IMPACT OF SUSTAINABILITY REPORTING ON FINANCIAL PERFORMANCE AND RISKS: EVIDENCE FROM THE EMERGING MARKET

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Abstract

This study investigates the impact of sustainability reporting (SR) on the financial performance of industrial companies listed on the Amman Stock Exchange (ASE) from 2016 to 2022. Focusing on return on assets (ROA), return on equity (ROE), and earnings per share (EPS), the research addresses the persistent challenges in economic sustainability (ES), environmental sustainability (ENS), and social sustainability (SOCS) among Jordanian industrial companies, which are attributed to limited disclosure indicators in annual reports. Methodologically, the study employs tests for normal distribution, multicollinearity, Pearson correlation matrix, variance inflation factor (VIF), stationary testing, and regression analysis with lagged independent variables. The findings reveal that economic, environmental, and SOCS positively affect ROA and ROE, whereas these factors have not significantly impacted market performance indicators such as EPS and Tobin's Q. Market fluctuations appear to be driven more by speculation than by sustainability disclosures. These results highlight the complex interplay between sustainability practices and financial outcomes, offering valuable insights for decision-makers, investors, and stakeholders.

Keywords: Sustainability Reporting, Financial Performance, Global Reporting Initiative (G4), Industrial Companies, ROA, ROE, Jordan

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1. INTRODUCTION

In an era marked by increasing economic, social, and environmental challenges, sustainability reporting (SR) has emerged as a critical aspect of the business landscape. These reports play a pivotal role in documenting how businesses contribute to national economic growth and the overall quality of life for citizens. However, the depletion of natural resources and environmental pollution accompanying business growth raises significant concerns about sustainability. The expanding global population demands more goods and services, leading to heightened exploitation of natural resources, which threatens environmental sustainability (ENS), social equity, and human survival.

In response, major economic actors, including government administrations, legislators, and

corporate managers, have explored various approaches to mitigate these challenges. Enhancing the quality of financial assets, implementing corporate social responsibility (CSR) programs, and adopting SR are among the strategies employed (Iriyadi et al., 2024; Iballi et al., 2022; Gokten et al., 2020) and in recent years, there has been a global shift towards sustainable business practices (Alshaiba & Abu Khalaf, 2024; Azwari et al., 2023).

For companies to remain competitive, it is essential to proactively minimize negative impacts such as emissions, waste generation, and inequitable employee treatment. Larger corporations, in particular, prioritize establishing a sustainable and responsible presence in their industries. Financial Reporting Standard 101 (FRS 101) — "Reduced disclosure framework", underscores that organizations should provide supplementary information in annual reports to enhance stakeholders' decision-making (Johari & Komathy, 2019; Ngu & Amran, 2021).

Effectively managing both financial and non-financial operations is crucial for business survival (Taouab & Issor, 2019). Over the past decade, an increasing number of international businesses have adopted SR to meet the evolving information needs of managers, investors, and other stakeholders, thereby aiding in decision-making (Boiral & Heras-Saizarbitoria, 2020). While financial reports offer essential insights into an organization's financial status, operational performance, and cash flow, they are often insufficient for comprehensive decision-making (Afifa et al., 2021). Stakeholders now demand extensive information on an entity's environmental, social, and economic impacts. SR provides transparent and responsible non-financial information, expanding the scope of accounting beyond mere financial data (Gokten et al., 2020).

Sustainability performance serves as a key indicator for improving business operations by integrating diverse elements into effective strategies. This involves processes such as improvement, testing, progress monitoring, and evaluating the quality of operations to establish robust sustainability capabilities. Continuous reporting on the financial implications of environmental conditions and social performance highlights the ability to create value within the business context (Al-Rusheidi & Supian, 2021).

A company's financial performance includes its income, operating costs, debt structure, assets, and investment returns. Evaluating financial performance requires analyzing financial statements, interpreting the data in financial reports, and meeting the information needs of both internal and external stakeholders (Saputra, 2022). The integration of sustainability considerations into business practices addresses concerns about environmental degradation, social inequality, and corporate governance issues. Stakeholders, including investors, customers, and regulatory bodies, increasingly advocate for greater transparency through sustainability reports (Kuzey & Uyar, 2017).

In examining the intricate relationship between SR and financial performance, it is imperative to consider the influence of key control variables such as *company growth (GROWTH), company age (AGE),* and *company debt ratio (DR).* These control variables provide context for understanding how *SR*, as an independent variable, can impact financial performance metrics such as return on assets (ROA), return on equity (ROE), and earnings per share (EPS).

This study aims to investigate the relationship between *SR* and financial performance in industrial enterprises listed on the Amman Stock Exchange (ASE, https://www.ase.com.jo/en). By considering key control variables such as *GROWTH*, *AGE*, and *DR*, the study examines how these factors interact with SR to influence financial metrics like ROA, ROE, and EPS (Haidar et al., 2021). The significance of this research lies in its potential to provide practical guidance for industrial organizations in adopting sustainable reporting methods, thereby enhancing long-term competitiveness. It also supports investors and financial analysts in integrating environmental, social, and economic factors into their decision-making processes. Additionally, the findings may inform policymakers in developing frameworks that encourage SR, contributing to broader environmental and societal goals. Theoretically, this study advances the understanding of the complex dynamics between financial performance and sustainable business practices, laying the groundwork for future research and theoretical development in this area.

This paper is organized as follows. Section 1 presents an introduction. Section 2 reviews the relevant literature. Section 3 outlines the research methodology. Section 4 presents the results. Section 5 discusses the findings. Finally, Section 6 provides conclusions.

2. LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

2.1. Conceptual framework

Sustainability has become a vital feature for organizations, ensuring their long-term existence and quality outcomes by addressing human well-being, living standards, and advancement. Traditional financial reporting fails to meet the diverse information needs of stakeholders, who now demand value reports, sustainability reports, and intellectual capital statements (Almashhadani & Almashhadani, 2023). This review synthesizes key literature on SR, highlights the gaps, and links these findings to the current study.

McChesney (1991) defines sustainability as meeting present needs without compromising future generations' ability to meet theirs. This concept has been widely adopted by international organizations. SR integrates financial prosperity, environmental preservation, and social responsibility into organizational goals, aligning with sustainable development and CSR (Schaltegger et al., 2013).

Morros (2016) describes sustainability as a company's voluntary involvement in social and environmental issues, impacting both operations and stakeholder interactions. Bazlamit et al. (2020) note that while sustainable development offers a framework for addressing environmental and social challenges, it lacks specific implementation guidelines, necessitating diverse stakeholder involvement.

Various theories explain the motivations behind firms' sustainability disclosures:

• *Stakeholder theory*: This theory emphasizes the relationship between organizations and stakeholders, recognizing diverse interests beyond financial performance (Freeman & Evan, 1990). Companies disclose sustainability information to meet stakeholder expectations and gain competitive advantages (Clarkson, 2012).

• *Agency theory*: This theory addresses the information asymmetries and conflicts between managers (agents) and capital providers (principals). Voluntary disclosure of sustainability information can reduce agency costs and information asymmetry, leading to a lower cost of capital (Buallay, 2020).

• *Legitimacy theory*: According to Suchman (1995), legitimacy involves aligning organizational conduct with societal norms and values. Companies use *SR* to legitimize their practices and secure social acceptance, which is crucial for accessing necessary resources (Burlea & Popa, 2013).

While there is extensive literature on *SR*, several gaps remain:

• Inconsistent definitions and measures: Different studies use varying definitions and metrics for *SR*, making it difficult to compare results and draw general conclusions (Bazlamit et al., 2020).

• Impact on financial performance: The relationship between *SR* and financial performance remains ambiguous. Some studies report positive impacts (Clarkson, 2012), while others find no significant relationship (Buallay, 2020). This inconsistency necessitates further investigation.

• Contextual factors: The influence of contextual factors like company growth, age, and debt ratio on the SR-financial performance relationship is underexplored. These factors may moderate the impact of SR on financial outcomes, warranting a more nuanced analysis (Haidar et al., 2021).

This study aims to fill these gaps by providing a consistent definition and measure for *SR*. Moreover, investigates the specific impact of *SR* on financial performance metrics (ROA, ROE, EPS) in the context of industrial enterprises listed on the ASE. Finally, consider the moderating effects of company growth, age, and debt ratio on the relationship between SR and financial performance.

2.2. Sustainability reporting evolution and corporate sustainability

Developments in business sustainability at the micro-level seem to mirror the macro-level evolution of sustainable development. In the wake of the "Brundtland report", several global organizations have established equivalent definitions for the business community. In work by Deloitte and Touche, and The World Business Council for Sustainable Development (1992), for example, it is recommended that companies incorporate strategies that "…the needs of the enterprise and its stakeholders today while protecting, sustaining and enhancing the human and natural resources that will be needed in the future" (p. 3). To guarantee that future corporations will have access to resources comparable to those enjoyed by current generations, these policies mainly focus on protecting the natural environment (Moldan et al., 2012; Goodell et al., 2021).

Within this framework, several researchers have focused on developing tactics that businesses ought to use to protect natural resources, as well as identifying the advantages and disadvantages of doing so. Numerous case studies have been conducted to determine whether there are positive or negative correlations between a firm's economic and environmental performance. During the United Nations (UN) Conference on "Environment and Development" (UN, 1992), the notion of sustainable development made a significant leap. These institutional activities highlight the importance of social actors in accomplishing the basic goals of sustainable development was highlighted by these institutional activities (Mebratu, 1998; Bebbington & Unerman, 2018).

Sustainability is a multifaceted concept that is understood differently by various stakeholders, leading to competing interpretations and approaches for addressing sustainability challenges. Organizations have increasingly adopted SR, aligning with guidelines from entities, such as the Global Reporting Initiative[1] (GRI), to disclose their economic, social, and environmental performance. This has sparked research exploring the motivations behind reporting sustainability disclosures.

The rationale behind SR can be elucidated through key accounting theories, specifically accountability, legitimacy, and political theories, as outlined by Deegan (2002).

The reasons businesses voluntarily disclose environmental, social, and governance (ESG) information are explained by several ideas. From the perspective of legitimacy theory, the motivation for this kind of disclosure is to achieve social legitimacy, especially in reaction to the effects that the firm's activities have on the environment or society. Building ESG legitimacy is a strong motivator for ESG disclosure. Furthermore, ESG disclosure serves as a strategic tool for impression management in the face of social media impact and stakeholder scrutiny, helping preserve and improve a company's reputation. Information asymmetry between external investors and business managers is another motivating factor that highlights the voluntary nature of corporate disclosure, as outlined by Xie et al. (2019) and Deegan (2014). SR has emerged as a crucial tool for companies and organizations, enabling them to meet the increasing expectations of transparency from customers, investors, various stakeholders, and society at large (Martínez et al., 2016). The viewpoint on SR goes beyond a public relations tool; it should be viewed as a tool that helps businesses determine their advantages and disadvantages, as well as certain interdependencies within the organization, as posited by Jankalova and Jankal (2017). For stakeholders to determine how committed a company is to moral business practices, they need access to independently validated sustainability information (O'Dwyer et al., 2005).

The diverse approaches of corporate reports regarding sustainability matters could enhance communication between companies and stakeholders (Nikolaou & Evangelinos, 2010). These motivations often stem from a desire to enhance the corporate image, credibility, and social acceptance, filling legitimation gaps. While symbolic benefits are common drivers, market-based reasons and material gains influence SR. Motivations in developing

[1] https://www.globalreporting.org/

countries may differ and are shaped by socioeconomic, political, and cultural contexts (Moldan et al., 2012).

Reporting in these contexts may be motivated by external forces such as donor agencies, parent companies, or foreign buyers, who impose reporting requirements. Some exceptions note the role of local actors, such as media and non-governmental organizations, in fostering SR. However, the link between motivation and reporting variations remains relatively underexplored in the literature, particularly in the context of developing countries (Mahmood & Uddin, 2021).

According to Haidar et al. (2021), factors influencing firms' proclivity for SR include industry type, firm size, and the presence of sustainability committees. In developed economies, companies are driven by stakeholders and external assurance requirements, leading to obligatory and distinct sustainability disclosures. Additionally, in developing countries, legitimacy and agency demands play pivotal roles in encouraging sustainability disclosure practices among firms.

Morros (2016) delineated sustainability within the corporate context as the deliberate engagement of enterprises in voluntary initiatives that manifest a commitment to addressing social and environmental concerns in their operational endeavors and interactions with stakeholders.

The expansion of SR has broadened the scope of accounting practices, moving beyond a singular focus on financial information. In contemporary contexts, stakeholders unequivocally seek comprehensive insights into the environmental and social ramifications of entities' operational activities (Gokten et al., 2020).

Recognizing the importance that stakeholders place on a company's social, environmental, and governance practices, it is necessary to emphasize the relationship between ESG disclosure and overall company performance. According to a recent survey by Alsahali and Malagueño (2022), approximately 78% of the world's largest companies incorporate non-financial data, such as ESG performance, into their annual financial statements. This integration underscores the multidimensional scope of sustainability disclosure, which addresses different ESG factors as asserted by the Food and Agriculture Organization of the United Nations (FAO, 2020) and Buallay (2020).

Companies use sustainability reports to voluntarily disclose information on the economic, environmental, and social impacts stemming from their operations. This practice serves to diminish information asymmetries and enhance transparency regarding sustainability performance, whether positive or negative, as articulated by Nobanee and Ellili (2016) and Oncioiu et al. (2020).

A sustainability report serves as a mechanism for both internal and external stakeholders to evaluate, communicate, and hold companies accountable for their endeavors to achieve sustainable development goals. It serves as a comprehensive portrayal of economic, social, and environmental activities premised on the assumption that these factors significantly impact corporate performance (Faisal, 2021).

2.3. The concept of corporate financial performance

In the initial decade of the 21st century, the characterization of organizational performance was framed as an entity's proficiency and skill in effectively deploying its existing resources to attain objectives while concurrently enhancing value for its shareholders. A notable shift in the definition occurred in the subsequent decade of the 21st century, wherein it was reconceptualized as the organization's capacity to accomplish predetermined goals using limited resources and, concurrently, fulfill the requirements of its stakeholders, as articulated by (Aifuwa, 2020).

In exploring the connection between financial performance and corporate governance (Core et al., 2006) argue that utilizing operating profit, as gauged by ROA, is a more effective measure.

ROA, ROE, and other financial indicators are vital tools for assessing a company's financial performance and offer valuable insights into its profitability, efficiency, and management. These measures can be employed individually or collectively to evaluate a company's financial health and make comparisons with other firms (Kasmir, 2012; Shaban & Barakat, 2023).

As Kieso et al. (2020) explain, ROE is a ratio that illustrates the degree to which a company's capacity to generate profits can be acquired by its shareholders. The calculation involves dividing the net income of the company by its shareholders' equity (ROE = Net income / total equity). Fluctuations in a company's stock prices, whether high or low, serve as indicators of financial performance (Daniswara & Daryanto, 2019).

EPS is a crucial ratio that garners significant attention from potential investors, as it is deemed fundamental in portraying a company's future earnings potential. Generally, both company management and common stockholders, along with prospective shareholders, exhibit interest in EPS as they delineate the monetary value earned per common share. The calculation of EPS involves deducting the preferred dividends, which are payments made to ordinary shareholders, from net income. The remaining amount is divided by the weighted average number of outstanding ordinary shares. The EPS does not reflect the amount paid out as dividends to shareholders; rather, it measures the amount of money earned for each common share. One common usage of the "net income per share" or "EPS" ratio is in prospectuses, proxy materials, and annual reports to shareholders (Kieso et al. 2020).

2.4. The relationship between sustainability reports and companies' financial performance

A substantial body of empirical literature has investigated the connection between corporate financial performance (CFP) and corporate SR, aiming to determine the consequences of stakeholder-oriented management on CFP, particularly in the context of social value concerning.

According to Ning et al. (2021), firms' disclosure of ENS initiatives and customer-focused sustainability activities could contribute positively to their financial performance. In recent decades, numerous scholarly investigations have investigated

the correlations between corporate governance and CFP. The prevailing findings from these academic inquiries suggest that sound corporate governance exerts a favorable influence on a firm's financial performance (Kyere & Ausloos, 2021). Furthermore, Baumgartner and Rauter (2017) emphasize that the implementation of corporate sustainability management has the potential to impact the efficiency and productivity of processes, contribute to the creation of more sustainable products and services, and lead to advancements in financial performance, including increased profits, decreased costs, and heightened share prices.

Based on a review of the literature, this study generates the following main null and alternative hypotheses:

$H1_0$: There is no statistically significant relationship between sustainability reporting (economic, environmental, and social) and ROA among Jordanian industrial companies listed on the ASE.

H1: There is a statistically significant relationship between sustainability reporting (economic, environmental, and social) and ROA among Jordanian industrial companies listed on the ASE.

$H2_0$: There is no statistically significant relationship between sustainability reporting (economic, environmental, and social) and ROE among Jordanian industrial companies listed on the stock exchange.

H2: There is a statistically significant relationship between sustainability reporting (economic, environmental, and social) and ROE among Jordanian industrial companies listed on the stock exchange.

$H3_0$: There is no statistically significant relationship between sustainability reporting (economic, environmental, and social) and EPS among Jordanian industrial companies listed on the ASE.

H3: There is a statistically significant relationship between sustainability reporting (economic, environmental, and social) and EPS among Jordanian industrial companies listed on the ASE.

3. METHODOLOGY

3.1. Population and sampling

The study population consisted of all Jordanian industrial companies listed on the ASE during the period (2016–2022), meaning that it covered a period of seven years, and the number of companies in the study population reached 46 at the end of the year 2022. The selected period (2016–2022) was justified for several reasons. This timeframe aligns with the availability of comprehensive data, thereby ensuring a robust dataset for analysis. The selected period also encompasses economic and regulatory stability, allowing for consistent observations and meaningful conclusions regarding the relationship between SR and financial performance. A seven-year span facilitates the examination of long-term trends, patterns, and potential changes in companies' sustainability practices and financial outcomes. Additionally, practical considerations, relevance to stakeholders, and alignment with research objectives contribute to the rationale for this timeframe by striking a balance between obtaining insightful findings and managing resource constraints.

Furthermore, a set of conditions was established to accept the study sample and filter the industrial sector companies subject to the study, considering that the presence of certain events may result in a high or low and unrealistic correlation between the variables of the study, which may affect the results of testing the hypotheses, as follows:

- The industrial company must be listed, and its shares traded during the extended study period (2016–2022).
- None of the companies sampled for the study were subject to any liquidation process during the study period.
- Availability of full study-related information during the study period.

The study investigated and analyzed the three aforementioned conditions, and when they were applied, the number of companies in the study sample reached 31. Fifteen Jordanian industrial companies were excluded because they failed to meet all of the aforementioned conditions, and the study sample constituted 67% of the study population. Table 1 displays the total number of industrial companies in the population by sub-sector, the number of companies excluded, and the number of companies on which descriptive and statistical analyses were performed based on annual reports obtained from the ASE. According to the findings, food and mining companies were the most representative of the industrial sector with a representation rate of 23%, followed by engineering companies with a representation rate of 19%. The following are listed companies in chemical industries, which accounted for 13%; medical and pharmaceutical companies, which accounted for 10%; electrical companies, which accounted for only 6%; and clothing and tobacco companies, which accounted for 3% of the sample, while the paper and cardboard sector was not represented by any company in the sample.

Table 1. Industrial companies' classification

Statement	*All companies*	*Excluding companies*	*Study sample*	*Percentage*
Chemicals	6	2	4	13%
Electricals	3	1	2	6%
Engineering	8	2	6	19%
Foods	8	1	7	23%
Mining	12	5	7	23%
Papers and cardboard	1	1	0	0%
Pharmaceuticals	6	3	3	10%
Clothing	1	0	1	3%
Tobacco	1	0	1	3%
Total	**46**	**15**	**31**	**100%**

Source: Prepared by the researcher based on ASE reports.

3.2. Data collection

Both primary data and secondary data were used in the statistical analysis of the study variables to test the hypotheses and arrive at the results.

3.3. Study variables and measurement methods

To test these hypotheses, the study employed multiple regression analysis, Pearson correlation matrix, variance inflation factor (VIF), and the augmented Dickey-Fuller test to check the stationarity of the data.

3.3.1. Dependent variables

The dependent variable in this study is represented by three main performance indicators: *ROA*, *ROE*, and *EPS*. These were retrieved by revisiting the financial statements of Jordanian industrial companies listed on the ASE from 2016 to 2022.

3.3.2. Independent variables

The GRI aims to develop and disseminate guidelines for disclosing sustainability reports for a company's activities, products, and services on a voluntary basis. There are three main dimensions that should be reported when companies wish to publish sustainability reports alongside their annual reports: economic, environmental, and social. In this study, the process of determining sustainability indicators and their elements was based on the guidelines for preparing sustainability reports issued by the ASE, which were prepared based on the guidelines issued by the GRI, specifically the fourth edition, known as G4.

In this context, the related guidelines of the ASE and the GRI include three types of disclosure: profile and strategy, approach management, and indicator performance, as these indicators show comparable information about economic, environmental, and social sustainability performance of companies.

Economic sustainability (ES): The first independent variable in this study was *ES* performance, which had nine indicators based on the related guidelines of the ASE and the GRI. The indication that each industrial company disclosed was assigned a value of one, and the indicator that the company did not reveal was assigned a value of zero. Then, for each company, all values were gathered for each year, and the result was divided by the number of total indicators nine to determine the level of the company's *ES* practice, as follows:

$$ES_{it} = \frac{DSUS_{it}}{INDI_{it}} \quad (1)$$

where:

- ES_{it}: Economic sustainability level;
- *DSUS*: Number of disclosed items related to *ES*;
- *INDI*: Total number of indicators (nine).

Environmental sustainability (ENS): The second independent variable in this study was *ENS*, the indicators of which were established based on the ASE's guidelines and the GRI for generating sustainability reports, totaling 10 indicators. The indicator disclosed by each industrial company was assigned a value of one, and the indicator not disclosed by the company does not reveal was assigned a value of zero. Then, for each company, all values were gathered for each year, and the result was divided by the number of total indicators (ten) to determine the level of the company's *ENS* practice, as follows:

$$ENS_{it} = \frac{DSUS_{it}}{INDI_{it}} \quad (2)$$

where:

- ENS_{it}: Environmental sustainability level;
- *DSUS*: Number of disclosed items related to *ENS*;
- *INDI*: Total number of indicators (ten).

Social sustainability (SOCS): The third independent variable in this study was *SOCS*, the indicators of which were established based on the ASE's guidelines and the GRI for drafting sustainability reports, totaling to ten indicators. The indicator disclosed by each industrial company was assigned a value of one, and the indicator not disclosed by the company does not reveal was assigned a value of zero. Then, for each company, all values were gathered for each year, and the result was divided by the total indicators 10 to determine the level of the company's *SOCS* practice, as follows:

$$SOCS_{it} = \frac{DSUS_{it}}{INDI_{it}} \quad (3)$$

where:

- $SOCS_{it}$: Social sustainability level;
- *DSUS*: Number of disclosed items related to *SOCS*;
- *INDI*: Total number of indicators (ten).

The EViews program used appropriate statistical methods, including descriptive statistics such as the arithmetic mean and standard deviation, as well as various statistical methods to test the study variables and data. The study assessed the suitability of the study data for testing the existence of multicollinearity by calculating the Pearson correlation coefficient between the independent variables and the VIF. Furthermore, the stability of the time series (time series stationary) was examined, and pooled data regression analysis was used to test the fitness of the data, which included cross-sectional time series data for 31 Jordanian industrial companies listed on the ASE from 2016 to 2022.

To address the concerns about sample size and endogeneity, we ensured data validity through rigorous checks and employed several statistical methods to enhance the robustness of our findings. We conducted a normal distribution test, multicollinearity test, Pearson correlation matrix, and VIF analysis to assess the relationships and potential issues among variables. We also performed stationary testing (unit root test) to ensure the time-series properties of our data. Additionally, we used the Hausman test to choose between fixed and random effects models. Finally, we lagged the independent variables in our regression analysis to mitigate endogeneity concerns. These comprehensive methodological steps provide a robust analysis of the relationship between SR and financial performance in industrial enterprises listed on the ASE.

Three multiple regression models were built for the purpose of examining the study hypotheses as follows:

Model 1

$$ROA_{it} = \beta_0 + \beta_1 ES_{it} + \beta_2 ENS_{it} + \beta_3 SOCS_{it} + \beta_4 GROWTH_{it} + \beta_5 AGE_{it} + \beta_6 DR_{it} + \varepsilon_{it} \quad (4)$$

where:

- ROA_{it}: *Return on assets*;
- ES_{it}: *Economic sustainability*;
- ENS_{it}: *Environmental sustainability*;
- $SOCS_{it}$: *Social sustainability*;
- $GROWTH_{it}$: *Company growth*;
- AGE_{it}: *Company age*;
- DR_{it}: *Company debt ratio.*

Model 2

$$ROE_{it} = \beta_0 + \beta\beta_1 ES_{it} + \beta_2 ENS_{it} + \beta_3 SOCS_{it} + \beta_4 GROWTH_{it} + \beta_5 AGE_{it} + \beta_6 DR_{it} + \varepsilon_{it} \quad (5)$$

where ROE_{it}: *Return on equity.*

Model 3

$$EPS_{it} = \beta_0 + \beta_1 ES_{it} + \beta_2 ENS_{it} + \beta_3 SOCS_{it} + \beta_4 GROWTH_{it} + \beta_5 AGE_{it} + \beta_6 DR_{it} + \varepsilon_{it} \quad (6)$$

where EPS_{it}: *Earnings per share.*

3.3.3. Control variables

This study uses several control variables: *GROWTH, AGE,* and *DR.*

GROWTH: The company's growth is measured by calculating the percentage change in sales revenue from the previous year to the current period.

AGE: A company's age is calculated by taking the natural logarithm (LN) of its age (1 + *AGE*) from its creation date to the year of release of the financial statements of Jordanian industrial companies listed on the ASE (Shi et al., 2016), where the company's age has a significant impact on increasing experience, skill, and business supervision (Yasser, 2011).

DR: The *DR* is measured by dividing a company's total current and non-current liabilities by its total assets (Gibson, 2008).

Finally, Table 2 summarizes the dependent, independent, and control variable calculation methods as well as their symbols.

Table 2. Summary of study variables and symbols

Dependent variables		
Return on assets	*ROA*	$ROA_{it} = \frac{Ni_{it}}{OEA_{it}}$
Return on equity	*ROE*	$ROE_{it} = \frac{Ni_{it}}{OEA_{it}}$
Earnings per share	*EPS*	$EPS_{it} = \frac{DSUS_{it}}{INDI_{it}}$
Independent variables		
Economic sustainability	*ES*	$ES_{it} = \frac{DSUS_{it}}{INDI_{it}}$
Environmental sustainability	*ENS*	$ENS_{it} = \frac{DSUS_{it}}{INDI_{it}}$
Social sustainability	*SOCS*	$SOCS_{it} = \frac{DSUS_{it}}{INDI_{it}}$
Control variables		
Company growth	*GROWTH*	$\frac{(Current\ sales\ revenue\ -\ Previous\ year\ sales\ revenue)}{Previous\ year\ sales\ revenue}$
Company age	*AGE*	*LN(AGE)*
Company debt ratio	*DR*	$\frac{Total\ liabilities}{Total\ assets}$

Source: Prepared by the researcher depending on Kieso et al. (2020).

In addition to the current methodology, several alternative methods could also be suitable for this research. The difference-in-differences (DiD) analysis could compare the financial performance of companies before and after adopting *SR*, using a control group that did not adopt such reporting. Propensity score matching (PSM) could address potential selection bias by matching companies engaged in *SR* with similar companies that do not, based on observable characteristics. Structural equation modeling (SEM) could estimate multiple dependent relationships simultaneously and account for measurement errors. Instrumental variables (IV) regression could use instruments to address potential endogeneity, providing more reliable causal estimates. Lastly, dynamic panel data models, such as the generalized method of moments (GMM), could handle potential endogeneity issues by using internal instruments derived from lagged values of the variables. These alternative methods could enhance the robustness of the findings and offer different perspectives on the relationship between *SR* and financial performance.

4. RESULTS

4.1. Descriptive statistics

The financial performance variable in this study is represented by three key variables (*ROA*, *ROA*, and *EPS*). The following findings were derived directly from the notes appended to the financial statements:

Table 3. Descriptive statistics for dependent variable's indicators during the period (2016–2022)

Variable	*Mean*	*Std. dev.*	*Max*	*Min*
ROA	0.003	0.105	0.346	-0.857
ROE	0.013	0.192	0.962	-1.050
EPS	0.012	0.148	2.197	-0.011

Table 3 shows the descriptive statistics for the dependent variable's indicators (*ROA*, *ROE*, and *EPS*), revealing that the mean of *ROA* was 0.003 with a standard deviation of 0.105, and the maximum and lowest values were 0.346 and -0.857, respectively. The results also revealed that the mean *ROE* value was 0.013 with a standard deviation of 0.192, with the highest and lowest values being 0.962 and -1.050, respectively. Finally, the findings showed that the mean value for *EPS* was 0.012 with a standard deviation of 0.148, and the maximum and lowest values were 2.197 and -0.011, respectively.

The independent variables in this study are represented by three main variables (dimensions): *ES*, *ENS*, and *SOCS* performance. These variables (dimensions) represent the sustainability level of Jordanian industrial companies listed on the ASE. Twenty-nine indicators were adopted to measure these variables (dimensions), including nine indicators for *ES*, 10 indicators for *ENS*, and 10 indicators for *SOCS*, based on the guidelines issued by the ASE and G4 of the GRI. Accordingly, Table 4 includes statistical information on *ES*, *ENS*, and *SOCS*.

Table 4. Descriptive statistics for independent variables during the period (2016–2022)

Variable	*Mean*	*Std. dev.*	*Max*	*Min*
ES	0.428	0.155	0.888	0.111
ENS	0.274	0.170	0.800	0.100
SOCS	0.195	0.144	0.800	0.100

Table 4 illustrates the descriptive statistics for the independent study variables, revealing that the mean value of *ES* was 0.428 with a standard deviation of 0.155, and the highest and lowest values were 0.888 and 0.111, respectively. This means that 42.8% of the total *ES* indicators were reported in Jordanian industrial companies' reports between 2016 and 2022. The mean value of *ENS* was 0.274 with a standard deviation of 0.170, and the highest and lowest values were 0.800 and 0.100, respectively, implying that 27.4% of the total *ENS* indicators were included in their reports over the period. Furthermore, the results showed that the mean value for *SOCS* was 0.195 with a standard deviation of 0.144, and the highest and lowest values were 0.800 and 0.100, respectively. This demonstrates that 19.5% of all *SOCS* indicators were disclosed in their reports from 2016 to 2022. Moreover, Table 5 displays the descriptive data for these control variables as follows:

Table 5. Descriptive statistics for control variables during the period (2016–2022)

Variable	*Mean*	*Std. dev.*	*Max*	*Min*
GROWTH	2.052	29.776	438.641	-0.674
AGE	36.576	16.824	76.000	1.000
DR	0.347	0.204	0.998	0.009

Table 5 displays the descriptive statistics for the control variables. According to the data, the *GROWTH* rate was 2.052 on average, with a standard deviation of 29.776. The highest value recorded was 438.641, while the lowest value was -0.674. The average *AGE* of the company was 36.576 years, with a standard deviation of 16.824, and the highest and lowest values were 76 and 1, respectively. Furthermore, the data reveal that the mean *DR* was 0.347 with a standard deviation of 0.204, with the highest value being 0.998 and the lowest value being 0.009.

4.2. Data validity

This study assessed the validity of the linear model by testing and examining the financial data of Jordanian companies collected between 2016 and 2022. The data were subjected to a normal distribution test before the study was checked for multicollinearity. The Pearson correlation coefficient between the independent and control variables was determined, then the VIF was computed, and lastly, the stability of the variables was examined to evaluate the existence of multiple linear correlations in the data. The following sections present the results of the tests to establish the degree of static (stationary).

4.2.1. Normal distribution test

Because the study sample consists of 31 listed Jordanian industrial companies, and the number of observations for each of the independent and dependent study variables is 217, we can assume a normal distribution of the data based on the central limit theorem, which states that the condition of a normal distribution for large data is met if the statistical sample (N > 30) (Gujarati, 2004).

4.2.2. Multicollinearity test

The study employed two methods to determine whether multiple linear correlations existed. The first approach involved running a Pearson correlation test between the independent study variables in the regression model. According to Bryman and Cramer (2001), multicollinearity is indicated if the correlation coefficient between the independent study variables is greater than 0.8. The second method was to calculate the VIF, which indicates how the strong correlation between variables acts to destabilize the estimated coefficients and is a measure done individually for each variable (Gujarati, 2004).

The correlation matrix between the independent (*ES*, *ENS*, and *SOCS*) and control (*GROWTH*, *AGE*, and *DR*) variables is presented in Table 6. The following findings were obtained from EViews software using the ordinary method for a balanced sample.

Table 6. Person correlation matrix

Variable	*ES*	*ENS*	*SOCS*	*GROWTH*	*AGE*	*DR*
ES	1	0.691	0.532	0.009	0.293	-0.113
ENS		1	0.544	0.133	0.284	-0.005
SOCS			1	0.004	0.281	-0.061
GROWTH				1	0.007	0.115
AGE					1	-0.077
DR						1

Table 6 presents the results of the Pearson correlation matrix, which demonstrate that all correlation values were less than 80%. This suggests that there is no linear correlation between

the independent variables and that the linearity of the variables within the regression model is incomplete. To guarantee the accuracy of the earlier findings, the VIF for each variable was also calculated. The VIF and tolerance values are listed in Table 7.

Table 7. Variance inflation factor

Variable	*VIF*	*Tolerance*
ES	2.094	0.906
ENS	2.218	0.788
SOCS	1.783	0.217
GROWTH	1.043	0.957
AGE	1.208	0.792
DR	1.093	0.907

The results in Table 7 demonstrate that every variable's VIF value ranged from 1.043 to 2.218, all of which were below 5. Additionally, the results demonstrate that all of the independent and control variables' allowable (tolerance) values fell between 0.217 and 0.957, with none of them falling below 0.2. This suggests that the regression model did not exhibit multiple linear correlations between the study variables.

4.2.3. Stationary testing (Unit root test)

The unit root test looks at each research variable's time-series variation to make sure it is stable. If the time series lacks a unit root, it is deemed stable and the differences are not used to make it stationary. If one of the variables has a unit root, the initial difference is applied. If the series is stable, it is integrated with the first order; if the time series is stable after taking the second difference, it is integrated with the second order. The covariance between two time periods was determined by the time gap rather than the actual moment at which the covariance was measured. Finally, to ascertain whether the research variables had a unit root, the augmented Dickey-Fuller test was employed (Greene, 2008). When applying the augmented Dickey-Fuller test, if the significance level is higher than 5%, the presence of a unit root suggests that the time series is not stable. The findings of the augmented Dickey-Fuller test for the research variables are displayed in Table 8.

Table 8. Unit root test (augmented Dickey-Fuller)

Variable	*p-value*	*Result*
ES	0.000	First difference
ENS	0.004	Level
SOCS	0.002	First difference
GROWTH	0.000	Level
AGE	0.000	Level
DR	0.003	First difference
ROA	0.026	First difference
ROE	0.013	First difference
EPS	0.012	First difference

The outcomes in Table 8 above demonstrated that for every variable, the probability value (p-value) was less than 5%. This shows that every variable is constant over time, so we rule out the possibility that there is a unit root.

4.3. Study model used (Hausman test)

Time-series data covering the years 2016 to 2022 served as the foundation for the methodology used to gather financial information from Jordanian industrial firms Listed on the ASE. As the study sample included (31 companies), each company represents cross-sectional data, as time-sectional data provide more information about the conditions of the sample companies, with clearer lines, less internal correlation between variables, and greater degrees of freedom, in addition to greater efficiency when drawing conclusions (Gujarati, 2004). Consequently, the regression models were classified based on the time series data gathered. These are classified into two models: fixed and random effects.

The Hausman test was used to evaluate which of the two previous models — the fixed effects model and the random effects model — was more effective and appropriate for analyzing cross-sectional time-series data. The purpose of the Hausman test is to assess the null hypothesis (H_0), which shows that the random-effects model is accepted over the alternative hypothesis (*H1*). Therefore, if the value (prob-value > 5%) is accepted, the random effects model is selected; if the value (prob-value < 5%), the fixed effects model is selected (Baltagi, 2008). Table 9 shows the results of the Hausman test.

Table 9. Hausman test

Model	*p-value*	*Chi-sq. df*	*Chi-sq. statistic*
$H1_0$	0.697	6	3.845
$H2_0$	0.611	6	4.481
$H3_0$	0.911	6	2.089

The Hausman test findings demonstrate the Chi-square value for all study models (Chi-sq. statistic) values were 3.845, 4.481, and 2.089, respectively. We reject the null hypothesis based on the prob-value, which is more than 0.05 for all study models, and the random effects model is a suitable estimation method.

4.4. Hypothesis testing

Jordanian industrial companies registered on the ASE comprised the study sample. This study covers the years 2016–2022. Over time, primary data were gathered from the companies' financial statements and annual reports. As a result, the data collected are regarded as time-series data of a cross-sectional form, and the pooled data regression model is deemed adequate for measuring the association between variables.

4.4.1. First hypothesis testing

Using the random effects model, Table 10 displays the results of the first hypothesis test, as follows:

Table 10. First hypothesis test

Variable	*Coefficient*	*Std. error*	*t-statistic*	*Prob.*
C	3.722	3.633	1.024	0.307
ES	7.813	3.999	1.954	0.052*
ENS	9.394	4.023	2.335	0.021**
SOCS	12.692	3.499	3.627	0.000***
GROWTH	0.020	0.011	1.878	0.061*
AGE	-1.331	0.995	-1.338	0.182
DR	-15.615	2.615	-5.971	0.000***
R^2	0.325			
Adjusted R^2	0.305			
F-statistic	16.231			
Prob. (F-statistic)	0.000			

*Note: Sig. level * 0.1, ** 0.05, and *** 0.01.*

The Hausman test results showed the following results. Throughout the course of the study, the combined independent variables had a statistically significant impact on the *ROA*, as evidenced by the value of F reaching 16.231 at the significance level of 0.000. As a result, we accept the alternative hypothesis and reject the null hypothesis, which claims that there is no statistically significant correlation between *ROA* and *SR* (*ES*, *ENS*, and *SOCS*) among Jordanian industrial companies listed on the ASE.

- With significance levels of 0.052, 0.021, and 0.000, respectively, the regression results show that the *ES*, *ENS*, and *SOCS* aspects of *SR* have a significant positive impact on the return of listed Jordanian industrial companies.
- The independent variables (*ES*, *ENS*, and *SOCS*) collectively explained 30.5% of the changes in the dependent variable *ROA*, according to the coefficient of determination (R^2) of 0.325 and the adjusted coefficient of determination (adjusted R^2) of 0.305.
- With a significance level of 0.061, the model results show that *GROWTH* proxied by sales *GROWTH* has a significantly positive influence on *ROA* in listed Jordanian industrial companies. Simultaneously, the findings indicate that the *DR* has a statistically significant negative impact on *ROA* at a significance level of 0.000. Conversely, the *AGE* of the company has no statistically significant impact on *ROA* at a significance level of 0.182.

4.4.2. Second hypothesis testing

Table 11 illustrates the results of testing the aforementioned hypotheses, as follows:

Table 11. Second hypothesis test

Variable	*Coefficient*	*Std. error*	*t-statistic*	*Prob.*
C	6.764	7.265	0.931	0.352
ES	15.507	7.897	1.964	0.051*
ENS	14.525	8.048	1.805	0.072*
SOCS	21.621	7.003	3.087	0.002***
GROWTH	0.061	0.021	2.905	0.004***
AGE	-2.751	2.007	-1.371	0.172
DR	-32.669	5.360	-6.095	0.000***
R^2	0.297			
Adjusted R^2	0.276			
F-statistic	14.451			
Prob. (F-statistic)	0.000***			

*Note: Sig. level * 0.1, ** 0.05, and *** 0.01.*

The second hypothesis testing revealed that:

- Throughout the course of the study, the independent variables taken together had a statistically significant impact on the *ROE*, as evidenced by the value of F reaching 14.451 when the level of significance reached 0.000. As a result, we accept the alternative hypothesis and reject the null hypothesis, which claims that there is no statistically significant correlation between *ROE* and *SR* (*ES*, *ENS*, and *SOCS*) among Jordanian industrial companies listed on the ASE.
- More specifically, at significance levels of 0.051, 0.072, and 0.002, the regression coefficients show that all *ES*, *ENS*, and *SOCS* reporting dimensions have a statistically significant positive impact on the *ROE* of Jordanian industrial companies listed on the stock exchange.
- *ROE* changes were explained by the independent variables (*ES*, *ENS*, and *SOCS*) by a combined 27.6%, according to the R^2 value of 0.297 and the adjusted R^2 value of 0.276.

Additionally, the model coefficients demonstrate that at a significance level of 0.004, company sales *GROWTH* positively affects *ROE*. At the significance level of 0.000, the *DR* has a negative impact on it. Moreover, at a significance level of 0.172, *AGE* did not significantly affect *ROE*.

4.4.3. Third hypothesis testing

The results of the third hypothesis are displayed in Table 12 as follows:

Table 12. Third hypothesis test

Variable	*Coefficient*	*Std. error*	*t-statistic*	*Prob.*
C	3.557	7.595	0.468	0.640
ES	1.942	9.952	0.195	0.845
ENS	-3.616	9.384	-0.385	0.703
SOCS	-3.441	9.910	-0.347	0.728
GROWTH	0.006	0.035	0.171	0.859
AGE	0.119	2.112	0.056	0.955
DR	-5.649	5.547	-1.018	0.309
R^2	0.007			
Adjusted R^2	0.021			
F-statistic	0.247			
Prob. (F-statistic)	0.959			

The findings in Table 12 show that:

- There was no statistically significant influence of the combined independent variables on *EPS* throughout the study period, as the value of F reached 0.247 when the level of significance reached 0.959. Therefore, we accept the null hypothesis and we reject the alternative hypothesis. In reality, looking at the market share price drivers of companies listed in emerging markets, such as the ASE, helps explain this outcome. Previous literature (Abdallah et al., 2022) noted that speculation was the main driver of the ASE's market share price, with prices changing based on levels of supply and demand rather than levels of disclosure, which may be attributed to the fact that the efficiency of such financial markets is modest.
- Regression coefficients demonstrate that there is no statistically significant influence of each dimension of *SR* (*ES*, *ENS*, and *SOCS*) on the *EPS* of Jordanian industrial companies listed on the stock exchange, with significance levels of 0.845, 0.703, and 0.728, respectively.

4.4.4. Additional test (Tobin's Q)

In an effort to provide additional context for the third hypothesis' conclusion, the study looked at how *SR* — which includes social, environmental, and economic aspects — affects Tobin's Q, a measure of market performance. This figure, which is calculated by dividing a company's market value by the book value (or replacement cost) of its assets, represents the possibility of asset growth (Butt et al., 2023). Results are illustrated in Table 13.

Table 13. Additional test (Tobin's Q)

Variable	*Coefficient*	*Std. error*	*t-statistic*	*Prob.*
C	-2.212	3.503	-0.631	0.528
ES	4.212	4.599	0.916	0.361
ENS	-5.256	4.341	-1.211	0.227
SOCS	2.871	4.649	0.618	0.537
GROWTH	-0.004	0.016	-0.250	0.791
AGE	-0.106	0.974	-0.109	0.913
DR	8.976	2.557	3.510	0.000***
Mean (Tobin's Q)	2.052			
Std. dev. (Tobin's Q)	29.776			
R^2	0.061			
Adjusted R^2	0.033			
F-statistic	2.210			
Prob(F-statistic)	0.040**			

*Note: Sig. level * 0.1, ** 0.05, and *** 0.01.*

It is noticed that the combined independent variables had a statistically significant effect on Tobin's Q during the study period based on the results of the additional model with Tobin's Q as the dependent variable. This is indicated by the value of F reaching 2.210 when the level of significance reached 0.040. On the other hand, regression coefficients pertaining to the dimensions of *SR*, where their significance levels exceed acceptable limits, demonstrate that there is no statistically significant impact of *SR*, as represented by the economic, environmental, and social dimensions, on Tobin's Q of Jordanian industrial companies.

5. DISCUSSION

The results indicate a complex relationship between *SR* and financial performance metrics among Jordanian industrial companies listed on the ASE. The descriptive statistics for the dependent variables (*ROA*, *ROE*, and *EPS*) show substantial variability, with mean values of 0.003 for *ROA*, 0.013 for *ROE*, and 0.012 for *EPS*, and high standard deviations, highlighting significant differences in financial performance across the sample. Meanwhile, the independent variables — *ES*, *ENS*, and *SOCS* — exhibit relatively low disclosure rates, suggesting limited sustainability practices among these companies.

The multicollinearity tests confirm the reliability of our regression model, as all VIF values are within acceptable limits, indicating no severe linear correlation among the independent variables. The normal distribution test, supported by the central limit theorem, affirms the normality assumption for the dataset, while the unit root test validates the stability of the time series data.

Regression analysis reveals that *SR* does not significantly impact *EPS*, as the F-value of 0.247 at a significance level of 0.959 exceeds the allowable threshold, leading us to accept the null hypothesis. This finding aligns with existing literature (Abdallah et al., 2022), which suggests that speculation, rather than disclosure levels, primarily drives market share prices in emerging markets like the ASE. Consequently, the modest efficiency of such financial markets diminishes the influence of *SR* on market performance indicators like *EPS*.

Furthermore, the regression coefficients indicate no statistically significant influence of the economic, environmental, and social dimensions of *SR* on *EPS*, with significance levels of 0.845, 0.703, and 0.728, respectively.

To provide additional context, we also examined the impact of *SR* on Tobin's Q, a measure of market performance. The results show a statistically significant effect of the combined independent variables on Tobin's Q, with an F-value of 2.210 at a significance level of 0.040. However, the regression coefficients for the individual dimensions of *SR* indicate no significant impact on Tobin's Q, as their significance levels exceed acceptable limits. This suggests that, while *SR* collectively influences market performance, the effect of individual dimensions is not substantial.

Overall, these findings underscore the intricate relationship between sustainability practices and financial outcomes for Jordanian industrial companies, emphasizing the need for enhanced sustainability disclosures to potentially improve financial performance and market perception. The results offer valuable insights for decision-makers, investors, and stakeholders, highlighting areas where these companies can bolster their sustainability practices for better financial outcomes.

6. CONCLUSION

This study has revealed several important insights regarding the impact of *SR* on the financial performance of industrial companies listed on the ASE from 2016 to 2022. Firstly, it was found that Jordanian industrial companies continue to exhibit low levels of ES, ENS, and SOCS, primarily due to the limited disclosure indicators present in their annual reports. Secondly, the analysis demonstrated that ES, ENS, and SOCS positively affect the ROA for these companies during the study period. Thirdly, a positive influence of ES, ENS, and SOCS on the ROE was also observed. However, it was noted that these sustainability dimensions do not significantly

impact market performance indicators such as EPS and Tobin's Q, indicating that market performance in the ASE may be more influenced by speculative activities and supply-demand dynamics rather than sustainability disclosures.

The importance of this paper lies in its detailed exploration of the relationship between SR and financial performance in an emerging market context. By highlighting the positive impacts of sustainability practices on ROA and ROE, the study provides valuable insights that can guide decision-makers, investors, and stakeholders toward more comprehensive and transparent sustainability disclosures. However, the study's limitations, including the relatively small sample size and the focus on industrial companies, suggest the need for further research. Expanding the sample size, including other sectors, and exploring additional indicators and methodologies could provide a broader perspective on the relationship between SR and financial performance. Additionally, comparative studies across different emerging markets could offer a more comprehensive understanding of this critical issue.

Lastly, given the sample size of 31 companies with 217 observations per variable, the central limit theorem allows us to assume a normal distribution of the data. This justifies the use of parametric statistical tests, like regression analysis, in our study.

The current study suggests that Jordanian industrial companies raise their levels of sustainable practices since such activities contribute positively to improved levels of loyalty and belonging to stakeholders. Furthermore, this study suggests that stakeholders involved with Jordanian industrial companies utilize sustainability dimensions (i.e., economic, environmental, and social) as indicators to forecast financial success and, hence, make better-informed decisions.

Finally, the study recommends that company executives and board members use all sustainability practices, whether economic, environmental, or social and disclose them as a strategy for improving financial performance, as the study found a positive impact of all SR dimensions on financial performance as measured by ROA and ROE. Moreover, the study suggests that policymakers in developing countries, such as Jordan, pursue frameworks that assist companies listed in their financial markets in implementing sustainable practices and improving disclosures about them to raise the efficiency levels of their financial markets.

REFERENCES

Abdallah, A., Afifa, M. A., Saleh, I. H., & Alsufy, F. (2022). Determinants of market stock price: New evidence from an emerging market. *Information Sciences Letters, 11*(2), 549–558. https://doi.org/10.18576/isl/110223

Afifa, M. A., Saleh, I., & Haniah, F. (2021). Direct and mediated associations among ownership structure, cash holdings and firm value: The case of Jordanian insurance firms. *Vision, 25*(4), 471–482. https://doi.org/10.1177/0972262920983989

Aifuwa, H. O. (2020). Sustainability reporting and firm performance in developing climes: A review of literature. *Copernican Journal of Finance & Accounting, 9*(1), 9–29. https://doi.org/10.12775/CJFA.2020.001

Akbaş, H. E., & Canikli, S. (2018). Determinants of voluntary greenhouse gas emission disclosure: An empirical investigation on Turkish firms. *Sustainability, 11*(1), Article 107. https://doi.org/10.3390/su11010107

Almashhadani, M., & Almashhadani, H. A. (2023). The impact of sustainability reporting on promoting firm performance. *International Journal of Business and Management Invention, 12*(4), 101–111. https://www.researchgate.net/profile/Mohammed-Almashhadani-2/publication/370199383_The_Impact_of_Sustainability_Reporting_on_Promoting_Firm_performance/links/64440d162d8ff0036393326c/The-Impact-of-Sustainability-Reporting-on-Promoting-Firm-performance.pdf

Al-Rusheidi, A. S. A., & Supian, K. B. (2021). The lean management practices, Gemba practices, and lean leadership relationship with sustainability performance of the national bank in Oman: An analytical study of variables. *IJASOS-International E-Journal of Advances in Social Sciences*, *7*(21), 585–597. http://ijasos.ocerintjournals.org/en/download/article-file/2166933

Alsahali, K. F., & Malagueño, R. (2022). An empirical study of sustainability reporting assurance: Current trends and new insights. *Journal of Accounting & Organizational Change, 18*(5), 617–642. https://doi.org/10.1108/JAOC-05-2020-0060

Alshaiba, S., & Abu Khalaf, B. (2024). The impact of board gender diversity on the Gulf Cooperation Council's reporting on sustainable development goals. *Corporate Board: Role, Duties and Composition, 20*(1), 33–41. https://doi.org/10.22495/cbv20i1art3

Azwari, P. C., Naz'aina, Barkah, Q., Nuraliati, A., Taufik, A., Rizki, M., & Mulyani, N. (2023). Organizational culture, financial reporting quality, and good governance: Evidence from Islamic financial institutions. *Corporate Governance and Organizational Behavior Review, 7*(3), 131–143. https://doi.org/10.22495/cgobrv7i3p11

Baltagi, B. H. (2008). *Econometric analysis of panel data* (4th ed.). John Wile & Sons.

Baumgartner, R. J., & Rauter, R. (2017). Strategic perspectives of corporate sustainability management to develop a sustainable organization. *Journal of Cleaner Production, 140*(Part 1), 81–92. https://doi.org/10.1016/j.jclepro.2016.04.146

Bazlamit, S. M., Al-Suleiman, T. I., & Ahmad, H. S. (2020). Practices of sustainable development in higher education institutions: Case study of Al-Zaytoonah University of Jordan. In K. Panuwatwanich & C.-H. Ko (Eds.), *The 10th International Conference on Engineering, Project, and Production Management. Lecture notes in mechanical engineering* (pp. 21–32). Springer. https://doi.org/10.1007/978-981-15-1910-9_2

Bebbington, J., & Unerman, J. (2018). Achieving the United Nations sustainable development goals: An enabling role for accounting research. *Accounting, Auditing & Accountability Journal, 31*(1), 2–24. https://doi.org/10.1108/AAAJ-05-2017-2929

Boiral, O., & Heras-Saizarbitoria, I. (2020). Sustainability reporting assurance: Creating stakeholder accountability through hyperreality? *Journal of Cleaner Production, 243*, Article 118596. https://doi.org/10.1016/j.jclepro.2019.118596

Bryman, A., & Cramer, D. (2001). *Quantitative data analysis with SPSS release 10 for Windows: A guide for social scientists* (1st ed.). Routledge. https://doi.org/10.4324/9780203471548

Buallay, A. (2020). Sustainability reporting and firm's performance: Comparative study between manufacturing and banking sectors. *International Journal of Productivity and Performance Management, 69*(3), 431–445. https://doi.org/10.1108/IJPPM-10-2018-0371

Burlea, A. S., & Popa, I. (2013). Legitimacy theory. In S. O. Idowu, N. Capaldi, L. Zu, & A. D. Gupta (Eds.), *Encyclopedia of corporate social responsibility* (pp. 1579–1584). Springer. https://doi.org/10.1007/978-3-642-28036-8_471

Butt, M. N., Baig, A. S., & Seyyed, F. J. (2023). Tobin's Q approximation as a metric of firm performance: An empirical evaluation. *Journal of Strategic Marketing, 31*(3), 532–548. https://doi.org/10.1080/0965254X.2021.1947875

Carmo, C., & Miguéis, M. (2022). Voluntary sustainability disclosures in non-listed companies: An exploratory study on motives and practices. *Sustainability, 14*(12), Article 7365. https://doi.org/10.3390/su14127365

Clarkson, P. M. (2012). The valuation relevance of environmental performance: Evidence from the academic literature. In S. Jones & J. Ratnatunga (Eds.), *Contemporary issues in sustainability accounting, assurance and reporting* (pp. 11–42). Emerald Group Publishing.

Core, J. E., Guay, W. R., & Rusticus, T. O. (2006). Does weak governance cause weak stock returns? An examination of firm operating performance and investors' expectations. *The Journal of Finance, 61*(2), 655–687. https://doi.org/10.1111/j.1540-6261.2006.00851.x

Daniswara, H. P., & Daryanto, W. M. (2019). Earnings per share (EPS), price book value (PBV), return on asset (ROA), return on equity (ROE), and Index Harga Saham Gabungan (IHSG) effect on stock return. *South East Asia Journal of Contemporary Business, Economics and Law, 20*(1), 11–27. https://seajbel.com/wp-content/uploads/2020/01/SEAJBEL-20_18.pdf

Deegan, C. (2002). Introduction: The legitimizing effect of social and environmental disclosures — A theoretical foundation. *Accounting, Auditing & Accountability Journal, 15*(3), 282–311. https://doi.org/10.1108/09513570210435852

Deegan, C. (2014). An overview of legitimacy theory as applied within the social and environmental accounting literature. In M. Laine & H. Tregidga (Eds.), *Sustainability accounting and accountability* (2nd ed., pp. 248–272). Routledge.

Deloitte and Touche (DT), & The World Business Council for Sustainable Development (BCSD). (1992). *Business strategy for sustainable development: Leadership and accountability for the 90s.* International Institute for Sustainable Development. https://www.iisd.org/system/files/publications/business_strategy.pdf

Faisal, A. F. (2021). The effect of sustainability reporting on company performance. *Diponegoro Journal of Accounting, 10*(4), 1–9. https://ejournal3.undip.ac.id/index.php/accounting/article/view/33001/26365

Food and Agriculture Organization of the United Nations (FAO). (2020). *The state of food and agriculture 2020: Overcoming water challenges in agriculture*. https://doi.org/10.4060/cb1447en

Freeman, R. E. (2010). *Strategic management: A stakeholder approach.* Cambridge University Press. https://doi.org/10.1017/CBO9781139192675

Freeman, R. E., & Evan, W. M. (1990). Corporate governance: A stakeholder interpretation. *Journal of Behavioral Economics, 19*(4), 337–359. https://doi.org/10.1016/0090-5720(90)90022-Y

Gibson, C. H. (2008). *Financial reporting & analysis: Using financial accounting information* (11th ed.). Cengage Learning.

Gokten, S., Ozerhan, Y., & Okan Gokten, P. (2020). The historical development of sustainability reporting: A periodic approach. *Zeszyty Teoretyczne Rachunkowości, 107*(163), 99–118. https://doi.org/10.5604/01.3001.0014.2466

Goodell, J. W., Kumar, S., Lim, W. M., & Pattnaik, D. (2021). Artificial intelligence and machine learning in finance: Identifying foundations, themes, and research clusters from bibliometric analysis. *Journal of Behavioral and Experimental Finance, 32*, Article 100577. https://doi.org/10.1016/j.jbef.2021.100577

Greene, W. H. (2008). *Econometric analysis* (6th ed.). Pearson/Prentice-Hall.

Gujarati, D. N. (2004). *Basic econometrics* (4th ed.). Tata McGraw Hill.

Haidar, H. M., Sohail, R. M., & Al Qurashi, S. M. (2021). Emerging trends in sustainability reporting (SR): Comparative literature review in developed, developing and GCC countries. *Open Journal of Business and Management, 9*(6), 2697–2718. https://doi.org/10.4236/ojbm.2021.96149

Iballi, N., Sulejmani, L. A., & Rexha, D. (2022). The nexus between financial transparency and the financial obstacle level of the enterprises in the Western Balkan region. *Corporate & Business Strategy Review, 3*(1), 39–44. https://doi.org/10.22495/cbsrv3i1art4

Iriyadi, Meiryani, Darmawan, M. A., Warganegara, D. L., Purnomo, A., & Persada, S. F. (2024). The effect of sustainability reporting, transfer pricing, and deferred tax expense on tax avoidance in multinational manufacturing sector companies. *Journal of Governance & Regulation, 13*(1), 50–62. https://doi.org/10.22495/jgrv13i1art5

Jankalová, M., & Jankal, R. (2017). The assessment of corporate social responsibility: Approaches analysis. *Entrepreneurship and Sustainability Issues, 4*(4), 441–459. https://doi.org/10.9770/jesi.2017.4.4(4)

Jensen, M. C., & Meckling, W. H. (2000). Theory of the firm: Managerial behavior, agency costs and ownership structure. In R. I. Tricker (Eds.), *Corporate governance* (1st ed., pp. 77–132). Gower.

Johari, J., & Komathy. (2019). Sustainability reporting and firm performance: Evidence in Malaysia. *International Journal of Accounting, Finance and Business, 4*(17). https://academicinspired.com/ijafb/article/view/138

Kasmir, S. E. (2012). *Analysis laporan keuangan* [Analysis of financial reports]. RajaGrafindo.

Kieso, D. E., Weygandt, J. J., & Warfield, T. D. (2020). *Intermediate accounting IFRS* (4th ed.). John Wiley & Sons.

Kuzey, C., & Uyar, A. (2017). Determinants of sustainability reporting and its impact on firm value: Evidence from the emerging market of Turkey. *Journal of Cleaner Production, 143*, 27–39. https://doi.org/10.1016/j.jclepro.2016.12.153

Kyere, M., & Ausloos, M. (2021). Corporate governance and firms' financial performance in the United Kingdom. *International Journal of Finance & Economics, 26*(2), 1871–1885. https://doi.org/10.1002/ijfe.1883

Mahmood, Z., & Uddin, S. (2021). Institutional logics and practice variations in sustainability reporting: Evidence from an emerging field. *Accounting, Auditing & Accountability Journal, 34*(5), 1163–1189. https://doi.org/10.1108/AAAJ-07-2019-4086

Martínez, J. B., Fernández, M. L., & Fernández, P. M. R. (2016). Corporate social responsibility: Evolution through institutional and stakeholder perspectives. *European Journal of Management and Business Economics, 25*(1), 8–14. https://doi.org/10.1016/j.redee.2015.11.002

McChesney, I. C. (1991). *The Brundtland Report and sustainable development in New Zealand* (Information paper No. 25). Centre for Resource Management Lincoln University and University of Canterbury. https://core.ac.uk/download/pdf/35461353.pdf

Mebratu, D. (1998). Sustainability and sustainable development: Historical and conceptual review. *Environmental Impact Assessment Review, 18*(6), 493–520. https://doi.org/10.1016/S0195-9255(98)00019-5

Moldan, B., Janoušková, S., & Hák, T. (2012). How to understand and measure environmental sustainability: Indicators and targets. *Ecological Indicators, 17*, 4–13. https://doi.org/10.1016/j.ecolind.2011.04.033

Morros, J. (2016). The integrated reporting: A presentation of the current state of art and aspects of integrated reporting that need further development. *Intangible Capital, 12*(1), 336–356. https://doi.org/10.3926/ic.700

Ngu, S. B., & Amran, A. (2021). Materiality disclosure in sustainability reporting: Evidence from Malaysia. *Asian Journal of Business and Accounting, 14*(1), 225–252. https://doi.org/10.22452/ajba.vol14no1.9

Nikolaou, I. E., & Evangelinos, K. I. (2010). Classifying current social responsibility accounting methods for assisting a dialogue between business and society. *Social Responsibility Journal, 6*(4), 562–580. https://doi.org/10.1108/17471111011083446

Ning, X., Yim, D., & Khuntia, J. (2021). Online sustainability reporting and firm performance: Lessons learned from text mining. *Sustainability, 13*(3), Article 1069. https://doi.org/10.3390/su13031069

Nobanee, H., & Ellili, N. (2016). Corporate sustainability disclosure in annual reports: Evidence from UAE banks: Islamic versus conventional. *Renewable and Sustainable Energy Reviews., 55*, 1336–1341. https://doi.org/10.1016/j.rser.2015.07.084

O'Dwyer, B., Unerman, J., & Hession, E. (2005). User needs in sustainability reporting: Perspectives of stakeholders in Ireland. *European Accounting Review, 14*(4), 759–787. https://doi.org/10.1080/09638180500104766

Oncioiu, I., Petrescu, A.-G., Bîlcan, F.-R., Petrescu, M., Popescu, D.-M., & Anghel, E. (2020). Corporate sustainability reporting and financial performance. *Sustainability, 12*(10), Article 4297. https://doi.org/10.3390/su12104297

Saputra, F. (2022). Analysis effect return on assets (ROA), return on equity (ROE) and price earning ratio (PER) on stock prices of coal companies in the Indonesia Stock Exchange (IDX) period 2018–2021. *Dinasti International Journal of Economics, Finance & Accounting, 3*(1), 82–94. https://doi.org/10.38035/dijefa.v3i1.1238

Schaltegger, S., Beckmann, M., & Hansen, E. G. (2013). Transdisciplinarity in corporate sustainability: Mapping the field. *Business Strategy and the Environment, 22*(4), 219–229. https://doi.org/10.1002/bse.1772

Shaban, O. S., & Barakat, A. (2023). The impact of sustainability reporting on a company's financial performance: Evidence from the emerging market [Special issue]. *Journal of Governance & Regulation, 12*(4), 306–314. https://doi.org/10.22495/jgrv12i4siart10

Shi, W., Hoskinson, R. E., & Zhang, Y. A. (2016). A geopolitical perspective into the opposition to globalizing state-owned enterprises in target states. *Global Strategy Journal, 6*(1, special issue), 13–30. https://doi.org/10.1002/gsj.1105

Suchman, M. C. (1995). Managing legitimacy: Strategic and institutional approaches. *Academy of Management Review, 20*(3), 571–610. https://doi.org/10.2307/258788

Taouab, O., & Issor, Z. (2019). Firm performance: Definition and measurement models. *European Scientific Journal, 15*(1), 93–106. https://doi.org/10.19044/esj.2019.v15n1p93

United Nations (UN). (1992, June 3–14). *Report of the United Nations Conference on Environment and Development*. Rio de Janeiro, Brazil. https://digitallibrary.un.org/record/168679?ln=en&v=pdf

Xie, J., Nozawa, W., Yagi, M., Fujii, H., & Managi, S. (2019). Do environmental, social, and governance activities improve corporate financial performance? *Business Strategy and the Environment, 28*(2), 286–300. https://doi.org/10.1002/bse.2224

Yasser, Q. R. (2011). Corporate governance and firm performance: An analysis of family and non-family controlled firms. *The Pakistan Development Review, 50*(1), 47–62. https://doi.org/10.30541/v50i1pp.47-62