International Organization of Supreme Audit Institutions

(INTOSAI)

The 25th INTOSAI Congress

(XXV INCOSAI)

Theme II

(Using Artificial Intelligence Techniques in Auditing)

Discussion Paper on the Second Technical Theme of XXV INCOSAI

"Using Artificial Intelligence Techniques in Auditing"

Sharm El-Sheikh, Egypt | 27–31 October 2025

1. Introduction:

In light of global developments in the field of information technology, the term "Artificial Intelligence" (AI) has become of interest to all societies. It is expected to play a crucial role in humanity's future due to its continued evolution. Furthermore, all areas of modern society, especially government and public institutions, rely on information systems and information technology. As a result, AI technologies are being used to alleviate the burden of time-consuming tasks, enabling more efficient and accurate performance in a shorter timeframe.

Supreme Audit Institutions (SAIs) have unique mandates to conduct public sector audits (financial, performance, and compliance), which include assessing the integrity, transparency, and accountability of the use of AI algorithms to ensure they are consistent with ethical principles and legal requirements, in addition to reviewing governance structures and risk management practices. Auditors evaluate data sources, model development processes, and decision-making frameworks to identify potential biases, errors, or unintended consequences that may impact individuals or communities.

The audit process essentially involves gathering evidence and facts, evaluating objective findings, and reporting them. In this context, Supreme Audit Institutions (SAIs) rely on relevant professional standards and can employ artificial intelligence technologies as a supporting tool to enhance efficiency and effectiveness by analyzing big data, automating routine tasks, assessing risks, and identifying audit priorities and areas.

There are also ongoing efforts exerted to develop a unified definition of AI among Supreme Audit Institutions, with a strong focus on incorporating therein governance principles, data privacy, and ethical standards.

This paper is centered on the use of artificial intelligence by Supreme Audit Institutions (SAIs) in the audit process, as well as auditing the use of artificial intelligence in government enterprises.

2. Integrating Artificial Intelligence into Auditing: A Strategic Framework and Ethical Guide.

The integration of artificial intelligence into auditing poses challenges due to its need for continuous development and its diverse applications within Supreme Audit Institutions. Recognizing the critical role of the human element in auditing, artificial intelligence is viewed as a supporting tool, not a replacement for the human element. The integration of artificial intelligence into auditing provides an opportunity for auditors to maximize the benefits of this technology in their audit processes. This integration must be consistent with the mandates of supreme audit institutions and their constitutional duties, and auditors must remain accountable for the audit

process, regardless of the technology used. To that end, a general strategy can be adopted based on the following norms:

1. Knowledge and understanding development.
2. Data sovereignty and compliance.
3. Human-AI interaction.
4. Availability of technology and software.
5. Quality assurance and continuous monitoring, including accuracy and transparency, as well as ethical measures for models.
6. Commitment to ethics, fairness, and non-discrimination as core issues and professional standards for achieving what is called “Responsible AI.”
7. Communicating and engaging with audited entities and stakeholders regarding their use of AI, as well as ensuring the quality of its use.
8. Environmental and Social Assessment of AI Applications. With growing awareness of the environmental footprint of training and operation (such as carbon emissions from data centers), the environmental and social impact of the models used must be assessed.

3. Leveraging Artificial Intelligence in Auditing: A Proposed Implementation Plan.

Recent evidence shows that AI systems are becoming capable of performing difficult and complex tasks, such as examining financial data, detecting errors, preparing bank reconciliations, and automatically linking accounts to supporting documents. AI can also analyze unstructured documents, such as invoices, emails, and contracts, and transform them into usable evidence for auditing.

Despite the immense capabilities of these tools, complete reliance on machines without human intervention is a real risk, especially in an environment that requires sensitive professional judgment and a deep understanding of the regulatory and legal context. Therefore, adopting a **hybrid model** that blends the efficiency of AI with the auditor's expertise emerges as the most suitable option. This model aims to improve the audit system and enhance its effectiveness and quality without compromising established professional principles. It leverages AI's ability to analyze vast amounts of data while leaving the tasks of interpretation, evaluation, and final judgment to the auditor, thus ensuring that outputs are consistent with the requirements of integrity and accountability.

Proposed Implementation Plan for the Hybrid Model in Auditing:

The audit process includes a set of key stages, from setting objectives and assessing risks to formulating the audit plan, executing test procedures, gathering evidence, and preparing the final report. With the integration of AI technologies into these stages, qualitative shifts have occurred in the content of the oversight work, creating a need to re-envision the traditional roles of the auditor.

The proposed plan integrates AI tools into various stages of the audit process:

1- **Planning Phase:** This stage begins with analyzing the historical and financial data of the audited entity using AI tools to identify high-risk areas and direct audit efforts more efficiently. Machine learning algorithms and predictive analytics contribute to the detection of unusual

patterns that may not be apparent in manual analysis, which enhances the quality of the initial risk assessment.

2- **Evidence Collection:** AI tools are used to extract evidence from multiple sources, such as contracts, invoices, reports, and emails, using text analysis and Optical Character Recognition (OCR)1 techniques. AI here can speed up the initial review process, classify documents, and identify unusual transactions.

3- **Examination and Analysis:** In this stage, AI models are employed to analyze financial data and transactions to uncover contradictions and anomalous patterns. This supports the auditor in making decisions based on stronger evidence. It is crucial that the results of the analysis are interpretable, enabling the auditor to review the algorithms or results that led to a specific conclusion.

4- **Drafting Findings and Reports:** AI tools are used to prepare initial drafts of notes, summarize findings, and present them in the form of charts or interactive dashboards. However, the final report drafting, impact estimation, and risk level determination remain the exclusive responsibility of the auditor, ensuring the preservation of the quality of professional judgment.

5- **Post-Audit Follow-up:** Business intelligence systems can be used to track the implementation of recommendations and generate periodic alerts in case deficiencies persist. AI technologies can also help in monitoring compliance indicators automatically and accurately. The link between AI's

[1] OCR (Optical Character Recognition): A technology that converts scanned document images (PDF, photos) into searchable and processable text.

analytical capabilities and the auditor's critical professional skills is what makes the hybrid model a practical and applicable model, especially in an audit environment that seeks to:

- Accelerate performance without compromising accuracy.
- Use technology without abandoning ethics.
- Achieve transparency while maintaining independent judgment

4. Technical Methods for Using Artificial Intelligence in Auditing

With the increasing reliance of SAIs on AI technologies, which include a wide range of methods and tools used to simulate human intelligence in computer systems—such as machine learning, Large Language Models (LLMs), Natural Language Processing (NLP), modelling and visualization, chatbots, predictive analytics, and pattern recognition, the auditing and oversight capabilities have become deeper and more effective. However, the use of AI in auditing is still in its early stages, and its results must be subject to continuous evaluation. Based on the results of practical case studies by some SAIs, the most important techniques used in auditing are as follows:

1- An AI-powered chatbot was used to process the largest amount of data at a higher speed and accuracy, which contributes to improving audit efficiency. It also responds to auditors' questions regarding methodology, models, and guidelines.

2- Machine learning algorithms were used to analyze historical data by feeding the AI model with historical data, through which:

- The use of AI techniques in auditing allows for a more accurate estimation of non-compliance risks. As a result, only high-risk work is referred to audit teams, which contributes to raising the efficiency of the oversight process and directing resources to priority areas.
- The analysis of metadata for a huge number of administrative actions related to human resources was conducted to identify patterns associated with irregular actions.
- Thousands of pages of reports were analyzed to extract the most significant substantive findings quickly and efficiently, which enhances audit accuracy and saves significant time and effort for auditors.
- Journal entries in big databases were analyzed by employing the Isolation Forest algorithm[2]. This led to the detection of deviations and the monitoring of fraud indicators with higher accuracy, which enhanced auditors' capabilities in risk assessment and directing detailed examination towards priority transactions.

3- Natural Language Processing (NLP) techniques: Documents are automatically classified to identify their content and categorize them by topic.

4- The use of Robotic Process Automation (RPA)[3] can be employed to detect manipulation in procedures and processes. This technique allows for the collection of data from multiple sources and its conversion into structured and organized data to be analyzed later,

[2] Isolation Forest Algorithm is one of the most popular algorithms used to detect anomalies in data and it works to isolate outliers directly.

[3] RPA stands for Robotic Process Automation, which is the use of intelligent software (robotics) to simulate the actions performed by humans on a computer

from which deviation patterns can be extracted, which enhances the accuracy and efficiency of oversight.

5- Large Language Models (LLMs)[4]: This technology enables auditors to search historical and archived data by integrating search capabilities based on LLMs. This allows them to go beyond the limits of traditional keyword-based searching and ask broader and more precise questions.

5. **Requirements for Using AI in Audit Work:** To ensure the safe and effective use of AI in auditing, a set of requirements must be met. The most prominent of these are:

- **Regulatory and Ethical Requirements:**

1- **Reviewing and Updating Existing Governance Controls:**

Reviewing current governance frameworks is essential to accommodate the new AI-based working mechanisms and to enable SAIs to integrate these technologies into audit processes effectively and safely.

2- **Developing Audit Standards:**

It is important to amend or develop audit standards to include clear procedures and controls when using AI tools, which ensures the quality of professional performance and the integrity of the results.

[4] Large Language Models (LLM) are a type of AI model designed to understand and produce natural language (text) in a human-like manner. They are based on deep learning and are trained on massive amounts of text data.

3- Creating an Ethical Framework:

Adopting a dedicated professional code of conduct is a fundamental requirement to regulate the use of AI in the oversight context and ensure adherence to ethical values and principles. A number of SAIs, including those in Brazil, Denmark, Malaysia, Austria, Australia, the United Kingdom, China, and Germany, have prepared such codes. They have established ethical frameworks that consider their national specificities and aim to ensure the fair and safe use of AI in government and oversight sectors. The absence of such codes represents a regulatory gap that must be addressed by formulating clear ethical rules that establish respect for core values such as integrity, fairness, and transparency in auditing.

4- Institutional and Technical Readiness:

- **Integrating AI into Strategic Audit Plans:** AI technologies must be included in strategic audit plans to develop methodologies and enhance efficiency and effectiveness. The existence of a fully integrated digital environment is not a prerequisite for benefiting from AI, as it can be applied in environments with partial digital readiness.
- **Preparing the Infrastructure:** Preparing the technical infrastructure is an essential element to support the integration of AI technologies and provide the appropriate environment for operating advanced tools.
- **Training Auditors to Examine and Interpret AI Results:** The effective use of AI in auditing requires enabling auditors to accurately examine, interpret, and document the results of AI systems, which enhances the credibility of audit work. Training is an essential element in this context, as it contributes to raising auditors' efficiency and enabling them to use AI technologies and

understand the mechanism of its algorithms, especially in areas such as risk assessment, deviation detection, and the automation of repetitive tasks, which ensures the proper professional use of the technology. Developing the analytical and technical skills of auditors is a necessary condition to avoid the decline of human efficiency as a result of excessive reliance on automation.

6. Benefits and Challenges of Using AI in Auditing.

➢ Benefits of Using AI in Auditing:

The use of AI technologies contributes to raising the quality and reliability of audit work. This is done through analyzing large quantities of data, detecting subtle deviations, and discovering patterns not visible through traditional means. These technologies enable the expansion of the scope of oversight work and enhance its accuracy, which creates a qualitative leap in the efficiency of results and the effectiveness of oversight.

The most prominent benefits associated with applying AI in an audit environment are as follows:

1- Big Data Analysis and Hidden Pattern Discovery:

AI technologies are capable of processing huge amounts of complex financial and operational data, whether structured or unstructured. Machine Learning algorithms are used to analyze historical data and discover hidden patterns and relationships between variables.

Case Study - India: SAIs used satellite imagery and remote sensing data to evaluate the effectiveness of afforestation programs, data that cannot be analyzed manually at this scale or complexity.

2- Enhanced Accuracy and Efficiency of Risk Assessment:

AI algorithms contribute to unprecedentedly accurate risk identification and classification by monitoring transactions or entities with a high probability of manipulation or corruption. This enables the auditors to focus their efforts on actual risk areas.

Case Study: A given SAI used an XGBoost[5] model to assess risks associated with administrative actions, which led to a reduction in the oversight gap and improved resource targeting.

3- Automation of Routine Tasks and Time Savings for Auditors:

AI technologies offer the possibility of automating repetitive tasks such as invoice verification, accounting data matching, and calculation verification, which reduces the costs and time consumed in manual procedures.

Case Study: A given SAI used AI-based robots to process unstructured invoices, which allowed for operational efficiency and increased focus on analytical examination.

4- Improved Fraud and Deception Detection Capabilities:

AI can detect fraud that is difficult to disclose by analyzing data behavior and uncovering unusual repetitions or unexpected patterns. This enhances oversight and reduces vulnerabilities.

[5] Extreme Gradient Boosting is an advanced machine learning algorithm based on the ensemble of multiple decision trees to improve prediction accuracy with tabular data and reveal more influential features in the result.

Case Study: A given SAI used Python to automatically and quickly analyze digital transactions to detect cases of collusion in public tenders.

5- **Supporting Data-Driven Audit Decisions:**

AI technologies provide accurate indicators and analytical recommendations based on statistical models that help in making oversight decisions based on reliable data instead of personal estimations.

Case Study: A given SAI created a program called MODI[6] to monitor municipalities that might face financial problems, which enabled oversight authorities to focus auditing on priority areas.

6- **Enhanced Transparency through Explainable AI:**

Modern systems allow for explaining how analytical results were reached, which enhances stakeholders' trust and helps build a more transparent and accountable oversight system.

Case Study: AI tools provided an explanation for analytical decisions, which helped auditors in a given SAI to adhere to governance standards and proactively respond to violations.

7- **Conducting a Full Population Audit:**

Unlike the traditional approach based on taking a small data sample, AI allows for reviewing all financial or operational transactions, which reduces the possibility of error or omission.

[6] **MODI** It is a tool for monitoring municipalities that may face financial problems by classifying these municipalities. The system relies on machine learning for prediction.

This mechanism is applied in many SAIs in Europe, especially in the analysis of public spending and major procurements.

8- **Improved Quality of Final Audit Reports:**

Smart analytics lead to more accurate and reliable reports, and they can be accompanied by explanatory models or recommendations based on deep data and analyses, which enhances their effectiveness before legislative and executive bodies.

Case Study: Analytical audit reports were developed in a given SAI using AI to provide actionable results.

9- **Lowering Operational Costs in the Long Run:** Despite the high initial cost, automation saves a lot of time and human resources, and it reduces the rate of human error, which leads to sustainable financial savings.

Case Study: Smart chatbots were used to reduce manual labor in audit and oversight inquiries, which lowered annual audit costs.

10- **Flexibility in Customization by Sector:** AI tools are customizable to suit the nature of each oversight body or sector, such as finance, environment, health, cybersecurity, etc..

Case Study: A given SAI used AI to monitor environmental sustainability by tracking emissions and waste.

11- Supporting Real-Time Auditing:

Thanks to AI capabilities, auditing can be performed instantly and synchronously with the operations within the audited entity, which allows for the early detection of any deficiencies.

Case Study: Real-time auditing was applied in a given SAI on the government procurement system, which led to an instant improvement in the level of transparency and financial discipline.

12- Redefining Traditional Audit Models:

AI enables the transition from sample-based audits to a comprehensive review of all data (Full Population Testing), which reduces the possibility of error or bias and enhances the credibility of audit results. This shift reshapes the traditional concept of auditing and makes it more fair and transparent, especially in sectors that rely on huge financial flows and complex data.

13- Developing Performance and Impact Auditing:

AI technologies allow for the analysis of long chronological series of data related to public programs and policies, which helps in evaluating the long-term social and economic impact. This contributes to "Value for Money" auditing by measuring the actual results achieved against the resources used. For example, the impact of agricultural support programs on production, prices, and consumption can be measured through AI-powered predictive models.

➢ **Challenges of Using AI in Auditing:**

Despite the opportunities that AI provides to improve the efficiency and effectiveness of audit work, its application faces a set of challenges and risks that require attention and treatment to ensure its responsible and effective use.

The most prominent of these challenges are:

1- **Difficulty in Interpreting the Results of Some AI Algorithms (Black Box Problem):**

Many AI systems, especially deep learning algorithms, rely on complex structures that make it difficult for users (auditors or oversight bodies) to understand how the system arrived at a specific result. This ambiguity in analytical logic weakens the ability to verify the validity of the outputs and restricts the principle of transparency and accountability, especially in oversight contexts that require precise justification for every action.

2- **Lack of Technical Expertise Among Auditors in Dealing with Smart Systems:** Many auditors still lack the technical skills necessary to understand how algorithms work, evaluate their efficiency, or critically review their results. This skills' gap may lead to the acceptance of AI outputs without sufficient verification, or to resistance to its use within SAIs due to ambiguity or fear of new technology.

3- **Poor Integration with Existing Systems and Outdated Infrastructure:** Many public sector institutions or oversight bodies still rely on traditional, old information systems that are difficult to connect with modern AI systems. This technical gap complicates integration and operation efforts and increases the need for a comprehensive update of the digital infrastructure.

4- **Challenges of Integrating AI into Existing Institutional Structures:** Applying AI requires an adjustment in internal auditing processes, restructuring decision-making mechanisms, and providing continuous administrative support. Without a change in institutional culture, the use of AI will remain formal or ineffective, and it may face resistance from within the institution itself.

5- **Absence of Ethical Codes of Conduct for the Use of AI in Oversight:** There are still no internationally recognized codes of conduct or guidelines that regulate the use of AI in oversight work environments from an ethical perspective (e.g., protecting privacy, non-bias, transparency in automated decisions). This creates a regulatory gap that may lead to misuse, conflicts of interest, or unfair decisions.

6- **Erosion of Human Analytical Skills:** The more reliance on algorithms for analysis and evaluation, the less human involvement in critical thinking and independent analysis, which over time leads to a decline in essential professional skills and the loss of the ability to interpret or evaluate results without assistive tools.

7- **Possibility of Incorrect Decisions Resulting from Wrong Outputs without Human Verification:** AI systems may produce inaccurate results due to wrong inputs, programming errors, or changes in context that the algorithm did not account for. If there is no human intervention to review the results, incorrect audit decisions may be made that negatively affect audited entities.

8- **Difficulty in Determining Legal Responsibility for System Results:** When an audit decision is made based on a smart system, it is sometimes difficult to determine who bears the responsibility in case of errors. Is it the system developer, the user, or the audit institution itself? This issue exposes SAIs to legal and regulatory risks if there is no clear framework for accountability.

9- **Absence of Explicit Professional Standards Regulating the Use of AI in Auditing:** International Auditing Standards (ISA) and traditional audit standards have not yet been designed to clearly cover the use of AI technologies. This lack of a legislative and professional framework weakens the ability of SAIs to set clear policies governing the use of AI and complicates the external evaluation or litigation process in case of disputes.

10- **High Initial Implementation and Operation Costs:**

Introducing AI into the audit environment requires significant investments in:

- Acquisition of software and servers.
- Building analyzable databases.
- Training human cadres.

- Hiring technical experts.

7. Opportunities and risks.

The use of AI technologies in government auditing represents a fundamental shift in audit methodologies and work methods. On one hand, these technologies offer promising opportunities to improve the efficiency and effectiveness of auditing, enabling SAIs to process and analyze huge amounts of data with speed and accuracy. They also enhance the capabilities for early risk detection and support decisions based on advanced analysis. On the other hand, this shift is accompanied by a number of challenges and risks that require an effective governance framework to ensure the responsible and safe use of these technologies. The most important opportunities and risks are as follows:

➢ **Opportunities:**

Opportunities are external factors or trends in the work, public, or technological environment that can be leveraged to expand the scope of AI application and increase its positive impact on auditing. These opportunities represent growth and improvement potential that SAIs can benefit from if they are ready to adopt AI strategically. These include:

1- Integrating AI with Other Technologies to Enhance Integrated Audit: AI can work interactively with other technologies, such as:

- **Remote Sensing:** To monitor environmental and agricultural projects.
- **Robotic Process Automation (RPA):** To perform automated audits in routine and repetitive tasks while reducing the need for human intervention in these

processes, whereas maintaining the human auditor's role in analytical and judgmental aspects.

- **Image and Video Analysis:** To audit physical and visual evidence in construction or security projects. This integration enhances the efficiency and accuracy of audit work and makes its results more realistic and responsive to field conditions
- Environmental auditing by analyzing remote sensing data.

  Example: Environmental auditing in the European Union has begun to include the analysis of satellite images to monitor pollution and land use

2- **Enhanced International Cooperation and Exchange of Smart Tools:** With increasing global interest in employing AI in auditing, an opportunity arises to form cooperation networks between SAIs to exchange experiences, models, and smart frameworks. This cooperation helps reduce the digital divide, save resources, and raise the efficiency of auditing at a global level.

3- **Rising Demand for Smart and Interactive Reports:** The business environment is witnessing a shift in stakeholders' expectations towards the nature of audit reports, as there is an increasing demand for interactive, visual, and instantly explained reports. AI allows for the development of these reports through data visualization tools (such as Power BI and Tableau), which enable the auditor to present results in a clearer and more effective way. This trend contributes to accelerating decision-making and enhances the added value of audit reports and increases the interaction of information recipients with them.

4- **Professional and International Interest in AI Auditing:** International professional organizations such as the International Federation of Accountants (IFAC) and the Information Systems Audit and Control Association (ISACA) have begun issuing professional guidelines and standards for the integration of AI into auditing. This trend opens the door for the development of unified frameworks that facilitate the adoption of these technologies and provide opportunities for professional training and qualification for auditors. Also, the existence of a supportive international environment enhances the legitimacy of using AI in auditing and pushes for its wider acceptance.

5- **Expansion into New Audit Areas:**

In addition to using artificial intelligence to improve audit processes, Supreme Audit Institutions should develop their capacity to audit the systems and algorithms used by government entities in decision-making.

What is AI Algorithm Auditing:

It is a systematic and independent evaluation of machine learning models, including their data, inputs, design choices, and outputs. The purpose of this audit is to ensure that the system's context, objectives, and intended use determine how its usefulness, fairness, transparency, and accountability are assessed. Unlike traditional technical testing, this audit takes into account the social, ethical, and regulatory aspects of how AI operates, recognizing that data, models, and algorithms cannot be separated from the context in which they were produced and applied.

Why Audit AI Algorithms

- To enhance transparency and accountability in algorithm-based decisions.
- To ensure compliance with national and international regulations such as GDPR and the EU AI Act.
- To address biases and ethical risks that may affect fairness and equality.

What is Audited?

- **Project governance and management** (objectives, responsibilities, risk management)
- **Data** (quality, representation, privacy)
- **Model development** (algorithms, data engineering)

How is the Audit Conducted?

- Reviewing documents and policies.
- Performing model reproducibility tests to verify reliability.
- Using interpretability tools such as LIME, SHAP, PDP, ICE, and ALE.

6- Improved Communication with Stakeholders through Simplified and Smart Reports: Thanks to Natural Language Generation (NLG) tools, the outputs of AI analysis can be converted into clear reports in a language that non-specialists can understand. This enhances the transparency of SAIs, raises the level of public trust, and contributes to engaging citizens in community oversight.

Example: In a given SAI, simplified reports are automatically issued to the public about the adherence of local administrations to budgets.

➢ **Risks:**

Risks are external factors that may negatively affect the successful application of AI in auditing, and they are often outside the institution's control. These include:

1- **Possibility of Algorithmic Bias:** If AI models are trained on imbalanced or unrepresentative data, they may produce biased outputs against certain groups or entities. This type of bias may lead to inaccurate or unfair audit results and weaken the integrity and impartiality of the audit.

(Illustrative Example): A system that deals with historical data for specific regions only, so it issues audit reports that generalize deviations to entities that do not belong to the same context.

2- **Data Security and Privacy Risks:** AI requires access to huge amounts of financial, personal, and confidential data, which increases the possibility of security breaches or unintentional leaks. The danger lies in the fact that any leak may harm the institution's reputation or lead to legal accountability, especially with the tightening of data protection laws in many countries, such as GDPR[7].

3- **Loss of Human Control over Decisions (Over-Automation):** With excessive reliance on AI, there is a risk that sensitive audit decisions will be made without sufficient human intervention or professional evaluation, which weakens the concept of individual responsibility and opens the door for inaccurate or unaccountable judgments.

4- **Rapid Changes in Technology and Difficulty in Keeping Up:** The accelerating pace of AI technology development exceeds the ability of some traditional SAIs to adapt, which leads to a technical gap that hinders the full benefit from these tools.

[7] GDPR (General Data Protection Regulation) is a European legislation issued in 2016 and entered into force in 2018. It aims to protect personal data and enhance the privacy of individuals within the European Union, and imposes strict controls on the collection, processing, and storage of data.

8. **Potential Future Trends for Using AI in Auditing:**

Recent experiences indicate that the future trends for using AI in auditing are moving towards enhancing the integration between these technologies and various audit activities, while expanding the scope of their applications to include all areas of government work. The most prominent of these trends, according to the experiences of various countries, are:

- **Proactive and Continuous Auditing:** Through the use of AI models capable of real-time transaction monitoring and risk pattern analysis, which enables the detection of deviations and fraud cases at an early stage.
- **Employing Geographic Analysis and Remote Sensing Technologies:** To support the auditing of environmental projects and compliance in sectors related to natural resources and sustainable development.
- **Using Advanced Document Analysis and Smart Data Mining:** Through Natural Language Processing (NLP) techniques and Large Language Models (LLMs), which contributes to accelerating and improving the quality of analyzing huge documents.
- **Auditing AI Systems Themselves:** Including evaluating their transparency, their compliance with ethical standards and legal requirements, and ensuring their alignment with relevant regulatory frameworks.

It is expected that SAIs will adopt more dynamic and data-driven audit models in the future, supported by AI technologies, which will contribute to raising the effectiveness of auditing and enhancing good governance.

9. Targeted results:

1- **Unifying Understanding and Definitions:** Reaching a consensus on a unified definition of AI among SAIs, which considers ethical standards and governance.

2- **Strengthening the audit Framework:** Developing a strategic and ethical framework for the use of AI in auditing, which ensures a balance between benefiting from the technology and maintaining independence and objectivity.

3- **Improving Audit Efficiency and Effectiveness:** Employing AI in the various stages of the audit process (planning, evidence collection, analysis, reports - follow-up) to increase accuracy, velocity, and transparency.

4- **Building Auditors' Capabilities:** Working to raise auditors' competency through training on the use of AI in risk assessment and deviation detection.

5- **Developing Audit Standards:** Contributing to the development of new professional standards that include the use of AI in auditing.

Discussion Questions :

- ✓ Multiple definitions are there to Artificial Intelligence. In your opinion, what are the most important points that should be included in a unified definition of artificial intelligence across Supreme Audit Institutions?
- ✓ What AI technologies should SAIs prioritize to achieve the greatest improvements in audit efficiency and effectiveness?
- ✓ What tools and frameworks can support the development of algorithm audit methodologies to enhance transparency and the explainability of AI outcomes?
- ✓ Should SAIs hire "AI experts" as part of their audit teams? And why?
- ✓ How can it be ensured that audit decisions remain based on independent professional judgment and not just on automated outputs, in light of AI's ability to discover patterns that are difficult to detect and analyze big data?
- ✓ How can measurable objectives such as transparency, accuracy, and fairness be effectively defined and monitored in AI-based audit environments?