“The role of environmental sustainability as a mediator in the relationship between green accounting and corporate performance in Jordan”

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THE ROLE OF ENVIRONMENTAL SUSTAINABILITY AS A MEDIATOR IN THE RELATIONSHIP BETWEEN GREEN ACCOUNTING AND CORPORATE PERFORMANCE IN JORDAN

Abstract

Green accounting is becoming a top issue in global opinion, especially given the environmental and climatic conditions that have become a concern for all countries. The study aims to explore the role of environmental sustainability as a mediator in the relationship between green accounting and corporate performance in Jordan. In the sample of industrial company managers, 259 responses were deemed suitable for in-depth statistical analysis. Smart PLS 4 was employed to analyze sample responses. The structural modeling findings demonstrate a positive association between green accounting and environmental sustainability with a *p*-value of 0.000, which is significant at the 0.05 level. Path coefficients corroborated the statistically significant positive association between green accounting and company performance, which was significant at the 0.05 level with a *p*-value of 0.029. The findings also demonstrate an influential correlation between environmental sustainability and company performance with a *p*-value of 0.000, which is significant at the 0.05 level. The results confirmed that environmental sustainability had an influential mediating influence on the relationship between green accounting and corporate performance with a *p*-value of 0.000.

Keywords green accounting, environmental sustainability, stakeholders, corporate performance, industrial enterprises, Jordan

JEL Classification M41, Q56

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INTRODUCTION

Since the release of the Brundtland Report, sustainable development has given rise to a new conceptual framework for resolving conflicts between environmental preservation and economic growth. Sustainable development has entered corporation and governmental rhetoric, priorities, and work plans (Bebbington et al., 2023). Ecological aspects of sustainability reporting are the focus of numerous metrics, indicators, and data points (O'Reilly et al., 2025). Green accounting has risen as a viable technique for gauging the ecological viability of business practices (Wiredu et al., 2023). It considers the effects of social and economic activities on the environment and includes them in a firm's financial reporting (Abur et al., 2023). It also considers social and environmental costs and benefits when assessing economic operations and their effects on sustainability (Azwin Md Nasir et al., 2024). So, ecological accounting, or "green accounting," is becoming increasingly popular to achieve ecological sustainability (Giang et al., 2021).

Concerns are being raised that the Earth system is approaching tipping points due to the current rate and extent of environmental change

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(Bebbington et al., 2023). Environmental challenges have also recently gained international attention (Agyemang et al., 2024). This indicates that environmental issues should be viewed as systemic risks to the stability of the economic system (Bebbington et al., 2023). Rising emission rates, waste, contaminated water, biodiversity loss, climate fluctuations, and excessive use of finite resources, all of which directly affect the ecology and society, continue to be major concerns (Khan et al., 2019 cited in Nzama et al., 2022, p. 3). In addition, the growing degradation of the worldwide environment has prompted the development and promotion of green design (Jui-Che & Huang, 2015). Consequently, the primary problem with all green accounting models is that, while designed in developed nations, they must consider developing economies' unique characteristics (Gonzalez & Peña-Vinces, 2023). This indicates that environmental issues should be viewed as systemic risks to the stability of the economic system (Bebbington et al., 2023). Although it is imperative for businesses to adopt sustainable practices, not all of them are eager to provide information about their environmental impact (Musah et al., 2021). Thus, the study seeks to answer the following questions: (1) What is green accounting? (2) Does green accounting impact environmental sustainability? (3) Does green accounting impact corporate performance? (4) Does environmental sustainability impact corporate performance? and (5) Does environmental sustainability play a mediating role in the relationship between green accounting and corporate performance enhancement?

Therefore, industrial companies must have a sustainable environmental strategic vision to adopt green accounting practices and adapt to the rapid environmental changes, particularly in emerging nations. This is because these changes directly affect the financial performance and sustainability of businesses. To implement these practices, businesses must be able to present all environmental disclosure information in sustainability reports with credibility and dependability. Users must also view the reports and use them to guide their investment decisions in these businesses, which are a key indicator of improving financial performance.

1. LITERATURE REVIEW AND HYPOTHESES

Adopting green accounting standards is the first step toward preserving the environment for future generations (Stanojević et al., 2010). Hence, green accounting is the process of identifying, measuring, evaluating, and disclosing the expenses associated with environmental corporate initiatives (Latifah & Soewarno, 2023). Therefore, in recent years, the United States, Taiwan, Japan, and European countries have supported environmental accounting principles and the requirement for businesses to publish information about environmental improvements (Jui-Che & Huang, 2015). Indeed, most businesses frequently overlook significant environmental expenses as an item of green accounting (Shakkour et al., 2018). Therefore, environmental awareness, involvement, and reporting are still in the infancy in developing nations like Jordan. It also still shows a weak commitment to protecting the environment (Jahamani, 2003).

The term "green accounting" refers to combining economic and environmental accounting. Its goal is to quantify how environmental effects threaten economic activity's long-term sustainability and economic performance (Bartelmus, 2012). Determining and quantifying economic activity's environmental sustainability is accomplished through methodical greening (Bartelmus, 2012). Thus, green accounting is a style of accounting that aims to account for environmental expenses in the financial results of activities (Rounaghi, 2019). According to Hörisch et al. (2020), this concept highlights the stakeholders and sustainability-related concerns that should be considered when accounting for a certain organization. It also shows how adding new stakeholders and themes can boost stakeholder value generation. Hence, the most widely used definition of corporate sustainability is "implementing business strategies and activities that meet companies' and their stakeholders' present needs while protecting, sustaining, and improving human and natural resources to meet future needs" (adapted from the Brundtland Report cited in Rahi et al., 2024). Therefore, stakeholder theory was used to evaluate the connection between green accounting and environmental sustainability and improve corporate performance.

According to the stakeholder theory, stakeholders should be identified and categorized according to their relative relevance and impact on a firm (Owen et al., 1997). Companies should take into account the needs and desires of all parties, not just shareholders (Owen et al., 1997). According to Freeman (2010), stakeholders comprise the company's workers, clients, suppliers, investors, and the broader public that the business deals with. Accordingly, the stakeholder theory clarifies how individuals are affected by an organization's activities and how they influence the company's objectives (Richter & Dow, 2017). In addition, pressure from stakeholders is an essential part of green accounting. Therefore, relationships between companies and stakeholders are crucial for success and the preservation of ecological sustainability (Rahaman et al., 2024). Stakeholder engagement enhances value unity and makes it easier to include different points of view, which is beneficial for environmental sustainability and green accounting (Wiredu et al., 2023).

A company's financial performance is no longer the primary emphasis of reporting since stakeholders and investors are gradually pressing businesses to disclose their impact on the environment and society as well (Maama & Appiah, 2019) due to the company's impact on environmental issues through their activities (Dewa et al., 2020). Accounting contributes to efforts to reduce environmental expenses, and a significant way to boost a firm's financial performance could be by adopting the corporate sustainability management system (Dewa et al., 2020). Moreover, environmental accounting is vital for ecological preservation and economic growth (Toke & Kalpande, 2024). Therefore, environmental accounting and reporting have grown in significance among stakeholders and organizations due to the correlation between an organization's financial health and environmental and social performance (Maama & Appiah, 2019).

According to Rahman and Islam (2023), green accounting significantly improves environmental performance. Further, according to Gonzalez and Peña-Vinces (2023), alternative models emphasize the need for green accounting to be developed as a socioeconomic instrument to aid in the adoption of its values and practices by businesses. In addition, Shakkour et al. (2018) indicate the importance of sound environmental accounting practices for advancing sustainability, particularly when it comes to paying attention to environmental taxes, costs, and the value of ecosystem services, as well as the price of carbon dioxide and water pollution, all of which support sustainable development. According to Al-Najjar and Anfimiadou (2011), eco-efficiency optimizes an operation's performance. Companies that practice eco-efficiency are valued higher than those that do not (Al-Najjar & Anfimiadou, 2011).

In addition, green accounting would aid in traceability in the measurement of environmental accounting by encouraging a move toward cleaner production that would enhance ecological quality, according to Gonzalez and Peña-Vinces (2023). Furthermore, green accounting disclosure depends on demonstrating ecological preservation and educating stakeholders about a firm's ecological performance (Agyemang et al., 2024). Amalya et al. (2023) demonstrated that green accounting impacts financial and ecological performance. Mondal et al. (2024) indicate that environmental accounting impacts sustainability.

Green or environmental accounting positively impacts environmental sustainability and corporate performance. Green accounting includes environmental valuation techniques, sustainable reporting and disclosure, integrating social and ecological factors into financial accounting, creating green economic indicators, and assessing how well environmental laws and regulations support sustainability (Azwin Md Nasir et al., 2024). Therefore, incorporating environmental factors into accounting practices promotes sustainable development and increases the long-term viability of businesses (Dietzenbacher et al., 2020; Rahman & Islam, 2023). Accordingly, green accounting is regarded as a crucial instrument for comprehending how the environment affects the economy (Huong & Anh, 2024). In addition, it can improve environmental performance (Rahman & Islam, 2023).

Studies have indicated that corporate sustainability practices are positively correlated with financial performance (Alshehhi et al., 2018). According to Deb et al. (2023), there is a considerable and favorable correlation between environmental ac-

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counting and financial performance. Amalya et al. (2023) demonstrated that green accounting impacts financial and environmental performance. Al-Dhaimesh (2020) disclosed the truth of green accounting procedures and their impact on Qatari enterprises' economic value-added. The analysis found a statistically significant connection between green accounting and economic value-added. Mondal et al. (2024) studied how environmental accounting practices affect financial performance. According to the findings, green accounting has a favorable impact on financial performance.

The dynamic journey that charts the historical growth and transformation of sustainability reporting is known as the evolution of green accounting procedures (Agyemang et al., 2024). It examines how environmental concerns, evolving social norms, and regulatory frameworks have impacted businesses' demand for more comprehensive and open reporting practices (Agyemang et al., 2024 cited in Chang et al., 2024). Khan and Gupta (2024) show that corporate green accounting improves corporate performance and reinforces the positive relationship between corporate green accounting and corporate performance. Green accounting includes valuing natural resources, measuring ecological effects, evaluating the social and economic ramifications of sustainability, and integrating these considerations into financial and policy decision-making methods (Khan & Gupta, 2024). Wang et al. (2014) documented strong evidence of a relationship between ecological expenditures and corporate performance. Also, Zeng et al. (2010) conducted a thorough investigation of how cleaner production could improve company performance. The analysis separated high- and low-cost operations and financial and non-financial performance, focusing on the Chinese manufacturing sector. Additionally, it was discovered that cleaner manufacturing improves financial performance; nevertheless, the favorable impact on financial performance is stronger for low-cost activities, while the non-financial performance is greater for high-cost activities (Zeng et al., 2010). On the other side, Fernando et al. (2017) show that stocks with substantial ecological danger exposure have lower values in accordance with risk management theory, which is why institutional investors steer clear of them. These results imply that environmental policies implemented by corporations that reduce exposure to environmental risks provide value for shareholders.

Green accounting is vital for ecological preservation and economic growth (Toke & Kalpande, 2024). That is, green accounting has risen as a viable technique for gauging the ecological viability of business practices (Wiredu et al., 2023). Khan and Gupta (2024) demonstrated that corporate green accounting has a favorable impact on firm performance. When corporate green accounting was expressed regarding environmental costs, the relationship between it and corporate performance became even more positive. Shah and Bhatt (2022) demonstrate the mediating function of environmental concern. For example, more environmental knowledge can give rise to ecological worry, which can increase green accounting uptake. In addition, Rahman and Islam (2023) discovered that green accounting methods had a favorable impact on energy efficiency and ecological performance on an economic, environmental, and social level, with ecological practices having the greatest influence.

Gull et al. (2022) test companies against their industry peers to reexamine the relationship between environmental and financial performance. The findings demonstrate that companies that are ecological best-in-class perform better financially. Jia and Li (2022) looked at the relationship between financial distress and environmental performance. Results indicate that, for companies with a higher level of risk, there is a stronger negative correlation between environmental performance and the likelihood of financial trouble.

The results support the assumption that firms that attained greater rates of ecological performance exhibit superior corporate performance levels in the future (Moneva & Ortas, 2010). Environmental (green) accounting, which includes aspects like carbon accounting, sustainability reporting, and ecological cost accounting, emerges as a crucial instrument (Deb et al., 2023 cited in Mondal et al., 2024). That means green accounting incorporates environmental considerations into a company's business philosophy. This will allow a company to sustain its current level of business efficiency and the system's overall sustainability (Novovic Buric et al., 2022).

Furthermore, Clarkson et al. (2008) state that companies with superior ecological performance are more inclined to communicate continuously with their investors and stakeholders using voluntary disclosures. Vafeas and Nikolaou (2001) indicate a significant superiority of environmentally "good" and "average" enterprises over environmentally "poor" firms. Similarly, Yilmaz (2021) found a statistically significant positive correlation between financial and sustainability performance. In addition, environmental performance can enhance a company's financing circumstances (Jia & Li, 2022). It enables businesses to match investor demands for corporate social responsibility while gaining access to less expensive equity financing (Jia & Li, 2022). Pahlavan et al. (2023) examined the effects of ecologically sustainable performance reporting on liquidity risks, stock market crashes, and the mediating function of profit predictability.

Green accounting methods have become a duty of businesses to their stakeholders in an era of growing environmental consciousness and the pressing need for businesses to adopt greener practices (Żelazna et al., 2020). Pahlavan et al. (2023) indicate that environmental sustainability performance reporting improves profit and reduces the likelihood of a crash and liquidity issues. Amalya et al. (2023) show that green accounting affects financial and environmental performance, and environmental performance affects ecological performance. Lee et al. (2016) examine the relationship between ecological responsibility and financial performance. They demonstrate positive and statistically significant correlations between ecological responsibility performance and firms' return on equity and return on assets. Mondal et al. (2024) studied how environmental accounting practices, like carbon accounting, sustainability reporting, and ecological cost accounting, affect financial performance. According to the findings, environmental accounting has a favorable impact on financial results, and sustainable production both directly improves economic performance and functions as a mediator in the relationship between financial success and environmental accounting activities.

In light of environmental climate changes and carbon emissions, which have become critical issues for all countries and companies around the world, previous research shows the increasing importance and benefit of green accounting in enhancing corporate performance and environmental sustainability across a wide range of industries. Although researchers generally agree that green accounting improves environmental sustainability and corporate performance, there are still some slight differences based on the country in which these companies are located. These findings highlight the need to apply green accounting principles into practice in accordance with environmental sustainability goals, which are believed to be a major factor in improving corporate performance, especially in emerging countries that lack such policies.

The study aims to explore the role of environmental sustainability as a mediator in the relationship between green accounting and corporate performance in Jordan. The study's conceptual model

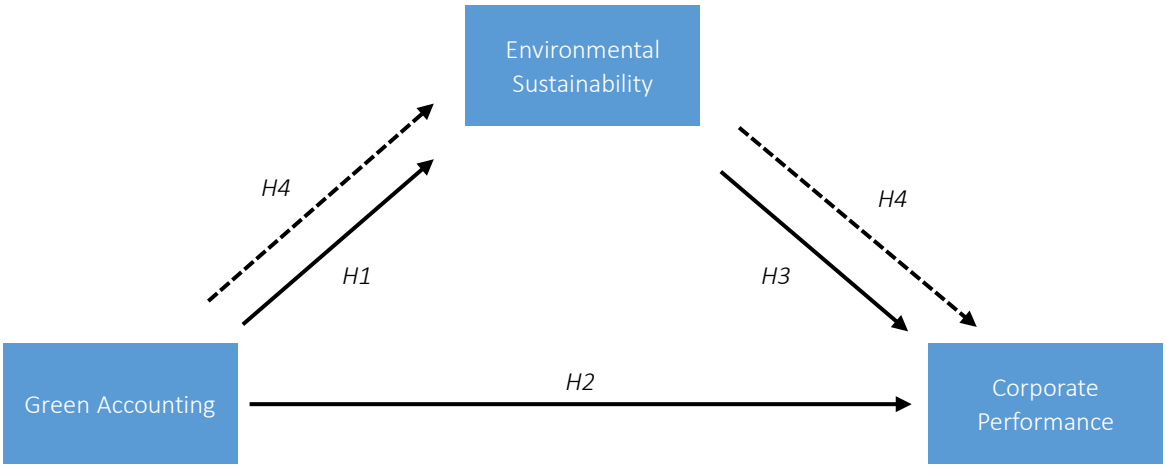

Figure 1. Research model

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is depicted in Figure 1. To further understand this relationship, the following hypotheses were formulated:

H1: Green accounting has a positive impact on environmental sustainability.

H2: Green accounting has a positive impact on corporate performance.

H3: Environmental sustainability has a positive impact on corporate performance.

H4: Environmental sustainability has a mediating role in the nexus between green accounting and corporate performance.

2. METHODS

The study explores how managers interact with the contribution of green accounting in Jordanian industrial companies. The study sample represents a wide range of managers working in industrial companies, especially those who have a direct relationship with sustainability reports within these companies, due to their familiarity with green financial and environmental policies that play a prominent role in preparing and presenting sustainability reports. This category of managers represents those in financial or executive departments or on boards of directors.

Four sectors make up the Amman Financial Market: financial, service, insurance, and the industrial sector, which is the focus of the study. The Amman Financial Market has 63 industrial companies, which are separated into ten distinct industrial sectors, such as chemical, furniture, wood, and rubber industries, engineering, electrical, and information technology industries, and cosmetics industries. In addition, the industries of food, supply, agriculture, animal wealth, packaging, paper, cardboard, office supplies, construction, mining, therapeutics, and medical supplies are included. Industrial companies were chosen because they are growing increasingly conscious of the social and environmental consequences of their operations and goods, which can have a financial impact (De Beer & Friend, 2006) and an effect on environmental sustainability (Nzama et al., 2022). Deb et al. (2023) also claimed industrial activity puts strain on the environment through resource utilization, garbage production, and emissions to the atmosphere and aquatic ecosystems.

Therefore, industrial companies in Jordan were chosen as a sample for this study due to their extensive damage to the environment. However, Jordan's framework for sustainability is still in its development stages. This indicates that most corporations were not required to disclose sustainability indicators in the financial periods before 2019 since there were no legal requirements compelling them to do so or to acknowledge the significance of these indicators. Moreover, these companies were not publishing sustainability reports because they were not required to do so by law (Al Frijat & Elamer, 2024; Al Frijat et al., 2024).

A questionnaire was distributed to the sample; 259 out of 331 participant responses were deemed suitable for in-depth statistical analysis. For data analysis, a Likert scale of 1 to 5 was employed to capture the nuances of the participants' views.

To confirm the proposed relationship between green accounting, environmental sustainability, and corporate performance, the PLS-SEM approach was used. PLS-SEM is extensively utilized in a wide range of business fields (Ringle et al., 2023). SEM techniques are widely used in numerous research that combine primary and secondary data (Rajesh, 2021). In addition, it has a stronger statistical power than covariance-based SEM (CB-SEM). Consequently, there is a higher probability of finding correlations between variables with increased statistical power.

For demographic data, the study demonstrates a 78% response rate, highlighting the participants' dedication to keeping their answers private. This group was specifically selected because of their significant contributions to green accounting initiatives and their work in the industry. In terms of age distribution, 37% of participants were between the ages of 30 and 40, while 10% of respondents were more than 50. Regarding gender, men comprised the majority, 90%. The distribution of educational backgrounds was varied, with 22% having Ph.D. and master's degrees and 78% having bachelor's degrees.

3. RESULTS

According to Appendix A, the questionnaire included questions about company performance, environmental sustainability, and green accounting in order to quantify the study variables. Green accounting items were measured using findings by Shakkour et al. (2018), Rahman and Islam (2023), Taygashinova and Akhmetova (2019), and Gonzalez and Peña-Vinces (2023). Environmental sustainability items were derived from Rehman et al. (2022). The majority of the attention has been focused on financial performance measurements in particular business and management sectors. According to Singh et al. (2015), data from stock exchanges or publicly accessible company statements can be used to measure financial performance metrics. Furthermore, manager-provided data on market share and profitability can be used to monitor financial performance without the need for supplementary data to assess the operation of the business. Given the challenges of comparing different objective performance indicators in international settings or obtaining objective data in developing countries, the ability of managers to rate the overall success of their organization is helpful (Hult et al., 2008 cited in Singh et al., 2015). Since company annual reports emphasizing performance could be purposefully deceptive (Brown & Laverick, 1994), management data are the most trustworthy source for testing. As Hult et al. (2008) showed, subjective performance measurements can be reliable in a developing market. Managers from four countries – Jordan included – stated that the information gathered from managers to gauge company performance was trustworthy. Therefore, this study measures corporate performance in three dimensions: sales growth, improvement of production, and investment growth.

For descriptive analysis, the results clarify the importance of environmental sustainability vision and tactics in the connection between green accounting and corporate performance. The findings of the descriptive statistics analysis demonstrate the critical role green accounting plays in helping businesses achieve environmental sustainability, which has a favorable indirect impact on their corporate performance (Table 1).

The constructs used in this investigation have outer loadings that are shown in Table 1, proving their contribution to the validity and reliability of the measurement model. Hair et al. (2019) state that loading levels in the range of 0.4 to 0.7 are deemed suitable, as long as eliminating markers that fall within this range has no detrimental effect on the reliability or average variance extracted of the composite constructs. Collinearity issues between independent latent variables are also investigated at this level. It may be challenging to pinpoint the precise amount of change in the dependent latent variable brought about by a single predictor variable due to the high degree of collinearity (Hair et al., 2019). In order to examine any potential collinearity issues at the level of the predictor constructs, Hair et al. (2019) advise

Table 1. Descriptive analysis, factor loading, and collinearity

Construct	Items	Mean	Standards Deviation	Loading	Variance Inflation Factor
Green accounting	GA1	3.541	1.102	0.852	2.568
	GA2	3.448	1.149	0.862	2.617
	GA3	3.537	1.119	0.835	4.603
	GA4	3.525	1.143	0.779	1.979
	GA5	3.432	1.118	0.860	3.553
	GA6	3.483	1.113	0.811	3.217
	GA7	3.486	1.154	0.839	3.400
Environmental sustainability	ES1	3.602	1.218	0.891	4.552
	ES2	3.506	1.130	0.872	3.575
	ES3	3.483	1.137	0.846	2.827
	ES4	3.456	1.150	0.862	3.417
	ES5	3.537	1.126	0.760	1.808
	ES6	3.525	1.133	0.857	3.616
Corporate performance	CP1	3.317	1.195	0.799	1.735
	CP2	3.452	1.166	0.844	1.330
	CP3	3.506	1.209	0.794	1.725

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Table 2. Measurement model assessment

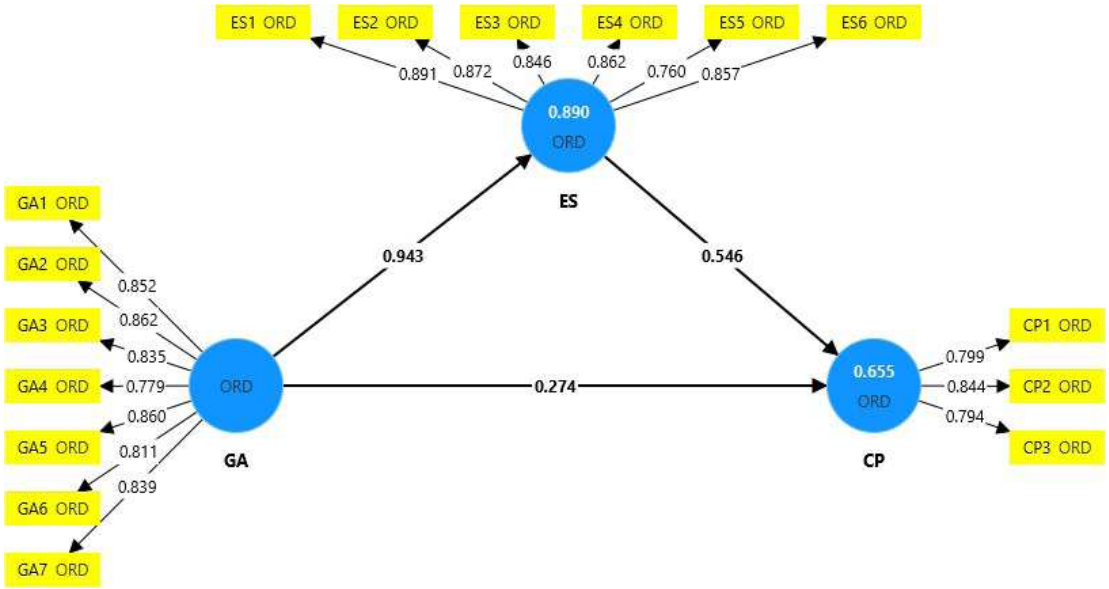
	Cronbach's alpha	Composite reliability	Average variance extracted
Green accounting	0.927	0.941	0.696
Environmental sustainability	0.922	0.939	0.721
Corporate performance	0.755	0.854	0.661

employing a variance inflation factor measure. The variance inflation factor value must be between 0.2 and 5.00 to ensure that predictor constructs are not collinear. This study achieved results of 0.2 to 5.00, proving that the prediction structures are not parallel. The findings, as denoted in Table 1, indicate no association issues linked to the model used.

Additionally, the measurement model assessment shows that internal consistency reliability was assessed using Cronbach's alpha, a commonly used metric examining the intercorrelations between various measurement markers. It is predicated on the idea that each indicator ought to have equal loading on its corresponding constructions. The consistently high Cronbach's alpha values for all variables indicated internal solid consistency dependability. Hair et al. (2019) suggested that none of Cronbach's alpha values were greater than one or decreased below 0.70, confirming the robustness of internal consistency dependability (Table 2). Furthermore, the dependability of each indication was taken into account in addition to the average variance extracted. The average variance extracted measures the degree to which measuring indicators are related to their corresponding constructs. High loading values show that the underlying concept accounts for a significant amount of the variance in the indicator. Because it is so close to the required threshold, an outside loading value of 0.7 is normally acceptable, while a recommended outer loading value of 0.708 or above is desirable. The average variance extracted for each of the constructs confirmed convergent validity, as indicated in Table 2. All showed values of more than 0.5 for their respective indices.

Tables 2 and 3 also illustrate the outer loadings for the constructs employed in this study, confirming their contribution to the measurement model's reliability and validity. Therefore, the previous assessments enormously enhanced the measurement model's reliability and validity, ensuring the robustness of the data for subsequent predictive modeling and path analysis, as depicted in Figure 2.

Moreover, Fornell and Larcker's (1981) criterion was used to thoroughly evaluate discriminant validity, a crucial component of measurement model



Note: GA = green accounting; ES = environmental sustainability; CP = corporate performance.

Figure 2. SmartPLS model

Table 3. Discriminant validity

	Green accounting	Environmental sustainability	Corporate performance
Green accounting	0.813		
Environmental sustainability	0.804	0.849	
Corporate performance	0.789	0.743	0.834

analysis. This tried-and-true technique is a contemporary standard for assessing discriminant validity in partial least squares models. It offers a strong safeguard to guarantee that structures are unique. Therefore, the test threshold value should be less than 0.90 for discriminant validity. The results demonstrate the discriminant validity of the constructs by confirming that they met this criterion. This supports the data quality and the measurement model's robustness for further analysis (Table 3).

The regression analysis findings for the hypothesized relationships are presented in Table 4, revealing a favorable correlation between green accounting, environmental sustainability, and corporate performance. According to Table 4, the structural model test results show that Hypothesis 1 (green accounting → environmental sustainability) is supported with a path coefficient of 0.943, a *T* value of 13.549, and a *p*-value of 0.000, significant at the 0.05 level. This indicates a positive relationship between green accounting and environmental sustainability. Consequently, Hypothesis 1 is accepted.

The structural model test results show that Hypothesis 2 (green accounting → corporate performance) is supported with a path coefficient of 0.274, a *T* value of 2.185, and a *p*-value of 0.029, significant at the 0.05 level. This indicates a positive relationship between green accounting and corporate performance. Consequently, Hypothesis 2 is accepted. Finally, the structural model test results show that Hypothesis 3 (environmental sustainability → corporate performance) is supported with a path coefficient of 0.546, a *T* value of 4.418, and a *p*-value of 0.000, significant at the 0.05 level. This indicates a positive relationship between environmental sustainability and corporate performance. Consequently, Hypothesis 3 is accepted.

To test the fourth hypothesis, Table 5 presents the regression analysis findings for the hypothesized relationships, revealing a favorable correlation between green accounting, environmental sustainability, and corporate performance. The structural model test results show that Hypothesis 4 is supported with a path coefficient of 0.515, a *T* value of 4.418, and a *p*-value of 0.000 (significant at the 0.05 level). This indicates a positive relationship between green accounting, environmental sustainability, and corporate performance. Consequently, Hypothesis 4 is accepted.

Moreover, *R*-squared values are essential when evaluating a study model's predictive power using sample data. They show the degree to which exogenous (independent) variables can account for endogenous factors (dependent variables). Higher numbers nearer 1 indicate stronger predictive accuracy. *R*-squared values vary from 0.00 to 1.00. *R*-squared ratings of 0.75 and higher, as well as 0.25 and lower, are categorized as having strong, medium, and weak predictive ability, respectively, according to Hair et al.

Table 4. Hypotheses testing

Relationship	Path coefficient	T value	P values	Decisions
Green accounting → Environmental sustainability	0.943	13.549	0.000	Confirmed
Green accounting → Corporate performance	0.274	2.185	0.029	Confirmed
Environmental sustainability → Corporate performance	0.546	4.418	0.000	Confirmed

Table 5. Summary of the mediation results

Hypothesis 4	Relationship	Path coefficient	T Value	P values	Decision
Total effect	Green accounting → Corporate performance	0.789	37.384	0.000	
Total indirect effect	Green accounting → Corporate performance	0.274	2.185	0.029	
Specific indirect effect	Green accounting → Environmental sustainability → Corporate performance	0.515	4.418	0.000	Confirmed

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(2019). The two variables with the greatest *R*-squared values in this analysis were corporate performance (*R*-squared = 0.655) and environmental sustainability (*R*-squared = 0.890), suggesting moderate in-sample predictive potential (Table 6).

The model's out-of-sample predictive power and capacity to anticipate unutilized data are also commonly assessed using Stone-Geisser's score. Any reflecting endogenous concept in the model should have a *Q*-squared greater than zero (Geisser, 1974; Hair et al., 2017). In particular, values of 0.02, 0.15, and 0.35 denote low, medium, and high predictive power, according to Hair et al. (2019). The model has a significant predictive ability, as seen by the *Q*-squared values of this study's two reflective endogenous constructs (environmental sustainability = 0.899 and corporate performance = 0.618) (Table 6).

Table 6. R-square and Q^2 predict

Construct	R-square	Q^2 predict
Environmental sustainability	0.890	0.889
Corporate performance	0.655	0.618

4. DISCUSSION

This study focused on the role of environmental sustainability as a mediating variable in the relationship between green accounting and the performance improvement of companies in Jordan. The results indicated that green accounting has a direct impact on environmental sustainability and an indirect impact on the corporate performance of industrial companies. Companies that will adhere to the principles and policies related to green accounting, whether in determining ecological taxes, ecological costs, estimating ecosystem services, the cost of carbon dioxide and water pollution, and indirect costs and benefits related to ecosystem services, will be followed by a tangible improvement in environmental sustainability, which will be reflected in their financial performance. Corporate managers increasingly view ecological accounting as an adjunct to better ecological decision-making, which increases the chance of producing notable environmental and financial advantages (Boyd, 1998). Using green accounting practices can result in higher earnings, less insurance and capital expenses, and decreased manufacturing costs, which can improve a business's financial performance (Mondal et al., 2024). According to Nzama et al. (2022), companies in the food sector should create sustainable, ecologically friendly plans for disposing of and managing waste. Bebbington et al. (2023) showed that stakeholders want businesses to be transparent about their operations' environmental impact and take steps to mitigate these effects. Green accounting enables firms to measure, schedule, and disclose their commitment to sustainability, meeting the expectations of interested parties and enhancing their ecological goodwill (Wiredu et al., 2023). Stanojević et al. (2010) indicate that a broader implementation of green accounting standards would encourage the renewable energy industry to grow at an unprecedented rate by attracting investors to renewable energy investments. Latifah and Soewarno (2023) state that the environmental accounting approach of small and medium entities impacts sustainability performance.

Additionally, the results indicated that environmental sustainability directly influences the corporate performance of industrial companies. Companies that pay attention to environmental activities to correctly recycle waste, safeguard the environment, lessen pollution, conserve water and electricity, allocate resources to provide ecological services, submit environmental assessment reports regularly, and work appropriately on the rational use of natural resources will be followed by a tangible improvement in corporate performance. Therefore, environmentally sustainable practices or policies should positively impact corporate performance. In addition, taking care of environmental sustainability measures through participation in environmental programs, practicing low-impact manufacturing technology, dealing with environmentally friendly suppliers, and developing ecological awareness among corporate employees will result in improved company productivity, profitability, investments, and sales growth. According to Nzama et al. (2022), there is a strong correlation between environmental information and activities relevant to the environment and between businesses' ecological strategies. Pahlavan et al. (2023) indicate that environmental sustainability performance reporting improves profit comparability and reduces the likelihood of a crash and liquidity issues. Erbetta et al. (2023) indicate that prioritizing the environmental dimension results in a trade-off connection between the environmental and economic goals. According to Kheireddine et al. (2024), environmental sustainability significantly impacts firm value.

When a company performs well in terms of the environment, society views it more favorably, which increases the likelihood that the company will be rewarded. As a result, the company will probably increase its value in the capital markets (Kheireddine et al., 2024).

The findings also indicated a favorable correlation between green accounting, environmental sustainability, and corporate performance. According to Kalyar et al. (2020), green supply chain management practices – such as eco-design, eco-manufacturing, eco-purchasing, customer cooperation, and green information systems – have a major direct impact on corporate performance, both directly and indirectly, through environmental performance. In addition, environmental accounting has a favorable influence on financial results, and sustainable production directly improves economic performance and functions as a mediator in the relationship between financial success and ecological accounting activities (Mondal et al., 2024).

CONCLUSION

The study aims to explore the role of environmental sustainability as a mediator in the relationship between green accounting and corporate performance in Jordan. The findings indicate that achieving environmental sustainability requires activating and implementing green accounting policies, which confirms a favorable correlation between green accounting and environmental sustainability. The results also demonstrate that green accounting-related cost patterns positively improve corporate performance, emphasizing its significance in providing a more comprehensive picture of corporate performance. The findings also show that businesses could improve their earnings, investments, and sales by utilizing the environmental tools, strategies, and initiatives they had implemented. This suggests that environmental sustainability significantly enhances corporate performance. These results also help to understand how corporate environmental sustainability practices, as a mediating variable, contribute to the relationship between green accounting and corporate performance. The findings are consistent with global trends in developed economic countries and provide crucial insights for board members and directors of industrial companies in emerging economies, especially Jordan.

The findings offer theoretical and practical contributions to green accounting and environmental sustainability. Theoretically, this study fills a research gap in Jordan, as it is the first study that addresses this topic, especially in light of the lack of commitment of industrial companies to prepare and submit sustainability reports. Many industrial companies in Jordan have not adhered to the concepts and foundations of green accounting and environmental sustainability practices, which have become a source of concern for investors and decision-makers. Therefore, the results provide many recommendations to decision-makers in these companies to adopt and apply green concepts and sustainable environmental practices that preserve the environment, climate, and nature, which may lead to improving their performance. Future studies should take into account all green concepts related to the environment.

AUTHOR CONTRIBUTIONS

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APPENDIX A

Table A1. Questionnaire items

Variables	Measurement
Green accounting	Managers of industrial companies are aware of the importance of including environmental taxes in corporate reports
	Managers of industrial companies are aware of the importance of including the costs associated with pollution in corporate reports
	Managers of industrial companies are aware of the importance of valuing ecosystem services
	Managers of industrial companies are aware of the importance of including the cost of water contamination in corporate reports
	Managers of industrial companies are aware of the importance of including the carbon dioxide cost in corporate reports
	Managers of industrial companies are aware of the importance of including the indirect costs and benefits related to ecosystem services in corporate reports
	Managers of industrial companies are aware of the importance of including the costs associated with the depletion of resources in corporate reports
Environmental sustainability	The company emphasizes the importance of disclosing waste recycling
	The company emphasizes the importance of disclosing efforts to preserve water and electricity
	The company emphasizes the importance of providing environmental awareness training for our employees
	The company emphasizes the importance of participating in environmental programs
	The company emphasizes the importance of practicing low-impact manufacturing technology
	The company emphasizes the importance of dealing with environmentally friendly suppliers
Corporate performance	Growth in company sales
	Improvement in company production
	Growth in company investments