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The IIA's Artificial Intelligence Auditing Framework

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EMPOWERING INTERNAL AUDITORS : EMBRACING THE 4IR



Internal audit's role in AI is to help an organization evaluate, understand, and communicate the degree to which artificial intelligence will have an effect (negative or positive) on the organization's ability to create value in the short, medium, or long term.

Source: *Global Perspectives & Insights: Artificial Intelligence – Considerations for the Profession of Internal Auditing, Parts I, II, III*



The IIA's Artificial Intelligence Auditing Framework

Before internal audit attempts to evaluate the organization's AI strategy, it should determine its own strategy for covering AI by including the topic in its risk assessment and considering whether AI should be included in the risk-based audit plan.

Relevant AI Strategy Objectives and Activities or Procedures

| Engagement or Control Objective(s) | Activities or Procedures |
|--|---|
| Be actively involved in AI projects from their beginnings, providing advice and insight contributing to successful implementation. | Attend AI project team meetings. |
| The organization has a defined AI strategy. | Determine whether an AI strategy has been documented and if so, verify that the strategy: <ul style="list-style-type: none"> ■ Articulates the intended results of AI activities (strategic objectives). ■ Articulates at a high level how the AI objectives will be accomplished (strategic plan). |
| Provide assurance over the readiness and response to cyber threats. | Leveraging an established cybersecurity framework, work collaboratively with IT and other parties to ensure effective defenses and responses are in place. |
| There are sufficient resources (staff and budget) to implement the AI strategy. | Review process for determining staff and budget needs to support AI. |
| Advise on whether the strategy adequately considers AI threats and opportunities. | Review any existing assessments of AI threats and opportunities. If no assessments exist, make recommendations for moving forward (how the organization could plan to identify AI threats and opportunities). |

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“In addition to providing assurance over AI activities, internal audit should ensure audit committees and boards are equipped to understand their role in navigating the benefits and risks associated with AI in the companies they serve.”

Carolyn Saint, CAE - University of Virginia

Relevant AI Governance Objectives and Activities or Procedures

Engagement or Control Objective(s)

Provide assurance that AI governance structures have been established, documented, and are working as designed.

Assess whether those with AI responsibilities have the necessary competencies to be successful. For example, those responsible for ethical imperatives should be competent in assessing the ethical behavior of those who provide human input into the AI, and should be independent of the AI activity.

Activities or Procedures

Review business models and organizational structure; **determine** if business models and organizational structure reflect the organization’s AI strategy.
Review AI policies and procedures; **determine** whether organizational policies and procedures clearly identify AI roles and responsibilities related to AI strategy, governance, data architecture, data quality, ethical imperatives, and measuring performance.

Interview those with AI responsibilities.

Review AI job descriptions, requisite skills, etc., and **verify** whether those responsible have their stated qualifications.



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Relevant AI Governance Objectives and Activities or Procedures

Provide assurance that AI policies and procedures have been established and documented.

Provide assurance that AI activity audit trails provide sufficient information to understand what AI decisions were made, and why.

Provide assurance that policies and procedures have been implemented and are working as designed, and that employees are compliant.

Review AI policies and procedures and **determine** if they sufficiently address AI risks.
Determine if policies and procedures provide for periodic “what if” analysis or scenario planning.

Review AI audit trails.
Determine whether audit trails provide sufficient information to understand what decisions were made, and why.

Observe employees implementing AI procedures.
Review helpline/hotline reports and **follow up** on any reports alleging noncompliant or malicious activities related to AI.

Interview a random sample of employees and **determine** if they are knowledgeable about AI policies and procedures.

Identify and **review** AI access policies and procedures.

Evaluate access policies and **test** access controls.

Assess whether regulatory control objectives reflect emerging regulations, standards, and guidance.



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“Data Infrastructure & Architecture and Data Quality are often intertwined. Relevant engagement or control objectives, and activities and procedures in one area, may overlap or impact objectives, activities, and procedures in the other area.”

Lesedi Lesetedi, Deputy Executive Director (Deputy CEO) – Strategy & Corporate Services
Botswana College of Distance & Open Learning (BOCODOL)

Relevant Data Architecture & Infrastructure Objectives and Activities or Procedures

Engagement or Control Objective(s)

Provide assurance that the organization is cyber resilient. Cyber resilience includes, but is broader than, cybersecurity alone. Cyber resilience encompasses security (resistance), reaction, and recovery.

Provide assurance that the data infrastructure has the capacity to accommodate the size and complexity of AI activity set forth in the AI strategy.

Provide assurance that the organization has established a data taxonomy. **Evaluate** the quality, completeness, and consistency of use for the enterprisewide data taxonomy.

Activities or Procedures

Understand and audit big data (see The IIA's Practice Guide: Understanding and Auditing Big Data).

Assess whether the organization is preparing for compliance with new technology regulations, such as the EU's General Data Protection Regulation (GDPR).

Assess whether the organization's disaster recovery protocols include AI failures, including the breakdown of controls that maintain the rules set forth by AI governance.

Assess whether the infrastructure is capable of handling structured and unstructured data.

Assess whether the taxonomy is robust enough to accommodate the size and complexity of AI activities.





The IIA's Artificial Intelligence Auditing Framework

Internal audit also should look at how data that is used in internal audit reports has been reconciled, synthesized, and validated.

Relevant Data Quality Objectives and Activities or Procedures

Engagement or Control Objective(s)

Provide assurance over the reliability of AI's underlying algorithms and the data on which algorithms are based.

Provide assurance that data input is reconciled and normalized to maximize accuracy.

Provide assurance that aggregated data is complete.

Provide assurance that the completeness of data is measured and monitored and that any material exceptions that impact decision-making are identified and explained. This should be done whether the exceptions are determined by humans or AI.

Activities or Procedures

Obtain a sample of the raw data that are inputs to AI.
Verify that the organization has implemented methodologies to validate AI outcomes with actual, real-world outcomes, and that policies and procedures are in place to continuously measure, monitor, escalate, and rectify inconsistencies between the two.

Verify that the organization has policies and procedures in place to continuously measure, monitor, escalate, and rectify data accuracy and integrity issues.
Confirm that the organization is consistently following and monitoring a formalized data reconciliation framework, which includes a rationale for differing methodologies and results should they exist.

Verify that the organization has policies and procedures in place to limit data input bias.

Review AI metrics and metric reports.
Assess whether those responsible for decision-making have received and considered explanations on material exceptions related to data quality.

The IIA's Artificial Intelligence Auditing Framework



The Human Factor component, which includes Ethics and The Black Box elements, addresses the risk of human error compromising the ability of AI to deliver the expected results.

Relevant Ethics Objectives and Activities or Procedures

Engagement or Control Objective (s)

Provide assurance that outcomes of the organization's AI activities are free from unintended biases.

The organization can “make meaning” of AI outputs.

Activities or Procedures

Review the intended results of the AI activities (strategic objectives) and compare with actual results. If a variance is detected, determine if bias is the cause.

Review AI outputs and the meaning that was derived from the outputs.



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As organizations advance to implementing Type III and Type IV AI technologies — utilizing machines or platforms that can learn on their own or communicate with each other — how the algorithms are operating becomes less transparent or understandable. The black box factor will become more and more of a challenge as an organization's AI activities become more sophisticated.

Relevant Black Box Objectives and Activities or Procedures

Engagement or Control Objective (s)

Assess the organization's understanding of "black box" data (i.e., the underlying algorithms, internal functions, or mechanisms that enable AI).

Activities or Procedures

Review AI development and implementation policies, processes, and procedures and verify black box data has been identified.

Interview those responsible for AI outcomes and **verify** that they understand and could explain black box data.



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AI governance refers to the structures, processes, and procedures implemented to direct, manage, and monitor the AI activities of the organization.

Relevant Measuring Performance Objectives and Activities or Procedures

Engagement or Control Objective (s)

Provide advice on how to establish AI metrics.

Stress test AI vulnerabilities.

Activities or Procedures

Facilitate working sessions for those responsible to establish AI metrics. **Convey** the importance and meaning of the terms *sufficient, reliable, relevant and useful* information.

Apply stress-testing techniques used by the banking industry to determine how AI activities will perform under extreme scenarios.



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AI governance refers to the structures, processes, and procedures implemented to direct, manage, and monitor the AI activities of the organization.

Relevant Measuring Performance Objectives and Activities or Procedures

Communicate the results of AI-related engagements.

Communicate the results of AI-related engagements in conformance with:

- IIA Standard 2400: Communicating Results
- IIA Standard 2410: Criteria for Communicating
- IIA Standard 2420: Quality of Communications
- IIA Standards 2421: Errors and Omissions
- IIA Standard 2430: Use of “Conducted in Conformance with the *International Standards for the Professional Practice of Internal Auditing*”
- IIA Standard 2431: Engagement Disclosure of Nonconformance
- IIA Standard 2440: Disseminating Results

Provide assurance over first line of defense controls and second line of defense oversight related to AI.

Embrace robotics and other forms of AI to perform AI-related engagements.



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