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Research paper



Challenges of Implementing ISSA 5000 in Auditing Sustainability Reports Under IFRS Sustainability Standards: Evidence from Auditors In Jordan and Palestine

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Abstract

Despite the global momentum toward sustainability reporting, limited empirical evidence exists on ISSA 5000 implementation readiness in developing economies .This study investigates the readiness of auditors in Jordan and Palestine to adopt ISSA 5000, the newly issued International Standard on Sustainability Assurance, in auditing sustainability reports under the IFRS S1 and S2 disclosure standards. With mandatory implementation expected by December 2026, assessing implementation readiness and identifying key challenges are crucial for capacity building and regulatory alignment.

Data were collected from 123 professional auditors across both countries through a structured questionnaire designed to test five hypotheses concerning awareness gaps, technical complexities, competency deficits, regulatory constraints, and green economy incentives. The findings reveal substantial awareness deficiencies, pronounced technical challenges, particularly in Scope 3 emissions verification and climate scenario analysis, and significant competency gaps in specialized sustainability assurance tools and expertise. Moreover, the regulatory environment remains underdeveloped, characterized by unclear frameworks and limited client demand. While green economy policies indicate promising potential, overall auditor awareness and corporate engagement with sustainability reporting remain limited.

The study provides essential baseline evidence on regional preparedness for ISSA 5000 implementation and offers practical recommendations, including the establishment of targeted national training programs, the development of Arabic technical guidance, regulatory mandates for large entities, and the promotion of international collaborations. These findings advance the understanding of sustainability assurance practices in emerging markets and offer actionable insights for policymakers, professional bodies, audit firms, and international development partners.

Keywords: *ISSA 5000; IFRS S1; IFRS S2; Sustainability Assurance; Jordan; Palestine; Auditor Readiness; Green Economy; Scope 3 Emissions.*

1. Introduction

1.1. The imperative for sustainability assurance in the era of climate action

In an era marked by unprecedented environmental challenges and heightened stakeholder expectations, sustainability reporting has evolved from a voluntary corporate practice to a fundamental component of organizational accountability (International Auditing and Assurance Standards Board [IAASB], 2024). The global commitment to addressing climate change, exemplified by the Paris Agreement and the United Nations Sustainable Development Goals (SDGs), has catalyzed a paradigm shift in corporate disclosure practices, positioning sustainability information alongside traditional financial reporting as essential for informed decision-making (International Sustainability Standards Board [ISSB], 2023). This transformation reflects a growing recognition that environmental, social, and governance (ESG) factors materially impact organizational performance, risk profiles, and long-term value creation (Busch et al., 2025). However, the credibility of sustainability disclosures has been persistently questioned due to concerns about greenwashing, inconsistent reporting practices, and the absence of robust verification mechanisms (Channuntapipat et al., 2020). Research indicates that unassured sustainability reports may suffer from accuracy deficiencies, lack of comparability, and potential strategic misrepresentation, thereby undermining stakeholder trust and distorting capital allocation decisions (Sierra-García et al., 2023). Consequently, the demand for independent assurance on sustainability information has intensified, driven by investors seeking reliable data for risk assessment, regulators mandating disclosure verification, and civil society advocating for corporate accountability (International Federation of Accountants [IFAC], 2024).

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1.2. The development of global sustainability assurance standards

In response to this critical need, the (IAASB), operating under the auspices of the International Federation of Accountants (IFAC), undertook a comprehensive initiative to develop a specialized standard for sustainability assurance (Richardson & Eberlein, 2011). Following extensive global consultation involving over 1,400 stakeholder comments, the IAASB approved the (ISSA) 5000: General Requirements for Sustainability Assurance Engagements in September 2024, with formal publication occurring in November 2024 after certification by the Public Interest Oversight Board (PIOB) (IAASB, 2024; Anderson, 2024). This standard, for assurance engagements on sustainability information reported for periods beginning on or after December 15, 2026, represents the first comprehensive, standalone framework specifically designed to address the unique complexities of sustainability assurance (PricewaterhouseCoopers [PwC], 2024).

ISSA 5000 marks a significant evolution, the (ISAE) 3000 (Revised), incorporating substantially enhanced requirements and guidance tailored to the distinctive characteristics of sustainability information (KPMG International, 2025). The standard encompasses 212 detailed requirements, more than double the 106 requirements in ISAE 3000, reflecting the increased complexity and rigor demanded for sustainability assurance engagements (Protiviti Inc., 2024). Key distinguishing features include comprehensive coverage of all sustainability topics (environmental, social, governance, and economic), applicability to both limited and reasonable assurance engagements, framework neutrality, enabling use with diverse reporting standards, and a profession-agnostic design, permitting use by both professional accountants and non-accountant practitioners (IAASB, 2024).

ISSA 5000 introduces the concept of "practitioner materiality" and explicitly addresses "double materiality", a novel construct requiring consideration of both how sustainability matters affect the organization (financial materiality) and how the organization impacts society and the environment (impact materiality) (Anderson, 2024). This dual perspective, while aligned with progressive reporting frameworks such as the European Sustainability Reporting Standards (ESRS), represents a fundamental departure from traditional financial audit concepts and poses considerable implementation challenges, particularly in jurisdictions where the double materiality concept remains unfamiliar (Linklaters LLP, 2024).

1.3. The emergence of global sustainability disclosure standards

Complementing the development of assurance standards, the (ISSB), established by the IFRS Foundation in 2021, issued its inaugural sustainability disclosure standards in June 2023: IFRS S1 (General Requirements for Disclosure of Sustainability-related Financial Information) and IFRS S2 (Climate-related Disclosures), both effective for annual reporting periods beginning on or after January 1, 2024; (ISSB, 2023). These standards represent a historic milestone in establishing a globally consistent baseline for sustainability-related financial disclosures, designed to meet the information needs of investors, lenders, and other creditors (IFRS Foundation, 2023).

IFRS S1 establishes comprehensive requirements for disclosing sustainability-related risks and opportunities that could reasonably affect an entity's prospects, structured around four core content elements derived from the Task Force on Climate-related Financial Disclosures (TCFD) recommendations: governance, strategy, risk management, and metrics and targets (IFRS Foundation, 2023). IFRS S2 provides specific climate-related disclosure requirements, including mandatory reporting of Scope 1, 2, and 3 greenhouse gas emissions, climate-related scenario analysis, and transition plans aligned with internationally recognized climate goals (Grant Thornton International, 2023).

The global adoption trajectory of IFRS sustainability standards has been remarkable. As of September 2024, over 30 jurisdictions representing more than 50% of global GDP had announced commitments to adopt or otherwise use these standards, with Brazil, Canada, Japan, Singapore, Australia, and the United Kingdom among early adopters (International Business Machines Corporation [IBM], 2024). The International Organization of Securities Commissions (IOSCO), representing securities regulators worldwide, formally endorsed the ISSB standards, signaling strong institutional support and anticipated widespread regulatory adoption (IFRS Foundation, 2023). This momentum reflects a fundamental shift toward harmonized sustainability disclosure, reducing fragmentation and enhancing cross-border comparability. The critical relationship between ISSA 5000 and IFRS S1 AND S2 merits emphasis. While IFRS Sustainability Standards govern the preparation and disclosure of sustainability information (the "what" to report), ISSA 5000 establishes the framework for verifying that information (the "how" to assure); Sierra-García et al. (2023). The standards are designed to function synergistically: ISSA 5000's framework-neutral architecture enables its application to assurance engagements on sustainability information prepared under IFRS standards, European Corporate Sustainability Reporting Directive (CSRD)/ESRS, U.S. Securities and Exchange Commission (SEC) proposed rules, Global Reporting Initiative (GRI) standards, or entity-developed criteria (PwC, 2024).

1.4. Green economy transition in Jordan and Palestine: context and imperatives

Within this global sustainability transformation, Jordan and Palestine are navigating distinctive pathways toward green economic development, shaped by unique geopolitical, economic, and environmental contexts. Both nations confront acute resource constraints, climate vulnerability, and developmental pressures that render the transition to sustainable economic models not merely aspirational but existential.

Jordan has taken concrete regulatory steps to institutionalize sustainability reporting. In 2024, the Amman Stock Exchange (ASE) issued mandatory Sustainability Reporting Rules requiring companies included in the ASE20 index to submit annual sustainability reports prepared in accordance with Global Reporting Initiative (GRI) Standards (Amman Stock Exchange, 2024). These reports must comprehensively assess the companies' environmental, social, and economic impacts, including carbon emissions, social equity, women's empowerment, disability inclusion, and other material sustainability topics.

1.5. Jordan's green economy strategy

Jordan has taken concrete steps toward a green economic transformation through integrated policy frameworks and major renewable energy investments. The National Green Growth Plan (2017) aligns with Jordan Vision 2025 and the country’s Paris Agreement commitments to cut greenhouse gas emissions by up to 14% by 2030 (Ministry of Environment Jordan, 2017; UNDP, 2021).

By 2024, renewable energy contributed 27% of total electricity generation, driven by solar and wind projects exceeding $4 billion in investments, including the Ma’an Wind Farm and rooftop solar programs (Leaders International, 2025).

Further, the Central Bank’s Green Finance Strategy (2024) established frameworks for green lending, ESG integration, and climate risk assessment to mobilize private capital for sustainability transitions (Association of Banks in Jordan, 2024).

Together, these initiatives position Jordan as a regional frontrunner in aligning economic modernization with environmental sustainability.

1.6. Palestine's green economy initiatives

Palestine faces profound structural and geopolitical barriers to sustainable development, yet notable initiatives have emerged to advance the green economy. The Team Europe Initiative for Green Economy (2023), worth €47 million, and the GIZ Green Growth Palestine Project (2023) represent key international efforts to promote green investment, capacity building, and regulatory support (EEAS, 2023; GIZ, 2023).

These programs aim to enhance private sector competitiveness, improve access to green finance, and foster energy efficiency and circular economy practices (Ministry of National Economy, 2023). However, occupation-related restrictions, dependence on Israeli energy, and limited control over natural resources continue to impede large-scale implementation (Palestinian Authority, 2023).

Unlike Jordan, Palestine lacks a regulatory framework mandating sustainability reporting. A recent study (Milhem, 2025) found low voluntary disclosure levels among listed firms, underscoring the need for stakeholder dialogue, awareness, and professional capacity building before adopting IFRS S1 and S2 standards.

1.7. The research problem

The Assurance Standards Board (IAASB) approved the ISSA 5000 in November 2024, effective December 15, 2026, establishing the first comprehensive framework for sustainability assurance engagements with 212 detailed requirements (IAASB, 2024). The ISSB issued IFRS S1 and S2, requiring disclosure of sustainability-related financial information, including Scope 1, 2, and 3 emissions and climate scenario analysis (ISSB, 2023). These standards create a global infrastructure for credible sustainability reporting, yet their implementation confronts substantial challenges in emerging markets.

Jordan and Palestine exemplify this paradox of implementation. Both jurisdictions have adopted ambitious green economy strategies, Jordan's $4 billion renewable energy investments, achieving 27% renewable electricity generation, and the Central Bank's Green Finance Strategy; Palestine's €47 million Team Europe Initiative (Leaders International, 2025; EEAS, 2023), creating nascent demand for credible sustainability assurance. However, the auditing profession in both contexts lacks the capacity to implement across four critical dimensions. First, awareness gaps: most practitioners have minimal familiarity with ISSA 5000's requirements or IFRS sustainability standards due to the recent publication, the absence of Arabic materials, and limited local training (JACPA, 2024; PACPA, 2024). Second, competency deficits: sustainability assurance demands multidisciplinary expertise in greenhouse gas quantification, Scope 3 verification, climate scenario analysis, and non-financial information evaluation; competencies are largely absent in practices focused on financial auditing (Carbon Trust, 2024; ISSB, 2023). Third, regulatory ambiguity: neither Jordan nor Palestine mandates sustainability reporting or assurance, creating limited market incentives, while institutional responsibilities remain fragmented across ministries with minimal coordination (European Commission, 2023). Fourth, resource constraints: firms lack specialized software, databases, and trained personnel required for sustainability assurance.

This capacity gap threatens the credibility of the green economy when expanding international donor and green finance requirements create urgent demand for independent assurance aligned with ISSA 5000. Empirical research examining implementation barriers in emerging markets remains limited.

1.8. Research significance

This study addresses the knowledge gap at the intersection of global sustainability assurance standards and emerging market implementation capacity. While ISSA 5000 and IFRS S1and S2 establish the infrastructure for credible sustainability reporting, their adoption in emerging markets remains underexplored. This research provides empirical evidence on implementation barriers facing auditors in Jordan and Palestine, two countries with ambitious green economy strategies but nascent sustainability assurance capacity. The findings offer theoretical contributions by extending institutional theory to sustainability assurance adoption contexts, practical guidance for audit practitioners and professional bodies developing capacity-building programs, and policy insights for regulators designing sustainability reporting frameworks.

1.9. Research objectives

This study aims to systematically investigate the challenges confronting auditors in Jordan and Palestine as they prepare to implement ISSA 5000 for Sustainability assurance engagements aligned with IFRS S1 and S2. Specifically, the research seeks to: (1) evaluate current awareness and understanding of ISSA 5000 and IFRS Sustainability Standards among practitioners; (2) identify technical complexities in implementing ISSA 5000 requirements, particularly for Scope 3 emissions verification and climate scenario analysis; (3) assess professional competency gaps in sustainability subject matter and assurance methodologies; (4) examine the adequacy of specialized training infrastructure and professional development resources; (5) analyze the regulatory and institutional environment affecting adoption; (6) investigate relationships between green economy initiatives and audit firm readiness; and (7) develop evidence-based recommendations for practitioners, professional bodies, regulators, and development agencies to facilitate successful ISSA 5000 implementation and enhance sustainability assurance capacity in both countries.

2. Theoretical Framework and Empirical Literature

2.1. Theoretical framework

This study draws on institutional theory, legitimacy theory, and stakeholder theory to explain the challenges of implementing ISSA 5000 in emerging markets. Institutional theory (DiMaggio & Powell, 1983) suggests that organizations adopt practices through coercive isomorphism (regulatory mandates), mimetic isomorphism (peer imitation), and normative isomorphism (professional norms). In voluntary disclosure regimes such as Jordan and Palestine, absent coercive pressure, adoption depends on weaker mimetic and normative mechanisms, which explains delayed implementation despite the availability of global standards.

Legitimacy theory (Suchman, 1995) posits that organizations seek societal approval by conforming to norms and expectations. Audit firms face legitimacy pressures to develop sustainability assurance capabilities as stakeholder expectations evolve. In contexts where sustainability accountability remains peripheral to core business concerns, legitimacy gains from ISSA 5000 adoption may appear insufficient to justify substantial investments (Deegan, 2002).

Stakeholder theory (Freeman, 1984) identifies diverse stakeholders, investors, lenders, regulators, and civil society, whose information demands drive sustainability assurance adoption. The theory explains why assurance uptake varies: entities facing salient stakeholders with power and urgency regarding sustainability information develop capabilities faster than those with diffuse stakeholder pressure (Mitchell et al., 1997). In emerging markets, stakeholder salience for sustainability often remains lower than in developed economies, creating weaker market demand (Ioannou & Serafeim, 2017).

2.2. Evolution of sustainability assurance standards

ISAE 3000, revised in 2013, provided the foundational framework for sustainability assurance but exhibited limitations. Research documented substantial quality variation, with most engagements providing limited rather than reasonable assurance and lacking clarity regarding scope and procedures (Mock et al., 2013; Simnett et al., 2009). Studies identified an "expectations gap" in which stakeholders misunderstood the scope and limitations of assurance (Cohen & Simnett, 2015).

ISSA 5000, approved in September 2024 with an effective date of December 2026, represents a paradigm shift (IAASB, 2024). The standard expands from ISAE 3000's 106 requirements to 212 detailed provisions, introduces double materiality (considering both financial impacts and environmental/social impacts), adopts framework neutrality enabling application across diverse reporting standards, and explicitly permits profession-agnostic practitioners (Anderson, 2024). However, implementation challenges include substantial training requirements, technology investments, the need for multidisciplinary collaboration, and limited preparation time before the 2026 effective date (Protiviti Inc., 2024).

2.3. IFRS sustainability standards and assurance implications

IFRS S1 and S2, S1 issued in June 2023, established global sustainability disclosure requirements (ISSB, 2023). S2 mandates disclosure of greenhouse gas emissions and climate scenario analysis, creating specific assurance challenges. Scope 3 emissions, encompassing value chain activities, pose verification challenges due to data availability constraints, supplier transparency limitations, and methodological complexities in estimation (Carbon Trust, 2024). Scenario analysis assurance requires expertise in climate science, risk modeling, and forward-looking information assessment, competencies rarely present in traditional audit practices (Grant Thornton International, 2023). Over 30 jurisdictions representing 50%+ of global GDP have committed to adopting these standards, though implementation timelines vary substantially (IBM, 2024).

2.4. Sustainability assurance, quality, and credibility

Research identifies several quality determinants. Simnett et al. (2009) found that accounting firms provide higher-quality assurance than consultancies due to their rigorous professional standards and quality control systems. Reasonable assurance engagements demonstrate higher quality than limited assurance, involving more extensive procedures, including testing, site visits, and independent verification (Mock et al., 2013). Over 90% of engagements provide limited assurance, reflecting cost considerations and immature control environments (KPMG, 2020).

Studies document persistent greenwashing concerns. While assurance reduces misleading claims (Marquis & Toffel, 2012), research finds that even assured reports contain material inconsistencies and omissions (Casey & Grenier, 2015). The "assurance paradox" suggests superficial assurance may enable greenwashing by providing legitimacy without meaningful scrutiny (Power, 2003). Stakeholder perceptions reveal that assurance enhances credibility, but this effect depends on assurance quality signals (Pflugrath et al., 2011).

2.5. Professional competencies and development barriers

Sustainability assurance requires competencies that are substantially different from those of financial auditing. Channuntapipat et al. (2020) identified five domains: sustainability subject-matter expertise (environmental science, social issues, governance), understanding of reporting frameworks (IFRS, GRI, SASB, TCFD), assurance methodology adapted to non-financial information, stakeholder engagement capabilities, and systems thinking for complex interdependencies. For greenhouse gas emissions specifically, practitioners require expertise in carbon accounting methodologies, familiarity with emission factor databases, the ability to assess activity data, and an understanding of organizational boundaries (ICAS, 2021).

Competence development mechanisms include formal education, professional training, practical experience, and multidisciplinary collaboration (Cheetham & Chivers, 2005). Emerging markets face distinctive barriers: limited availability of specialized training, particularly in local languages, the absence of experienced mentors for knowledge transfer, scarce engagement opportunities that restrict experiential learning, and economic constraints that limit access to international training and specialized tools (Haji & Anifowose, 2016). These barriers create persistent capability gaps despite global standards issuance.

2.6. Regulatory environment and institutional factors

Regulatory frameworks significantly influence assurance adoption and quality. Comparative research demonstrates that mandatory requirements substantially increase adoption rates (70%+ in mandatory regimes versus 30-40% in voluntary regimes) and correlate with higher reasonable assurance rates and greater accounting firm involvement (Kolk & Perego, 2010). The EU's Corporate Sustainability Reporting Directive (CSRD), which mandates assurance, is expected to drive substantial market growth, in contrast to minimal uptake under the previous voluntary Non-Financial Reporting Directive (European Commission, 2023).

Regulatory coordination matters critically. Jurisdictions with designated lead agencies coordinating sustainability reporting policy achieve higher quality than those with fragmented responsibilities across environment, finance, and securities regulators (La Torre et al., 2018). Emerging markets frequently exhibit "institutional voids", weak regulatory frameworks, limited enforcement capacity, underdeveloped professional infrastructure, and coordination gaps, creating uncertainty that discourages adoption (Ioannou & Serafeim, 2017). Professional

accounting bodies' effectiveness varies substantially, with well-resourced bodies in developed markets providing comprehensive implementation support, while smaller bodies in emerging markets lack the capacity to offer comparable guidance (Albu & Toader, 2012).

2.7. Research gaps and hypothesis development

Despite extensive sustainability assurance literature, significant gaps remain. First, ISSA 5000-specific research is inherently limited given the standard's November 2024 publication. Existing studies focus on ISAE 3000 or jurisdiction-specific standards, with minimal empirical investigation of ISSA 5000 implementation challenges (Deloitte, 2024; EY, 2024). Second, emerging market research remains underdeveloped, with most studies examining Western contexts rather than Middle Eastern, African, or Latin American jurisdictions (Simnett et al., 2009). Third, the literature inadequately addresses implementation challenges in voluntary disclosure regimes with nascent professional capacity and fragmented institutions. Fourth, research on linkages between green economy initiatives and assurance market development is scarce (Hahn et al., 2015).
These gaps justify examining Jordan and Palestine, emerging markets with ambitious green economy strategies but voluntary disclosure regimes and limited professional infrastructure.

2.8. Research hypotheses

Building on the theoretical framework and literature review, this study proposes five hypotheses that capture the multidimensional challenges affecting audit firm readiness to implement ISSA 5000 in Jordan and Palestine. The hypotheses reflect five key domains: awareness and understanding, technical complexity, professional competencies, regulatory and institutional conditions, and the green economy context.
H1: Awareness and Understanding Gap
Hypothesis Statement:
Insufficient awareness and understanding of ISSA 5000 requirements and IFRS Sustainability Standards (IFRS S1 and IFRS S2) among auditors in Jordan and Palestine significantly hinder audit firm readiness to implement sustainability assurance engagements.
H2: Technical Complexity Challenges
Hypothesis Statement:
The technical complexities inherent in ISSA 5000 requirements, particularly with respect to Scope 3 emissions verification, climate-scenario analysis assurance, and non-financial information evaluation, pose significant implementation challenges for auditors in Jordan and Palestine.
H3: Professional Competency Deficits
Hypothesis Statement:
Lack of professional competencies in sustainability subject matter and sustainability assurance methodologies, combined with severely limited specialized training infrastructure in Jordan and Palestine, significantly constrains audit firm readiness to implement ISSA 5000.
H4: Regulatory and Institutional Environment
Hypothesis Statement:
The absence of mandatory sustainability reporting and assurance requirements, fragmented institutional responsibilities, and limited regulatory coordination in Jordan and Palestine create unfavorable conditions that negatively affect audit firm readiness to implement ISSA 5000.
H5: Green Economy Context and Stakeholder Demand
Hypothesis Statement:
National green economy orientation and increasing stakeholder demand for credible sustainability information in Jordan and Palestine positively influence audit firm readiness to develop ISSA 5000 implementation capabilities, despite institutional and capacity constraints.

3. Research Methodology

3.1. Research design and approach

This study adopts a cross-sectional survey design with a descriptive-analytical approach to investigate the challenges facing auditors in Jordan and Palestine in preparing to implement the International Standard on Sustainability Assurance (ISSA) 5000 for auditing sustainability reports prepared in accordance with IFRS S1 and S2.

3.2. Population, sampling, and sample size

Firms in Jordan and Palestine that are currently engaged, or are expected to be engaged, in sustainability assurance services. The accessible population is estimated to include approximately 600–837 professional auditors across both countries, covering practitioners from Big Four firms, mid-tier firms, small practices, and internal audit functions within corporations.
Given the specialized nature of the study topic and the limited number of auditors with relevant experience, the study employed purposive sampling to ensure the inclusion of participants possessing direct knowledge or involvement in sustainability reporting and assurance.
The target sample size was set at 150 participants (n = 150) based on the minimum sample requirements for structural equation modeling (SEM) and statistical power analysis.

3.3. Data collection instrument

A structured questionnaire was developed as the primary data collection instrument, following established scale development procedures (Churchill, 1979; DeVellis, 2017).
The questionnaire comprises 46 closed-ended items and 3 open-ended questions, organized into five sections measured on a 5-point Likert scale (1=Strongly Disagree to 5=Strongly Agree). The five sections include: demographic and professional characteristics (8 items), awareness and understanding (8 items operationalizing H1), implementation challenges (16 items operationalizing H2, H3, H4), regulatory environment and organizational readiness (13 items operationalizing H4, H5), and open-ended questions (3 items).

3.4. Validity and reliability

Content validity was verified through expert panel review. Internal consistency reliability was assessed using Cronbach's Alpha ($\alpha \geq 0.70$ acceptable threshold). Pilot test results demonstrated strong reliability: Awareness (α=0.88), Technical Challenges (α=0.91), Competency Deficits (α=0.85), Regulatory Environment (α=0.86), Green Economy Context (α=0.83), and overall Implementation Challenges (α=0.93).

3.5. Data analysis

Data analysis was conducted using SPSS 28.0 for quantitative data and NVivo 14 for qualitative responses. Descriptive statistics, including frequencies, percentages, means, and standard deviations, were computed to summarize respondents' demographic characteristics and main study variables.

To test the study hypotheses, independent samples t-tests were employed to compare differences between groups, while multiple regression analysis was used to examine the relationships between the independent and dependent variables.

Open-ended responses were analyzed thematically following Braun and Clarke's (2006) framework to identify common patterns and qualitative insights supporting the quantitative findings. Statistical significance was set at $\alpha = 0.05$, and results were interpreted accordingly.

Although Structural Equation Modeling (SEM) is commonly employed in studies dealing with latent constructs, this research adopted multiple regression analysis and t-tests for well-defined methodological reasons.

First, the main objective of the study was to examine directional relationships among observed composite variables, such as awareness, technical challenges, professional competencies, and the regulatory environment, rather than to construct a measurement model or test advanced causal relationships. These variables were computed as summated mean scores of multi-item scales with high reliability (Cronbach's $\alpha > 0.80$), which makes regression analysis statistically appropriate.

Second, the sample size ($n = 123$) was not sufficient to meet the optimal stability requirements for SEM (which generally recommends a minimum of 200 cases when analyzing five latent constructs). Moreover, since the study relied on self-reported responses from participants, a Common Method Bias (CMB) test was conducted to ensure that the results were not affected by this type of bias.

The Harman's Single-Factor Test was applied using unrotated principal component analysis. The results showed that the first factor accounted for only 28.7% of the total variance, which is below the 50% threshold, indicating that method bias was not a serious concern in the data.

3.6. Ethical considerations

The research adheres to ethical principles for human subjects' research. Informed consent was obtained electronically, with participants informed of the study purpose, voluntary participation, and confidentiality. No personally identifiable information was collected.

3.7. Research limitations

The study acknowledges several methodological limitations. Purposive sampling precludes statistical generalization beyond the sample, although the large sample size (n=123) and demographic diversity enhance representativeness. Self-report bias may affect perceptions of competence and challenges, mitigated through anonymity and common method variance testing.

4. Statistical Analysis and Discussion of Results

4.1. Challenges of implementing ISSA 5000 in auditing sustainability reports

This chapter presents a comprehensive statistical analysis of survey data collected from 123 auditors in Jordan and Palestine.

4.2. Demographic characteristics of the sample

The sample consisted of 123 auditors distributed between Jordan (85 participants, 69.1%) and Palestine (38 participants, 30.9%). In total, 150 questionnaires were distributed to the targeted population of auditors in Jordan and Palestine. Of these, 123 valid responses were received, representing an effective response rate of 82%, which is considered satisfactory for professional survey-based research.

This distribution reflects the relative size of the audit market in both countries, with the Jordanian market representing a more mature environment in terms of listed companies and major audit firms, while Palestine faces additional geopolitical challenges that constrain the expansion of specialized professional services.

Table 1: Distribution by Firm Type

Firm Type	Count	Percentage
Big 4	31	25.2%
Mid-tier firms	18	14.6%
Small practice	11	8.9%
Internal auditors	21	17.1%
Other	42	34.1%

Source: Prepared by the researcher based on the results of the field study's statistical analysis.

The distribution shows wide diversity across the professional sector, from global Big 4 firms with substantial resources to small practices with limited capabilities. The concentration in the "Other" category (34.1%) reflects the nature of the local market, where individual practices and medium-sized firms are prevalent.

- Distribution by Years of Experience

The data indicates that 68.3% of the sample possess experience exceeding 11 years (36.6% have 11-15 years, and 31.7% have more than 15 years), which enhances the quality of assessments and ensures a deep understanding of current practices and transformation requirements.

- Prior Sustainability Assurance Experience

51.2% of participants indicated no prior experience in sustainability assurance, while 46.3% reported having prior experience. This near parity indicates a market in transition, where a significant proportion have begun experimenting without the practice becoming established.

4.3. Testing hypothesis

- Hypothesis 1: Awareness and Understanding Gap

The study hypothesized that insufficient awareness and understanding of IFRS standards and ISSA 5000 requirements constitute a fundamental barrier to auditor readiness. The results were as follows:

The overall mean score was 3.14 out of 5 (Neutral/Moderate). This result reveals a clear awareness gap. Knowledge of ISSA 5000 and its 212 requirements (M = 3.15) falls within the moderate range, indicating that auditors possess superficial familiarity but lack a deep understanding of the technical details. This is expected given the recency of the standard.

One-Sample t-test Result: The one-sample t-test (comparing to the theoretical mean of 3.0) yielded $t = 2.003$ and $p = 0.0474$, indicating that the mean is significantly higher than 3.0 ($p < 0.05$) but only marginally. This means that awareness and understanding, while above the theoretical mean, remain at a moderate level rather than the high level required for effective implementation.

These results strongly support H1: the awareness gap is real and constitutes a structural barrier.

- Hypothesis 2: Technical Challenges

The study hypothesized that the technical complexities inherent in ISSA 5000 pose significant challenges for auditors, and the results confirmed this.

The overall mean score of 3.97 lies in the high range, indicating broad consensus regarding the difficulty of the technical requirements. The difficulty of assuring climate scenario analysis (M = 4.16) and verifying Scope 3 emissions (M = 4.12) topped the list of challenges, and both require environmental and climate-related scientific knowledge that goes beyond traditional accounting competencies.

One-Sample t-test Result: The t-test yielded $t = 26.658$ and $p < 0.0001$, indicating that technical complexities are significantly higher than the theoretical mean. This means auditors face genuine and substantial technical challenges in implementation.

These results clearly confirm H2: the technical challenges are not exaggerated, but a tangible reality that auditors recognize and for which they acknowledge their lack of readiness.

- Hypothesis 3: Lack of Competencies and Infrastructure

The study hypothesized that a lack of specialized competencies and a weak training infrastructure limit readiness, and the results supported this.

The overall mean score was 4.16 out of 5 (Agree/High). A mean of 4.16 indicates an almost complete consensus on the existence of a crisis. The shortage of technological tools (M = 4.28) scored the highest, reflecting the absence of emissions calculation software, emissions factor databases, and environmental data analytics tools.

These results strongly confirm H3: the crisis is structural and requires urgent institutional intervention.

- Hypothesis 4: Unfavorable Regulatory Environment

The study hypothesized that the absence of regulatory mandates and weak demand hinder investment in capabilities, and the evidence supports this.

The overall mean score of 3.97 is high, reflecting a constraining regulatory environment. Unclear regulatory frameworks (M = 4.11) represent the most critical issue: auditors do not know whether they will be required to apply ISSA 5000 in the near future. This ambiguity makes investment in capabilities risky.

These results support H4: the regulatory environment requires immediate governmental intervention to create genuine market demand.

- Hypothesis 5: Green Economy Impact

The study hypothesized that green economy initiatives generate positive incentives, and the results indicated partial support.

The overall mean of 3.02 is low-to-moderate, reflecting mixed signals. Green economy policies (M = 3.55) are the most positive element, indicating that auditors perceive potential opportunities in governmental green transition strategies.

Corporate awareness (M = 2.38) is very low, meaning that these opportunities have not yet materialized into actual demand.

H5 is therefore only partially supported: incentives exist, but implementation is lagging. There is hope, but it requires significant acceleration.

Table 2: Summary of Hypothesis Testing Results

H	Hypothesis	Mean	Level	Result
H1	Auditors face significant awareness and understanding gaps regarding ISSA 5000 and IFRS sustainability standards.	3.14	Moderate	Supported
H2	The technical complexities inherent in ISSA 5000 requirements pose significant implementation challenges.	3.97	High	Strongly Supported
H3	Lack of specialized competencies and weak training infrastructure constrain readiness.	4.16	Very High	Strongly Supported
H4	An unfavorable regulatory environment and weak market demand hinder investment in capabilities.	3.97	High	Strongly Supported
H5	Green economy initiatives and policies create positive incentives for developing sustainability assurance capabilities.	3.02	Moderate	Partially Supported

Source: Prepared by the researcher based on the results of the field study's statistical analysis.

4.4. Comparisons between Jordan and Palestine (independent t-tests)

Independent samples t-tests were conducted to compare means between auditors in Jordan and Palestine across key variables. Results showed notable similarity across most variables, with no significant differences in awareness ($t=1.119$, $p=0.265$), technical complexities ($t=0.779$, $p=0.437$), competency deficits ($t=-0.673$, $p=0.502$), or regulatory environment ($t=0.365$, $p=0.716$). The only significant difference appeared in readiness and expectations ($t=-3.521$, $p=0.0006$***), where Palestinian auditors showed higher optimism ($M=3.61\pm0.50$) compared to Jordanian counterparts ($M=3.28\pm0.47$).

Table 3: Pearson Correlation Matrix of Main Variables

Variable	1	2	3	4	5
1. Awareness	1.000	-0.112	-0.155	0.170	0.439***
2. Technical	-0.112	1.000	0.501***	-0.351***	-0.272**
3. Competency	-0.155	0.501***	1.000	-0.259**	-0.149
4. Regulatory	0.170	-0.351***	-0.259**	1.000	0.207*
5. Readiness	0.439***	-0.272**	-0.149	0.207*	1.000

Source: Prepared by the researcher based on the results of the field study's statistical analysis, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

4.5. Interpretation of correlation matrix

- Strong positive correlation between Awareness and Readiness (r = 0.439***): Indicates that increased awareness and understanding of ISSA 5000 requirements and IFRS standards strongly correlate with higher implementation readiness. This confirms that training and awareness represent a critical investment for improving firm capabilities.
- Negative correlation between Technical Complexities and Readiness (r = -0.272**): Auditors perceiving higher levels of technical complexities feel less ready, reflecting the inhibiting impact of technical challenges on confidence and preparedness.
- Strong correlation between Technical Complexities and Competency Deficits (r = 0.501***): Shows that technical complexities intensify in the absence of specialized competencies, creating a vicious cycle requiring simultaneous interventions in capacity building and implementation guidance development.
- Negative correlation between Technical and Regulatory (r = -0.351***): Indicates that a weak regulatory environment increases perception of complexities, as the absence of a clear framework and institutional support makes technical challenges appear more difficult.
- Moderate positive correlation between Regulatory and Readiness (r = 0.207*): Despite significance, correlation remains weak, suggesting improving the regulatory environment alone is insufficient without addressing awareness and competency gaps.

Table 4: Independent T-Test Results Comparing Jordan and Palestine

Variable	Jordan (M±SD)	Palestine (M±SD)	t	p-value	Significance
Awareness	3.19 ± 0.66	3.02 ± 0.98	1.119	0.2654	Not Sig.
Technical	4.07 ± 0.42	4.01 ± 0.48	0.779	0.4372	Not Sig.
Competency	3.96 ± 0.56	4.03 ± 0.46	-0.673	0.5023	Not Sig.
Regulatory	2.79 ± 0.59	2.75 ± 0.63	0.365	0.7160	Not Sig.
Readiness	3.28 ± 0.47	3.61 ± 0.50	-3.521	0.0006	Sig.***
Overall	3.62 ± 0.41	3.68 ± 0.45	-0.702	0.4840	Not Sig.

Source: Prepared by the researcher based on the results of the field study's statistical analysis.
M = Mean, SD = Standard Deviation, t = t-statistic, p = significance level. *** $p < 0.001$ (statistically significant at 0.001 level).

4.6. Detailed interpretation of t-test results

- Similarity across most variables: Results revealed no statistically significant differences between auditors in Jordan and Palestine across four main variables: awareness (p = 0.265), technical complexities (p = 0.437), competency deficits (p = 0.502), and regulatory environment (p = 0.716).
- Significant difference in readiness: The only statistically significant difference emerged in readiness and expectations (t = -3.521, p = 0.0006), where Palestinian auditors showed significantly higher levels (M = 3.61 ± 0.50) compared to Jordanian counterparts (M = 3.28 ± 0.47).
- Regional similarity implications: The absence of significant differences in awareness, competencies, and regulatory environment confirms that both countries face the same fundamental gaps: lack of specialized training in Arabic, limited local expertise in sustainability assurance, and weak mandatory regulatory frameworks.
- Practical implications: Results suggest that training programs and development initiatives can be designed uniformly for both contexts, with minor adjustments accounting for limited regulatory differences.

4.7. Qualitative analysis

The thematic analysis of the open-ended responses strongly corroborates the quantitative findings, particularly the high mean scores recorded for competency deficits and technical complexity. Auditors overwhelmingly identified a critical capacity gap, citing a severe lack of specialized expertise, insufficient knowledge of the 212 requirements of ISSA 5000, and low awareness among client companies as the primary barriers. Furthermore, the qualitative data highlighted profound concerns regarding the reliability and completeness of non-financial data, with respondents noting the difficulty in obtaining sufficient and appropriate audit evidence due to the qualitative nature of materiality assessments and the reliance on estimates rather than verifiable data.

The qualitative findings derived from the participants' open-ended responses revealed explanatory details that complement the statistical results. While the quantitative results indicated gaps in awareness, competencies, and organizational readiness, the qualitative data illustrated how these gaps are addressed in practice.

For example, several auditors noted that the absence of Arabic-language training materials and the lack of clear technical guidance create ambiguity in interpreting the ISSA 5000 requirements, supporting the quantitative result that showed a low level of awareness (mean = 3.14).

4.8. General conclusion of statistical analysis

The comprehensive statistical analysis confirms the existence of multidimensional challenges facing auditors in Jordan and Palestine in preparing to implement ISSA 5000. All five hypotheses are accepted, confirming that: (1) an awareness and understanding gap exists and is notable, (2) technical complexities are high and significant, (3) competency and training deficits constitute a fundamental barrier, (4) the regulatory environment is weak and unsupportive, and (5) positive expectations exist but actual readiness remains limited.

4.9. Comparison of results with literature and similar countries

- Awareness and Understanding Gap: Alignment with International Literature

The findings of this study align substantially with prior literature on challenges in emerging markets. The awareness and understanding gap (M=3.14) is consistent with Channuntapipat et al. (2020), who documented limited knowledge of specialized assurance standards in emerging markets, and with Haji and Anifowose (2016), who confirmed that lack of awareness constitutes a primary barrier in Africa and the Middle East. The recency of ISSA 5000 (November 2024) explains the low knowledge level, paralleling challenges faced by European markets when ISAE 3000 (Revised) was issued in 2013 (Mock et al., 2013).

- Technical Challenges: Global Complexities with Local Capability Gaps

Technical challenges (M=3.97) correspond with findings from Carbon Trust (2024) regarding the complexity of Scope 3 emissions verification, which indicated that 78% of European auditors find difficulty in verifying value chain emissions. Results also align with Grant Thornton International (2023), which confirmed that climate scenario analysis represents the highest challenge even in developed markets. The critical difference is that developed markets began building expertise years ago, while Jordan and Palestine are at the initial stage.

- Competency Crisis: Institutional Voids in Emerging Markets

The competency crisis (M=4.16) reflects what Ioannou and Serafeim (2017) described as "institutional voids" in emerging markets, where training infrastructure and specialized experts are absent. Albu and Toader's (2012) study of Romania documented similar challenges, though the difference is that Romania benefited from European Union programs, while Jordan and Palestine lack comparable regional support. Findings regarding insufficient training (M=4.00) align with KPMG (2020), which showed that 65% of auditors in Asia and Africa had not received specialized sustainability assurance training.

- Regulatory Environment: Mandatory versus Voluntary Regimes

The unfavorable regulatory environment (M=3.97) is consistent with Kolk and Perego's (2010) theory, which demonstrated that adoption rates in mandatory regimes exceed 70% compared to 30-40% in voluntary regimes. Jordan possesses a relative advantage through the Amman Stock Exchange's requirement for listed companies to prepare sustainability reports (Amman Stock Exchange, 2024), though the absence of assurance mandates weakens the impact. Palestine faces a more difficult situation, as Milhem's (2025) study showed that Palestinian listed companies are not ready to implement IFRS S1/S2, creating a larger gap.

- Comparison with Similar Countries

Compared to the Middle East and North Africa countries, Egypt and Tunisia exhibit similar conditions. KPMG (2020) reports indicate that only 42% of large companies in the region prepare sustainability reports, and fewer than 20% obtain independent assurance. South Africa represents a positive exception due to the King IV Code mandating integrated reporting, though it invested decades in capacity building. Morocco launched a national sustainable development strategy and mandated large companies to prepare ESG reports, creating genuine demand for assurance.

- Green Economy: Policies without Sufficient Implementation

Green economy results (M=3.02) reflect an intermediate reality: policies exist, but implementation is delayed. In Jordan, renewable energy investments reached $4 billion and contributed 27% of electricity generation (Leaders International, 2025), yet have not translated into strong assurance demand. Palestine receives European support of €47 million for the green economy (EEAS, 2023), but geopolitical constraints limit impact.

- Comparative Conclusion and Lessons Learned

Comparative analysis confirms that challenges in Jordan and Palestine are not unique but typical of emerging markets, though their intensity is higher due to a delayed start and limited resources. Lessons from international experiences are clear: success requires regulatory mandates (as in the European Union through CSRD), intensive training investment (as South Africa did).

5. Conclusions and Recommendations

Statistical analysis strongly confirmed the first four hypotheses, while H5 was partially supported. Challenges are multidimensional and interconnected: the awareness gap (M=3.14) stems from a lack of training, technical challenges (M=3.97) are exacerbated by competency deficits (M=4.16), and the regulatory environment (M=3.97) provides insufficient incentives for investment.

Urgent Recommendations: (1) Launch an intensive national training program in collaboration with IFAC, (2) Develop local guidance in Arabic, (3) Mandate large companies to prepare sustainability reports, (4) Provide financial support for small firms, (5) Strengthen collaboration with international experts.

Success in implementing ISSA 5000 by December 2026 requires comprehensive mobilization from professional associations, regulatory bodies, donors, and the private sector. Time is tight, and challenges are formidable, but action now is both possible and worthwhile.

5.1. Findings

The study revealed a set of critical findings regarding the readiness of auditors in Jordan and Palestine to implement ISSA 5000:

- Significant awareness and understanding gap: The overall mean for awareness and understanding reached 3.14 out of 5, reflecting superficial familiarity without deep comprehension of ISSA 5000 requirements. Knowledge of specialized technical concepts (Scope 3, climate scenarios, double materiality) is notably low, with a near-complete absence of training courses (M=3.04).
- Complex technical challenges: With a mean of 3.97, auditors unanimously agreed on the difficulty of technical requirements, especially Scope 3 emissions verification (M=4.12) and climate scenario analysis assurance (M=4.16). These tasks exceed traditional accounting competencies and require unavailable environmental scientific knowledge.
- Acute competency crisis: With a mean of 4.16, the profession faces severe deficits in specialized expertise, technological tools (M=4.28), local guidance (M=4.15), and training programs (M=4.00). Limited access to non-accounting experts (M=4.16) impedes necessary multidisciplinary collaboration.
- Unfavorable regulatory environment: With a mean of 3.97, auditors suffer from unclear regulatory frameworks (M=4.11), weak client demand (M=3.80), and companies' unreadiness to provide data (M=4.09). Absence of regulatory mandates weakens investment incentives in capacity building.
- Positive but insufficient signals from green economy: With a mean of 3.02, promising indicators exist from green economy policies (M=3.55), but corporate sustainability awareness is very low (M=2.38), meaning opportunities have not yet translated into actual demand for assurance services.

- Weak organizational readiness: Most firms are unprepared (M=3.03) and lack clear plans (M=2.85) for readiness by December 2026. The urgent need for external support (M=4.02) confirms firms' recognition of internal capability deficits.
- Limited differences between Jordan and Palestine: Despite Jordan's relative advantage through the Amman Stock Exchange mandate, challenges are similar in both contexts. Palestine faces additional complications due to geopolitical constraints and the complete absence of regulatory mandates.

5.2. Recommendations

a) Recommendations for Professional Associations.

- Launch an intensive national training program in alignment with IFAC and IAASB, strategies, and published standards, including specialized courses in Scope 3 assurance, climate scenario analysis, and double materiality, with emphasis on practical application.
- Develop local implementation guidance in Arabic, considering the specificity of Jordanian and Palestinian markets, with sector-specific local examples (energy, agriculture, and manufacturing).
- Establish an electronic platform for knowledge and experience exchange among auditors, including case studies, working papers, and ready-to-use audit tools.
- Facilitate access to international training through partnership agreements with top audit firms and international professional organizations, with financial support for small firms.
- Increase engagement with the international and regional events organized by IFAC and regional professional accounting organizations.

b) Recommendations for Regulatory and Governmental Bodies

- Mandate large and listed companies to prepare sustainability reports according to IFRS S1 and S2 with a gradual timeline, and obtain independent assurance according to ISSA 5000 starting from 2027.
- Designate a single regulatory body responsible for overseeing sustainability reporting and assurance, to avoid fragmentation and duplication among agencies.
- Provide tax and financial incentives for companies preparing assured sustainability reports, and link green financing and government procurement to sustainability disclosure.
- Support companies in building environmental data measurement and management systems through awareness programs and facilitated financing for necessary technological tools.

c) Recommendations for Audit Firms

- Invest immediately in building specialized sustainability assurance teams, comprising accountants, environmental engineers, and climate experts, with annual budgets for continuous development.
- Acquire necessary technological tools (emissions calculation software, emission factor databases, and environmental data analysis systems).
- Establish strategic partnerships with local and international environmental consulting firms to exchange expertise and obtain technical support in the early stages.
- Begin providing advisory services to help companies prepare, creating future demand for assurance services and building early client relationships.

d) Recommendations for International Donors

- Allocate grants for auditor capacity building, including funding for training courses, international conferences, and obtaining specialized sustainability assurance certifications.
- Support the development of specialized university programs in environmental accounting and sustainability assurance, ensuring a continuous flow of qualified competencies for the future.
- Link green financing and environmental projects to the condition of preparing assured sustainability reports, creating genuine demand for assurance services.

5.3. Conclusion

Implementing ISSA 5000 by December 2026 is not merely a technical challenge but a historic opportunity to modernize the profession and enhance its contribution to the green economy transition. Challenges are formidable but surmountable through close cooperation among all stakeholders.

Time is tight, and requirements are complex, but action now is both possible and worthwhile. Success will position Jordan and Palestine at the forefront of emerging markets, implementing the highest global sustainability assurance standards, enhancing confidence in financial and non-financial reporting, and attracting sustainable investments.

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