

ISA 315 Compliance, Artificial Intelligence Adoption, and Audit Outcomes: A Theoretical Framework for Emerging Economies

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ABSTRACT

The modern auditing environment is undergoing a radical change due to the accelerated technological development and the growing complexity of international business conditions (Munoko et al., 2020; Assidi et al., 2025). Risk assessment is the most important feature of the profession of auditing, formally regulated under the International Standard on Auditing (ISA) 315, Identifying and Assessing the Risks of Material Misstatement (Carlin & Persellin, 2021). The new ISA 315, which took effect in December 2021, is the most material change to the risk assessment standards in more than a decade, including stronger requirements to understand the IT environment of an entity and internal controls. At the same time, the power of Artificial Intelligence (AI) technologies — including machine learning, natural language processing, and sophisticated data analytics — have become the disruptive powers in the professional services sphere (Munoko et al., 2020). This paper develops a multi-theoretical framework integrating the Technology Acceptance Model (TAM), Diffusion of Innovation (DOI) Theory, Institutional Theory, Agency Theory, and the Resource-Based View (RBV) to explain how ISA 315 compliance and AI adoption jointly determine audit efficiency and audit effectiveness in Iraqi auditing firms, mediated by contextual barriers and facilitators. Nine formal hypotheses are advanced. The paper argues that compliance with ISA 315 functions as a regulatory catalyst for AI adoption, and that the efficiency and effectiveness benefits of both compliance and adoption are filtered through the structural and institutional conditions of the Iraqi operating environment.

1. Introduction

The modern auditing environment is undergoing a radical change due to the accelerated technological development and the growing complexity of international business

conditions (Munoko et al., 2020; Benlarbi & Naama, 2025). Risk assessment is the most important feature of the profession of auditing that is formally regulated under the International Standard on Auditing (ISA) 315, Identifying and Assessing the Risks of Material Misstatement. According to this standard, auditors have the obligation to gain a thorough insight into the entity and its surrounding, including internal controls, with the view to detecting and estimating risks of material misstatement, whether fraudulent or erroneous (IFAC, 2019). The new ISA 315 that took effect in December 2021 is the most material change to the risk assessment standards in more than a decade, including stronger requirements to understand the IT environment of an entity and internal controls (Carlin & Persellin, 2021). At the same time, the power of AI technologies, including machine learning, natural language processing, and sophisticated data analytics, have become disruptive powers in the professional services sphere, with an unparalleled ability to handle enormous amounts of information, detect trends and abnormalities, and automate tedious analytical operations (Munoko et al., 2020; Zemankova, 2019).

Implementation of AI in audit institutions has its own advantages and obstacles, especially in developing economies like Iraq. According to a study by Deloitte (2020), AI and cognitive technologies have the potential to decrease the amount of time spent on audits by up to 30–40 percent and, at the same time, increase the quality of the audit. Nevertheless, the increase in investments in AI technologies by the Big Four accounting firms has led to an increasing disparity between large global networks and smaller ones in emerging markets (Omoteso, 2012; Tiberius & Hirth, 2019). Although the adoption of AI in auditing is deeply covered in the international literature for developed markets, there is still a significant lack of theoretical frameworks that can explain how auditing firms in emerging economies can manage the crossroad between traditional auditing standards and recent technological advances (Al-Akra et al., 2016; Abdullatif & Al-Rahahleh, 2020).

This study fills this gap by exploring how ISA 315 compliance and AI adoption jointly shape audit efficiency and effectiveness in Iraqi auditing firms, through a multi-theoretical conceptual framework. The intersection of ISA 315 requirements and AI possibilities provides a transformative opportunity for audit quality (Carlin & Persellin, 2021). The study employs five underpinning theories — TAM, DOI, Institutional Theory, Agency Theory, and RBV — each contributing distinct explanatory power to the proposed framework.

1.1 Research Objectives

The objectives of this study are: (a) to test the connection between ISA 315 compliance and the adoption of AI in Iraqi auditing firms; (b) to examine the impact of ISA 315 compliance on audit efficiency and audit effectiveness; (c) to test the effect of AI adoption on audit efficiency and audit effectiveness; and (d) to examine the mediating role of Barriers and Facilitators in the relationships between ISA 315 compliance, AI adoption, and the audit outcome variables (Munoko et al., 2020; Benlarbi & Naama, 2025).

2. Literature Review

2.1 ISA 315 (Revised 2019): Evolution and Requirements

ISA 315 constitutes the cornerstone of the risk-based audit approach, mandating that auditors obtain thorough knowledge of the entity and its environment to identify and assess risks of material misstatement at both financial statement and assertion levels (IFAC, 2019). The 2019 revision was required due to the growing complexity of business processes and the growing reliance on IT systems, as well as the necessity to make the risk assessment procedures in modern audit environments more robust (IAASB, 2018; Carlin & Persellin, 2021). Three major enhancements distinguish the revised standard. The first is a finer comprehension of the IT environment of the entity, which is comprised of IT applications, IT infrastructure, and IT processes that pertain to financial reporting (Cannon & Bedard, 2017). Secondly, it requires a more established method of risk identification and evaluation of material misstatement risks, whereby auditors are to separately address inherent risk and control risk (Bell et al., 2005). Third, it highlights professional scepticism in the risk assessment process, especially in the evaluation of management representations and responses to perceived risks (Hurtt et al., 2013).

The new standard also introduces the spectrum of inherent risk, where auditors are expected to identify inherent risk not in a high/low framework but on a scale (Carlin & Persellin, 2021; Knechel & Salterio, 2016). This will help make a more sensitive judgment of the likelihood and magnitude of potential misstatements. The spectrum concept is a radical conceptual change that assumes greater analytical skills on the part of the auditors, compelling them to reflect on the level to which natural risk factors impact the propensity of an assertion to misstatement (IAASB, 2019).

2.2 Artificial Intelligence in Auditing

The concept of Artificial Intelligence in auditing is the implementation and use of high-level computation technologies to automate processes and increase the power of audits (Assidi et al., 2025; Munoko et al., 2020). The machine learning algorithms allow the auditors to examine past trends in data and make more accurate predictions about the risks in present-day financial statements in comparison with traditional sampling techniques (Cao et al., 2015). Natural Language Processing enables the analysis of multiple thousands of contracts, meeting minutes, and documents in a fraction of the time it would take to do so manually, allowing the gathering of more audit evidence (Brown-Liburd et al., 2015). Robotic Process Automation automates repetitive procedures in data extractions, reconciliation, and simple analysis processes, helping release auditors to pursue more valuable tasks that involve professional judgment (Cooper et al., 2019). Predictive analytics can improve the capability of risk identification to detect abnormal patterns, relations, and outliers that could contain material misstatements or fraud (Appelbaum et al., 2017).

2.3 Audit Efficiency and Audit Effectiveness

The efficiency of the audit is described as the capability to meet the audit objectives at the most efficient level of resource utilisation; the key measure is the correlation between the inputs to the audit process — time, cost, and human resources — and the output of the audit (Eulerich et al., 2022; Bachi et al., 2025). It may be considered the production role of auditing, in which the aim is to reduce inputs for a given amount of output in terms of assurance. The main dimensions in this study are saving of time, cost reduction, and optimisation of resources (Bachi et al., 2025).

Audit effectiveness is the capacity of the audit process to accomplish its fundamental goal: to render moderate assurance that the financial statements are free of material misstatement (Knechel et al., 2013; DeFond & Zhang, 2014). The original definition is due to DeAngelo (1981), who defined audit quality as the joint probability that an auditor will detect, and report, a breach of the accounting system of the client. The main dimensions are the accuracy of risk identification, detection of material misstatement, and overall quality of the audit (Munoko et al., 2020).

2.4 Barriers and Facilitators of AI Adoption in Emerging Economies

The challenges facing Iraqi auditing firms in AI adoption are multi-dimensional and deeply rooted in the structural characteristics of the local economy (Haqqani et al., 2020). Financial barriers are particularly acute, as the cost of procuring, implementing, and maintaining advanced AI audit systems is prohibitive for most small and medium-sized local firms that dominate the Iraqi market (World Bank, 2023). Technical expertise gaps represent a critical constraint, as the supply of auditors trained in data analytics, machine learning, and AI-driven audit tools remains severely limited (Allami et al., 2024). Infrastructure deficiencies — including unreliable internet connectivity, frequent power outages, and the absence of cloud computing facilities — further impede the operationalisation of AI audit platforms in many Iraqi firms (UNDP, 2023; Mohammad, 2025). Regulatory uncertainty compounds these obstacles, as the Iraqi Board of Supreme Audit has not yet issued explicit guidance on the acceptability of AI-generated audit evidence, creating a risk-averse professional culture (Al-Akra et al., 2016). Cultural resistance to change within audit firms, coupled with a tendency to rely on established manual practices, further slows the pace of technological transformation (Bachi et al., 2025). Table 1 summarises this barrier–facilitator profile.

Table 1: Barrier–Facilitator Profile of AI Adoption in Iraqi Auditing Firms

Category	Barriers	Facilitators	Source
Financial	High AI procurement & maintenance costs	International network funding & shared platforms	World Bank (2023)
Technical	Shortage of AI-trained audit professionals	Training programmes & CPD initiatives	Allami et al. (2024)
Infrastructure	Unreliable internet; power instability; no cloud access	Investment in digital infrastructure; cloud migration	UNDP (2023); Mohammad (2025)
Regulatory	No guidance on AI-generated audit evidence	Regulatory endorsement of technology-enabled audits	Al-Akra et al. (2016)
Cultural	Resistance to change; reliance on manual practices	Leadership commitment; change management culture	Bachi et al. (2025)

Source: Compiled by the author from reviewed literature.

3. Research Methods

This paper presents a conceptual research methodology based on a systematic review of the theoretical and empirical literature, followed by the deductive construction of a multi-theoretical framework and the formal derivation of testable hypotheses. The methodology is a translation of the conceptual framework into a rigorous and replicable research design (Benlarbi & Naama, 2025; Carlin & Persellin, 2021). Every methodological choice is clearly explained in terms of the research aims and questions,

and the theoretical framework based on TAM, DOI Theory, Institutional Theory, Agency Theory, and RBV (Bachi et al., 2025).

Five theoretical traditions were selected through purposive theoretical sampling based on their demonstrated applicability to technology adoption, professional regulation, and audit quality. The study employs two independent variables — ISA 315 Compliance (IV-A) and AI Adoption (IV-B) — one mediating variable (Barriers and Facilitators, MV-X), and two dependent variables: Audit Efficiency (DV-Y1) and Audit Effectiveness (DV-Y2). This research specifically focuses on AI technologies relevant to risk assessment procedures, such as machine learning algorithms, data analytics tools, NLP tools, and automated testing procedures (Benlarbi & Naama, 2025; Carlin & Persellin, 2021).

4. Theoretical Framework and Research Hypotheses

4.1 Multi-Theoretical Foundations

Most of the existing research literature on technology adoption in auditing utilises one theoretical framework, most often TAM or DOI (Rahman et al., 2024; Munoko et al., 2020). Such a one-theory approach can never fully explain the complexity of the adoption phenomenon, which is simultaneously influenced by individual perceptions (TAM), the nature of innovation (DOI), institutional pressures (Institutional Theory), economic incentives (Agency Theory), and resource provision (RBV) (Venkatesh & Davis, 2000; Davis, 1989). This gap is addressed by the current study, which explicitly develops a multi-theoretical framework (Munoko et al., 2020; Assidi et al., 2025). Table 2 presents the synthesis of the five theoretical foundations.

Table 2: Summary of Theoretical Foundations

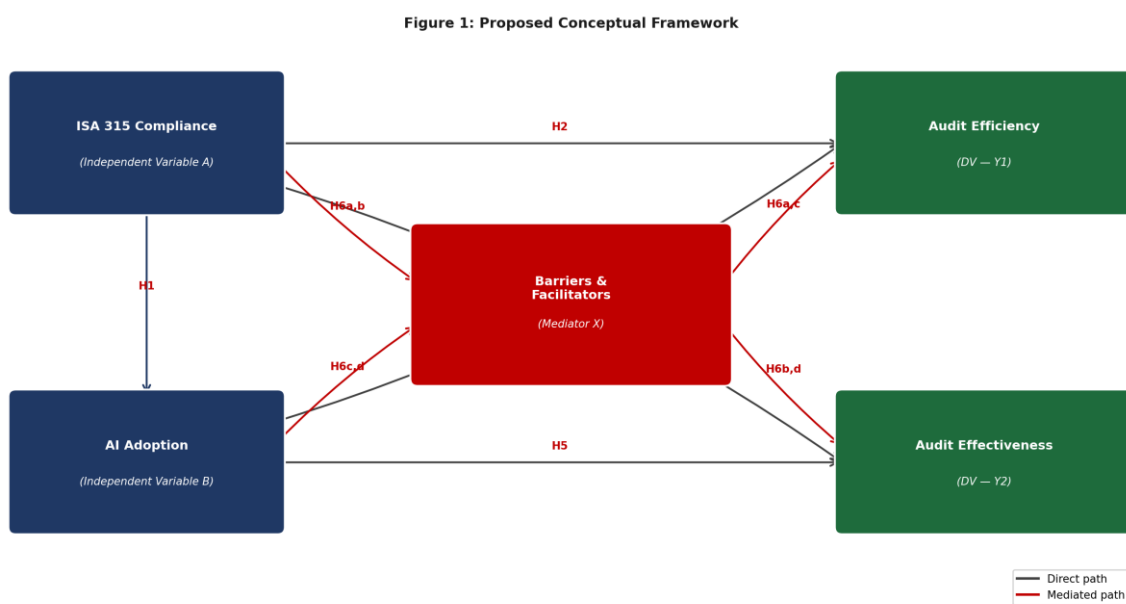
Theory	Author(s)	Core Constructs	Role in Framework
Technology Acceptance Model (TAM)	Davis (1989)	Perceived Usefulness (PU); Perceived Ease of Use (PEOU)	Explains individual auditor acceptance of AI tools; PU explains why auditors adopt AI to meet ISA 315 demands
Diffusion of Innovation (DOI)	Rogers (2003)	Relative advantage; Compatibility; Complexity; Trialability; Observability	Explains firm-level AI adoption rates and heterogeneity across firm sizes and network affiliations
Institutional Theory	DiMaggio & Powell (1983)	Coercive; Mimetic; Normative isomorphism	Explains coercive regulatory pressure from ISA 315 and normative pressure from professional bodies compelling AI adoption
Agency Theory	Jensen & Meckling (1976)	Principal-agent relationship; Information asymmetry; Agency costs	Justifies ISA 315 compliance and AI adoption as mechanisms to reduce information asymmetry and monitoring costs
Resource-Based View (RBV)	Barney (1991)	VRIN resources (Valuable, Rare, Inimitable, Non-substitutable)	Explains heterogeneity in AI adoption outcomes across firms with different resource endowments; AI as VRIN asset

Source: Compiled by the author.

4.2 Conceptual Framework

The conceptual framework of this study provides the visual and logical architecture that links the theoretical foundations to the empirically testable hypotheses (Bryman, 2016; Saunders et al., 2019). It maps the hypothesised causal pathways between ISA 315 Compliance (IV-A), AI Adoption (IV-B), Barriers and Facilitators (MV-X), Audit Efficiency (DV-Y1), and Audit Effectiveness (DV-Y2). ISA 315 Compliance is additionally theorised to directly predict AI Adoption (H1), representing the regulatory catalysis pathway — the demanding nature of the revised standard concerning knowledge of IT environments establishes regulatory pressure that, in effect, enforces the utilisation of technology (Munoko et al., 2020; IAASB, 2019). Figure 1 presents the proposed conceptual framework.

Figure 1: Proposed Conceptual Framework



4.3 Research Hypotheses

Table 3 presents all nine research hypotheses, the theoretical basis for each, and the directional path within the conceptual model. The multi-theoretical framework gives clear and consistent theoretical explanations behind every one of the hypothesised relationships (Suyono et al., 2025; Assidi et al., 2025).

Table 3: Research Hypotheses and Theoretical Foundations

H#	Hypothesis Statement	Theoretical Basis	Path
H1	There is a significant positive relationship between ISA 315 Compliance and AI Adoption in Iraqi auditing firms.	Institutional Theory (coercive isomorphism); TAM (Perceived Usefulness); normative professional pressure	A → B
H2	ISA 315 Compliance has a significant positive effect on Audit Efficiency in Iraqi auditing firms.	Agency Theory; ISA 315 risk-based resource allocation model; RBV (resource optimisation)	A → Y1

H3	ISA 315 Compliance has a significant positive effect on Audit Effectiveness in Iraqi auditing firms.	Agency Theory; ISA 315 risk identification mandate; professional scepticism requirements	A → Y2
H4	AI Adoption has a significant positive effect on Audit Efficiency in Iraqi auditing firms.	DOI Theory (relative advantage); TAM (PU); RBV (AI as VRIN resource reducing input requirements)	B → Y1
H5	AI Adoption has a significant positive effect on Audit Effectiveness in Iraqi auditing firms.	RBV (VRIN); DOI (observability of quality benefits); Agency Theory (population-wide monitoring)	B → Y2
H6a	Barriers & Facilitators mediate the relationship between ISA 315 Compliance and Audit Efficiency.	Institutional Theory; RBV (resource constraints as causal mechanism)	A → X → Y1
H6b	Barriers & Facilitators mediate the relationship between ISA 315 Compliance and Audit Effectiveness.	Institutional Theory; infrastructure context as intervening condition	A → X → Y2
H6c	Barriers & Facilitators mediate the relationship between AI Adoption and Audit Efficiency.	TAM (PEOU); DOI (complexity); RBV (resource feasibility)	B → X → Y1
H6d	Barriers & Facilitators mediate the relationship between AI Adoption and Audit Effectiveness.	TAM (PU); Institutional Theory; RBV (capability endowments)	B → X → Y2

Source: Developed by the researcher (2026).

4.4 Theoretical Justification of Hypotheses

The initial correlation is the association between ISA 315 Compliance and AI Adoption (H1). This relationship is mainly justified within the frames of Institutional Theory through coercive isomorphism: the increased demands of ISA 315 (Revised 2019), especially those concerning knowledge of IT settings and the evaluation of IT risks, establish the pressure of regulation that, in effect, will enforce the utilisation of technology (Munoko et al., 2020; Assidi et al., 2025). Audit firms that aim towards high compliance are motivated to embrace AI tools to handle the volume and complexity of data required by the standard. This institutional driver is supported by normative isomorphism, as the profession is defining digital competency as a standard of professional practice (Appelbaum et al., 2017; Issa et al., 2016).

The second and third associations are related to the correlation between ISA 315 Compliance and Audit Efficiency (H2) and Audit Effectiveness (H3). These relationships are best justified by Agency Theory. Adherence to ISA 315 enhances effectiveness since it will result in the audit being designed with an overarching knowledge of the risk environment of the entity, which will minimise the likelihood of omitting material misstatements (Benlarbi & Naama, 2025). The professional scepticism stipulated in the standard directly increases the monitoring capacity of the auditor — the key role of Agency Theory (Nelson, 2009; Hurtt et al., 2013). To be efficient, the risk-based approach intrinsic in ISA 315 offers a theoretical efficiency model through focusing on high-risk areas and lessening wasteful substantive testing in low-risk areas (Lehikoinen, 2024).

The fourth and fifth relationships are related to the connections between AI Adoption and the outcome variables (H4, H5). RBV provides the main reason for the AI–Efficiency relationship: AI is a valuable asset that enhances the audit production process by

decreasing the number of inputs needed to produce a given amount of output (Kokina & Davenport, 2017; Munoko et al., 2020). Agency Theory gives the rationale for the AI-Effectiveness relationship: the ability of AI to test the entire population and its advanced pattern recognition make it a more effective monitoring tool, which will directly decrease the information asymmetry and agency costs (Omoteso, 2012; Appelbaum et al., 2017).

The sixth set of relationships concerns the mediating role of Barriers and Facilitators (H6a–H6d). The compliance, adoption, and outcome relationships are mediated by barriers and facilitators, which are the filtering process whereby intentions have to pass before becoming reality (Hair et al., 2019; Anderson & Gerbing, 1988). Financial barriers may make a firm unable to implement AI even when they want to follow ISA 315, which breaks the connection between the standard and technology (Lehikoinen, 2024). Unless a firm is in a position to afford the tools, the pressure posed by the standard is not effective in motivating adoption (Benlarbi & Naama, 2025; Carlin & Persellin, 2021). Similarly, technical incompetence is a mediator: although a firm may purchase the software (adoption), without trained users, the tool does not improve efficiency or effectiveness (Allami et al., 2024).

5. Results

The theoretical synthesis yields a unified multi-theoretical framework characterised by three analytical layers. The first layer concerns the compliance–adoption relationship (H1), theorised as a coercive-institutional and TAM-PU mechanism. The theoretical anticipation that arises out of this integrated framework is that the interplay of these five theoretical forces will jointly determine ISA 315 compliance, AI adoption, and the mediating barriers and facilitators (Lehikoinen, 2024; IAASB, 2021). Compliance intention will be motivated by institutional pressure (ISA 315 as a coercive standard). The adoption of particular tools will be determined by individual perception of AI as reflected in TAM PU and PEOU. The rate at which AI will be adopted in the market will depend on the innovation characteristics of AI as measured through DOI (Rogers, 2003).

The second layer addresses the direct effects of compliance (H2–H3) and AI adoption (H4–H5) on audit outcomes, theorised through Agency Theory and RBV respectively. The aspect of resource endowments of the firm, captured by RBV, will make or break adoption financially and technically (Barney, 1991; Wernerfelt, 1984). And the end-result — the lessening of information asymmetry and agency costs — gives the economic rationale to the whole process, which is encapsulated in Agency Theory (DeAngelo, 1981; Jensen & Meckling, 1976).

The third layer introduces barriers and facilitators as contextual mediators (H6a–H6d). The anticipation of a multi-determined and complex adoption process in the Iraqi context is in line with the general literature on technology adoption in developing economies (Allami et al., 2024). Barriers in developing countries are multi-dimensional and interactive; focusing on one barrier and disregarding the other can have a weak overall effect (Haqqani et al., 2020).

6. Conclusion

This paper developed a theoretically grounded conceptual framework explaining how ISA 315 compliance and AI adoption jointly determine audit efficiency and effectiveness in Iraqi auditing firms, mediated by contextual barriers and facilitators. The intersection of

ISA 315 requirements and AI possibilities provides a transformative opportunity for the quality of audits (Benlarbi & Naama, 2025; Carlin & Persellin, 2021). All five theoretical traditions contribute non-redundant explanatory power: TAM explains individual-level decisions; DOI explains firm-level diffusion patterns; Institutional Theory explains regulatory-driven isomorphic adoption; Agency Theory explains the economic rationale for compliance and technology investment; and RBV explains the heterogeneity of outcomes across firms with different resource endowments.

The framework makes a distinct contribution by theorising the mediating role of barriers and facilitators, recognising that the compliance–technology–outcome relationship is not direct but is filtered through the structural and institutional conditions of the operating environment. This is particularly important in emerging economy contexts such as Iraq, where resource constraints, infrastructure deficits, and regulatory uncertainty are chronic conditions (Al-Akra et al., 2016; Abdullatif & Al-Rahahleh, 2020).

Future research should subject the proposed hypotheses to empirical validation using Structural Equation Modelling (SEM) with data from Iraqi auditing firms, and subsequently test the framework's generalisability across other emerging economy contexts. As ISA 315 continues to evolve and AI capabilities expand, the theoretical relationships posited here are likely to intensify in significance (Munoko et al., 2020; Assidi et al., 2025).

Ethics Approval and Consent to Participate

This study is a purely theoretical and conceptual paper. It does not involve human participants, data collection, clinical trials, or any empirical research requiring ethical approval. Accordingly, no ethics committee or IRB review was required for this work.

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Conflict of Interest

The authors declare no conflict of interest.

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