The Impact of Corporate Sustainability on Financial Reporting Quality Considering the Mediating Role of Risk

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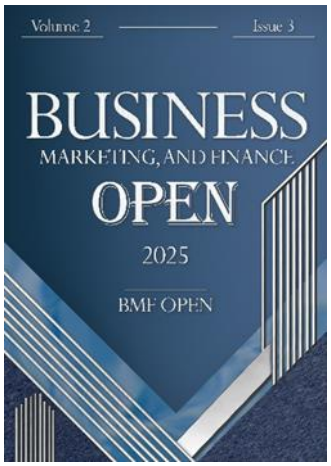

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Abstract: The present study aims to examine the impact of corporate sustainability on financial reporting quality, considering the mediating role of risk. In terms of purpose, this research is applied, and in terms of methodology, it is a descriptive-correlational study. The data are panel data and were collected using information obtained from the CODAL database and Rahavard Novin software. The statistical population consists of companies listed on the Tehran Stock Exchange during the period 2020–2024. Using a screening method, a final sample of 121 companies was selected. To analyze the research model and test the hypotheses, panel data linear regression was employed using EViews software. Furthermore, the mediating effect was examined using the three-step procedure proposed by Baron and Kenny (1986). The results of the statistical analyses indicate that corporate sustainability has a positive and significant effect on financial reporting quality. The findings also reveal that risk has a negative and significant effect on financial reporting quality. Finally, based on the last stage of the Baron and Kenny technique, it was determined that risk plays a partial mediating role in the relationship between corporate sustainability and financial reporting quality.

Keywords: Corporate Sustainability, Financial Reporting Quality, Risk.

1. Introduction

Financial reporting quality is one of the core foundations of capital-market transparency, corporate accountability, and efficient resource allocation. In listed companies, financial reports are not merely technical outputs of accounting systems; rather, they represent a formal communication mechanism through which managers transmit information about corporate performance, financial position, risk exposure, and future prospects to investors, creditors, regulators, and other stakeholders. When financial reporting quality is high, reported accounting information is more relevant, reliable, comparable, and less affected by opportunistic managerial discretion. Conversely, low-quality reporting may increase information asymmetry, impair investment decisions, intensify agency conflicts, and weaken market confidence. In this regard, financial reporting quality has been widely discussed as a mechanism that can reduce conflicts between corporate investment decisions and dividend policy, because more credible accounting information enables stakeholders to evaluate managerial decisions more accurately and reduces uncertainty in financial contracting [1]. The importance of this issue becomes more pronounced in emerging capital markets, where ownership concentration, information asymmetry, and weaker external monitoring may increase the probability of earnings management and reduce the informativeness of financial statements.

In recent years, corporate sustainability has emerged as a major strategic and reporting-oriented construct that can influence the quality of corporate information environments. Corporate sustainability refers to the integration of environmental, social, and governance considerations into corporate strategy, operations, disclosure practices, and accountability mechanisms. Unlike traditional views that narrowly define corporate performance through short-term profitability, sustainability-oriented approaches emphasize long-term value creation, responsible stakeholder engagement, environmental protection, social legitimacy, and effective governance. The growing importance of sustainability has changed expectations about what companies should report and how they should demonstrate accountability. Sustainability performance and sustainability disclosure are closely related but conceptually distinct: disclosure reflects the extent to which firms communicate sustainability-related information, whereas performance reflects the actual implementation of sustainability practices. The distinction is important because symbolic disclosure without substantive performance may not improve stakeholder trust, while genuine sustainability performance may strengthen organizational legitimacy and information credibility [2]. Therefore, examining sustainability as a determinant of financial reporting quality requires attention not only to disclosure quantity but also to whether sustainability-related practices are embedded in corporate conduct.

The link between corporate sustainability and financial reporting quality can be explained through agency theory, stakeholder theory, signaling theory, legitimacy theory, and risk management perspectives. From an agency-theoretical standpoint, sustainability practices may strengthen monitoring, reduce managerial opportunism, and align managerial behavior with broader stakeholder expectations. Firms with stronger sustainability orientation are more likely to adopt transparent governance mechanisms, disclose more comprehensive information, and avoid aggressive financial reporting practices that could damage long-term reputation. Empirical research on companies listed on the stock exchange has shown that corporate governance characteristics are associated with the level of sustainability reporting, particularly when viewed through the lens of agency theory [3]. From a stakeholder perspective, sustainability increases managerial accountability toward groups beyond shareholders, including employees, creditors, customers, communities, and regulators. From a signaling perspective, the disclosure of sustainability information can send credible signals about managerial quality, operational discipline, and long-term strategic orientation, particularly when such reporting is supported by real performance rather than impression management [4]. These theoretical perspectives jointly suggest that sustainability may improve the internal and external information environment of firms and consequently enhance financial reporting quality.

A growing body of international evidence supports the relevance of sustainability and ESG activities for accounting information quality. Recent studies have indicated that sustainability reporting can improve the quality of accounting information by increasing transparency, strengthening accountability, and reducing the scope for opportunistic discretion in financial reporting [5]. Similarly, international evidence shows that corporate environmental, social, and governance activities are significantly associated with financial reporting quality, suggesting that ESG-oriented firms may be more committed to transparent and reliable reporting practices [6]. Evidence from mandatory CSR reporting settings also indicates that sustainability-related reporting obligations may improve financial reporting quality, especially when regulatory pressure compels firms to disclose more structured non-financial information and reduces managerial discretion in withholding stakeholder-relevant information [7]. In the same line, CSR disclosure has been found to be associated with financial reporting quality in Gulf Cooperation Council countries, indicating that broader accountability through social responsibility disclosure can be connected with higher-quality financial reporting outcomes [8]. These findings suggest that

sustainability is not separate from financial reporting; rather, it can become part of the broader corporate information system.

However, the relationship between sustainability and reporting quality is not necessarily automatic or uniform across firms and institutional environments. Sustainability reporting may differ in quantity, quality, credibility, and strategic intent. Some firms may disclose sustainability information primarily for legitimacy purposes, while others may use sustainability reporting as a genuine accountability mechanism. Research on ESG reporting quantity, quality, and performance highlights the need to move beyond the simple volume of ESG disclosure and focus on the credibility, usefulness, and performance relevance of such information [9]. In addition, mandatory sustainability reporting quality is influenced by sustainable corporate governance, indicating that governance structures play a decisive role in transforming sustainability obligations into meaningful, high-quality information [10]. This implies that sustainability can improve financial reporting quality when supported by governance mechanisms, board oversight, audit committee effectiveness, and internal control systems. The quality of governance is also relevant to financial reporting quality more broadly, as compliance with audit committee recommendations and good governance codes has been linked to improved reporting quality [11]. Therefore, sustainability should be studied not only as a disclosure practice but as part of a governance-based information environment.

Corporate sustainability may also influence financial reporting quality through its effect on risk. Risk is a fundamental factor in corporate valuation, reporting incentives, managerial behavior, and stakeholder decision-making. Firms with higher risk may face greater pressure to manipulate earnings, conceal unfavorable information, or engage in opportunistic reporting to maintain access to capital and protect managerial reputation. Conversely, firms with stronger sustainability performance may reduce operational, reputational, regulatory, and market risks by improving stakeholder relations, strengthening compliance, and enhancing long-term strategic resilience. Studies have shown that ESG risks can have a significant effect on corporate value, confirming that sustainability-related risk is not merely a reputational issue but a financial and valuation-relevant matter [12]. Empirical evidence from New York Stock Exchange-listed companies also indicates that ESG factors affect corporate risk, reinforcing the view that environmental, social, and governance activities can shape the risk profile of firms [13]. In the Iranian context, corporate sustainability performance has also been linked to systematic risk, showing that sustainability practices may have meaningful implications for the risk exposure of companies in the capital market [14].

Risk is especially important as a mediating mechanism because it connects sustainability practices with financial reporting incentives. When sustainability reduces corporate risk, managers may face fewer incentives to distort financial information, smooth earnings, or conceal adverse outcomes. Lower risk can reduce the cost of capital, improve investor confidence, and enhance the credibility of corporate disclosures. In contrast, higher risk may increase uncertainty and create incentives for impression management, particularly when firms experience financial pressure or ESG-related controversies. Research indicates that financial performance shortfalls and ESG controversies are associated with ESG performance, suggesting that firms facing performance pressure and controversy may experience complex interactions between sustainability conduct, stakeholder scrutiny, and risk exposure [15]. Likewise, the relationship between corporate sustainability disclosure and risk has been confirmed in prior research, indicating that sustainability-related reporting may be connected with lower perceived or actual risk [16]. These findings provide a theoretical and empirical foundation for investigating whether risk transmits part of the effect of corporate sustainability on financial reporting quality.

The integration of risk management and sustainability has become a major issue in contemporary corporate management. Sustainability is increasingly viewed not only as an ethical or reputational concern but also as a risk governance tool that can improve financial performance and long-term resilience. A systematic literature review on the integration of risk management and sustainability emphasizes that firms are increasingly required to manage sustainability-related risks in a structured manner and incorporate them into strategic decision-making and performance evaluation [17]. This perspective is important for financial reporting quality because risk management systems and sustainability systems often overlap in areas such as internal controls, compliance, board oversight, environmental liabilities, employee welfare, supply-chain stability, and stakeholder accountability. When sustainability and risk management are integrated, the quality of both financial and non-financial information may improve because firms become more capable of identifying, measuring, monitoring, and reporting material risks. In this sense, risk can be understood as an important channel through which sustainability affects the credibility and usefulness of financial reporting.

The relationship between sustainability, financial performance, and risk has become even more salient after recent global disruptions, including the pandemic and subsequent economic volatility. Evidence comparing the effect of ESG on corporate financial performance before and after the pandemic suggests that sustainability has become an imperative for corporate resilience and financial performance in unstable environments [18]. This reinforces the idea that sustainability-oriented firms may be better positioned to manage uncertainty, maintain stakeholder trust, and provide higher-quality information to capital-market participants. At the same time, ESG has been identified as important for long-term shareholder value creation, although differences may exist between theoretical expectations and actual corporate practice [19]. These findings highlight a critical point: sustainability can create value and reduce risk only when it is genuinely embedded in corporate systems, rather than treated as a superficial reporting exercise. Therefore, examining the financial reporting implications of sustainability requires empirical analysis that considers both direct and indirect pathways.

In addition to sustainability and risk, the institutional context of financial reporting must also be considered. In markets where reporting quality is affected by governance weaknesses, complexity of operations, audit quality, and managerial discretion, firms may engage in earnings management or fraudulent reporting. Research on earnings management in frontier markets shows that institutional settings matter and can shape managerial reporting behavior [20]. This issue is highly relevant to listed companies in emerging markets, where regulatory enforcement, information transparency, and investor protection may differ from developed markets. Corporate financial sustainability has also been examined in relation to fraudulent financial reporting, with corporate governance mechanisms playing a role in reducing the likelihood of distorted reporting [21]. Moreover, auditor-related factors such as work experience, task complexity, and self-efficacy can influence auditor performance, which indirectly affects the reliability of financial reporting and the effectiveness of external monitoring [22]. These considerations show that financial reporting quality is a multidimensional outcome shaped by sustainability practices, governance mechanisms, audit quality, risk exposure, and institutional conditions.

In the Iranian capital market, the investigation of corporate sustainability, risk, and financial reporting quality is particularly important. Companies listed on the Tehran Stock Exchange operate in an environment characterized by economic uncertainty, inflationary pressures, regulatory changes, financing constraints, and high stakeholder sensitivity to corporate transparency. In such a context, sustainability may serve as a mechanism for strengthening legitimacy, reducing information asymmetry, and improving stakeholder confidence. Prior Iranian research has emphasized the role of sustainability performance in social, environmental, governance, and financial domains in

improving investment efficiency, particularly when financial reporting quality is considered as an important mechanism [23]. This suggests that sustainability may contribute to better corporate decision-making and capital allocation through improved information quality. At the same time, because risk is a central concern for investors in volatile markets, understanding whether risk mediates the sustainability–reporting quality relationship can provide a more complete explanation of how sustainability affects financial transparency.

Despite the expanding literature, several gaps remain. First, many studies examine the direct association between sustainability or ESG and financial reporting quality, but fewer studies explicitly investigate the mediating role of corporate risk. Second, prior research often focuses on disclosure quantity rather than a broader sustainability performance checklist incorporating social, environmental, and governance dimensions. Third, in emerging markets such as Iran, the combined analysis of corporate sustainability, risk, and financial reporting quality remains underdeveloped. Fourth, prior evidence suggests that sustainability can influence risk and that risk can influence corporate value and reporting behavior, but the indirect mechanism linking sustainability to financial reporting quality through risk requires additional empirical examination. Addressing these gaps can contribute to the sustainability accounting literature, risk management literature, and financial reporting quality literature by clarifying whether sustainability improves reporting quality only directly or also indirectly through risk reduction.

Accordingly, the present study aims to examine the effect of corporate sustainability on financial reporting quality, with particular emphasis on the mediating role of risk, among companies listed on the Tehran Stock Exchange during 2020–2024.

2. Methodology

Considering that the findings of this study can be used by a diverse range of stakeholders, including investors, shareholders, and organizational managers, this research is applied in terms of its objective. At the same time, based on its method of implementation, it can be classified as descriptive-correlational research. Since published articles in reputable journals were reviewed to identify, understand, and obtain information from previous theories and studies, the research is archival in this respect; furthermore, given the method of data collection, it is library-based. In addition, because the study is based on past data, it is ex post facto research. From the perspective of research ontology, the study falls within the positivist paradigm; the data are quantitative, and the relationships among the variables are tested through quantitative data analysis.

The statistical population of this study consists of all companies listed on the Tehran Stock Exchange during the period 2020–2024. Using a systematic screening method, the research sample was determined to include 121 companies.

To collect information for explaining the research literature, the library method and documentary studies were used. To obtain the required data for testing the research hypotheses, the CODAL website and Rahavard Novin software were used. Given the use of the three-step technique proposed by Baron and Kenny (1986), the research models are as follows:

First model: Step one of the technique / examining the effect of the independent variable on the dependent variable

$$FRQit = \beta0 + \beta1ESGit + \beta2Sizeit + \beta3Ageit + \beta4Levit + \beta5Roait + \beta6Liqit + \beta7TangGit + \varepsilon it$$

Second model: Step two of the technique / examining the effect of the independent variable on the mediating variable

$$Riskit = \beta0 + \beta1ESGit + \beta2Sizeit + \beta3Ageit + \beta4Levit + \beta5Roait + \beta6Liqit + \beta7TangGit + \varepsilon it$$

Third model: Step three of the technique / examining the simultaneous effect of the independent and mediating variables on the dependent variable

$FRQit = \beta0 + \beta1ESGit + \beta2Riskit + \beta3Sizeit + \beta4Ageit + \beta5Levit + \beta6Roait + \beta7Liqit + \beta8TangGit + \varepsilon it$

The operational definitions of the variables are as follows:

Dependent variable

Financial reporting quality (FRQ): This variable is equal to the value obtained from the modified Jones model, namely discretionary accruals.

Independent variable

Corporate sustainability (ESG): A corporate sustainability checklist is used to measure this variable. Accordingly, a checklist consisting of 27 indicators across three general dimensions, as presented in Table 1, is used.

Table 1. Corporate Sustainability Measurement Checklist

Dimension	Component	Code	Indicator
Social	Social assistance	S11	Charitable contributions, financial and non-financial
Social	Social assistance	S12	Support for small industries and entrepreneurship
Social	Social assistance	S13	Support for social and cultural activities
Social	Social assistance	S14	Support for health and educational programs
Social	Social assistance	S15	Scientific cooperation with universities and academic-research centers
Social	Social assistance	S16	Support for sports activities
Social	Human capital	S21	Employee health and safety — OHSAS 18001 certification
Social	Human capital	S22	Facilities and cash benefits
Social	Human capital	S23	Allocation of cultural and welfare benefits to employees
Social	Human capital	S24	Disclosure of employees' age distribution and education level
Social	Human capital	S25	Human resource training — ISO 10015
Social	Human capital	S26	Termination of human resource contracts
Environmental	Product quality	S31	Product quality assurance — ISO 9001
Environmental	Climate change	E11	Use of clean energy and prevention of pollutant gas emissions
Environmental	Resource conservation	E22	Optimal consumption of resources
Environmental	Resource conservation	E23	Energy management system — ISO 50001
Environmental	Environment	E34	Environmental protection — ISO 14001
Environmental	Environment	E35	Waste and residual materials management
Environmental	Environment	E36	Investment in environmental projects
Governance	Board of directors	G11	Use of non-executive members
Governance	Board of directors	G12	Non-executive status of the board chair
Governance	Board of directors	G13	Use of financial and accounting experts
Governance	Board of directors	G14	Number of board meetings
Governance	Shareholder rights	G21	Presence of shareholders with control rights
Governance	Shareholder rights	G22	Ownership concentration
Governance	Information transparency	G31	Reliability of information
Governance	Information transparency	G32	Audit firm

In designing the indicators, an attempt was made to move sustainability scoring away from mere disclosure and closer to actual performance. These indicators are scored as zero or one through content analysis of the annual report on the activities of the board of directors. Finally, the total corporate sustainability score is calculated by dividing the obtained score by the total attainable score, namely 27.

Moreover, the scoring procedure for the indicators related to the corporate governance component presented in the above table is explained in detail in Table 2 (Hummel & Schlick, 2016; Hosseini & Ebrahimi, 2023).

Table 2. Measurement Procedure for Corporate Governance Indicators

Indicator	Scoring procedure
Use of non-executive members	If the ratio of non-executive members is higher than the calculated sample mean, a score of one is assigned; otherwise, a score of zero is assigned.
Non-executive status of the board chair	If the chair of the board is non-executive, a score of one is assigned; otherwise, a score of zero is assigned.
Use of financial and accounting experts	If an accounting expert is present on the board of directors, a score of one is assigned; otherwise, a score of zero is assigned.
Number of board meetings	If the number of annual meetings is disclosed in the board of directors' activity report, a score of one is assigned; otherwise, a score of zero is assigned.
Presence of shareholders with control rights	If shareholders with control rights are present, a score of one is assigned; otherwise, a score of zero is assigned.
Ownership concentration	If the percentage of free-float shares is lower than the calculated sample mean, a score of one is assigned; otherwise, a score of zero is assigned.
Reliability of information	If long-outstanding receivables are absent, a score of one is assigned; otherwise, a score of zero is assigned.
Audit firm	If the company is audited by the Audit Organization, a score of one is assigned; otherwise, a score of zero is assigned.

Mediating variable

Risk: This variable is equal to the standard deviation of monthly stock returns for each year.

Control variables

Company size (Size): This variable is equal to the logarithm of the company's assets.

Company age (Age): This variable is equal to the logarithm of the number of years the company has been listed on the stock exchange.

Financial leverage (Lev): This variable is measured as the ratio of total debt to total assets.

Return on assets (ROA): This variable is measured as the ratio of net profit to total assets.

Liquidity (Liq): The inverse Amihud measure is used for this variable.

Tangible fixed assets (Tangibility): This variable is equal to the value of tangible fixed assets reported in the audited financial statements, which is scaled by dividing it by total assets.

To analyze the research relationships, two approaches were used: descriptive statistics and inferential statistics. In the descriptive statistics section, the main data indicators, including minimum, maximum, mean, and standard deviation, were extracted. Subsequently, in the inferential statistics section, a panel data regression model was used to examine the research variables and their relationships with the dependent variables. It should be noted that, due to the panel nature of the data, multiple linear regression based on panel data was employed. To evaluate the adequacy of model fit, tests such as ARCH, VIF, Durbin–Watson, and Fisher tests were used, and the Limer and Hausman tests were conducted to determine the appropriate model specification. The t-test was also used to examine the research hypotheses. Moreover, the three-step method proposed by Baron and Kenny (1986) was applied to analyze the mediating effect. Excel, for classifying and organizing the data, and EViews, for conducting the statistical calculations, were the main analytical tools.

3. Findings and Results

In the descriptive statistics section, the data were analyzed using measures of central tendency and measures of dispersion. The results for all research variables are presented in Table 3. Regarding the independent, mediating, and dependent variables, as well as the control variables, the low standard deviation values indicate limited dispersion of the data and, consequently, greater stability of the information.

Table 3. Descriptive Statistics

Variable	Mean	Minimum	Maximum	Skewness	Kurtosis	Standard Deviation
Financial reporting quality	0.29	0.005	0.90	0.59	-0.23	0.19
Corporate sustainability	0.55	0.03	0.92	-0.42	-0.57	0.18
Risk	0.18	0.04	0.59	2.005	2.21	0.07
Company size	7.26	5.64	9.57	0.73	0.50	0.69
Company age	1.57	0.69	1.85	-1.06	1.50	0.19
Financial leverage	0.41	0.01	0.89	0.31	-0.16	0.18
Return on assets	0.24	-0.37	0.76	0.38	-0.019	0.16
Liquidity	0.03	0.0002	0.57	6.15	9.07	0.05
Tangible fixed assets	0.24	0.0005	0.86	0.87	-0.06	0.19

When variables are non-stationary or contain a unit root, regression estimates may become biased and produce misleading results. In this study, the Levin, Lin, and Chu (LLC) test was used to examine the stationarity of the data, and the results are presented in the following table.

Table 4. Results of the Variable Stationarity Test

Variable	Statistic	Significance Level	Conclusion
Financial reporting quality	-61.82	0.000	Stationarity confirmed at the 99% confidence level
Corporate sustainability	-32.03	0.000	Stationarity confirmed at the 99% confidence level
Risk	-44.11	0.000	Stationarity confirmed at the 99% confidence level
Company size	-60.34	0.000	Stationarity confirmed at the 99% confidence level
Company age	-19.12	0.000	Stationarity confirmed at the 99% confidence level
Financial leverage	-22.20	0.000	Stationarity confirmed at the 99% confidence level
Return on assets	-17.07	0.000	Stationarity confirmed at the 99% confidence level
Liquidity	-52.14	0.000	Stationarity confirmed at the 99% confidence level
Tangible fixed assets	-13.34	0.000	Stationarity confirmed at the 99% confidence level

Accordingly, by rejecting the null hypothesis in all cases, which states that the variables are non-stationary, it can be concluded that all relevant variables are stationary.

A) Examination of the first hypothesis: the first step of the Baron and Kenny technique, namely the effect of the independent variable on the dependent variable.

Since the Baron and Kenny (1986) approach was used to analyze the model in this study, the first stage of this method requires confirmation of the effect of the independent variable on the dependent variable. This stage is, in fact, equivalent to the first research hypothesis. In addition, given the structure of the model, it is necessary first to determine the data pattern using the Limer test based on the relevant assumptions.

H0 = Pooled effects method, or pooled data

H1 = Random effects method, or panel data

The result of this test is presented in the following table.

Table 5. Results of the Limer Test for the First Model

Test Statistic	Significance Level	Test Result
1.80	0.000	Rejection of the null hypothesis

Given the rejection of the null hypothesis, the Hausman test is required to determine whether the fixed effects or random effects method should be used. The hypotheses related to this test are as follows:

H0 = Random effects method

H1 = Fixed effects method

The result is presented in Table 6.

Table 6. Results of the Hausman Test for the First Model

Test Statistic	Significance Level	Test Result
36.99	0.000	Rejection of the null hypothesis

Accordingly, as observed, given the rejection of the null hypothesis in the Hausman test, the fixed effects method was selected as the most appropriate method for estimating the model. Next, to examine the presence or absence of heteroscedasticity, the ARCH LM test was used, and the results are presented in the following table.

Table 7. Results of the Heteroscedasticity Test for the First Model

Test Name	Test Statistic	Significance Level	Status
Chi-square	1.29	0.2548	No heteroscedasticity

Given the confirmation of the null hypothesis regarding homoscedasticity, the ordinary least squares (OLS) estimation method was selected as the appropriate estimation method for the model. The results are presented in Table 8.

Table 8. First-Step Regression Results

Dependent variable: Financial reporting quality

$FRQit = \beta0 + \beta1ESGit + \beta2Sizeit + \beta3Ageit + \beta4Levit + \beta5Roait + \beta6Liqit + \beta7TangGit + \varepsilon it$

Variables	Coefficient	Standard Error	t-Statistic	Significance Level	VIF
Intercept	0.25	0.088	2.84	0.0046	—
Corporate sustainability	0.12	0.034	3.66	0.0003	1.18
Company size	0.02	0.009	2.17	0.0300	1.22
Company age	0.006	0.028	0.23	0.8109	1.06
Financial leverage	-0.41	0.029	-14.26	0.0000	1.49
Return on assets	0.11	0.051	2.21	0.0291	1.66
Liquidity, inverse measure	-0.19	0.116	-1.69	0.0905	1.06
Tangible fixed assets	-0.29	0.028	-10.54	0.0000	1.25
Adjusted coefficient of determination	0.49				
F-statistic	5.57				
Significance level of the F-statistic	0.000				
Durbin–Watson statistic	2.18				

The F-statistic and its probability, which are 5.57 and 0.000, respectively, indicate the overall adequacy of the model. The Durbin–Watson statistic, which falls within the range of 1.5 to 2.5, also indicates the absence of serial autocorrelation in the model. Referring to the VIF criterion also rejects the presence of multicollinearity among the independent variables. Finally, based on the significance level and coefficient of the corporate sustainability variable, namely 0.0003 and 0.12, the positive and significant effect of corporate sustainability on financial reporting quality is confirmed at the 99% confidence level. Therefore, in addition to confirming the first step of the Baron and Kenny technique, the first research hypothesis is also confirmed.

B) Examination of the second hypothesis: the second step of the Baron and Kenny technique, namely the effect of the independent variable on the mediating variable.

Given the confirmation of the effect of the independent variable on the dependent variable, to examine the existence of a mediating effect according to the stages of the Baron and Kenny technique, the second step must be implemented. In this stage, the effect of the independent variable on the mediating variable is tested; evidently, rejection of this hypothesis would indicate the absence of a mediating effect. Given the structure of the model, in this section, as in the previous model, it is necessary to conduct the Limer, Hausman, and ARCH tests, and the results are presented in the consolidated Table 9.

Table 9. Results of the Limer, Hausman, and ARCH Tests for the Second Model

Test	Test Statistic	Significance Level	Result / Status
Limer test	4.20	0.000	Rejection of the null hypothesis
Hausman test	69.01	0.000	Rejection of the null hypothesis
Heteroscedasticity test, Chi-square	2.42	0.1200	No heteroscedasticity

Given the confirmation of the required conditions, the OLS estimation method was selected as the appropriate estimation method for the model between the independent variable, corporate sustainability, and the mediating variable, risk. The results are presented in Table 10.

Table 10. Second-Step Regression Results

Dependent variable: Risk

$Risk_{it} = \beta 0 + \beta 1 ESG_{it} + \beta 2 Size_{it} + \beta 3 Age_{it} + \beta 4 Lev_{it} + \beta 5 Roa_{it} + \beta 6 Liq_{it} + \beta 7 TangG_{it} + \varepsilon_{it}$

Variables	Coefficient	Standard Error	t-Statistic	Significance Level	VIF
Intercept	0.31	0.042	7.56	0.000	—
Corporate sustainability	-0.22	0.092	-2.39	0.0244	1.18
Company size	-0.01	0.004	-2.87	0.0042	1.22
Company age	-0.01	0.013	-1.34	0.1791	1.06
Financial leverage	0.05	0.016	3.07	0.0022	1.52
Return on assets	-0.08	0.021	-3.98	0.0001	1.69
Liquidity, inverse measure	-0.08	0.055	-1.59	0.1124	1.06
Tangible fixed assets	0.007	0.014	0.47	0.6361	1.24
Adjusted coefficient of determination	0.45				
F-statistic	4.99				
Significance level of the F-statistic	0.000				
Durbin–Watson statistic	2.34				

The F-statistic and its probability, which are 4.99 and 0.000, respectively, indicate the overall adequacy of the model. The Durbin–Watson statistic, which falls within the range of 1.5 to 2.5, also indicates the absence of serial autocorrelation in the model. Referring to the VIF criterion also rejects the presence of multicollinearity among the independent variables. Finally, based on the significance level and coefficient of the corporate sustainability variable, namely 0.0244 and -0.22, the negative and significant effect of corporate sustainability on corporate risk is confirmed at the 95% confidence level. Therefore, in addition to confirming the second step of the Baron and Kenny technique, the second research hypothesis is also confirmed.

C) Examination of the third hypothesis: the third step of the Baron and Kenny technique, namely the simultaneous effect of the independent and mediating variables on the dependent variable.

Finally, in the last stage of the Baron and Kenny (1986) method, which aims to confirm or reject the existence of a mediating effect, the independent and mediating variables are entered into the model simultaneously. At this stage, two issues are examined: first, whether the mediating variable affects the dependent variable; and second,

whether the independent variable still affects the dependent variable when the mediating variable is included in the model.

As in the previous models, it is also necessary to conduct the required tests, namely the Limer, Hausman, and ARCH tests, for this model. The results are presented in the consolidated Table 11.

Table 11. Results of the Limer, Hausman, and ARCH Tests for the Third Model

Test	Test Statistic	Significance Level	Result / Status
Limer test	1.95	0.000	Rejection of the null hypothesis
Hausman test	53.46	0.000	Rejection of the null hypothesis
Heteroscedasticity test, Chi-square	0.001	0.9691	No heteroscedasticity

Given the confirmation of the required conditions, the ordinary least squares estimation method was also used for model fitting in this case. The results are presented in Table 12.

Table 12. Third-Step Regression Results

Dependent variable: Financial reporting quality

$FRQit = \beta0 + \beta1ESGit + \beta2Riskit + \beta3Sizeit + \beta4Ageit + \beta5Levit + \beta6Roait + \beta7Liqit + \beta8TangGit + \varepsilon it$

Variables	Coefficient	Standard Error	t-Statistic	Significance Level	VIF
Intercept	0.32	0.108	3.01	0.0027	—
Corporate sustainability	0.05	0.014	3.49	0.0005	1.20
Risk	-0.37	0.111	-3.38	0.0008	1.13
Company size	0.01	0.006	2.14	0.0323	1.28
Company age	0.005	0.011	0.46	0.6422	1.06
Financial leverage	-0.39	0.031	-12.68	0.0000	1.53
Return on assets	0.08	0.037	2.20	0.0298	1.69
Liquidity, inverse measure	-0.16	0.110	-1.49	0.1353	1.10
Tangible fixed assets	-0.23	0.024	-9.68	0.0000	1.25
Adjusted coefficient of determination	0.46				
F-statistic	5.02				
Significance level of the F-statistic	0.000				
Durbin–Watson statistic	2.14				

Regarding the above model, the F-statistic and its probability, which are 5.02 and 0.000, respectively, indicate the overall adequacy of the model. The Durbin–Watson statistic, which falls within the range of 1.5 to 2.5, also indicates the absence of serial autocorrelation in the model. Referring to the VIF criterion also rejects the presence of multicollinearity among the independent variables. As observed, the mediating variable, risk, has a negative and significant effect on the dependent variable, financial reporting quality, at the 99% confidence level. Therefore, the third condition of the Baron and Kenny (1986) method is confirmed, and accordingly, the third research hypothesis is also confirmed. At the same time, because the coefficient of the independent variable remains significant despite the inclusion of the mediating variable in the model, it can be concluded that the mediating variable, risk, has a partial mediating effect on the relationship between corporate sustainability and financial reporting quality.

4. Discussion and Conclusion

The present study examined the effect of corporate sustainability on financial reporting quality, considering the mediating role of risk among companies listed on the Tehran Stock Exchange during the period 2020–2024. The findings demonstrated that corporate sustainability has a positive and significant effect on financial reporting

quality. In addition, corporate sustainability was found to have a negative and significant effect on corporate risk. The results further revealed that risk exerts a negative and significant effect on financial reporting quality. Finally, the mediating analysis based on the Baron and Kenny approach indicated that risk plays a partial mediating role in the relationship between corporate sustainability and financial reporting quality. These findings collectively suggest that sustainability-oriented companies not only produce higher-quality financial reports directly through stronger governance, transparency, and accountability mechanisms, but also indirectly improve reporting quality by reducing organizational risk.

The first finding of the study showed that corporate sustainability positively affects financial reporting quality. This result is consistent with the theoretical foundations of stakeholder theory, legitimacy theory, signaling theory, and agency theory. From a stakeholder perspective, organizations that actively address environmental, social, and governance concerns are under greater pressure to provide transparent and reliable information to various stakeholder groups. Consequently, such firms tend to develop stronger reporting systems and higher-quality disclosure practices. Similarly, legitimacy theory suggests that companies seek to maintain social approval by demonstrating responsible behavior and transparency. Sustainability initiatives create incentives for organizations to improve both financial and non-financial reporting, thereby enhancing the credibility of information presented to stakeholders. This interpretation aligns closely with the findings of Hummel and Schlick, who argued that sustainability performance and sustainability disclosure are closely connected and that firms with superior sustainability performance tend to provide more credible and transparent disclosures [2].

The positive relationship observed between corporate sustainability and financial reporting quality is also supported by the growing international literature on ESG and accounting information quality. Ferreira et al. reported that sustainability reporting improves accounting information quality by increasing transparency, accountability, and stakeholder confidence in corporate disclosures [5]. Likewise, Ozer et al. demonstrated that environmental, social, and governance activities significantly enhance financial reporting quality across international settings [6]. The present findings reinforce this argument by showing that sustainability initiatives are not merely symbolic activities but can strengthen the overall information environment of firms. Organizations that invest resources in sustainability programs generally establish more comprehensive monitoring systems, stronger internal controls, and more rigorous governance procedures, all of which contribute to improving the reliability and relevance of financial reports.

The findings are also consistent with evidence from mandatory sustainability and CSR reporting environments. Wang et al. found that mandatory CSR reporting requirements improved financial reporting quality by increasing transparency and reducing managerial discretion in reporting practices [7]. Similarly, Ani demonstrated that corporate social responsibility disclosure is positively associated with financial reporting quality in Gulf Cooperation Council countries [8]. These studies suggest that sustainability-related activities encourage organizations to adopt a broader accountability framework that extends beyond financial performance. The current results support this perspective and indicate that sustainability-oriented firms in the Iranian capital market are likely to engage in more transparent reporting practices because sustainability performance requires systematic monitoring, data collection, and disclosure processes.

Another explanation for the positive association between sustainability and financial reporting quality can be derived from corporate governance mechanisms. Sustainability initiatives are frequently accompanied by stronger governance structures, more effective boards of directors, and enhanced oversight functions. Previous research has emphasized the importance of governance mechanisms in improving both sustainability reporting and financial

reporting outcomes. Gerwing et al. found that sustainable corporate governance significantly improves sustainability reporting quality [10]. Similarly, Garcia-Blandon et al. reported that compliance with audit committee recommendations and governance best practices contributes to higher financial reporting quality [11]. Since the corporate sustainability index used in the present study incorporates governance indicators alongside environmental and social dimensions, the observed positive effect on reporting quality may partly reflect the role of governance structures in constraining opportunistic managerial behavior and strengthening reporting integrity.

The second major finding indicated that corporate sustainability has a negative and significant effect on corporate risk. This result suggests that firms with stronger sustainability performance experience lower levels of uncertainty and risk exposure. From a theoretical perspective, sustainability activities improve stakeholder relationships, strengthen corporate reputation, reduce regulatory pressures, and enhance organizational resilience. These factors collectively contribute to a lower risk profile. Organizations that actively manage environmental impacts, social responsibilities, and governance issues are generally better prepared to respond to external shocks and operational challenges. Consequently, investors and other stakeholders may perceive these firms as less risky.

The negative relationship between sustainability and risk is strongly supported by previous empirical studies. Hosseini and Ebrahimi found that corporate sustainability performance significantly reduces systematic risk among firms listed in the Iranian capital market [14]. Similarly, Khalifeh Soltani and Alishahi Bajestani reported a significant relationship between sustainability disclosure and lower corporate risk [16]. International evidence also confirms this relationship. Peliu demonstrated that ESG factors significantly influence corporate risk among New York Stock Exchange-listed firms [13]. Furthermore, Anton et al., in their systematic review of sustainability and risk management integration, concluded that sustainability initiatives play an important role in reducing organizational risks and improving long-term performance [17]. The present findings therefore provide additional evidence that sustainability functions as a strategic risk-management mechanism.

The reduction of corporate risk through sustainability practices can also be interpreted through the lens of stakeholder trust and reputational capital. Firms that maintain strong ESG performance are less likely to face environmental controversies, social conflicts, regulatory sanctions, or governance failures. DasGupta found that ESG controversies are associated with weaker ESG performance and can negatively affect organizational outcomes [15]. Therefore, sustainability-oriented organizations can reduce the likelihood of adverse events by proactively addressing stakeholder concerns. Similarly, Al Azizah and Haron highlighted the importance of ESG practices for corporate resilience and performance, particularly during periods of uncertainty and economic disruption [18]. These observations help explain why firms with stronger sustainability performance in the present study exhibited lower risk levels.

The third finding of the study revealed that risk negatively affects financial reporting quality. This result indicates that firms experiencing higher levels of risk tend to provide lower-quality financial reports. This finding is theoretically meaningful because risk creates incentives for managers to engage in earnings management, information manipulation, or selective disclosure in order to reduce stakeholder concerns and maintain access to capital. When firms operate under conditions of elevated uncertainty, managers may experience greater pressure to present favorable financial results, thereby reducing reporting quality.

This finding is consistent with the broader literature on reporting quality and managerial incentives. Martens et al. demonstrated that institutional conditions and organizational pressures can influence earnings management practices [20]. Likewise, Esmaeili and Oshni argued that corporate financial sustainability and governance mechanisms are important determinants of fraudulent financial reporting practices [21]. When risk levels increase,

information asymmetry tends to rise, making it more difficult for external stakeholders to accurately evaluate firm performance. As a result, opportunities for reporting distortions may increase. Conversely, lower-risk firms often experience greater stability, reduced financing pressures, and stronger stakeholder confidence, creating an environment that supports more transparent and reliable financial reporting.

The negative relationship between risk and reporting quality may also be explained through investor behavior and market discipline. Investors generally demand higher-quality information when uncertainty increases. However, high-risk firms may struggle to meet these expectations because uncertainty itself complicates forecasting, valuation, and disclosure processes. Cohen emphasized that ESG-related risks significantly affect corporate value and investor perceptions [12]. Therefore, risk not only influences operational performance but also shapes the quality and credibility of information provided to capital-market participants. The current findings suggest that reducing risk through sustainability initiatives can contribute indirectly to improving reporting quality.

The final and most important finding of the study concerns the mediating role of risk. The results indicated that risk partially mediates the relationship between corporate sustainability and financial reporting quality. This means that sustainability improves reporting quality through two pathways. First, sustainability directly enhances transparency, governance effectiveness, and disclosure quality. Second, sustainability reduces corporate risk, which subsequently contributes to higher-quality financial reporting. The persistence of a significant direct effect alongside a significant indirect effect indicates partial rather than full mediation.

This finding provides an important contribution to the literature because most previous studies have examined either the sustainability–reporting quality relationship or the sustainability–risk relationship separately. The current results demonstrate that risk serves as a transmission mechanism connecting sustainability practices to financial reporting outcomes. In other words, sustainability does not influence reporting quality solely through governance and disclosure improvements; it also affects the broader risk environment within which reporting decisions are made. This interpretation is consistent with the argument that ESG initiatives create long-term shareholder value by reducing uncertainty and enhancing organizational resilience [19]. It is also compatible with findings suggesting that sustainability performance can improve investment efficiency through the quality of financial information provided to stakeholders [23].

Overall, the findings of this study suggest that corporate sustainability should be viewed as a strategic organizational capability rather than merely a reporting obligation. Sustainability initiatives strengthen governance structures, improve stakeholder relationships, reduce organizational risk, and enhance the credibility of financial information. Consequently, firms that adopt comprehensive sustainability practices are more likely to achieve both superior reporting quality and stronger long-term organizational performance. These results contribute to the growing body of literature emphasizing the interconnected nature of sustainability, risk management, and financial reporting quality and provide empirical evidence from an emerging market context that complements existing international findings [5, 6, 13, 17].

Several limitations should be acknowledged when interpreting the findings of this study. First, the analysis was limited to companies listed on the Tehran Stock Exchange, which may restrict the generalizability of the findings to other institutional and regulatory environments. Second, corporate sustainability was measured using a checklist-based scoring system derived from publicly available disclosures, which may not fully capture the actual implementation and effectiveness of sustainability practices within organizations. Third, the study employed archival data and an ex post facto research design, limiting the ability to establish definitive causal relationships

among the variables. Fourth, risk was measured using stock return volatility, whereas other dimensions of risk, such as operational risk, reputational risk, or ESG-specific risk, were not considered. Finally, external macroeconomic conditions and industry-specific factors may have influenced the observed relationships but were not explicitly incorporated into the analytical model.

Future studies may expand the scope of investigation by examining the relationship between corporate sustainability and financial reporting quality in different industries, countries, and institutional contexts. Researchers could explore alternative measures of sustainability performance and reporting quality to determine whether the observed relationships remain stable across different methodological approaches. Additional mediating and moderating variables, such as corporate governance quality, ownership structure, audit quality, managerial characteristics, organizational culture, and institutional pressures, may also be incorporated into future models. Longitudinal studies with longer observation periods could provide deeper insights into the dynamic effects of sustainability practices over time. Furthermore, future research may investigate specific environmental, social, and governance dimensions separately to identify which aspects of sustainability exert the strongest influence on risk reduction and reporting quality.

Managers should view sustainability initiatives as strategic investments that contribute not only to social and environmental objectives but also to organizational transparency and information quality. Corporate boards should strengthen sustainability governance structures and integrate sustainability considerations into strategic planning, risk management, and performance evaluation processes. Regulators and policymakers may encourage more comprehensive sustainability reporting frameworks to enhance transparency and accountability in capital markets. Investors should consider sustainability performance as an indicator of organizational stability and reporting reliability when evaluating investment opportunities. Finally, firms should establish integrated systems that combine sustainability management, risk management, and financial reporting functions to improve decision-making quality, strengthen stakeholder confidence, and support long-term value creation.

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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