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ENVIRONMENTAL COST ACCOUNTING PRACTICES ON THE BUSINESS PERFORMANCE OF HOSPITALITY INDUSTRY IN PANGLAO, BOHOL, PHILIPPINES

JOHN CARMELO A. SERVIDAD
Graduate Studies, University of Bohol,
Tagbilaran City, Philippines

Corresponding Author: servidadjohncarmelo@gmail.com

ABSTRACT

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This research study aimed to determine the effect of environmental cost practices on the business performance of the hospitality industry in Panglao, Bohol, Philippines. Environmental cost accounting (ECA) practices were measured by the extent to which environmental cost items were identified, assessed, and allocated. Business performance was measured based on profit margin, return on assets (ROA), return on equity (ROE), public image, and customer loyalty. The descriptive-correlational method was utilized in this study. Questionnaires were used as the data collection instruments to measure the study variables. The survey questionnaire was divided into three major sections: respondents' profiles, environmental cost accounting practices, and entities' business performance. The results revealed that ECA practices significantly affect business performance. It was also concluded that company size and industry type significantly affect respondents' ECA

practices. On the other hand, respondents' years of operation and industry rating have no significant effect on their ECA practices. An entity that addresses environmental costs can make better decisions, creating a positive image and reputation among investors and customers, ultimately leading to better business performance.

INTRODUCTION

The impact of Super Typhoon Odette in December 2021 highlighted the influence of environmental issues on Bohol's economy. As a result, businesses have focused more on environmental impact, investing in resource management and pollution prevention. Environmental cost accounting (ECA) helps companies identify, analyze, and allocate costs related to their products, processes, or activities. ECA enables organizations to communicate environmental costs to stakeholders and incorporate ecological considerations into decision-making, thereby improving compliance and operational efficiency. This study examines the role of ECA in helping hotels and resorts in Panglao address environmental challenges while meeting business objectives. This research analyzes how resorts and hotels in Panglao, Bohol, apply environmental cost accounting (ECA) and evaluates its impact on organizational performance. ECA is assessed using four criteria: waste and emission treatment, prevention and environmental management, costs of materials not incorporated into final products, and environmental profits. The study also examines how these practices affect profit margin, return on assets, return on equity, public image, and customer loyalty. This study draws on legitimacy and stakeholder theories, both of which are commonly used in environmental accounting research. According to legitimacy theory, organizations aim to meet societal expectations in order to maintain their social contract and continue to exist (Deegan, 2002; O'Donovan, 2002). Voluntary environmental disclosures can help businesses gain credibility, influence public opinion, and keep their operating permits (Burlea & Popa, 2013; Chelli et al., 2014). In contrast, stakeholder theory focuses on interactions between firms and all stakeholders, not only shareholders (Freeman, 2010). Businesses that accurately identify, distribute, and disclose their environmental expenses can better meet stakeholder expectations. This can increase a company's worth and profitability (Phillips & Reichart, 2000). There is empirical data to support these theories. Environmental accounting approaches can affect financial performance, but the repercussions vary by industry and setting (Carandang & Ferrer, 2020; Osazuwa et al., 2015; Al-Mawali, 2021). Profit margin, ROE, and ROA are key indicators for determining how these practices affect business outcomes (Damodaran, 2007). In some circumstances, effective environmental policies increase customer trust and revenue (Homan, 2016). In other circumstances, business size, location, and industry characteristics may also affect outcomes (Carandang & Ferrer, 2020).

The resort and hotel industry in Panglao offers a relevant context for this study. As a major tourist destination with significant environmental impact, the industry sees environmental accounting as essential for sustainability and competitiveness. This research reviews ECA practices across Panglao's resorts and hotels, assesses their financial outcomes, and examines the relationships among organizational characteristics, environmental accounting, and business performance.

RESEARCH METHODOLOGY

A quantitative, descriptive correlational approach was employed in this study. The design seeks to determine the extent to which respondents identify, assess, and allocate environmental cost items, as well as their level of business performance. The correlational technique was administered to determine a significant correlation between the environmental cost accounting practices (independent variable) and the business performance (dependent variable) of the respondents.

The research was conducted in the Municipality of Panglao, a 4th-class municipality in the province of Bohol. The research respondents are key informants connected to the lodging segment of the hospitality industry. Ideally, the informants are the accountants, bookkeepers, managers, and owners of resorts and hotels, as they possess direct knowledge of and responsibility for the entity's environmental costs and business performance. Using the sample size calculator, a sample size of 105 was estimated for a population of 141. Table 1 summarizes the distribution of establishments by industry ratings.

Table 1. *Distribution of Respondents*

Industry rating	Respondents	Percent
1-star	18	17.1
2-star	28	26.7
3-star	42	40.0
4-star	15	14.3
5-star	2	1.9
	105	100.0

A survey tool was developed to measure two variables: environmental cost accounting and business performance. The instrument was divided into three major sections for respondents' profiles, ECA practices, and business performance.

The section to measure ECA practices was adapted from an instrument developed by Al-Mawali (2021), where participants indicated the extent to which their organization's costing system identifies, assesses, and allocates the 19 environmental cost items. The items cover four groups: prevention

and environmental management, processing costs of non-product output, the material purchase value of non-product output, and waste and emission treatment. Environmental cost items are assessed based on the extent to which respondents engage in them, using a four-point scale as follows:

Scale	*Range*	*Mark*	*Descriptive Interpretation:*
1	1.00 – 1.74	NP	Not practiced
2	1.75 – 2.49	SP	Slightly practiced
3	2.50 – 3.24	MP	Moderately practiced
4	3.25 – 4.00	HP	Highly practiced

Business performance was measured using three items to rate overall financial performance and two items to assess public image and customer loyalty. They were asked to rate their facility's financial performance relative to the previous period on a four-point scale, with higher scores indicating better performance. They were also asked to rate their establishment's public image and customer loyalty over the past two years relative to those of close competitors. This was done using a four-point scale, where higher scores indicate better public image and customer loyalty.

Scale	Range	Mark	Descriptive Interpretation:
1	1.00 – 1.74	MW	Much worse
2	1.75 – 2.49	SW	Slightly worse
3	2.50 – 3.24	SB	Slightly better
4	3.25 – 4.00	MB	Much better

Pilot testing was conducted to ensure the validity of the questionnaires, with 10 respondents with a similar profile to the actual respondents, and the questionnaires were subjected to Cronbach's Alpha. The result of the pilot testing is as follows:

	Cronbach's Alpha Value	Internal Consistency
ECA Practices		
WE	0.781	Acceptable
PEM	0.897	Good
MPV	0.853	Good
EE	0.701	Acceptable
Business Performance	0.938	Excellent

RESULTS AND DISCUSSION

Extent of Environmental Cost Accounting Practices. To assess the extent of Environmental Cost Accounting (ECA) practices, respondents indicated the degree to which their organizations identify, assess, and allocate 19 environmental cost items within their costing systems. These items were categorized into four groups following Jasch's (2003) framework: (1) prevention and environmental management; (2) processing costs of non-product output; (3) material purchase value of non-product output; and (4) waste and emission treatment. Environmental earnings were also assessed as a separate category.

Overall, the findings indicate a moderate level of ECA implementation, with an overall weighted mean of 2.91. Most organizations apply practices moderately related to waste and emissions treatment, environmental management, and the material value of non-product output. This suggests that while certain environmental cost elements are integrated into accounting systems, these practices are not yet fully institutionalized across all cost categories.

Notably, environmental earnings obtained the lowest weighted mean (2.33), indicating a low degree of implementation. This dimension includes revenues from recycling, environmental subsidies, awards, or other environment-related income streams. The limited practice in this area may reflect a lack of structured initiatives for resource recovery, recycling programs, or incentive utilization within the hospitality sector.

The moderate adoption of ECA practices overall may be attributed to varying levels of awareness, technical expertise, and strategic prioritization of environmental accounting among stakeholders in the hospitality industry. Many organizations may recognize the importance of environmental costs but lack the systems or capacity to measure and allocate them systematically.

Business Performance Indicators. Business performance was evaluated using both financial (profit margin, return on assets, return on equity) and non-financial indicators (public image and customer loyalty). The overall mean score of 3.23 indicates that business performance is slightly above average among participating establishments.

Among all indicators, customer loyalty achieved the highest mean score (3.59), followed by public image (3.45), both of which were categorized as "much better." These results suggest that participating resorts and hotels have established a strong market reputation and enjoy repeat patronage—key elements of sustained competitiveness in the tourism sector.

Financial performance indicators—profit margin, return on assets, and return on equity—had mean scores ranging from 3.02 to 3.06, indicating slightly better performance. While these figures suggest overall financial stability, they also reflect potential for improvement, particularly through strategic environmental management practices that can lower operational

costs and enhance profitability.

Relationship Between Firm Profile and ECA Practices. Statistical tests were conducted to examine the relationship between firm characteristics—such as company size, industry rating, years of operation, and industry type—and the extent of environmental cost accounting practices. These variables were analyzed to determine whether organizational attributes influence the level of ECA implementation. The analysis contributes to understanding how organizational structure and operational maturity may shape environmental accounting behaviors within the hospitality sector.

Table 1. *Relationship between the company's profile and Environmental cost accounting practices*

Variables	Statistical Test Used	Test Value	P-value	Decision	Interpretation
Company Size and Extent of Environmental Cost Practices	Chi-Square Test	10.015	0.016	Reject the null hypothesis.	There is a significant relationship between the variables.
Industry Rating and Extent of Environmental Cost Practices	Chi-Square Test	20.463	0.054	Failed to reject the null hypothesis	There is an insignificant relationship between the variables.
Years of Operation and Extent of Environmental Cost Practices	Spearman Rank Correlation	-0.107	0.279	Failed to reject the null hypothesis	There is an insignificant relationship between the variables.
Type of Industry and Extent of Environmental Cost Practices	Chi-Square Test	15.969	0.012	Reject the null hypothesis.	There is a significant relationship between the variables.

Relationship Between Firm Profile and Environmental Cost Accounting Practices. Statistical analysis using Spearman's Rank Correlation was conducted to examine the relationship between selected firm profile variables—company size, industry rating, years of operation, and industry type—and the extent of environmental cost accounting (ECA) practices.

The results revealed a significant relationship between company size and environmental cost practices ($p = 0.016$), thereby rejecting the null hypothesis. This finding indicates that larger organizations are more likely to adopt and implement ECA practices than smaller ones. One plausible explanation is that larger firms typically possess greater financial and human resources, enabling them to invest in environmental management systems and sustainability initiatives. Moreover, larger firms are often subject to higher regulatory oversight and stakeholder scrutiny, compelling them to adopt more transparent and systematic environmental accounting practices.

In contrast, industry rating was not significantly associated with ECA

practices (p = 0.054), suggesting that an organization's industry standing or reputation alone does not predict its level of environmental accounting implementation. Similarly, years of operation showed no significant relationship with ECA practices (p = 0.279), indicating that organizational maturity or longevity does not necessarily translate into more robust environmental accounting systems.

Finally, industry type was significantly related to the extent of ECA practices (p = 0.012). This suggests that differences in operational processes and environmental impact across industries influence the degree to which environmental costs are identified, assessed, and allocated. For example, industries with more resource-intensive operations, such as accommodations with high energy and water usage, may have more substantial incentives or regulatory requirements to adopt environmental accounting practices.

Overall, the findings indicate that company size and industry type are key determinants of ECA implementation, while industry rating and years of operation appear to have limited influence. These results highlight the importance of considering structural and sectoral characteristics when promoting environmental accounting practices in the hospitality industry.

Table 2. *Relationship between the Company's profile and Business Performance*

Variables	Statistical Test Used	Test Value	P-value	Decision	Interpretation
Company Size and Business Performance	Chi-Square Test	1.608	0.487	Failed to reject the null hypothesis	There is an insignificant relationship between the variables.
Industry Rating and Business Performance	Chi-Square Test	14.337	0.071	Failed to reject the null hypothesis	There is an insignificant relationship between the variables.
Years of Operation and Business Performance	Spearman Rank Correlation	-0.087	0.279	Failed to reject the null hypothesis	There is an insignificant relationship between the variables.
Type of Industry and Business Performance	Chi-Square Test	7.160	0.129	Failed to reject the null hypothesis	There is an insignificant relationship between the variables.

Relationship Between Firm Profile and Business Performance. Table 2 presents the results of the statistical analysis examining the relationship between firm profile variables—company size, industry rating, years of operation, and industry type—and business performance. The results indicate that none of the variables exhibit a statistically significant relationship with business performance, as all p-values exceeded the 0.05 significance level. Consequently, the null hypotheses for all variables could not be rejected.

These findings suggest that company size, industry rating, years of

operation, and industry type do not have a measurable impact on the business performance of the participating establishments. This may imply that other factors—such as operational efficiency, marketing strategies, customer relations, or external economic conditions—play a more decisive role in determining business outcomes than firm characteristics alone.

Moreover, the absence of significant relationships may reflect the relatively homogenous nature of the sample, as many of the surveyed establishments operate within the same geographic and sectoral context (Panglao's hospitality industry), potentially limiting variability in business performance outcomes across profile categories.

Relationship Between Environmental Cost Accounting Practices and Business Performance

Table 3 presents the results of the Spearman Rank Correlation analysis examining the relationship between the extent of environmental cost accounting (ECA) practices and business performance. The results indicate a significant positive relationship between the two variables ($\rho = 0.394$, $p < 0.001$), thereby rejecting the null hypothesis. This finding suggests that companies implementing more extensive ECA practices tend to achieve higher levels of business performance. In other words, organizations that systematically identify, assess, and allocate environmental costs are more likely to improve financial and non-financial performance indicators.

Table 3. *Relationship Between the Extent of Environmental Cost Accounting Practices and Business Performance*

Variables	Statistical Test Used	Test Value	P-value	Decision	Interpretation
Extent of Environmental Cost Practices and Business Performance	Spearman Rank Correlation	0.394	0.000	Reject the null hypothesis.	There is a significant relationship between the variables.

These results are consistent with previous studies' findings. Al-Mawali (2021) reported a positive relationship between ECA and financial performance, while Simsek and Ozturk (2021) found that environmental accounting and environmental performance mutually reinforce each other. Similarly, Carandang and Ferrer (2020) found that environmental cost reporting significantly affects return on equity, and Magara et al. (2015) demonstrated that environmental accounting practices are significantly related to perceived financial performance.

However, the current findings diverge from studies reporting null or negative relationships. Connelly and Limpaphayom (2004) found no significant link between environmental reporting and accounting performance.

Makori and Jagongo (2013) observed a negative relationship between environmental accounting and both Return on Capital Employed (ROCE) and Earnings per Share (EPS), while Riyadh (2020) and Faizah (2020) similarly reported negative or non-significant impacts of green accounting on financial performance. These differences may be attributed to variations in industry context, regulatory environments, firm size, and the maturity of environmental accounting practices.

Although a significant correlation was found, it is important to emphasize that correlation does not imply causation. Other unmeasured factors—such as organizational culture, leadership commitment, market dynamics, or regulatory pressures—may also influence both environmental accounting practices and business outcomes. Furthermore, the reliance on self-reported survey data introduces the potential for common method bias and subjective interpretation, which should be addressed in future research through triangulation with objective financial and environmental performance metrics.

CONCLUSION

This study concludes that resorts and hotels in Panglao, Bohol implement environmental cost accounting (ECA) practices at a moderate level, reflecting increased environmental awareness but limited full integration into business operations. Among the cost categories, environmental earnings showed the lowest level of implementation, suggesting that establishments have yet to fully harness the financial benefits of environmental initiatives such as recycling, subsidies, or awards. Business performance was above average, with customer loyalty and public image as key strengths, while financial performance showed modest improvement, indicating room for strategic growth.

Company size and industry type were significantly associated with ECA practices, implying that larger organizations and specific industry segments are better positioned to adopt structured environmental accounting systems. In contrast, industry rating and years of operation showed no significant relationship. No firm profile variable was found to significantly influence business performance. Notably, a significant positive relationship was identified between the extent of ECA practices and business performance, underscoring the strategic role of environmental accounting in improving operational efficiency, reducing costs, and enhancing reputation. Strengthening ECA integration can enable businesses to achieve environmental sustainability and improved economic outcomes simultaneously.

RECOMMENDATIONS

Based on the findings and conclusions of the study, the following recommendations are proposed:

1. **Strengthen ECA Awareness and Implementation.** While the

hospitality industry in Panglao, Bohol, has started integrating Environmental Cost Accounting (ECA) into its systems, there remains considerable room for development. Local government units, in partnership with non-governmental organizations, should conduct targeted education and training programs to build awareness of ECA's environmental and economic benefits. They should also develop clear guidelines and standards for ECA implementation and provide financial incentives—such as tax credits or grants—to encourage wider adoption across the industry.

2. **Promote Sustainable Sourcing Practices.** Most establishments in Panglao's hospitality sector are relatively young, operating for only one to five years, indicating rapid industry growth. This provides an opportunity to embed sustainability practices early. Businesses should be encouraged to adopt sustainable sourcing of food, energy, and water to minimize environmental impact, enhance operational efficiency, and support ECA integration.
3. **Investigate Barriers and Challenges in ECA Implementation.** Further research should examine the practical challenges, barriers, and potential malpractices that businesses encounter when adopting ECA. Understanding these obstacles will help policymakers and industry leaders design targeted interventions and support mechanisms to facilitate effective implementation.
4. **Expand Research to Other Industries.** Future studies should explore the application of ECA in other sectors such as manufacturing, retail, agriculture, and technology. Comparative analyses between industries that implement ECA and those that do not could provide valuable insights into the economic, social, and environmental impacts of ECA.
5. **Enhance Research Methodologies.** To improve the reliability and validity of future studies, a more comprehensive set of instruments should be employed that combines quantitative and qualitative approaches. This mixed-methods design would reduce the subjectivity inherent in self-reported data and address potential standard method bias arising from single-survey instruments.

REFERENCES CITED

Al-Mawali, H. (2021). Environmental cost accounting and financial performance: The mediating role of environmental performance. Accounting, 7(3), 535–544. https://doi.org/10.5267/j.ac.2021.1.005

Burlea-Schiopoiu, A., & Popa, I. (2013). Legitimacy theory. In S. O. Idowu, N. Capaldi, L. Zu, & A. Das Gupta (Eds.), *Encyclopedia of Corporate Social Responsibility* (pp. 1579–1584). Springer. https://www.researchgate.net/profile/Adriana-Burlea-Schiopoiu/publication/303928907_Legitimacy_Theory/links/585bef9e08ae329d61f2e0b6/Legitimacy-Theory.pdf

Carandang, J. C., & Ferrer, R. C. (2020). Effect of environmental accounting on financial performance and firm value of listed mining and oil companies in the Philippines. Asia-Pacific Social Science Review, 20(1). https://www.studocu.com/ph/document/south-cotabato-state-college/bs-in-accountancy/effect-of-environmental-accounting-on-financial/84282416

Chelli, M., Durocher, S., & Richard, J. (2014). France's new economic regulations: Insights from institutional legitimacy theory. Accounting, Auditing & Accountability Journal. https://doi.org/10.1108/AAAJ-07-2013-1415

Connelly, J. T., & Limpaphayom, P. (2004). Environmental reporting and firm performance: Evidence from Thailand. *Journal of Corporate Citizenship*, (13), 137–149. https://www.researchgate.net/publication/303682556_A_theoretical_framework_on_the_relationship_between_political_connection_board_characteristics_and_environmental_disclosure_in_Nigeria?utm_source=chatgpt.com

Deegan, C. (2002). 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

Damodaran, A. (2007). Return on capital (ROC), return on invested capital (ROIC) and return on equity (ROE): Measurement and implications. SSRN. https://doi.org/10.2139/ssrn.1105499

Faizah, B. S. Q. (2020). Penerapan green accounting terhadap kinerja keuangan. Jurnal Riset Akuntansi Kontemporer, 12(2), 94–99. https://doi.org/10.23969/jrak.v12i2.2779

Freeman, R. E. (2010). Strategic management: A stakeholder approach. Cambridge University Press.

Homan, H. S. (2016). Environmental accounting helps improve the company's environmental and financial performance. Southeast Asia J Contemp Bus Econ Law, 11, 9–15. https://seajbel.com/wp-content/uploads/2017/01/ACC-129.pdf

Jasch, C. (2003). The use of environmental management accounting (EMA) for identifying environmental costs. Journal of Cleaner Production, 11(6), 667–676. https://doi.org/10.1016/S0959-6526(02)00107-5

Magara, R., Aming'a, N., & Momanyi, E. (2015). Effect of environmental accounting on company financial performance in Kisii County. British Journal of Economics, Management & Trade, 10(1), 1–11. https://doi.org/10.9734/BJEMT/2015/19909

Makori, D. M., & Jagongo, A. (2013). Environmental accounting and firm profitability: An empirical analysis of selected firms listed in the Bombay Stock Exchange, India. International Journal of Humanities and Social Science, 3(18), 248–256. https://ir-library.ku.ac.ke/server/api/core/bitstreams/e2d3375b-9adc-44a9-85fe-a699333bcd61/content

O'Donovan, G. (2002). Environmental disclosures in the annual report: Extending the applicability and predictive power of legitimacy theory. Accounting, Auditing & Accountability Journal, 15(3), 344–371. https://doi.org/10.1108/09513570210435870

Osazuwa, N. P., Che Ahmad, A., & Che Adam, N. (2015). A theoretical framework on the relationship between political connection, board characteristics, and environmental disclosure in Nigeria. http://www.icas.my/index.php/proceedings/3-icas-20...

Phillips, R. A., & Reichart, J. (2000). The environment as a stakeholder? A fairness-based approach. Journal of Business Ethics, 23(2), 185–197. https://doi.org/10.1023/A:1006041929249

Riyadh, H. A. (2020). The analysis of green accounting cost impact on corporations' financial performance. International Journal of Energy Economics and Policy, 10(6), 421–426. https://doi.org/10.32479/ijeep.9238

Simsek, H., & Ozturk, G. (2021). Evaluation of the relationship between environmental accounting and business performance: the case of Istanbul province. Green Finance, 3, 46–58. https://acikerisim.gelisim.edu.tr/items/4b4cf3df-84d9-4205-97e4-e96359681bcd