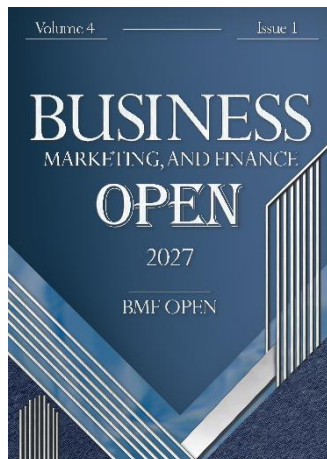





Presenting an Assurance Model for Sustainability Reporting Based on the Grounded Theory Approach

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responsibility.

Abstract: The purpose of the present study was to develop an assurance model for sustainability reporting based on the grounded theory approach. In this regard, the theoretical saturation (snowball) method was employed to select experts for interviews. Accordingly, among experts and scholars in the fields of sustainability and auditing, interviews were conducted in 2026 with eight participants, including two university faculty members and six expert professionals working in the Ministry of Economic Affairs and Finance, the Iranian Association of Certified Public Accountants Training Center, and the auditing and Tehran Stock Exchange organizations. Overall, the findings indicated the high importance of identifying contextual-environmental factors, structural-institutional factors, executive-operational processes, and the content components of sustainability reporting, including environmental, social, and economic dimensions, in the field of sustainability reporting. Furthermore, in the paradigmatic model of the present study, “the gradual transition toward sustainability auditing within Iran’s challenging environment: the confrontation between modern requirements and traditional structures” was identified as the core category. In addition, international pressures, the Stock Exchange Organization’s requirements regarding corporate social responsibility disclosure, increasing stakeholder expectations, and companies’ need for access to global markets were identified as causal conditions affecting sustainability reporting assurance. On the other hand, factors such as international sanctions, resistance to change, budgetary constraints faced by companies and institutions, and political and economic uncertainty were identified as intervening conditions. Moreover, unfavorable economic conditions, the traditional structure of the auditing profession, low levels of sustainability awareness, and limitations in financial and human resources were introduced as contextual conditions related to the assurance of sustainability reporting. In this regard, the development of localized standards (Sustainability Standard No. 1 and the draft of Sustainability Standard No. 2), along with the utilization of the international frameworks ISSA 5000 and ISAE 3410 for assuring sustainability reports, the implementation of gradual training programs for auditors and companies, the use of non-auditor experts and specialists within audit teams, and the execution of pilot projects in large companies were identified as optimal strategies for sustainability reporting assurance. The consequences of these strategies included the gradual enhancement of reporting transparency, improvement of the global image of Iranian companies, attraction of sustainable investments, and promotion of corporate social

Keywords: Assurance Model, Sustainability Reporting, Grounded Theory Method.

1. Introduction

In recent decades, sustainability has evolved from a peripheral ethical concern into one of the central pillars of corporate governance, strategic management, and financial reporting. Increasing environmental crises, climate change, social inequality, resource scarcity, and growing stakeholder awareness have fundamentally transformed the expectations imposed upon corporations across the world. Modern organizations are no longer evaluated solely based on profitability and financial performance; rather, they are increasingly assessed according to their environmental responsibilities, social commitments, ethical conduct, and long-term sustainability orientation [1]. Consequently, sustainability reporting has emerged as a strategic mechanism through which firms communicate their environmental, social, and governance (ESG) performance to stakeholders, investors, regulators, and society at large. The growing importance of sustainability reporting has encouraged organizations to disclose not only economic information, but also non-financial data concerning greenhouse gas emissions, resource consumption, labor rights, social responsibility initiatives, governance structures, and sustainable development strategies [2].

The expansion of sustainability reporting practices has been accompanied by increasing concerns regarding the reliability, comparability, transparency, and credibility of disclosed information. Unlike traditional financial reporting, sustainability reporting often involves qualitative, forward-looking, and multidimensional information that is difficult to measure and verify objectively. As a result, stakeholders frequently question the authenticity and trustworthiness of sustainability disclosures, particularly in contexts where firms may engage in symbolic reporting or greenwashing practices to enhance corporate reputation without implementing substantive sustainability measures [3]. The existence of information asymmetry between managers and stakeholders further intensifies these concerns, as managers may selectively disclose favorable sustainability information while concealing negative environmental or social impacts [4]. In this regard, assurance services for sustainability reporting have gained substantial attention as an important mechanism for enhancing the credibility and legitimacy of sustainability disclosures.

Sustainability assurance refers to the independent examination and verification of sustainability reports by qualified professionals with the purpose of increasing stakeholder confidence in disclosed sustainability information. Assurance practices contribute to improving transparency, reducing information asymmetry, strengthening accountability, and enhancing organizational legitimacy [5]. In addition, external assurance can assist organizations in improving internal control systems, identifying reporting weaknesses, and institutionalizing sustainability-related processes within corporate structures [6]. Recent empirical evidence demonstrates that sustainability assurance positively influences green transformation strategies, environmental performance, and managerial accountability by encouraging firms to align operational practices with measurable sustainability objectives [7]. Consequently, sustainability assurance has become a critical component of modern corporate reporting systems and integrated reporting frameworks.

The rapid institutionalization of sustainability reporting and assurance has been significantly influenced by international organizations, regulatory bodies, and professional standard setters. Frameworks and standards such as the Global Reporting Initiative (GRI), Sustainability Accounting Standards Board (SASB), International Standard on Assurance Engagements (ISAE 3410), and the recently developed International Standard on Sustainability Assurance (ISSA 5000) have provided conceptual and technical guidance for sustainability reporting assurance practices [8]. Moreover, the publication of the International Ethics Standards for Sustainability Assurance (IESSA) by the International Ethics Standards Board for Accountants has highlighted the growing importance of ethical

principles, professional competence, and independence in sustainability assurance engagements [9]. These developments reflect the global transition toward institutionalized sustainability governance and indicate that assurance practices are increasingly becoming an integral element of corporate accountability systems.

Despite these international advancements, sustainability assurance practices continue to face substantial conceptual, technical, and institutional challenges, especially in developing economies and emerging markets. One of the most important challenges relates to the absence of unified assurance frameworks and the diversity of sustainability standards and reporting methodologies [6]. Unlike financial auditing, sustainability assurance lacks universally standardized measurement criteria, resulting in inconsistencies in assurance scope, assurance level, materiality assessment, and reporting approaches [10]. Furthermore, sustainability information frequently requires interdisciplinary expertise in environmental sciences, social impact assessment, engineering, and risk management, which exceeds the traditional competencies of financial auditors [11]. Consequently, sustainability assurance engagements often require collaboration between auditors and non-accounting specialists to ensure the adequacy and accuracy of assurance processes.

Another important challenge concerns the organizational and institutional resistance against sustainability assurance implementation. In many organizations, traditional governance structures and financial-oriented management systems remain dominant, creating resistance toward the integration of sustainability-oriented accountability mechanisms [12]. The implementation of sustainability assurance often requires substantial organizational transformation, including the redesign of reporting systems, development of sustainability indicators, enhancement of internal controls, and investment in human and technological resources. In developing countries, these challenges are intensified by institutional voids, regulatory instability, political uncertainty, financial constraints, and weak sustainability awareness among corporations and professional institutions [13]. As a result, sustainability assurance in such contexts often remains fragmented, voluntary, and underdeveloped.

The Iranian corporate and regulatory environment represents a particularly important context for studying sustainability reporting assurance. Similar to many emerging economies, Iran has experienced increasing pressure to improve transparency, accountability, and corporate sustainability practices in recent years. The expansion of capital markets, growing stakeholder awareness, environmental challenges, and international expectations regarding corporate responsibility have encouraged organizations to pay greater attention to sustainability disclosure practices [14]. Nevertheless, sustainability reporting and assurance in Iran remain in the early stages of institutional development. Existing corporate reporting structures are still primarily focused on financial information, while sustainability disclosure practices lack comprehensive institutionalization and standardized assurance mechanisms.

Several Iranian studies have attempted to identify sustainability reporting components and develop sustainability disclosure models suitable for the Iranian business environment. Research has emphasized the importance of environmental, social, economic, and governance dimensions in corporate sustainability reporting [15]. Other studies have proposed conceptual frameworks for balancing stakeholder expectations with organizational capacities in sustainability reporting practices [16]. Furthermore, scholars have highlighted the importance of identifying sustainability indicators and industry-specific sustainability components through multi-criteria decision-making techniques and fuzzy analytical approaches [17]. Research has also examined factors influencing sustainability reporting among pharmaceutical companies and emphasized the importance of institutional support, managerial commitment, and stakeholder pressures in advancing sustainability disclosure practices [18]. While these studies have significantly contributed to the understanding of sustainability reporting

in Iran, relatively limited attention has been devoted to the assurance dimension of sustainability reporting and the development of a comprehensive assurance model adapted to Iranian institutional conditions.

The importance of developing an assurance framework for sustainability reporting becomes even more critical considering the increasing relationship between sustainability practices and corporate performance. Evidence suggests that sustainability disclosure and sustainable management practices can improve corporate reputation, enhance investor confidence, reduce audit report lag, and strengthen long-term financial performance [19]. Similarly, effective sustainability disclosure practices contribute to reducing information asymmetry in capital markets and improving market transparency [4]. Corporate governance mechanisms and board attributes also play an important role in improving sustainability performance and environmental disclosure quality [2]. Furthermore, the interaction between corporate social responsibility disclosure, governance quality, and organizational reputation significantly affects stakeholder trust and firm performance outcomes [12]. These findings indicate that sustainability assurance can function as a strategic instrument for improving both accountability and competitive advantage.

The growing integration of sustainability with technological transformation and risk management has further increased the significance of assurance mechanisms. Contemporary sustainability systems increasingly rely on digital technologies, data-driven monitoring systems, and Internet of Things (IoT)-enabled sustainability infrastructures [20]. Similarly, sustainability assurance is becoming closely associated with cybersecurity, operational resilience, and integrated risk governance frameworks [21]. As organizations become increasingly dependent on digital sustainability data and ESG-related performance metrics, the need for reliable assurance mechanisms capable of evaluating the integrity and security of sustainability information becomes more urgent. This transformation highlights the necessity of developing assurance models that are not only accounting-oriented but also adaptive to interdisciplinary sustainability governance environments.

At the international level, recent studies have emphasized the need for more comprehensive and theoretically grounded sustainability assurance models. Systematic reviews of sustainability assurance practices indicate that existing assurance approaches suffer from conceptual fragmentation, methodological inconsistency, and regulatory gaps [8]. In addition, concerns regarding greenwashing, selective disclosure, and symbolic sustainability practices have intensified demands for more rigorous assurance frameworks capable of ensuring the authenticity of sustainability claims [3]. The increasing complexity of sustainability reporting has therefore encouraged scholars and practitioners to reconsider traditional assurance paradigms and develop more integrated, contextualized, and stakeholder-oriented assurance models [11].

Although previous studies have investigated sustainability disclosure practices, sustainability components, stakeholder expectations, and the relationship between sustainability and firm performance, an important research gap remains regarding the development of a paradigmatic assurance model for sustainability reporting within the institutional and regulatory context of Iran. Existing studies have rarely addressed the causal conditions, contextual factors, intervening variables, strategic mechanisms, and organizational consequences associated with sustainability assurance implementation in emerging economies. Furthermore, limited research has employed grounded theory methodology to conceptualize sustainability assurance processes from the perspective of professional experts, regulators, auditors, and academic specialists. Considering the complexity, multidimensionality, and contextual nature of sustainability assurance practices, grounded theory provides an appropriate methodological framework for identifying the underlying concepts, relationships, and institutional dynamics shaping sustainability assurance systems.

Accordingly, the present study aims to develop a sustainability reporting assurance model based on the grounded theory approach in the context of Iran's institutional, regulatory, and professional environment.

2. Methodology

This study was based on the grounded theory approach. In this method, after defining the research problem and reviewing the literature and prior theoretical foundations, sampling is conducted. In grounded theory, sampling is non-random, and the selection of samples is aligned with the research objective. Furthermore, the sample size is not predetermined, and during data analysis, the sampling process continues until the theory reaches the stage of theoretical saturation. In other words, in grounded theory, data collection and data analysis are two interconnected processes. On the other hand, considering the nature of the subject and the study population, and based on the strategy and approach of grounded theory, various qualitative research tools, including different forms of interviews, observation, and document collection, may be employed to gather primary data. In the present study, the data collection instrument consisted of in-depth interviews with university scholars and professional experts in the fields of auditing and sustainability, selected on the basis of their extensive professional experience.

Data were collected through interviews with eight university scholars and professional experts in the research field in 2026 (including two university faculty members, two experts employed at the Audit Organization, two employees of the Securities and Exchange Organization, one employee of the Ministry of Economic Affairs and Finance, and one expert from the Iranian Association of Certified Public Accountants Training Center). The experts were selected using the snowball sampling method. The interviews were conducted individually, and the average duration of each interview was approximately one hour. Theoretical sampling through the snowball method continued until the categories reached theoretical saturation. Theoretical saturation refers to the stage at which no new data related to the categories emerge and the relationships among the categories are established and confirmed. During the analysis phase, the interview transcripts were repeatedly reviewed in order to identify a new model or revise the previous model. Furthermore, based on the criteria and indicators proposed by Creswell and Miller (2000), and to ensure the validity of the study, five experts reviewed the final report of the first stage of the analytical process and the extracted categories, and their suggestions were incorporated into the open and axial coding procedures.

3. Findings and Results

At this stage, considering the research methodology (grounded theory), interviews were conducted with university scholars and professional experts in the fields of auditing and sustainability in order to collect information and data related to the research domain. According to Table 1, the number of selected participants was eight individuals (including five PhD holders in accounting and three Master's degree holders in accounting), as presented below.

Table 1. Characteristics of University Scholars and Professional Experts in the Present Study

Organization/Institution	Number	Experience (Years)	Position	Occupation
University Faculty Members	2	34	Full Professor	Faculty Member at Alzahra University
		35	Full Professor	Faculty Member at Islamic Azad University
Audit Organization	2	18	Secretary of the Sustainability Reporting Committee	Member of the Organization's Standards Committee
		35	Member of the Organization's Board	Member of the Sustainability Reporting Committee
Securities and Exchange Organization	2	17	Supervisor of Industrial and Mining Issuers	Supervisory Expert
		10	Supervisor of Certified Auditors and Financial Reporting	Supervisory Expert
Ministry of Economic Affairs and Finance	1	20	Senior Financial Systems Consultant	Financial Consultant
Iranian Association of Certified Public Accountants Training Center	1	27	Executive Director of the Training Center	Official Judicial Expert
Total	8			

After conducting this number of interviews, the researcher concluded that the collected information had reached theoretical saturation and that additional interviews were unnecessary. In selecting this sample size, issues such as time constraints, accessibility of university scholars and professional experts, and their level of cooperation were taken into consideration.

Data analysis in the present study was conducted through coding at three levels: open coding, axial coding, and selective coding. In the first stage (open coding), data description and classification were performed. In the axial coding stage, the categories and concepts identified during open coding were connected in a new configuration. Finally, during selective coding, the analytical model for sustainability reporting assurance was extracted from the integrated categories and concepts.

At this stage (open coding), appropriate conceptual labels were assigned to all important and key points identified in the interviews. In open coding, meaningful units are first labeled using conceptual names, and then the resulting concepts are classified using more abstract labels, which are referred to as categories. Subsequently, through data exploration, the characteristics and dimensions of the categories are developed. These stages are not linear and are generally conducted simultaneously with considerable overlap. At this stage, the researcher reviews the collected dataset in an attempt to identify the underlying concepts embedded in the interviews. This stage is referred to as open coding because the researcher approaches the conceptual labeling process with an open mind and without restrictions regarding code assignment. The purpose of open coding is to break down the qualitative dataset into the smallest possible conceptual components. A sample of the most important open coding results extracted from the interviews is presented in Table 2. It should be noted that no significant or key open codes were extracted from Interviews No. 7 and 8. Evidence of theoretical saturation included: (1) repetition of categories, as the main concepts became completely repetitive after Interview 6; (2) absence of new categories, since no new concept or relationship emerged after the sixth interview; (3) conceptual depth, as each subsequent interview only contributed to deepening existing concepts; and (4) stability of relationships, as the relationships among categories remained constant in the final interviews.

Table 2. First-Level (Open) Coding

Row	Selected Key Open Codes	Interviewee
1	Difference between Standard 720 and the new sustainability standards (Standard 1 and Draft Standard 2)	No. 1
2	Necessity of implementing Standards 3410 and 5000 for assurance purposes	
3	Necessity of employing non-auditor experts and specialists in the sustainability auditing process	
4	Sustainability report as independent information rather than other information	
5	Testing overlapping internal controls in financial and sustainability auditing	
6	Absence of formal evaluation of sustainability reports in Iran	No. 2
7	Necessity of benchmarking against SASB and GRI standards	
8	Environmental sustainability components: greenhouse gas reduction and natural resource management	
9	Economic sustainability components: sustainable profitability and environmental and social costs	
10	Challenge of industrial diversity in sustainability reporting	
11	Documentation and comparability issues in sustainability information	No. 3
12	Necessity of an integrated framework for sustainability reporting	
13	Inherent differences between financial and sustainability data	
14	Need for the development of interdisciplinary sciences for sustainability auditing	
15	Vital role of corporate governance in sustainability	
16	Different levels of assurance (compliance, review, opinion)	No. 4
17	Inappropriateness of using Standard 720 for sustainability	
18	Necessity of an independent sustainability report	
19	Necessity of including environmental experts in audit teams	
20	Three-lines-of-defense model in internal controls	
21	Three levels of assurance	No. 5
22	Separation of sustainability auditing from financial auditing	
23	Mandatory independent sustainability reporting	
24	Necessity of creating interdisciplinary academic programs	
25	Role of power distribution in corruption control	
26	Social costs as a "price" for business continuity	No. 6
27	Lack of awareness among companies and auditors regarding sustainability	
28	Need for an open economic environment for sustainability implementation	
29	Financing problems related to sustainability auditing	
30	Necessity of practical training rather than solely theoretical instruction	

At this stage, based on the information obtained from the first phase of data collection (open codes extracted from semi-structured interviews), the open codes were revised, eliminated, and classified. At this stage, data should not be interpreted within predetermined frameworks; rather, interpretation and classification should be conducted based on the conceptual indicators embedded in the data [22]. Accordingly, the results of second-level (axial) coding, including the main categories and detailed subcategories, are presented in Table 3. As shown in Table 3, the main categories related to sustainability reporting assurance included contextual-environmental factors (such as economic conditions, political-legal environment, laws and regulations, institutional requirements, sanctions, and financial resource limitations), structural-institutional challenges (including the absence of an integrated sustainability reporting framework, professional challenges, auditors' resistance to accepting new responsibilities, lack of localized standardization, and incompatibility of international standards with Iranian conditions), executive-operational processes (such as different assurance levels, separation of sustainability auditing from financial auditing, necessity of employing specialized experts, testing sustainability-specific internal controls, and integration of sustainability controls with financial controls), and the content components of sustainability reporting, including environmental, social, and economic dimensions.

Table 3. Second-Level (Axial) Coding

Row	Detailed Subcategories	Main Categories
1	Lack of localized standardization	Structural-Institutional Challenges
2	Absence of an integrated reporting framework	
3	Incompatibility of international standards with Iranian conditions	
4	Translation and localization challenges	
5	Professional challenges	
6	Auditors' resistance to accepting new responsibilities	
7	Traditional structure of audit firms	
8	Underdevelopment of interdisciplinary sciences	
9	Greenhouse gas and carbon management (ISO 14064 and GHG Protocol standards)	Environmental Sustainability Components
10	Control of water, air, and soil pollution	
11	Biodiversity conservation	
12	Human rights and labor force	Social Sustainability Components
13	Social responsibility	
14	Local and community development	Economic Sustainability Components
15	Sustainable profitability	
16	Financial transparency	
17	Long-term risk management	
18	Auditing and assurance	Executive-Operational Processes
19	Different levels of assurance	
20	Separation from financial auditing	
21	Necessity of specialized experts	
22	Internal controls	
23	Three-lines-of-defense model	
24	Testing sustainability-specific internal controls	Contextual-Environmental Factors
25	Integration of sustainability controls with financial controls	
26	Economic conditions	
27	Financial resource limitations	
28	Priority of economic issues over sustainability	
29	High implementation costs	
30	Political-legal environment	
31	Institutional requirements (Stock Exchange and Audit Organization)	
32	Laws and regulations	
33	International environment and sanctions	

Finally, in order to present the paradigmatic model of sustainability reporting assurance, the results of the final-stage (selective) coding are presented in Table 4. As shown, in the present study, the category "gradual and inevitable transition toward sustainability auditing within Iran's challenging environment: the confrontation between modern requirements and traditional structures" was selected as the core category. International pressures for sustainability reporting, the Stock Exchange Organization's requirements regarding corporate social responsibility disclosure, increasing stakeholder expectations, and companies' need for access to global markets were identified as causal conditions affecting sustainability reporting assurance. Furthermore, factors such as international sanctions, resistance to change, budgetary constraints faced by companies and institutions, and political and economic uncertainty were identified as intervening conditions. Unfavorable economic conditions, the traditional structure of the auditing profession, low levels of sustainability awareness, and financial and human resource limitations were introduced as contextual conditions governing sustainability reporting assurance. Finally, the development of localized standards (Sustainability Standard No. 1 and Draft Sustainability Standard No. 2), utilization of the international ISSA 5000 and ISAE 3410 frameworks, gradual training of auditors and

companies, employment of non-auditor experts and specialists in audit teams, and implementation of pilot projects in large companies were identified as the most important moderating strategies in the paradigmatic model of sustainability reporting assurance. Factors such as gradual enhancement of reporting transparency, improvement of the global image of Iranian companies, attraction of sustainable investments, and enhancement of corporate social responsibility were identified as the most important gradual outcomes of sustainability reporting assurance.

Table 4. Selective Coding for the Paradigmatic Model of Sustainability Reporting Assurance

Component	Detailed Subcategories
Final Core Category	Gradual and inevitable transition toward sustainability auditing within Iran’s challenging environment: the confrontation between modern requirements and traditional structures
Causal Conditions	International pressures for sustainability reporting Stock Exchange Organization requirements for corporate social responsibility disclosure Increasing stakeholder expectations Companies’ need for access to global markets
Intervening Conditions	International sanctions Resistance to change Budgetary constraints of companies and institutions Political and economic uncertainty
Contextual Conditions	Unfavorable economic conditions Traditional structure of the auditing profession Low level of sustainability awareness Financial and human resource limitations
Strategies	Development of localized standards (Sustainability Standard No. 1 and Draft Sustainability Standard No. 2) and utilization of the international ISSA 5000 and ISAE 3410 frameworks Gradual training of auditors and companies Employment of non-auditor experts and specialists in audit teams Implementation of pilot projects in large companies
Consequences	Gradual enhancement of reporting transparency Improvement of the global image of Iranian companies Attraction of sustainable investments Enhancement of corporate social responsibility

Finally, the paradigmatic model of sustainability reporting assurance is presented comprehensively in Figure 1 below.

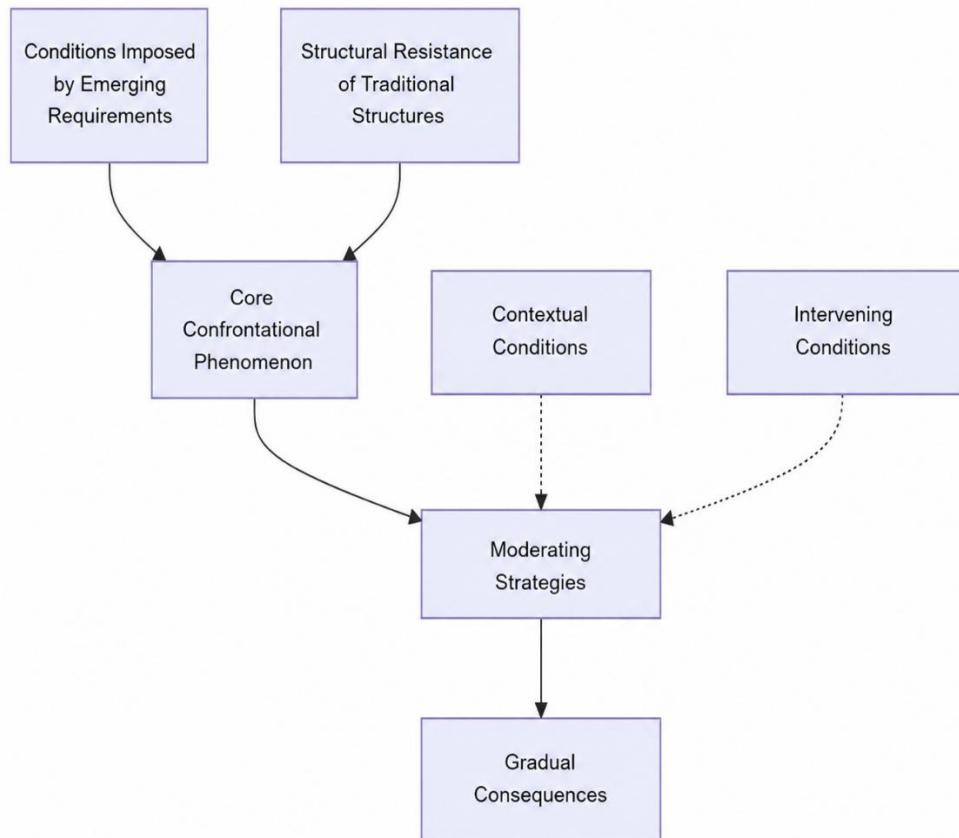


Figure 1. Paradigmatic Model of Sustainability Reporting Assurance

4. Discussion and Conclusion

The findings of the present study demonstrated that sustainability reporting assurance in Iran is shaped by a complex interaction among contextual-environmental factors, structural-institutional challenges, executive-operational processes, and the substantive dimensions of sustainability reporting, including environmental, social, and economic components. The grounded theory analysis further revealed that the central phenomenon governing sustainability assurance in Iran can be conceptualized as a “gradual and inevitable transition toward sustainability auditing within a challenging environment characterized by the confrontation between modern requirements and traditional structures.” This finding reflects the reality that sustainability assurance in emerging economies is not merely a technical auditing process, but rather an institutional transformation that requires the alignment of governance structures, regulatory systems, professional competencies, and organizational culture. The results indicate that the development of sustainability assurance practices in Iran is occurring under substantial pressure from international reporting trends, capital market expectations, and stakeholder demands, while simultaneously facing resistance rooted in traditional auditing structures and economic constraints. These findings are consistent with the arguments of [11], who emphasized that sustainability assurance should be understood as a socially constructed and institutionally embedded practice rather than a purely procedural assurance engagement. Similarly, [6] argued that extended external reporting assurance is affected by multiple organizational and regulatory challenges, especially in environments lacking mature sustainability governance systems.

One of the most important findings of the present study concerns the significance of structural-institutional barriers in limiting the development of sustainability assurance practices. Participants identified the absence of

localized standards, lack of integrated reporting frameworks, incompatibility between international standards and domestic conditions, resistance among auditors, and the traditional structure of auditing institutions as major obstacles. This finding suggests that the implementation of sustainability assurance in Iran cannot rely solely on the direct adoption of international frameworks, but instead requires localization and adaptation to national institutional conditions. These results support the findings of [5], who demonstrated that sustainability assurance practices vary significantly across institutional environments and are strongly influenced by national governance systems and professional infrastructures. The findings are also aligned with [13], who found that institutional voids and weak governance systems in developing countries significantly constrain the effectiveness of sustainability reporting and assurance mechanisms. Moreover, the identified resistance among auditors toward accepting sustainability-related responsibilities confirms the argument of [10] that the transition from financial auditing to sustainability assurance requires substantial changes in professional identity, assurance methodologies, and competency frameworks.

The study also revealed that sustainability assurance requires interdisciplinary collaboration and cannot be confined to conventional accounting expertise. Interviewees emphasized the necessity of employing environmental experts, technical specialists, and non-auditor professionals within sustainability assurance teams. This finding reflects the multidimensional nature of sustainability reporting, which involves environmental indicators, social performance measures, governance variables, and long-term risk assessments that exceed the scope of traditional financial auditing. The findings support the conclusions of [8], who identified interdisciplinary competency as one of the major future requirements of sustainability assurance practice. Similarly, [9] emphasized the importance of professional competence, ethical capability, and multidisciplinary expertise in sustainability assurance engagements. The results also correspond with the perspective of [21], who highlighted the increasing integration of sustainability assurance with technological governance, operational resilience, and cybersecurity frameworks. Therefore, the findings indicate that future sustainability assurance systems must move toward integrated assurance models involving collaboration among accounting professionals, environmental specialists, engineers, legal experts, and sustainability consultants.

Another important finding of the study concerns the role of causal conditions such as international pressures, stakeholder expectations, stock exchange disclosure requirements, and companies' need for access to global markets in accelerating the institutionalization of sustainability assurance. These findings demonstrate that sustainability assurance is increasingly becoming a strategic necessity rather than a voluntary organizational initiative. As global investors, regulators, and stakeholders place greater emphasis on ESG performance and sustainable governance, firms are under growing pressure to provide reliable and independently assured sustainability information. These findings are consistent with [7], who found that sustainability assurance plays a significant role in facilitating green transformation and strengthening sustainability-oriented managerial practices. Likewise, [12] emphasized that corporate governance quality and organizational reputation are strongly associated with sustainability disclosure practices and stakeholder trust. The findings also support the conclusions of [1], who demonstrated that sustainability-oriented reporting and green innovation practices positively influence long-term financial performance and strategic competitiveness. Consequently, sustainability assurance can be interpreted not only as a compliance mechanism but also as a strategic instrument for improving corporate legitimacy and competitive positioning.

The findings further highlighted the importance of environmental, social, and economic sustainability components within sustainability assurance processes. Environmental dimensions such as greenhouse gas

management, pollution control, and biodiversity protection were identified as essential sustainability indicators requiring assurance verification. Social dimensions included labor rights, social responsibility, and community development, while economic dimensions focused on sustainable profitability, financial transparency, and long-term risk management. These findings are highly consistent with the multidimensional sustainability frameworks proposed by [17], [15], and [18], who emphasized that sustainability reporting must incorporate integrated environmental, social, and economic indicators to achieve effective stakeholder accountability. The present findings also align with [2], who found that environmental disclosure quality and governance structures significantly influence sustainability outcomes and organizational accountability.

An important contribution of the present study lies in identifying contextual and intervening conditions affecting sustainability assurance implementation in Iran. Factors such as international sanctions, political and economic uncertainty, financial resource limitations, and unfavorable economic conditions were identified as major contextual barriers. These findings indicate that sustainability assurance practices in developing economies are deeply influenced by macroeconomic instability and institutional uncertainty. Such conditions increase implementation costs, reduce organizational willingness to invest in sustainability systems, and weaken regulatory enforcement capacity. The findings correspond with [23], who argued that governance quality and institutional environments significantly affect corporate accountability practices and transparency mechanisms. The findings are also compatible with [24], who highlighted the importance of balancing stakeholder expectations with organizational capacities in sustainability disclosure systems. Therefore, the successful implementation of sustainability assurance in Iran requires not only technical standards but also broader institutional reforms and economic stabilization policies.

The study additionally identified several strategic mechanisms capable of facilitating the transition toward sustainability assurance. These included the development of localized sustainability standards, adoption of international frameworks such as ISSA 5000 and ISAE 3410, gradual auditor training, pilot implementation in large corporations, and integration of sustainability controls with financial controls. These findings indicate that sustainability assurance institutionalization should follow a gradual and adaptive implementation strategy rather than an immediate mandatory enforcement approach. Such gradual institutionalization can reduce organizational resistance, improve professional readiness, and increase stakeholder acceptance. These results support the findings of [5] and [8], who emphasized that sustainability assurance development requires regulatory support, professional education, and progressive institutional adaptation. The findings are also aligned with [3], who stressed that regulatory gaps and weak assurance systems increase the risk of greenwashing and symbolic sustainability disclosure. Consequently, the establishment of robust assurance mechanisms and localized assurance standards can play an important role in reducing misleading sustainability claims and improving disclosure credibility.

The consequences identified in the study further illustrate the strategic value of sustainability assurance systems. Participants emphasized that effective sustainability assurance can gradually increase reporting transparency, improve the global image of Iranian companies, attract sustainable investment, and strengthen corporate social responsibility. These findings support prior evidence suggesting that sustainability disclosure and assurance contribute to reducing information asymmetry and enhancing investor confidence [4]. Similarly, [19] demonstrated that sustainable management practices can improve organizational efficiency and reporting quality. The findings are also compatible with [14], who argued that coherent sustainability reporting models improve corporate accountability and organizational legitimacy. Therefore, sustainability assurance should be viewed not merely as

an auditing function, but as a strategic governance mechanism capable of enhancing organizational transparency, sustainability performance, and long-term stakeholder trust.

One of the limitations of the present study relates to the relatively limited number of interview participants and the qualitative nature of the research methodology. Although theoretical saturation was achieved, the findings may still reflect the perspectives and experiences of a specific group of experts operating within particular institutional settings. Furthermore, due to the emerging nature of sustainability assurance practices in Iran, some concepts and institutional dynamics may continue to evolve over time. Another limitation concerns the restricted availability of formal sustainability assurance practices and standardized sustainability reporting systems in the Iranian business environment, which limited the possibility of conducting comparative empirical analyses across industries and organizations.

Future research can expand the findings of the present study by conducting quantitative investigations of the relationships among sustainability assurance, corporate governance quality, organizational performance, investor behavior, and sustainability outcomes. Comparative studies between developing and developed economies may also provide valuable insights regarding the institutional determinants of sustainability assurance effectiveness. In addition, future scholars may examine the role of technological systems, artificial intelligence, big data analytics, and digital governance infrastructures in enhancing sustainability assurance quality and reliability. Industry-specific studies focusing on sectors such as energy, banking, insurance, manufacturing, and capital markets may further contribute to understanding the contextual diversity of sustainability assurance implementation.

From a practical perspective, policymakers and regulatory institutions should prioritize the development of localized sustainability assurance standards aligned with international frameworks while remaining compatible with domestic institutional conditions. Professional accounting bodies and universities should also design interdisciplinary educational programs focused on sustainability auditing, ESG reporting, environmental governance, and integrated assurance systems. Organizations are encouraged to strengthen sustainability-related internal controls, establish integrated sustainability reporting systems, and gradually institutionalize sustainability governance structures within corporate decision-making processes. Furthermore, the implementation of pilot sustainability assurance projects in large listed companies may facilitate organizational learning, reduce implementation resistance, and accelerate the gradual institutionalization of sustainability assurance practices across the broader business environment.

Authors' Contributions

Authors equally contributed to this article.

Ethical Considerations

All procedures performed in this study were under the ethical standards.

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Conflict of Interest

The authors report no conflict of interest.

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