements: data validation, alerts and triggers quality, case management, and reporting and appropriate tuning. Traditionally, transaction monitoring audits are done with reasonable testing due to the limitation for auditors to conduct a full-scale system test, which is a lengthy and costly process.

1) Data validation: The core capability of transaction monitoring relies on transaction data integrity. In an effective transaction monitoring model, data has to be mapped correctly and transformed into the corresponding systems.

The auditor verifies the data by reviewing documentation regarding the mapping data from initial implementation to any trigger of changes and any modification made over time. Depending on the scope of the business, typical risk indicators are rapid movements of funds, activities in high-risk jurisdictions, changes from previous average activities, etc.

A complete data validation exercise is time consuming; instead of merely reviewing documentation and sample testing, i.e., taking a few data feed and validating, AI offers a more efficient option. AI can improve the efficiency and enhance the quality of testing results by processing more comprehensive scope of data feed and the ability to learn feeding patterns across different systems. Machine learning is different from traditional statistical analysis; statistical analysis is based on probability theory and probability distributions, while machine learning is designed to find the combination of mathematical equations that best predict an outcome. Thus, machine learning can enhance the capabilities of the auditor to identify the gaps in the relevant data

[7] Rethinking the Audit," Journal of Accountancy, Apr. 1, 2017, http://bit.ly/2Vxx7RB

mapping process by enabling a more comprehensive assibilate of different settlement systems.

Instead of relying on representative sampling techniques, machine learning algorithms are able to review an entire population for anomalies. When auditors are able to work on the entire data population, they can perform their tests in a more directed and intentional manner.

2) Alerts and triggers quality: Auditors verify the volume and quality of the alerts in response to the set thresholds. This requires auditors to test if alerts are being triggered as intended. Similarly, auditors are required to process vast amount of alerts and go through the escalation to validate the effectiveness, while most of the time, sampling is adopted. It is challenging to identity gaps precisely due to the limited sampling. The machine learning capabilities of AI will enable auditors to analyse the effectiveness of the alerts in a more comprehensive manner compared to the conventional approach of sampling.

3) Case management and reporting: The auditor is to ensure investigation coverage is documented and that SARs are being filed timely. This involves the investigation process of each of the alerts generated, management information and governance on the alerts, and eventually the regulator reporting mechanism in place.

Verifying the alerts is a time-consuming task, which requires auditors to understand each of the products and transactions as well as investigation outcome.

Machine learning enables AI to make correlations and predict outcomes; the more successive cycle of data it processes, the more precise the analysis and prediction. The continuity of machine learning can significantly improve the accuracy of the audit findings. AI will be able to provide insight out of the previous audit work done in alerts and triggers to understand if investigation work is being done properly.

AI eliminates the potential auditor's bias in decision making like effectiveness of the transaction monitoring controls.

AI, which is able to process a vast amount of data, will be able to support more evidence-based audit assurance.

4) Appropriate tuning: Auditors verify if adequate process and rationale take place to tune and adjust the parameters, thresholds, filters, and rules. This is referring to the optimisation work being done by the organisation. Auditors would typically review the relevant documentation; however, require a comprehensive understanding of the specific transaction monitoring model to challenge the optimisation process. AI, through machine learning and typologies generated from previous experience, on the other hand, would be able to analyse the gap from different transaction monitoring systems and advise if appropriate gaps are being looked at. Additionally, it eliminates the potential auditor's bias in decision making like effectiveness of the transaction monitoring controls.

3.4 Audit Delivery & Continuous Auditing

The most valuable part of the audit is to justify whether the regulatory requirement is met, to articulate existing control gaps, and, more importantly, make recommendations.

AI facilitates the larger process of the audit by improving efficiency and accuracy; however, auditors maintain a prominent role in communicating results and making recommendations. Auditors are allowed more resources in articulating the risks of the gaps and communicating these to the business. The recommendation can be more precise along with the industrial knowledge from the auditor. Furthermore, this transforms conventional periodic auditing into a continuous model, which is welcomed by regulators. The relevant typologies can be shared within firms and beyond for best practice sharing.

AI is being extensively applied in various transaction monitoring programs in financial institutions, which further widen the existing gaps in conventional AML audit framework. The large scale of digitisation and automation from organisations has made incorporating AI in transaction monitoring auditing more feasible; however, it is not a one-size-fits-all solution.

4. Limitation

AI adoption in transaction monitoring plays a key role, as it enables auditors to work better and smarter by optimising time and sharing information, knowledge, and capabilities in an open and collaborative approach. Further, it eliminates human bias during the audit process. However perfect the technology is, it is bounded by limitations.

4.1 Data Error and Bias

AI capabilities should not be overestimated, as there are risks related to legal issues and liability. The Gartner's 2018 CIO Agenda Survey found out that 85 percent of AI projects[8] deliver erroneous outcomes due to poor quality of data or bias in data, algorithms, or development teams.

4.2 Data Privacy and Regulatory Requirement

As a result of the potential risks and bias of adopting AI in AML audit, new regulatory requirements on increasing assurance will be required on algorithms and AI solutions.

Standards are discussed and in place to cover all audit processes, while there are challenges around the fast-evolving pace in this area. Further, there is consideration on whether certain techniques be mandated for auditor. DAWG has also been focusing on identifying areas where analytics could add value during updates of current standards, e.g., ISA 315.

[8] https://www.gartner.com/en/newsroom/press-releases/2018-02-13-gartner-says-nearly-half-of-cios-are-planning-to-deploy-artificial-intelligence

The opacity of the audit AI solutions poses challenges to different regulations—for example, the General Data Protection Regulation (GDPR)—while the auditor is required to possess an adequate level of knowledge to demonstrate the appropriateness and fairness of their AI-based decision.

4.3 Inadequate Knowledge

The common barriers with regard to AI in finance include lack of necessary skills or resources to manage or deploy AI; also, some might worry about data compliance/data privacy/data protection issues, e.g., GDPR.

One of the biggest risks to the profession is the expectation gap. AI marketing creates a lot of hype, which is sometimes unrealistic. Actual or expected employee resistance to deploying AI, actual versus perceived immaturity of the technology, and lack of widespread trust in AI's capability remain top concerns.

Therefore, proper training and guidance to auditors is key. It is important that audit firms are building the right skills within their organisations.

5. Conclusion

The AML audit environment is evolving, and AI can bring appropriate solutions as well as risks for the future of auditing.

Innovation, such as evolution in transaction monitoring and other AML digitisation, revolutionise multiple elements of audits. Audits are not just about processes, they are about evaluations and activities; hence, the role of auditors is hard to replace.

Key questions that we have to consider in order to bring this future to life is how to balance risks and opportunities related to disruptive technologies? By considering what innovation strategy to adopt, this paper has discussed the feasibility and key benefits for firms to adopt AI in transaction monitoring audits. Adapting an appropriate talent model will enable auditors to adapt to the new environment. In addition to that, it will also manage change with internal and external stakeholders.

Furthermore, there is a need for collaboration in the industry. There are very few AML audit cases that have enough data to really harness true AI capabilities. A significant benefit exists in firms working with technologies that pool data and experience across the profession; this, however, requires more transparency in the industry.

The role of an auditor is irreplaceable. If AI is to facilitate analytic tasks for large amounts of data and provide insight enabling deeper reviews into 100 percent of the data, then clients can be advised on financial health and compliance with more comprehensive evidence and greater risk assurance. This means reducing the administrative time spent on reviewing audit documents and allowing more time to participate in the judgment and analytical part of the process.

Through the combination of this new knowledge, specialised skills, and talent with digital technologies and AI, we will be able to achieve greater performance, time planning, productivity, and efficiency.