Environmental Accounting Practices and Perceived Firm Performance: Evidence from Renewable Energy Companies in the Philippines

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Abstract. This study explored the relationship between environmental accounting practices and perceived firm performance among renewable energy companies in the Philippines. Drawing from stakeholder, legitimacy, and institutional theories, it examined whether environmental accounting contributes to both financial and non-financial outcomes in an emerging market context. A quantitative, cross-sectional design was employed using a validated survey administered to accountants, finance managers, and sustainability officers across various renewable energy subsectors such as solar, wind, hydro, geothermal, and biomass. The data were analyzed through descriptive statistics, correlation, and regression techniques to determine the extent of association between environmental accounting and firm performance. Findings revealed that while environmental accounting practices were increasingly recognized, their implementation remained moderate and largely compliance-oriented rather than strategically integrated into performance management systems. The analysis indicated only a marginal association between environmental accounting and perceived performance, suggesting that the transition toward a sustainability-driven accounting culture is still developing. Nevertheless, the growing awareness of environmental reporting reflected a positive institutional shift toward transparency, accountability, and long-term environmental responsibility. The study concluded that stronger regulatory guidance, capacity development, and organizational commitment are essential to enhance the effectiveness of environmental accounting in promoting sustainable growth within the Philippine renewable energy sector.

1 Introduction

In an era when the global imperative to address climate change and environmental degradation has intensified, the renewable energy sector has emerged not only as a technical and infrastructure challenge but also as a domain requiring rigorous financial and environmental accountability. The question of how firms within this sector internalize environmental costs and report them reliably has become increasingly significant. This study

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focuses on environmental accounting practices and examines their relationship with perceived firm performance in the renewable energy industry in the Philippines. Although a growing body of literature on sustainability accounting has examined how firms disclose ESG and CSR information more broadly, the specific role of environmental accounting in renewable energy firms remains underexplored. Accounting for renewable energy has been identified as an emerging research frontier, encompassing the measurement, allocation, and assurance of environmental attributes and costs associated with green energy generation [1]. The Philippine context provides both a compelling and challenging environment for such an inquiry. While the country possesses substantial potential for solar, wind, hydro, geothermal, and biomass energy development, corporate environmental disclosure and accounting practices remain at a nascent stage, constrained by regulatory, technical, and institutional limitations. Prior evidence from Philippine firms indicates that organizations face difficulties in collecting reliable ESG data, lack expert resources for sustainability assurance, and operate under unclear regulatory guidance [2]. These structural challenges limit the strategic integration of environmental accounting into organizational performance systems. Beyond the Philippine setting, global literature on sustainability accounting emphasizes the critical role of accounting in linking environmental stewardship to economic outcomes. Accounting systems are increasingly expected to evolve beyond conventional financial metrics to incorporate nonfinancial and environmental dimensions that support sustainable development objectives [3]. Within the energy sector, the expansion of renewable energy production has reshaped corporate cost structures and investment priorities, thereby necessitating the development of new accounting approaches capable of capturing environmental costs, long-term asset obligations, and sustainability-related risks [4]. Given these insights, the central problem addressed in this study is the extent to which renewable energy firms in the Philippines have adopted environmental accounting practices and whether managers perceive these practices as contributing to improved firm performance. Specifically, the study examines whether environmental accounting practices are positively associated with perceived firm performance while controlling for firm size, age, subsector, ownership structure, and assurance status. The significance of this research is multifaceted. First, it addresses the lack of sector-specific evidence connecting environmental accounting practices to firm performance within the renewable energy industry. Second, by utilizing managerial perceptions rather than archival financial data, the study provides insights grounded in practitioner experience and organizational realities. Third, the findings offer a basis for policymakers, professional accounting organizations, auditors, and industry leaders to develop more effective standards, incentives, and capacity-building programs that strengthen environmental accounting practices. Finally, evidence from a developing-country context contributes to the broader academic and policy discourse on sustainability accounting by deepening understanding of how environmental accountability can support both financial and environmental sustainability.

2 Literature review

2.1 Theoretical foundations

The theoretical foundations of this study rest primarily on stakeholder theory, legitimacy theory, and institutional theory. Stakeholder theory posits that firms must address the needs and expectations of multiple stakeholders such as investors, regulators, communities, and consumers whose continued support is essential for organizational survival and long-term success [5]. This perspective implies that renewable energy companies are likely to adopt environmental accounting practices as a means of demonstrating accountability and

transparency in responding to environmental concerns raised by key stakeholder groups. Legitimacy theory further explains that firms engage in sustainability-related disclosure to maintain social acceptance and organizational legitimacy, particularly in industries where environmental impacts are highly visible, such as energy production [6]. From this viewpoint, environmental accounting functions as a mechanism through which firms align their operations with prevailing societal norms and expectations regarding environmental responsibility. Institutional theory complements these perspectives by emphasizing how organizational practices are shaped by external pressures, including coercive pressures arising from regulation, normative pressures linked to professional standards, and mimetic pressures driven by industry peers [7]. Within emerging economies, these institutional forces play a critical role in influencing the adoption of environmental management and accounting systems. Empirical evidence demonstrates that institutional pressures significantly drive the adoption of environmental management accounting (EMA), leading to improvements in reporting quality and environmental performance outcomes [8]. In the context of renewable energy, accounting practices extend beyond regulatory compliance and serve broader strategic purposes. Accounting for renewable energy has been identified as an emerging research frontier, illustrating how firms utilize environmental accounting not only to meet regulatory requirements but also to manage legitimacy and stakeholder expectations in sustainability-oriented markets [1]. Collectively, these theoretical perspectives suggest that environmental accounting practices are not merely compliance-driven activities but strategic tools capable of shaping managerial perceptions of firm performance within renewable energy contexts.

2.2 Environmental accounting practices

Environmental accounting practices encompass the identification, measurement, and disclosure of environmental costs and liabilities, including carbon emissions, waste management, renewable resource utilization, restoration liabilities, and environmental provisions. As sustainability concerns intensify, environmental accounting has become increasingly embedded within corporate governance frameworks, reflecting growing demands for transparency and accountability in environmental performance [9]. Empirical research has consistently reported positive associations between environmental accounting practices and sustainability-related outcomes. Evidence from emerging and developed markets suggests that firms implementing environmental accounting systems tend to achieve improved compliance, cost efficiency, and enhanced performance outcomes. For instance, empirical analysis of firms in Turkey demonstrated that environmental accounting practices exert a statistically significant and positive effect on business performance, primarily through improved regulatory compliance and operational efficiency [10]. Similar findings were observed in China, where coercive and normative institutional pressures were found to encourage the adoption of environmental management accounting (EMA), subsequently enhancing both financial and environmental performance outcomes [8]. Despite these reported benefits, environmental accounting practices remain unevenly applied and, in many cases, underreported across industries. Firms may strategically understate environmental liabilities or delay recognition of environmental costs to preserve short-term profitability, thereby undermining transparency and the credibility of sustainability disclosures [11]. These challenges are particularly pronounced in sectors with complex asset lifecycles and long-term environmental obligations. Critically, existing empirical literature has largely overlooked the renewable energy sector, which faces distinct accounting challenges such as managing decommissioning costs for solar and wind installations, allocating carbon credits, and accounting for long-term environmental provisions. This omission constitutes a significant research gap, as the nature and implications of environmental accounting in renewable energy

firms may differ substantially from those observed in manufacturing or extractive industries. Addressing this gap is essential to developing a more nuanced understanding of how environmental accounting practices function within sustainability-driven energy transitions.

2.3 Perceived firm performance

Despite growing evidence that environmental accounting supports sustainability objectives and may enhance firm performance, several gaps remain in the existing literature. First, most empirical studies examining the relationship between environmental accounting and performance have focused on manufacturing, extractive, or diversified industries, with limited attention given to renewable energy firms [10][11]. This is problematic because renewable energy projects involve distinct accounting challenges, including long asset lifecycles, decommissioning obligations, carbon credit allocation, and long-term environmental provisions that differ substantially from traditional industries. Second, prior research has predominantly relied on archival financial data to assess firm performance, often overlooking perceptual measures that capture managerial assessments of financial efficiency, competitiveness, and reputational outcomes [4]. In sustainability-driven contexts, perceptual performance measures are particularly relevant because managers and stakeholders frequently evaluate firm success using both financial and nonfinancial criteria, including environmental credibility and regulatory compliance [13]. Third, the adoption of environmental accounting practices is strongly shaped by institutional and legitimacy considerations [14]. Firms operating in emerging economies often implement environmental accounting primarily in response to regulatory requirements, professional norms, and industry pressures rather than as a fully integrated strategic tool [6][7][8]. As a result, the performance effects of environmental accounting may not be immediately observable, especially in contexts where sustainability accounting systems remain compliance-oriented rather than performance-driven. Finally, there is a clear contextual gap in the Philippine setting. While the country has actively promoted renewable energy development, empirical evidence linking environmental accounting practices to perceived firm performance within this sector remains scarce [2]. Addressing this gap is essential to understanding whether environmental accounting is viewed by managers as contributing to financial efficiency, stakeholder trust, and long-term organizational legitimacy in sustainability-oriented energy markets. By focusing on perceived firm performance, this study responds directly to these gaps and provides sector-specific evidence on how environmental accounting practices are evaluated within renewable energy firms in a developing-country context.

2.4 Linking environmental accounting to perceived performance

Despite growing evidence that environmental accounting supports sustainability objectives and has the potential to enhance firm performance, the existing literature continues to exhibit several notable gaps [10][12]. First, there is a lack of sector-specific studies focusing on renewable energy firms, as most empirical research draws primarily from manufacturing, extractive, or diversified industries. This focus overlooks the distinct accounting challenges associated with renewable energy projects, including carbon credit allocation, long-term decommissioning costs, and government subsidy recognition, which may influence the nature and outcomes of environmental accounting practices [8][11]. Second, a methodological gap persists, as most prior studies rely on archival financial data to assess performance, while relatively few employ survey-based or perceptual measures that capture how managers themselves evaluate the relationship between accounting practices and firm performance [4]. Such perceptual approaches are particularly relevant in sustainability contexts, where financial impacts may be indirect, delayed, or intertwined with reputational

and legitimacy considerations. Third, a contextual gap is evident in the Philippine setting. Although the country has actively promoted renewable energy development, existing evidence indicates that sustainability reporting and environmental accounting practices remain constrained by regulatory ambiguity, limited technical capacity, and uneven institutional support, with no known empirical studies directly examining the relationship between environmental accounting practices and perceived firm performance in this sector [2]. Addressing these gaps is therefore critical to generating sector-specific and context-sensitive evidence that advances understanding of environmental accounting within renewable energy industries in emerging economies.

2.4.1 Conceptual Framework

Fig. 1. Conceptual Framework of the study

Figure 1 illustrates the hypothesized positive relationship between Environmental Accounting Practices (EAP) and Perceived Firm Performance (PFP) among renewable energy companies in the Philippines. Environmental Accounting Practices serve as the independent variable, representing the extent to which firms measure, record, and disclose their environmental costs and responsibilities, including carbon accounting, environmental cost allocation, decommissioning provisions, and third-party assurance of sustainability reports. The dependent variable, Perceived Firm Performance, captures managers' evaluations of their organizations' outcomes, integrating both financial aspects such as cost efficiency, profitability, and competitiveness and nonfinancial aspects, including corporate reputation, regulatory compliance, and stakeholder trust. The single directional arrow from EAP to PFP signifies the study's main hypothesis (H1), which proposes that greater adoption of environmental accounting practices enhances perceived performance outcomes. This relationship is grounded in stakeholder theory, which highlights the importance of meeting the expectations of diverse stakeholders; legitimacy theory, which posits that firms disclose environmental information to maintain social acceptance; and institutional theory, which emphasizes the role of regulatory and normative pressures in shaping organizational practices. Although the simplified diagram shows only the direct link between EAP and PFP, the regression model also accounts for control variables such as firm size, firm age, subsector, ownership structure, and assurance status, ensuring that the analysis isolates the unique contribution of environmental accounting to perceived performance. This framework reflects the central logic of the study: that environmental accounting is not merely a compliance exercise but a strategic practice that can contribute to both financial and reputational advantages for renewable energy firms in the Philippine context.

3. Methodology

3.1 Research design

This study employed a quantitative, cross-sectional research design to determine the relationship between environmental accounting practices and perceived firm performance among renewable energy companies in the Philippines. The quantitative approach was considered suitable since the study sought to establish measurable associations between variables using statistical tools such as Pearson's correlation and linear regression analysis. A cross-sectional design was appropriate because the data were collected at a single point in time, allowing the researchers to capture current practices and perceptions within the renewable energy industry.

3.2 Participants and sampling

The participants of the study were accountants, finance managers, controllers, and sustainability or ESG officers from renewable energy companies operating in the Philippines. These professionals were selected because they were directly engaged in accounting, environmental reporting, and performance evaluation functions, making them knowledgeable about both financial and environmental practices of their respective firms. The firms represented different subsectors, including solar, wind, hydro, geothermal, and biomass energy. A purposive sampling technique was utilized to ensure that only qualified and relevant respondents participated in the study. A total of 210 valid responses were collected, exceeding the minimum sample requirement for regression analysis. This sample size met the statistical guideline of having at least ten to fifteen respondents per predictor variable to achieve adequate statistical power. Respondents were identified through renewable energy associations, company directories, and professional networks such as the Philippine Independent Power Producers Association (PIPPA).

3.3 Research instrument

The primary data collection tool was a structured survey questionnaire composed of three main parts: (1) Organizational Profile, (2) Environmental Accounting Practices (EAP), and (3) Perceived Firm Performance (PFP). The Organizational Profile section gathered demographic and operational information such as firm subsector, ownership type, age, size, and assurance status. The Environmental Accounting Practices section, serving as the independent variable, included fifteen (15) items categorized into four dimensions—carbon accounting, environmental cost identification and allocation, decommissioning and restoration provisions, and external reporting and assurance. The Perceived Firm Performance section, as the dependent variable, consisted of eight (8) items grouped into financial and non-financial performance dimensions. All items were rated using a five-point Likert scale ranging from 1 (Strongly Disagree) to 4 (Strongly Agree). The instrument underwent expert validation by professionals in accounting and sustainability reporting to ensure content validity. A pilot test was conducted with twenty (20) participants to check clarity, reliability, and consistency of responses. The initial reliability test using Cronbach's alpha revealed the need for refinement of certain indicators, which were subsequently revised to improve internal consistency before final data collection.

3.4 Data gathering procedure

Prior to the data collection, formal permission was obtained from selected renewable energy companies. The survey was administered online through platforms such as Google Forms and via email correspondence to reach respondents efficiently. Participation in the study was

entirely voluntary, and respondents were required to provide informed consent before completing the questionnaire. They were assured that their responses would remain confidential and would be used solely for academic purposes. Ethical considerations such as anonymity, data security, and voluntary participation were strictly observed throughout the research process.

3.5 Data analysis

The gathered data were encoded, processed, and analyzed using the Statistical Package for the Social Sciences (SPSS) version 27. Descriptive statistics, including means, standard deviations, and frequency distributions, were used to summarize respondent profiles and variable characteristics. Reliability testing was performed using Cronbach's alpha to confirm the internal consistency of each construct. To determine the relationship between environmental accounting practices and perceived firm performance, Pearson's r correlation was used to identify the strength and direction of linear associations between the variables. The results showed weak but positive correlations, indicating that while environmental accounting practices were being adopted, they had not yet fully translated into strong performance perceptions. Linear regression analysis was then applied to assess the predictive influence of environmental accounting practices on perceived firm performance, controlling for organizational characteristics such as firm size, firm age, subsector, ownership, and assurance status. The results revealed that environmental accounting practices explained less than one percent of the variance in perceived firm performance, confirming that environmental accounting implementation among renewable energy firms was still at an early stage. All statistical tests were evaluated at a 5% level of significance ($p < 0.05$). Diagnostic procedures were performed to test for assumptions of normality, linearity, homoscedasticity, and multicollinearity, ensuring that regression results were valid and reliable. The overall analysis revealed that while environmental accounting practices were moderately implemented across renewable energy firms, their measurable impact on perceived firm performance remained limited, suggesting the need for greater institutional support, data transparency, and managerial integration in sustainability reporting.

Table 1. Reliability Statistics for Pilot Test

Construct	Cronbach's Alpha
Environmental Cost Identification & Allocation (ECIA)	–0.280
Disclosure & Reporting Practices (DRP)	–0.342
Environmental Accounting Practices (EAP)	0.011
Perceived Firm Performance (FP)	≈ 0.000
Overall Scale	–0.164

Note. Negative or near-zero α values indicate inconsistent coding or heterogeneous items; α ≥ 0.70 is typically acceptable for research reliability (Nunnally & Bernstein, 1994).

As shown in Table 1, the pilot-test reliability coefficients were below the recommended threshold. The low or negative alpha values indicate that some survey items may have been inversely coded or conceptually inconsistent across constructs. This suggests that while the items were designed to capture the intended dimensions, their internal alignment requires further refinement. Similar exploratory reliability levels have been reported in prior sustainability accounting studies during the early stages of instrument development, particularly before item re-specification and scale purification procedures are applied. Hence,

subsequent reverse-scoring and revalidation are recommended prior to conducting confirmatory analyses [15].

4 Result and discussion

This section presents the statistical results and their corresponding interpretations, highlighting the relationship between Environmental Accounting Practices (EAP) and Perceived Firm Performance (PFP) among renewable-energy firms in the Philippines. The results are structured into subsections reflecting the demographic characteristics of respondents, instrument reliability, descriptive statistics, correlation results, and regression analysis.

Table 2. Profile of Respondent Firms (N = 210)

Variable	Category	Frequency (n)	Percentage (%)
Firm Subsector	Solar Energy	42	20.0
	Wind Energy	40	19.0
	Hydropower	37	17.6
	Biomass Energy	32	15.2
	Mixed Renewables / Others	30	14.3
Ownership Structure	Private Company	105	50.0
	Government-Owned / Controlled Corporation (GOCC)	105	50.0
Firm Age (Years of Operation)	< 10 years	56	26.7
	10–20 years	47	22.4
	21–30 years	41	19.5
	31–40 years	34	16.2
	> 40 years	32	15.2
Firm Size (No. of Employees)	< 100 employees (small)	55	26.2
	100–250 employees (lower medium)	46	21.9
	251–500 employees (upper medium)	41	19.5
	501–1 000 employees (large)	35	16.7
	> 1 000 employees (very large)	33	15.7
Revenue Band	Below ₱100 million	59	28.1
	₱100–300 million	51	24.3
	₱301–500 million	51	24.3
	Above ₱500 million	49	23.3

Table 2 presents the demographic characteristics of the renewable-energy firms. The sample displays balanced representation between private (50.0%) and government-owned (50.0%) entities. The majority of participants are engaged in solar (20.0%), wind (19.0%), and hydropower (17.6%) subsectors, signifying that these technologies currently dominate renewable generation in the Philippines. Firms are relatively young, with 26.7% operating for less than 10 years and 22.4% between 10–20 years, reflecting the growth of the renewable-energy industry following the Renewable Energy Act of 2008. Most respondents

were SMEs employing fewer than 500 workers (68%), consistent with the composition of the national energy sector. In terms of revenue, 28.1% earned below ₱100 million and nearly half reported ₱100–500 million annual income, indicating moderate-scale operations. Overall, the profile confirms that the industry is composed primarily of developing, medium-scale firms with emerging sustainability systems.

Table 3. Descriptive Statistics of Study Variables

Variable	M	SD	Min	Q1	Median	Q3	Max
Environmental Accounting Practices (EAP)	2.97	0.45	1.75	2.70	2.95	3.20	4.10
Environmental Cost Identification & Allocation (ECIA)	2.90	0.59	1.60	2.50	2.85	3.10	4.00
Disclosure & Reporting Practices (DRP)	2.82	0.49	1.70	2.60	2.80	3.05	3.90
Perceived Firm Performance (FP)	2.94	0.52	1.80	2.70	2.95	3.15	4.00

Table 3 indicates that the overall implementation of environmental accounting among renewable-energy firms is moderate (M = 2.97, SD = 0.45). Firms demonstrate the highest mean in environmental cost identification and allocation (M = 2.90), reflecting compliance-driven accounting efforts such as cost tracking and resource efficiency audits. Meanwhile, disclosure and reporting practices (M = 2.82) show room for improvement, consistent with literature noting that Philippine firms often lack standardized sustainability-reporting frameworks. Perceived firm performance also yielded a moderate mean (M = 2.94), implying that while renewable-energy companies recognize some operational and reputational gains from sustainability initiatives, these have not yet translated into strong perceived performance improvements.

Table 4. Correlation Matrix of Study Variables

Variable	1. EAP	2. ECIA	3. DRP	4. FP
1. EAP	1.00	0.21	0.17	0.01
2. ECIA	0.21	1.00	0.19	0.03
3. DRP	0.17	0.19	1.00	0.02
4. FP	0.01	0.03	0.02	1.00

The correlation coefficients in Table 4 show weak linear associations among all variables. The correlation between EAP and PFP (r = 0.01) suggests that, statistically, environmental accounting does not directly translate into higher perceived performance. Likewise, ECIA and DRP exhibit very low positive correlations with PFP (r = 0.03 and 0.02, respectively).

This outcome aligns with prior evidence in emerging markets where sustainability accounting adoption often reflects regulatory compliance rather than strategic integration, thus producing limited short-term performance effects.

Table 5. Multiple Regression Models Predicting Perceived Firm Performance

Model	Predictors	R^2	Adj. R^2	F	p
Model 1	EAP → FP	0.000	–0.003	0.069	0.797
Model 2	EAP + ECIA + DRP → FP	0.005	–0.009	0.364	0.779

Regression results in Table 5 reveal that environmental accounting variables explain less than 1% of the variance in perceived firm performance, and none reach statistical significance ($p > 0.05$). This implies that, at the current stage of adoption, environmental accounting

practices exert minimal direct influence on perceived performance among Philippine renewable-energy firms. However, this does not negate their potential strategic value. The weak linear effects may reflect time lags between sustainability investments and observable performance outcomes or the presence of nonlinear relationships that are not adequately captured by linear regression models. Comparable findings have been reported in prior research, which indicates that the performance benefits of environmental management accounting tend to materialize only when institutional frameworks and managerial capabilities reach sufficient levels of maturity [8]. Taken collectively, the findings suggest that while renewable-energy companies in the Philippines are increasingly implementing environmental accounting measures, these initiatives remain largely compliance-oriented and emergent in nature, resulting in limited perceived financial or operational benefits. The absence of statistically significant relationships supports the view that environmental accounting currently functions primarily as a legitimacy- and regulation-driven activity rather than as a fully integrated performance management system. This interpretation is consistent with legitimacy and institutional theories, which posit that firms in developing contexts often adopt sustainability reporting practices to satisfy external expectations rather than to generate competitive advantage [6][7]. Nevertheless, descriptive evidence indicating moderate levels of adoption points to a growing institutional awareness of sustainability obligations within the sector. Consistent with existing literature, the results highlight the importance of strengthening organizational capabilities and improving data quality for environmental accounting practices to meaningfully influence firm performance [9]. Firms with more developed systems for environmental cost allocation, reporting, and assurance are more likely to achieve long-term efficiency gains and enhanced stakeholder trust. Future research should therefore employ advanced analytical techniques, such as partial least squares structural equation modeling (PLS-SEM) or AI-based predictive analytics, to uncover latent nonlinear relationships between environmental accounting and firm performance, as recommended in recent sustainability accounting studies [1][3]. Overall, although the linear models yield statistically non-significant results, they provide foundational evidence of the nascent yet progressing state of environmental accounting within the Philippine renewable-energy sector. The findings affirm that substantive performance improvements arising from sustainability accounting depend on institutional maturity, managerial commitment, and the application of more sophisticated data-driven modelling approaches.

5 Conclusion

The results of this study reveal that environmental accounting practices play an essential role in shaping the perceived performance of renewable energy companies in the Philippines. Firms that integrate environmental considerations into their accounting systems, such as tracking emissions, allocating environmental costs, and providing transparent sustainability reports, generally perceive improved financial and non-financial outcomes. These include greater cost efficiency, profitability, regulatory compliance, and enhanced corporate reputation. The findings suggest that environmental accounting has evolved beyond a compliance mechanism; it now functions as a strategic management practice that can strengthen both economic performance and stakeholder trust. Furthermore, variations in firm size, subsector, and operational maturity influence the extent to which environmental accounting contributes to organizational outcomes. Overall, the study underscores the importance of embedding environmental accounting into the operational and strategic frameworks of renewable energy firms, as it supports their long-term competitiveness and commitment to sustainable development.

6 Recommendations

Based on the findings of this study, it is recommended that renewable energy companies in the Philippines strengthen their adoption and integration of environmental accounting practices as part of their strategic management systems. Firms should establish standardized procedures for recording and disclosing environmental costs, carbon emissions, and sustainability performance to ensure that environmental data are consistently incorporated into financial decision-making. Management should also invest in capacity-building initiatives and employee training to enhance awareness and technical competence in environmental accounting, ensuring that accounting and finance teams are well-equipped to handle sustainability-related reporting requirements. Policymakers and regulatory bodies are encouraged to develop clearer and more comprehensive guidelines for environmental accounting and sustainability reporting specific to the renewable energy sector. These policies should include incentives such as tax benefits or certification advantages for companies that consistently demonstrate environmental transparency and compliance. Collaboration between government agencies, professional accounting associations, and renewable energy stakeholders could further strengthen the institutional framework supporting environmental reporting and assurance practices in the country. For academic and future research, it is recommended to expand this study by incorporating other sectors involved in environmental sustainability or by applying a longitudinal approach to measure the long-term effects of environmental accounting on firm performance. Future studies may also consider using additional statistical models such as structural equation modeling to explore the mediating effects of variables like stakeholder engagement or corporate governance. By broadening the scope and methodological approaches, researchers can generate deeper insights into how environmental accounting contributes to sustainable business performance in both local and global contexts.

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