

The Implementation of Environmental Management Accounting as a Business Strategy for Tourism on Rote Island: A Triple Bottom Line and Stakeholder Theory Approach

Indah Mutiara*, Efandri Agustian, Minarni Anaci Dethan, and Apriana H.J Fanggidae
Faculty of Economic and Business, Nusa Cendana University, Kupang, 85001, Indonesia

ABSTRACT

Purpose – This study explores the implementation of Environmental Management Accounting (EMA) as a business strategy in the tourism service sector of Rote Island, Indonesia. It examines how EMA supports sustainable business practices from the perspectives of the Triple Bottom Line (TBL) and Stakeholder Theory while identifying the challenges faced by tourism businesses.

Design/methodology/approach – A qualitative case study approach was employed. Data were collected through in-depth interviews, observations, and document analysis involving hotel and homestay managers, tourism operators, local government officials, community representatives, and local SMEs. The data were analyzed using thematic analysis.

Finding/Results – The findings reveal that EMA implementation remains at an early stage. Tourism businesses have adopted environmentally responsible practices, including energy and water conservation, waste reduction, and the use of local products, but environmental costs are not systematically recorded. From the TBL perspective, EMA enhances operational efficiency (*profit*), strengthens community participation (*people*), and supports environmental conservation (*planet*). Stakeholder Theory further explains that EMA improves managerial decision-making while fostering trust among tourists, local communities, government agencies, and business partners. Key challenges include limited awareness of EMA, inadequate environmental accounting systems, insufficient human resources, and limited institutional support.

Originality/Value – This study extends the EMA literature by integrating Triple Bottom Line and Stakeholder Theory within a tourism destination context, providing practical insights for developing sustainable tourism strategies in small island destinations.

ARTICLE INFO

Keywords:

Environmental Management Accounting (EMA), Business Strategy, Sustainable Tourism, Triple Bottom Line, Stakeholder Theory

Article Information:

Received: 27/06/2026

Revise: 21/07/2026

Accepted: 15/08/2026

ISSN:

2985-3168 (Online)

2985-3222 (Print)

*Corresponding Author at:

Faculty of Economics and Business, Nusa Cendana University, Jl. Adisucipto, Penfui, Kupang 85001, East Nusa Tenggara, Indonesia.

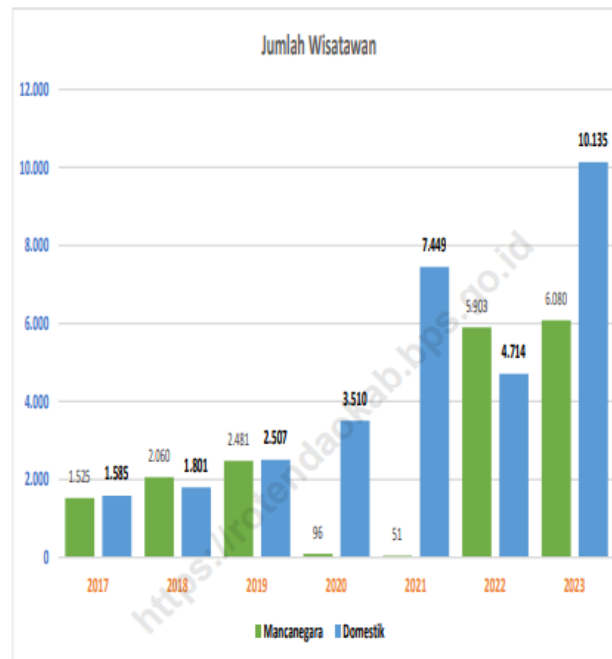
E-mail address: (author#1) indah.mutiara@staf.undana.ac.id (Indah Mutiara)

The work is licensed under a [Creative Commons Attribution-ShareAlike 4.0 International \(CC BY-SA 4.0\)](https://creativecommons.org/licenses/by-sa/4.0/)



that tourism development remains economically viable, socially responsible, and environmentally sustainable.

Figure 2. Number of Tourist Arrivals



Environmental issues have become a major concern at both the national and international levels (Ramadhani & Hakim, 2020). This growing concern is reflected in the United Nations Sustainable Development Goals (SDGs), particularly those emphasizing climate action and sustainable environmental management (Astuti & Nurdiana, 2020). Increasing environmental awareness has also influenced the expectations of key stakeholders, including consumers, investors, and governments, who now place greater importance on environmentally responsible business practices (Indah & Arip, 2024).

From an investment perspective, long-term investors increasingly evaluate a company's environmental and social performance, as these factors are closely associated with business continuity and long-term sustainability (Yudhanta, 2009). Consequently, companies that actively implement environmental conservation initiatives are more likely to strengthen stakeholder confidence, attract investment, enhance corporate reputation, and improve their economic performance. Effective environmental management not only supports ecological sustainability but also creates strategic value by fostering stronger relationships with shareholders and other stakeholders, ultimately contributing to long-term business profitability (Pflieger et al., 2005).

Several approaches have been developed to measure the implementation of Environmental Management Accounting (EMA), with the Triple Bottom Line (TBL) serving as one of its most widely adopted conceptual foundations. Proposed by Elkington (1997), the TBL framework emphasizes that sustainable business performance should be evaluated based on three interrelated dimensions: profit (economic performance), people (social responsibility), and planet (environmental sustainability). Rather than focusing solely on financial outcomes, this approach encourages organizations to integrate environmental and social considerations into their strategic and operational decision-making.

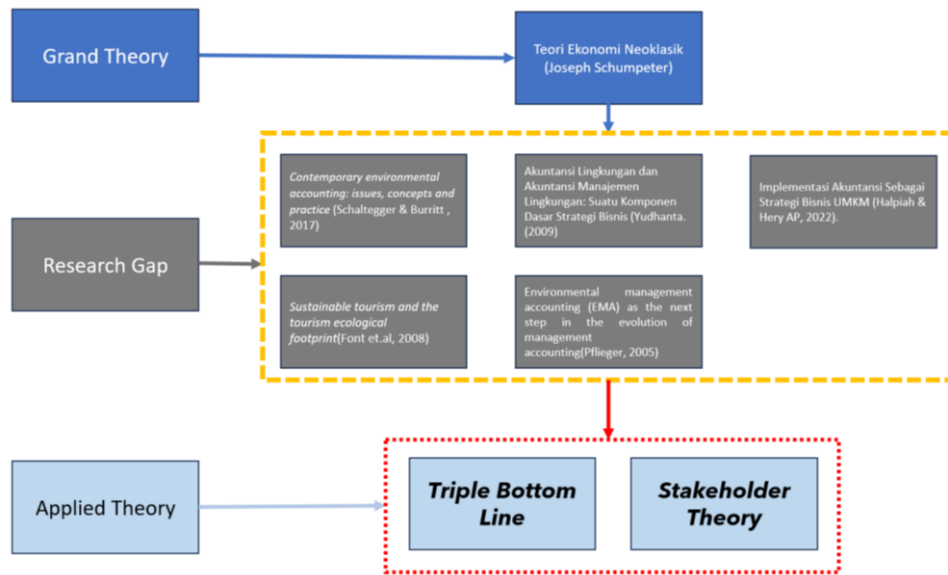
In addition to the Triple Bottom Line framework, the implementation of EMA in the tourism industry can also be examined through the lens of Stakeholder Theory. According to Freeman

(1984), organizations are accountable not only to shareholders but also to a broader range of stakeholders, including customers, employees, government agencies, local communities, business partners, and the natural environment. Within the tourism sector, sustainable business success depends on the ability of tourism enterprises to balance the expectations and interests of these diverse stakeholder groups while minimizing their environmental impacts. The integration of the Triple Bottom Line (TBL) and Stakeholder Theory provides a comprehensive framework for addressing the challenges of implementing Environmental Management Accounting (EMA) in tourism businesses on Rote Island. The TBL perspective ensures that business development simultaneously promotes economic viability, social well-being, and environmental protection, whereas Stakeholder Theory emphasizes collaboration among all parties involved in the tourism industry to support sustainable management practices. Together, these complementary perspectives can enhance business competitiveness and profitability while fostering a more responsible, inclusive, and sustainable tourism industry that generates long-term benefits for local communities and the natural environment of Rote Island.

Previous studies have highlighted the growing importance of Environmental Management Accounting in promoting sustainable business practices. Schaltegger and Burritt (2017) examined the role of environmental accounting in improving corporate sustainability and emphasized the importance of transparent environmental reporting. However, their study primarily focused on large corporations rather than small and medium-sized enterprises (SMEs) operating in the tourism sector. Similarly, Font et al. (2008) investigated the relationship between sustainable tourism and ecological footprints, demonstrating that tourism activities can contribute to environmental degradation if they are not managed responsibly. Nevertheless, their research did not specifically explore the role of EMA in mitigating these environmental impacts.

Yudhanta (2009) further argued that Environmental Management Accounting plays a significant role in supporting corporate business strategy by improving managerial decision-making and organizational sustainability. Likewise, Pflieger et al. (2005) examined EMA as an evolution of conventional management accounting toward environmentally oriented management systems. Although their findings demonstrated the strategic value of EMA, the study was largely concentrated on manufacturing companies rather than tourism businesses. Furthermore, Halpiah and Hery (2022) emphasized that financial reports generated through sound accounting practices provide valuable information for financial institutions in assessing the creditworthiness of SMEs. Improved financial reporting can therefore facilitate access to external financing, enabling tourism enterprises to secure the capital needed to support sustainable business development and environmental management initiatives.

Figure 3. State of the Art of the Study



The existing body of literature demonstrates that most previous studies have examined Environmental Management Accounting (EMA) within the context of large corporations or industrial sectors, while limited attention has been given to its application in tourism-related small and medium-sized enterprises (SMEs). More importantly, no previous study has specifically investigated the implementation of EMA in tourism businesses on Rote Island by simultaneously integrating the Triple Bottom Line (TBL) and Stakeholder Theory frameworks. This research therefore addresses an important gap in the literature by providing empirical evidence on the implementation of EMA within SME-based tourism businesses in a remote island destination.

Despite the growing body of research on Environmental Management Accounting (EMA), most existing studies have examined its implementation either from the perspective of environmental performance or organizational sustainability, while treating Triple Bottom Line (TBL) and Stakeholder Theory as separate analytical lenses. Studies adopting the TBL perspective primarily evaluate whether EMA contributes to economic, social, and environmental performance, whereas stakeholder-based studies focus on how organizations respond to the expectations of customers, governments, communities, and other stakeholder groups. Consequently, the interaction between stakeholder demands, environmental accounting practices, and sustainability outcomes remains insufficiently theorized, particularly in tourism destinations dominated by small and medium-sized enterprises. This gap limits the understanding of EMA as a strategic managerial mechanism rather than merely an environmental accounting tool.

This study addresses the gap by proposing an integrated conceptual perspective in which Stakeholder Theory explains the drivers of EMA implementation, Environmental Management Accounting functions as the strategic managerial mechanism, and the Triple Bottom Line represents the sustainability outcomes generated through the use of environmental information. Within this perspective, stakeholder pressures—including those from tourists, local communities, government agencies, employees, suppliers, and tourism associations—encourage tourism businesses to identify, measure, record, and utilize environmental information in managerial decision-making. The implementation of EMA subsequently enables businesses to formulate strategies that balance economic viability

(*profit*), social responsibility (*people*), and environmental stewardship (*planet*). Rather than viewing Stakeholder Theory and TBL as parallel perspectives, this study conceptualizes EMA as the connecting mechanism through which stakeholder expectations are translated into sustainability-oriented business strategies. The proposed Stakeholder–EMA–Triple Bottom Line framework therefore provides a process-oriented explanation of how environmental information supports sustainable tourism management.

Accordingly, this study makes three theoretical contributions. First, it extends Environmental Management Accounting literature by positioning EMA as a strategic business mechanism linking stakeholder expectations with sustainability outcomes, rather than as a technical environmental accounting system. Second, it integrates Stakeholder Theory and the Triple Bottom Line into a coherent explanatory framework that clarifies both the antecedents and consequences of EMA implementation in tourism businesses. Third, it develops an implementation perspective for small-island tourism destinations by demonstrating how stakeholder relationships influence the maturity of EMA practices and, ultimately, the achievement of sustainable tourism objectives. These contributions offer a broader theoretical understanding of EMA implementation beyond the manufacturing sector and provide a conceptual foundation for future research on sustainability-oriented business strategies in tourism destinations.

1.1 Research Questions

Based on the research background, the study addresses the following research questions:

- a. How is Environmental Management Accounting (EMA) implemented in tourism businesses on Rote Island?
- b. What strategies can tourism businesses adopt to maximize the benefits of Environmental Management Accounting (EMA)?
- c. What challenges do tourism business operators encounter in implementing Environmental Management Accounting (EMA)?

2. Literature Review & Hypothesis Development

2.1 Geography and Demographics

Rote Ndao Regency is located at the southernmost tip of Indonesia and is an archipelagic regency consisting of Rote Island as the main island, together with several surrounding smaller islands. Geographically, the regency is bordered by the Sawu Sea to the north and west, the Pukuafu Strait to the east, and the Indian Ocean to the south. Administratively, Rote Ndao Regency comprises 11 sub-districts (*kecamatan*), 112 villages (*desa*), and 7 urban villages (*kelurahan*), covering a total land area of approximately 1,731 km².

According to the Central Bureau of Statistics (BPS, 2024), the population of Rote Ndao Regency reached 152,610 inhabitants, with an annual population growth rate of 1.72%. The regency's Gross Regional Domestic Product (GRDP) per capita was recorded at IDR 25.6 million per year, ranking 463rd nationally. This relatively modest level of economic prosperity indicates substantial opportunities to enhance local welfare through the sustainable development of the tourism sector.

2.2 Economic Conditions

The Gross Regional Domestic Product (GRDP) of Rote Ndao Regency at current market prices amounted to IDR 3.92 trillion in 2024, representing a 3.2% increase compared with IDR 3.73 trillion in 2023. The local economy continues to be dominated by the agriculture, forestry, and fisheries sector, which contributes 47.18% of the total GRDP. In contrast, the accommodation

and food service sector, which forms a critical component of the tourism industry, accounts for one of the smallest shares of the regional economy. This condition highlights the considerable potential for expanding tourism-related businesses as a driver of sustainable economic growth and regional development.

Table 1. Macroeconomic Indicators of Rote Ndao Regency, 2023–2024

Indicator	2023	2024	Growth/Trend
Gross Regional Domestic Product (GRDP) at Current Market Prices	IDR 3.73 trillion	IDR 3.92 trillion	+3,2%
GRDP per Capita	IDR 24.9 million	IDR 25.6 million	+2,8%
Population	150.84 thousand	152.61 thousand	+1,17%
Poverty Rate	27,05%	~26,5% (est.)	Decreasing
Contribution of Agriculture, Forestry, and Fisheries	47,18%	~47%	Remains the dominant sector
Contribution of the Tourism Sector	<5%	<5%	High potential for future growth

Source: BPS of Rote Ndao Regency. (2025).

2.3 Tourism Profile of Rote Island

Rote Island possesses exceptional natural and cultural tourism assets, making it one of the hidden gems of eastern Indonesia and an increasingly recognized international tourist destination. Its diverse attractions provide significant opportunities for developing sustainable tourism based on environmental conservation and local cultural heritage.

- Nemberala Beach is internationally recognized as one of Indonesia's premier surfing destinations. Since 2016, it has consistently been regarded as one of the country's most popular surfing locations, attracting surfers from Australia, Europe, and Asia due to its world-class, consistent waves.
- Coral Reef Ecosystems. Rote Island is surrounded by extensive coral reef ecosystems with high levels of marine biodiversity. These ecosystems provide excellent opportunities for marine tourism activities, particularly scuba diving and snorkeling, while also serving as important natural resources that require sustainable management and conservation.
- Rote Snake-necked Turtle (*Chelodina mccordi*). This endemic freshwater turtle species is found exclusively in the wetlands of Rote Island and has become an important symbol of biodiversity conservation and ecotourism. In June 2019, the Provincial Government of East Nusa Tenggara designated three lakes on Rote Island as Essential Wetland Ecosystem Areas, strengthening conservation efforts for this critically endangered species and its habitat.
- Sasando Cultural Heritage. The Sasando, a traditional stringed musical instrument originating from Rote Island, has been officially recognized as part of Indonesia's national cultural heritage. It represents one of the island's most distinctive cultural attractions and plays an important role in promoting cultural tourism.

- e. **Pristine Beaches.** In addition to Nemberala Beach, Rote Island offers numerous white-sand beaches characterized by relatively unspoiled natural landscapes. These coastal destinations provide authentic tourism experiences and substantial potential for the development of sustainable beach and marine tourism.

2.4 Tourist Arrival Statistics

According to official data published by the Department of Culture and Tourism (Disbudpar) of Rote Ndao Regency and the Central Bureau of Statistics (BPS), tourist arrivals have shown a strong recovery following the COVID-19 pandemic. This upward trend reflects the resilience of the local tourism sector and demonstrates the growing potential of Rote Island as a sustainable tourism destination. The increasing number of domestic and international visitors also underscores the importance of implementing Environmental Management Accounting (EMA) to support environmentally responsible tourism development while maintaining long-term economic competitiveness.

Table 2. Tourist Arrivals in Rote Ndao Regency, 2020–2023

Year	International Tourists	Domestic Tourists	Total Visitors	Remarks
2020	96	3.510	3.606	COVID-19 pandemic
2021	51	7.449	7.500	Gradual recovery
2022	5.903	4.174	10.077	Significant recovery
2023	6.080	10.135	16.215	Highest growth recorded

Source: BPS of Rote Ndao Regency. (2025).

The tourist arrival data reveal two important findings. First, total tourist arrivals increased by approximately 61% between 2022 and 2023, reflecting a remarkable post-pandemic recovery and the growing popularity of Rote Island as an emerging tourism destination. This substantial increase indicates a strong upward trend in tourism demand and highlights the sector's potential to become an important driver of regional economic growth.

Second, in 2023, international tourists accounted for nearly 40% of total visitor arrivals, an exceptionally high proportion compared with many tourism destinations in eastern Indonesia. This figure demonstrates Rote Island's strong international appeal, particularly among visitors seeking world-class surfing, marine tourism, and nature-based experiences. The relatively large share of foreign visitors also underscores the importance of maintaining high environmental quality and adopting sustainable tourism management practices to preserve the island's competitive advantage.

At the provincial level, East Nusa Tenggara (NTT) recorded 1.62 million tourist arrivals in 2023, followed by a slight decline to 1.55 million visitors in 2024. Tourism demand subsequently rebounded in 2025, with visitor arrivals increasing by 17.99% to approximately 1.84 million tourists. The performance of Rote Ndao Regency has generally followed this broader provincial trend, suggesting that the regency possesses considerable untapped potential for future tourism growth. Consequently, integrating Environmental Management Accounting (EMA) into tourism business practices is becoming increasingly important to ensure that this growth is achieved in a manner that is economically viable, socially responsible, and environmentally sustainable.

2.5 Environmental Challenges Facing Tourism on Rote Island

2.5.1 Plastic Waste Pollution

One of the most critical environmental issues affecting tourism on Rote Island is the accumulation of plastic waste along coastal areas, particularly around major tourist destinations. Nemberala Beach, internationally recognized as one of Indonesia's premier surfing destinations, faces increasing environmental pressure from plastic pollution, which threatens coastal ecosystems, degrades scenic landscapes, and endangers marine wildlife. The presence of plastic debris diminishes the aesthetic value of beaches and negatively affects the visitor experience, potentially reducing the island's attractiveness as an international tourism destination.

Although the island's pristine beaches, coral reefs, and world-class surfing waves have become valuable tourism assets, several environmental problems continue to threaten their sustainability. These include inadequate plastic waste management, coral reef degradation caused by destructive fishing practices, and illegal sand extraction along coastal areas. According to the Head of the National Marine Conservation Area Office (BKKPN), these issues represent some of the most pressing environmental challenges facing marine tourism development on Rote Island.

To improve environmental awareness among local communities, the National Marine Conservation Area Office (BKKPN) has implemented the Conservation Goes to School (CGtS) program at Nemberala Elementary School. The program reported that approximately 85% of participating students demonstrated an understanding of coral reef ecosystems. However, around 40% of students were still unfamiliar with the conservation status of these ecosystems, indicating the need for more intensive environmental education and public awareness programs.

2.5.2 Threats to Marine Ecosystems

Several environmental pressures continue to threaten the sustainability of Rote Island's marine tourism resources:

- a. **Coral Reef Degradation.** Destructive fishing practices, including blast fishing and cyanide fishing, continue to damage coral reef ecosystems that serve as the ecological foundation for diving, snorkeling, and other marine tourism activities.
- b. **Illegal Beach Sand Extraction.** Unauthorized sand mining contributes to coastal erosion, destabilizes beach ecosystems, and reduces the visual appeal of tourism destinations.
- c. **Tourism Pressure.** The rapid increase in tourist arrivals, without adequate carrying capacity assessments and visitor management strategies, may place excessive pressure on environmentally sensitive ecosystems, including coral reefs, coastal habitats, and wetlands that support the endemic Rote Snake-necked Turtle (*Chelodina mccordi*).
- d. **Accommodation Waste Management.** Many hotels, guesthouses, and homestays still lack adequate wastewater treatment and solid waste management systems, resulting in pollution of groundwater, coastal waters, and surrounding marine ecosystems.

2.6 Economic Implications of Environmental Degradation

Environmental degradation has consequences that extend beyond ecological damage, generating substantial economic costs for the tourism industry. The deterioration of marine habitats, declining destination attractiveness, adverse public health impacts, and reduced business revenues are among the direct consequences of poor environmental management. Furthermore, plastic waste entering marine food chains and degrading into microplastics may

reduce the quality of seafood products, thereby threatening one of the primary sources of income for local coastal communities.

In this context, investing in environmental management through Environmental Management Accounting (EMA) represents not only an environmental responsibility but also a strategic business decision. Although implementing EMA requires initial financial investment, previous studies have shown that environmentally responsible management practices can improve long-term profitability by reducing operational costs, increasing resource efficiency, strengthening corporate reputation, and enhancing the competitiveness of tourism businesses. Consequently, the adoption of EMA can support the development of a tourism industry on Rote Island that is economically resilient, socially responsible, and environmentally sustainable.

3. Methodology

3.1 Research Design

This study employs a qualitative research method using a phenomenological approach. Qualitative research is appropriate for investigating phenomena in their natural settings, where the researcher serves as the primary research instrument. Data are collected through triangulation techniques, while data analysis follows an inductive qualitative process aimed at understanding meanings, interpreting unique experiences, and constructing an in-depth understanding of social phenomena (Sugiyono, 2019).

A phenomenological approach is adopted because it enables the researcher to explore and interpret the lived experiences of participants regarding the implementation of Environmental Management Accounting (EMA) in tourism businesses on Rote Island. According to Creswell (2017), phenomenological research seeks to identify the essence of participants' experiences through in-depth observation, interviews, and active engagement with individuals who have direct experience of the phenomenon under investigation.

Unit of Analysis and Key Informants

The study consists of two levels of analysis:

- a. Macro level: Rote Island as a tourism destination.
- b. Micro level: Tourism business entities, including hotels, resorts, homestays, and tourism operators.

The study involves the following key informants:

- a. Owners and managers of hotels, resorts, and homestays located in Nemberala and surrounding tourism areas.
- b. Traditional community leaders and local community representatives.
- c. Tour guides.
- d. Local residents living in the vicinity of hotels, resorts, and homestays.
- e. Domestic and international tourists visiting Rote Island.

These informants were selected because they possess first-hand knowledge and experience regarding tourism development, environmental management practices, and stakeholder involvement in sustainable tourism on Rote Island.

3.2 Data Collection Techniques

Data were collected using multiple qualitative techniques to ensure the credibility, validity, and trustworthiness of the findings. The study employed methodological triangulation, combining several sources of evidence to obtain a comprehensive understanding of the implementation of Environmental Management Accounting in tourism businesses.

Table 3. Data Collection Techniques and Research Instruments

Data Collection Technique	Research Instrument	Target Data	Data Source
In-depth Interviews	Semi-structured interview guide	Participants' experiences, challenges, and strategies related to the implementation of Environmental Management Accounting (EMA)	Twelve key informants
Field Observation	Observation checklist	Environmental conditions of tourism destinations, waste management facilities, and environmental management practices	Three major tourism destinations
Document Analysis	Document analysis protocol	Tourist arrival statistics, Gross Regional Domestic Product (GRDP), environmental regulations, and tourism-related policy documents	BPS, Disbudpar, BKKPN
Focus Group Discussion	Panduan FGD	Stakeholder perspectives and consensus on the proposed Environmental Management Accounting (EMA) framework	One Focus Group Discussion session

In-depth interviews were conducted with tourism business operators, local community members, and government officials to obtain diverse perspectives on how Environmental Management Accounting (EMA) practices are integrated into organizational sustainability objectives. These interviews provided valuable insights into participants' experiences, perceptions, challenges, and strategic approaches to implementing environmentally responsible business practices within the tourism sector.

Document analysis complemented the interview data by examining relevant organizational and institutional documents, including sustainability reports, environmental policies, tourism development plans, and other official publications related to sustainable tourism and environmental management. This process enabled the researcher to compare reported practices with stakeholder perceptions and to strengthen the credibility of the findings through data triangulation.

Field observations were undertaken to directly examine environmental conditions at tourism destinations and to assess the extent to which EMA principles were reflected in day-to-day operational practices, including waste management, resource utilization, and environmental conservation initiatives. Direct observation also provided contextual information that could not be fully captured through interviews alone.

In addition, a Focus Group Discussion (FGD) was conducted with representatives from local communities and government agencies to explore collective perspectives, validate preliminary

findings, and identify opportunities for collaborative implementation of Environmental Management Accounting within the tourism sector on Rote Island.

The qualitative data were analyzed using thematic analysis based on an inductive deductive approach. During the inductive phase, themes and patterns emerged directly from the empirical data. Subsequently, these themes were interpreted deductively using the Triple Bottom Line (TBL) and Stakeholder Theory as the primary analytical frameworks. This analytical strategy enabled the study to systematically identify how environmental, social, economic, and stakeholder dimensions influence the implementation of Environmental Management Accounting in tourism businesses on Rote Island.

3.3 Triple Bottom Line (TBL)

The Triple Bottom Line (TBL) is a sustainability framework first introduced by Elkington (1997), which proposes that organizational performance should be evaluated using three interrelated dimensions: economic, environmental, and social performance. These dimensions are commonly referred to as the 3Ps Profit, People, and Planet and provide a comprehensive approach to assessing business sustainability beyond traditional financial measures.

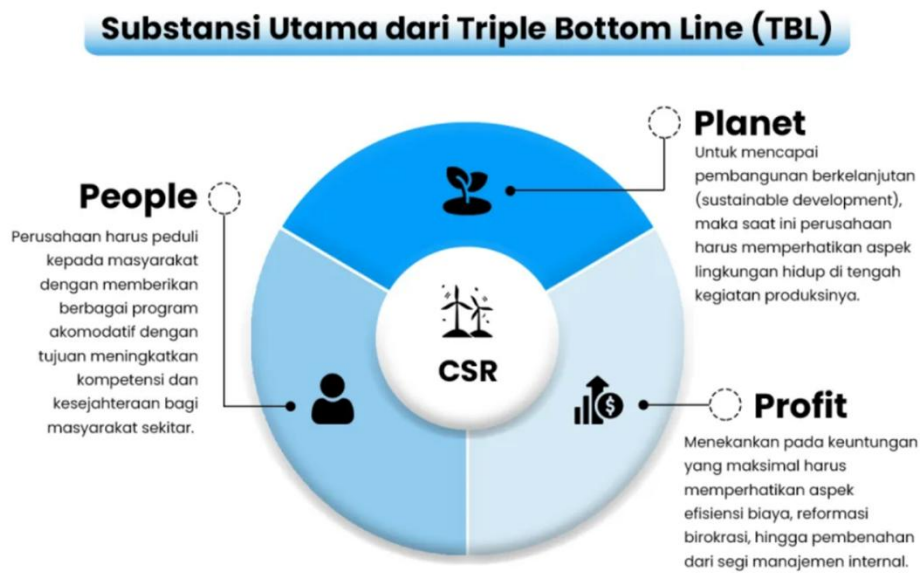
The profit dimension emphasizes the importance of achieving sustainable economic performance through increased productivity, operational efficiency, innovation, and effective cost management. While profitability remains a fundamental objective of every business, the TBL framework argues that long-term financial success should be pursued without compromising social welfare or environmental integrity.

The people dimension recognizes that local communities, employees, customers, and other stakeholders are essential partners in organizational success. Businesses therefore have a responsibility to create social value by improving community well-being, promoting fair employment practices, supporting local economic development, and maintaining positive relationships with stakeholders. In the context of tourism, this includes empowering local communities through employment opportunities, preserving cultural heritage, and encouraging community participation in tourism development.

The planet dimension highlights the responsibility of organizations to minimize their environmental impacts and conserve natural resources. Sustainable businesses are expected to adopt environmentally responsible practices, including efficient resource utilization, waste reduction, pollution prevention, biodiversity conservation, and climate change mitigation. For tourism businesses on Rote Island, protecting coastal ecosystems, coral reefs, wetlands, and other natural assets is essential for maintaining the long-term attractiveness and competitiveness of the destination.

According to the Triple Bottom Line concept, sustainable organizations are not solely concerned with maximizing financial returns but also with creating long-term value for shareholders and society through responsible environmental and social performance (Aulia & Kartawijaya, 2011). Consequently, businesses are expected to integrate economic, social, environmental, and ethical considerations into their strategic decision-making while fostering collaboration with a broad range of stakeholders. This holistic perspective provides an appropriate theoretical foundation for examining the implementation of Environmental Management Accounting (EMA) in tourism businesses, where economic growth, community welfare, and environmental conservation must be balanced to achieve sustainable tourism development.

Figure 4. Triple Bottom Line (TBL) Model



Source : John Elkington (1994)

3.4 Stakeholder Theory

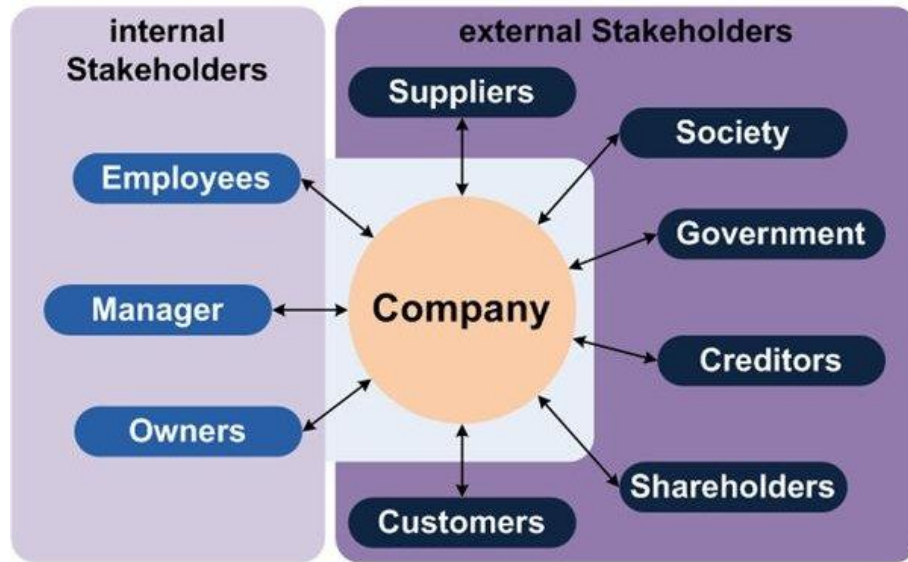
Stakeholder Theory, originally proposed by Freeman (1984), argues that organizations are accountable not only to their owners or shareholders but also to all stakeholders who influence or are affected by the organization's activities. These stakeholders include employees, customers, suppliers, local communities, government agencies, investors, environmental organizations, and society at large. Consequently, organizations are expected to implement sound management practices that create value for all stakeholders while enhancing financial performance and long-term organizational sustainability (Devi et al., 2017).

The fundamental objective of Stakeholder Theory is to assist organizations in managing relationships with various stakeholder groups in a manner that enhances corporate value while minimizing potential risks and conflicts that may arise from business operations. Rather than focusing exclusively on maximizing shareholder wealth, the theory emphasizes balancing the interests of multiple stakeholders whose support is essential for organizational success. By effectively responding to stakeholder expectations, organizations can improve their legitimacy, strengthen stakeholder trust, and achieve sustainable competitive advantage. Stakeholder Theory further suggests that businesses have responsibilities extending beyond investors and owners. Organizations are expected to generate positive economic, social, and environmental outcomes for communities, governments, and the natural environment. Maintaining strong relationships with stakeholders requires organizations to understand and respond to stakeholder needs, particularly those of groups that provide critical resources necessary for business operations, such as employees, customers, suppliers, local communities, and regulatory authorities (Hörisch et al., 2017).

In the context of Environmental Management Accounting (EMA) within the tourism industry, Stakeholder Theory provides a valuable framework for understanding how environmental management practices are influenced by the expectations of multiple stakeholder groups. Tourism businesses on Rote Island depend heavily on collaboration among business operators, local communities, tourists, government institutions, conservation agencies, and environmental organizations. Therefore, the successful implementation of EMA requires

active stakeholder participation to promote environmental conservation, improve operational efficiency, strengthen community engagement, and support the long-term sustainability of tourism destinations. Integrating Stakeholder Theory with the Triple Bottom Line (TBL) framework enables a more comprehensive assessment of how environmental, economic, and social objectives can be achieved simultaneously through collaborative and sustainable tourism management.

Figure 5. Stakeholder Theory Model



4. Result and Discussion

4.1 Implementation of Environmental Management Accounting as a Business Strategy

Based on field observations and the review of relevant literature, the majority of tourism businesses on Rote Island continue to rely on conventional accounting systems that do not explicitly recognize or record environmental costs. Expenditures related to waste management, water consumption, energy use, and other environmental impacts are generally classified as general operating overheads, without adequate identification or allocation. As a result, managers have limited access to environmental cost information that could support more effective strategic and operational decision-making.

Environmental Management Accounting (EMA) is defined as the application of an accounting system that identifies, measures, records, analyzes, and reports environmental costs and benefits to support business decision-making and enhance organizational competitiveness. Unlike conventional accounting, EMA integrates environmental information into business strategy, enabling organizations to improve economic performance while simultaneously promoting environmental sustainability.

The findings of this study indicate that the implementation of Environmental Management Accounting (EMA) has begun to support sustainable business strategies within the tourism sector on Rote Island, although the level of adoption varies considerably among tourism enterprises. Evidence gathered from in-depth interviews, field observations, and document analysis demonstrates that many tourism businesses have already introduced environmentally responsible practices, including reducing water and electricity consumption, minimizing the use of single-use plastics, improving waste management, and prioritizing

locally sourced products. However, these initiatives are generally implemented without a structured environmental accounting system capable of systematically measuring and reporting environmental costs in accordance with the principles of EMA.

The study further reveals that information related to energy consumption, water usage, consumable materials, and waste management costs is increasingly considered in operational decision-making. Tourism business managers recognize that improving resource efficiency not only reduces operating expenses but also enhances service quality and strengthens the environmental image of their businesses and destinations. Consequently, although many respondents are unfamiliar with the formal concept of Environmental Management Accounting, the fundamental principles of EMA have already been incorporated into everyday business operations.

From a strategic perspective, the implementation of EMA is reflected in the commitment of tourism enterprises to develop sustainable tourism models that integrate environmental conservation with community empowerment. Businesses increasingly procure food products from local farmers and fishermen, involve local communities in tourism services, and promote the island's cultural heritage as part of their tourism offerings. These initiatives function as differentiation strategies that provide authentic visitor experiences while simultaneously strengthening relationships between tourism enterprises and surrounding communities.

The findings also indicate that the implementation of Environmental Management Accounting contributes positively to organizational business strategy. EMA enables businesses to identify and measure environmental costs that were previously overlooked or inadequately recorded, including waste management expenses, energy consumption, water usage, and pollution prevention costs. The availability of this information supports more effective managerial decision-making, facilitates cost control, and improves the efficiency of resource utilization.

Beyond its economic and environmental benefits, the study demonstrates that implementing EMA enhances organizational reputation among customers, investors, business partners, and other stakeholders. Tourism businesses that consistently adopt environmentally responsible practices tend to gain higher levels of stakeholder trust, creating opportunities to expand market share, strengthen customer loyalty, and improve long-term business sustainability.

Overall, the findings suggest that Environmental Management Accounting (EMA) represents an effective business strategy for improving operational efficiency, strengthening organizational competitiveness, supporting sustainable innovation, and creating long-term value. Consequently, EMA should be considered an integral component of organizational management systems, particularly for tourism enterprises seeking to align business performance with the principles of sustainable development.

These findings are consistent with previous empirical studies. Research conducted by Putri (2024), Talitha (2022), Dianty and Nurrahim (2022), and Ramadhani et al. (2022) similarly reported that the implementation of Environmental Management Accounting contributes positively to financial performance. Comparable evidence has also been documented internationally. Studies undertaken in the United Kingdom (Gerged et al., 2024), Pakistan (Hanif et al., 2023), Japan (Yagi & Kokubu, 2020), and Vietnam (Liem & Hien, 2024) consistently demonstrate a positive relationship between Environmental Management Accounting, business strategy, and improved financial performance. These findings reinforce the argument that integrating environmental accounting into strategic management not only enhances environmental stewardship but also strengthens organizational competitiveness and long-term financial sustainability across diverse economic and institutional contexts.

4.2 Classification of Environmental Management Accounting Implementation

To distinguish between general environmental practices and Environmental Management Accounting (EMA), this study classified tourism businesses according to the maturity of EMA implementation. The classification was developed based on the presence of four key accounting processes: (1) identification of environmental aspects and costs, (2) measurement of physical and monetary environmental information, (3) recording and reporting of environmental costs, and (4) the use of environmental information in managerial decision-making.

The findings indicate that none of the tourism businesses included in this study had reached the level of formal EMA. Most businesses were classified as informal EMA, while a smaller number demonstrated characteristics of partial EMA.

Businesses classified as informal EMA had adopted environmentally responsible practices, including reducing plastic use, conserving electricity and water, separating waste, and purchasing products from local suppliers. However, these practices were primarily motivated by operational efficiency or environmental awareness rather than by a structured accounting system. Environmental expenditures, such as waste management, water consumption, and energy use, were still recorded as general operating expenses and were not separately identified or analyzed. Consequently, environmental information was not available for systematic managerial decision-making.

Several businesses demonstrated characteristics of partial EMA. These organizations regularly monitored electricity and water consumption, reviewed utility bills, and estimated waste management costs to improve operational efficiency. Nevertheless, environmental costs remained integrated within overhead accounts, and no dedicated environmental accounting reports or performance indicators were prepared. Environmental information was therefore used only partially to support operational decisions rather than strategic planning.

No evidence was found of formal EMA implementation. None of the participating tourism businesses maintained dedicated environmental cost accounts, prepared environmental management reports, or integrated physical and monetary environmental information into budgeting, investment appraisal, or performance evaluation. This finding suggests that EMA implementation among tourism enterprises on Rote Island remains at an early stage of development.

Overall, the classification demonstrates that environmental responsibility should not automatically be interpreted as Environmental Management Accounting. While environmentally friendly operational practices were commonly observed, the systematic identification, measurement, recording, analysis, and use of environmental information the defining characteristics of formal EMA were largely absent. Therefore, the findings indicate that tourism businesses on Rote Island are predominantly positioned within the informal and partial stages of EMA implementation.

The EMA maturity classification provides a more nuanced interpretation of environmental management practices within tourism businesses. Previous studies frequently equate environmentally responsible activities with EMA implementation. However, the findings of this study demonstrate that environmental practices alone do not constitute Environmental Management Accounting unless they are supported by systematic accounting processes. The majority of tourism enterprises on Rote Island remain at the informal or partial stages because

environmental information is generated primarily for operational purposes rather than strategic management.

From the perspective of Stakeholder Theory, the transition from informal to formal EMA depends on increasing stakeholder expectations regarding environmental accountability and transparency. Meanwhile, the Triple Bottom Line suggests that organizations with higher levels of EMA maturity are more likely to generate measurable economic, social, and environmental outcomes because environmental information becomes embedded within strategic decision-making processes. Accordingly, EMA maturity represents not only the sophistication of accounting practices but also the organization's capacity to transform stakeholder demands into sustainable business strategies.

4.3 Triple Bottom Line (TBL)

4.3.1 Planet Dimension

The planet dimension reflects an organization's commitment to environmental stewardship by promoting environmentally friendly business operations and minimizing pollution (Panji Putra & Larasdiputra, 2020). Within the tourism sector, environmental quality represents both the greatest sustainability challenge and the most important source of competitive differentiation for Rote Island. As a nature-based tourism destination, the island's long-term competitiveness depends on the preservation of its coastal ecosystems, marine biodiversity, and natural landscapes.

The study identified several major environmental challenges affecting tourism sustainability on Rote Island, including:

- a. **Plastic Pollution.** Plastic waste constitutes the dominant form of coastal litter in tourism areas and has become one of the principal sources of marine pollution, threatening coastal ecosystems and reducing the attractiveness of tourist destinations.
- b. **Coral Reef Degradation.** Coral reef ecosystems are increasingly threatened by destructive fishing practices, tourism pressure, and climate change. The deterioration of coral reefs directly affects marine biodiversity and reduces the quality of diving, snorkeling, and surfing tourism.
- c. **Wastewater Management.** The limited availability of wastewater treatment facilities in many hotels, resorts, and homestays creates a significant risk of groundwater and coastal water contamination.

The findings indicate that most tourism businesses have incorporated environmentally responsible practices into their business strategies. These initiatives include reducing single-use plastics, implementing waste segregation, improving energy efficiency, managing wastewater, organizing beach-cleaning activities, and utilizing locally sourced environmentally friendly materials.

The interview results further reveal that business owners recognize environmental quality as the primary asset supporting tourism development on Rote Island. Consequently, maintaining clean beaches, conserving coral reef ecosystems, and preserving the island's natural environment have become integral components of their long-term business strategies. From the perspective of Environmental Management Accounting (EMA), investments in environmental management are no longer viewed merely as additional operating costs but rather as strategic investments that contribute to business resilience, destination competitiveness, and long-term sustainability.

4.3.2 People Dimension

The people dimension emphasizes an organization's responsibility toward employees, local communities, and other social stakeholders. According to Kasmawati (2014), local communities constitute one of the most important stakeholder groups because their support is essential for the existence, continuity, and growth of business organizations. Therefore, businesses should strive to maximize social benefits through inclusive and community-oriented development.

Within the tourism industry, the people dimension implies that tourism products should generate benefits not only for visitors but also for tourism operators and surrounding communities. Local traditions, customs, and cultural heritage represent valuable tourism assets that should be preserved because they form the unique identity of tourism destinations (Stoddard et al., 2012).

Despite gradual improvements, the poverty rate in Rote Ndao Regency remained relatively high at 27.05% in 2023, although it had declined from 30.99% in 2011 (BPS Rote Ndao, 2025). This condition indicates that tourism possesses considerable potential to function as an inclusive engine for poverty reduction when managed through community-based and sustainable development approaches.

The study found that the implementation of Environmental Management Accounting has strengthened relationships between tourism businesses and local communities. Most respondents explained that their business strategies prioritize employing local workers, purchasing agricultural products from local farmers and fishermen, and collaborating with Rote's traditional weaving artisans and local micro, small, and medium-sized enterprises (MSMEs) that produce handicrafts and culinary products.

Such community involvement generates broader economic benefits while simultaneously increasing public acceptance of tourism development initiatives. Moreover, tourists gain richer and more authentic cultural experiences through direct interaction with local communities and traditions. These findings demonstrate that the implementation of EMA extends beyond environmental cost management by creating social value through community empowerment, local economic development, and stakeholder engagement.

4.3.3 Profit Dimension

The profit dimension focuses on an organization's ability to generate sustainable economic returns. Communities living in tourism destinations should benefit economically from tourism development through employment opportunities, increased business activities, and higher household incomes.

Tourism on Rote Island has demonstrated encouraging economic performance, with tourist arrivals increasing by approximately 61% in 2023 (BPS Rote Ndao, 2025). Nevertheless, transforming visitor growth into sustainable economic benefits remains constrained by several challenges:

- a. **Economic Leakage.** A significant proportion of tourist expenditures, particularly those associated with premium accommodation owned by external investors, leaves the local economy, thereby limiting the economic benefits received by local communities.
- b. **Seasonality of Tourism Demand.** Tourist arrivals remain highly concentrated during the peak season, particularly in August, resulting in fluctuating revenues and making long-term financial planning more difficult for tourism businesses.
- c. **Environmental Costs Are Not Internalized.** Tourism packages and accommodation prices generally fail to incorporate the actual environmental costs associated with tourism

activities, creating long-term economic inefficiencies and reducing incentives for environmental conservation.

The research findings indicate that Environmental Management Accounting has generated measurable economic benefits for tourism enterprises on Rote Island. Hotel managers, homestay operators, restaurant owners, and tourism service providers have begun recording expenditures related to electricity consumption, water usage, operational materials, and waste management as part of their internal cost-control practices. Although these recording systems have not yet fully adopted formal environmental accounting standards, the resulting information has proven useful in supporting business decision-making.

Respondents emphasized that improved efficiency in energy and water consumption has reduced operating costs without compromising service quality. The adoption of energy-efficient lighting, better water management, and greater reliance on locally sourced materials has enabled businesses to lower expenditures while simultaneously strengthening their competitive advantage. Consequently, Environmental Management Accounting is increasingly recognized as a strategic management tool that enhances operational efficiency while supporting the long-term economic sustainability of tourism enterprises.

4.4 Stakeholder Theory

From the perspective of Stakeholder Theory, Environmental Management Accounting (EMA) functions as an information system designed to meet the diverse information needs of multiple stakeholder groups. Different stakeholders require different types of environmental information to support their respective decisions and interests. For example, **investors** require information regarding environmental risks, environmental costs, blue economy investment opportunities, and the potential impacts of sustainability practices on corporate value. Government agencies require information related to regulatory compliance and contributions to sustainable tourism and blue economy policies. Coastal communities seek information concerning the impacts of tourism development on their livelihoods, access to natural resources, environmental quality, and benefit-sharing mechanisms. Environmental organizations emphasize transparency, environmental protection programs, and conservation outcomes, whereas tourists and consumers increasingly demand information regarding ethical business practices and the sustainability of tourism products and supply chains.

Because stakeholder groups possess different priorities and expectations, Environmental Management Accounting should be developed based on the principle of materiality. Material information is not limited to information that influences investors' economic decisions but also includes information that affects community welfare and ecosystem sustainability. In this regard, the concept of double materiality becomes particularly relevant. Tourism businesses should disclose not only how environmental issues influence their financial performance but also how their operations affect coastal ecosystems, biodiversity, and local communities. Consequently, Stakeholder Theory provides a comprehensive accountability framework that guides organizations in identifying stakeholder groups and communicating environmental information that is relevant to each group.

Furthermore, Stakeholder Theory emphasizes that active participation by local communities in tourism decision-making strengthens local governance, aligns tourism development with community needs, and contributes to improved environmental management. Within the context of Environmental Management Accounting, local communities should therefore be

regarded not merely as beneficiaries of tourism development but as active participants in environmental reporting, monitoring, and accountability systems.

4.5 Internal Stakeholders

The findings demonstrate that the implementation of Environmental Management Accounting provides substantial benefits for internal stakeholders, including business owners, managers, and employees working within tourism enterprises on Rote Island.

Based on interview findings, the adoption of EMA enables management to obtain more accurate information regarding energy consumption, water use, operational materials, and waste management costs. This information supports budget planning, operational cost control, resource allocation, and performance evaluation. Managers reported that systematic monitoring of resource consumption has become an important managerial tool for improving operational efficiency.

Respondents also explained that recording resource utilization has fostered a workplace culture emphasizing environmental awareness and resource efficiency. Employees have become increasingly conscious of the importance of reducing electricity consumption, conserving water, and improving waste management practices. Business owners likewise recognized that improved operational efficiency resulting from EMA contributes directly to increased profitability and long-term business sustainability.

The study further found that EMA has encouraged tourism enterprises to shift their business strategies from focusing primarily on revenue generation toward strategies emphasizing resource efficiency, environmental risk management, and sustainable value creation. Consequently, Environmental Management Accounting has become an integral component of strategic decision-making within tourism businesses.

Theme 1. Environmental Management Accounting and Business Performance

The findings indicate that the implementation of Environmental Management Accounting (EMA) has contributed to improving resource monitoring among tourism businesses on Rote Island. However, the evidence suggests that these improvements should be interpreted primarily as perceived operational benefits rather than verified financial outcomes.

Interview data revealed that managers routinely monitored electricity and water consumption as part of their operational control.

One hotel manager explained:

"Every month we compare electricity and water bills. If there is an unusual increase, we immediately investigate the cause and try to reduce unnecessary consumption."

This statement was supported by documentary evidence obtained from monthly electricity and water bills, which showed that utility expenditures were regularly monitored as part of operational management. Although businesses did not prepare separate environmental cost reports, utility bills served as the primary source of environmental information used for daily managerial decisions.

Similarly, field observations indicated that several businesses had installed LED lighting, implemented water-saving devices, and encouraged towel reuse to reduce resource consumption. These practices were consistently observed across accommodation providers, suggesting that resource efficiency had become part of routine operational management.

Theme 2. Environmental Management Accounting Supports Strategic Decision-Making

The research also demonstrates that environmental cost information is increasingly utilized in strategic business planning. Tourism operators have invested in LED lighting systems, water-

saving technologies, and more durable construction materials because these investments generate long-term economic benefits.

As one homestay owner explained:

"Initially, we thought replacing all the lights would be too expensive. However, after calculating the savings, our electricity costs decreased substantially, making the investment financially worthwhile."

This finding indicates that Environmental Management Accounting encourages managers to evaluate investments based not only on initial expenditures but also on their long-term economic and environmental benefits.

Theme 3. Environmental Management Accounting and Stakeholder Trust

Interview findings suggest that tourism operators perceived environmentally responsible practices as strengthening relationships with tourists, local communities, and government agencies.

One tourism operator stated:

"Many guests appreciate that we reduce plastic waste and use local products. Some even mention these practices in their online reviews." (Informant 5)

This perception was triangulated through observations of waste segregation facilities and the use of locally produced food and handicrafts within tourism establishments. In addition, several online visitor reviews highlighted environmental cleanliness and the use of local products as positive aspects of their tourism experience.

4.6 External Stakeholders

The study also demonstrates that the implementation of Environmental Management Accounting creates value for external stakeholders, including tourists, local communities, government agencies, local MSMEs, suppliers, and environmental organizations.

Interview findings reveal that tourists increasingly appreciate environmentally responsible tourism practices. Businesses that reduce single-use plastics, maintain clean tourism areas, and prioritize locally sourced products receive more favorable responses from visitors. These practices improve customer satisfaction while strengthening Rote Island's image as a sustainable tourism destination.

From the perspective of local communities, Environmental Management Accounting promotes greater participation in tourism value chains through employment opportunities, local food production, traditional weaving, transportation services, and cultural attractions. Respondents indicated that such collaboration has increased household incomes while strengthening community ownership of tourism development.

For local governments, EMA contributes to sustainable tourism objectives by improving compliance with environmental regulations, reducing pollution, and supporting the conservation of coastal ecosystems that constitute the primary attraction of Rote Island. Furthermore, collaboration between tourism businesses and environmental organizations in beach-cleaning campaigns and environmental education programs enhances the social legitimacy of tourism enterprises.

The study also found that relationships with suppliers have evolved. Tourism businesses increasingly prioritize suppliers capable of providing locally produced and environmentally friendly products. This procurement strategy not only strengthens the local economy but also reduces environmental impacts associated with transporting goods from outside the region.

Theme 4. Environmental Management Accounting Increases Tourist Trust

Interview findings indicate that tourists value tourism businesses that demonstrate genuine environmental responsibility. Reducing single-use plastics, providing waste-separation facilities, and maintaining clean tourism areas contribute significantly to visitor satisfaction.

One tourist stated:

"I feel much more comfortable staying at accommodation that cares about the environment. Everything is clean, there is very little plastic, and the waste management system appears to be well organized."

This finding suggests that Environmental Management Accounting contributes to business differentiation by enhancing corporate image, customer satisfaction, and visitor loyalty.

Theme 5. Environmental Management Accounting Strengthens Relationships with Local Communities

The findings reveal that most tourism enterprises actively incorporate locally produced goods into their business operations. Fresh fish, vegetables, fruits, traditional **Rote ikat textiles**, and locally produced handicrafts have become integral components of tourism services.

One restaurant owner explained:

"We purchase fish directly from local fishermen and vegetables from nearby farmers so that local communities also benefit from tourism."

Similarly, one local MSME owner stated:

"Since the hotels started collaborating with us, sales of our traditional woven textiles have increased because tourists purchase them directly as souvenirs."

These findings demonstrate that Environmental Management Accounting extends beyond environmental cost management by strengthening local value chains and generating broader economic benefits for surrounding communities.

Theme 6. Environmental Management Accounting Strengthens Relationships with Government

The study found that tourism operators increasingly prioritize waste management and environmental cleanliness to comply with local government policies promoting sustainable tourism development.

A representative from the Regional Tourism Office commented:

"Tourism businesses that consistently protect the environment are generally easier to collaborate with because they demonstrate a genuine commitment to sustainable destination development."

This finding indicates that implementing Environmental Management Accounting enhances the legitimacy of tourism enterprises in the eyes of government institutions while improving opportunities to participate in destination development programs and receive institutional support.

Theme 7. Environmental Management Accounting and Social Impact

The findings indicate that tourism businesses increasingly collaborated with local suppliers, including fishermen, farmers, and small enterprises, as part of their sustainability initiatives.

According to one restaurant manager:

"Whenever possible, we purchase vegetables from nearby farmers and seafood from local fishermen because it benefits the community and ensures freshness."

This statement was supported by procurement records showing regular purchases from local suppliers. Field observations also confirmed that locally produced food, woven textiles, and handicrafts were incorporated into tourism services. Community representatives

acknowledged that collaboration with tourism businesses had created additional economic opportunities.

Table 4. Date Stakeholder

Stakeholder		EMA Implementation	Resulting Business Strategy
Internal Stakeholders (Owners, Management, and Employees)		Recording and monitoring environmental costs, improving energy and water efficiency, and implementing waste management practices.	Cost efficiency, improved service quality, enhanced operational performance, and more effective strategic decision-making.
External Stakeholders (Tourists, Local Communities, Government, Suppliers, Environmental Organizations, and Local Communities)	Local	Utilization of local products, environmental conservation initiatives, compliance with environmental regulations, and collaboration with local communities and other stakeholders.	Enhanced destination reputation, increased tourist loyalty, strengthened social legitimacy, strategic partnerships, community empowerment, and sustainable competitive advantage.

From the perspective of Stakeholder Theory, the implementation of Environmental Management Accounting (EMA) in tourism businesses on Rote Island generates significant benefits for both internal and external stakeholders.

For internal stakeholders, including business owners, managers, and employees, EMA functions as an effective management tool for environmental cost control, operational efficiency, and strategic decision-making. By providing systematic information on resource consumption, waste management, and environmental expenditures, EMA enables managers to optimize operational performance, improve resource utilization, reduce unnecessary costs, and support long-term business sustainability.

For external stakeholders, including tourists, local communities, government agencies, local micro, small, and medium-sized enterprises (MSMEs), suppliers, and environmental organizations, EMA contributes to higher tourist satisfaction, stronger collaboration with local communities and MSMEs, improved compliance with environmental regulations, and the development of a positive corporate reputation as an environmentally responsible tourism provider. These outcomes enhance stakeholder trust, strengthen destination attractiveness, and promote broader community participation in tourism development.

The findings further demonstrate that Environmental Management Accounting has evolved beyond its traditional role as an environmental accounting system to become a strategic business approach that creates shared value. The success of tourism enterprises on Rote Island is determined not only by their ability to generate financial returns but also by their capacity to establish mutually beneficial relationships with diverse stakeholder groups while protecting the natural environment upon which tourism depends.

Overall, these findings provide empirical support for Stakeholder Theory, confirming that long-term business sustainability depends on an organization's ability to balance the interests of both internal and external stakeholders. By integrating environmental responsibility into strategic decision-making and fostering collaboration among stakeholders, Environmental Management Accounting contributes to sustainable tourism development, strengthens

organizational legitimacy, and enhances the long-term competitiveness of tourism businesses on Rote Island.

Discussion of Stakeholder Theory

Overall, the findings strongly support the principles of Stakeholder Theory, demonstrating that the successful implementation of Environmental Management Accounting depends upon the active involvement of both internal and external stakeholders. Internally, EMA improves managerial decision-making, operational efficiency, and strategic planning. Externally, it strengthens relationships with tourists, local communities, suppliers, government agencies, and environmental organizations by increasing transparency, accountability, and stakeholder trust.

The findings further suggest that Environmental Management Accounting serves not only as an environmental accounting system but also as a strategic governance mechanism that aligns the interests of multiple stakeholder groups. By integrating environmental information into business decisions and promoting stakeholder collaboration, tourism enterprises on Rote Island are better positioned to achieve sustainable competitive advantage while supporting environmentally responsible and community-based tourism development. These results reinforce the relevance of Stakeholder Theory as an appropriate conceptual framework for understanding the implementation of Environmental Management Accounting within sustainable tourism destinations.

Discussion of the Triple Bottom Line

Based on the three dimensions of the Triple Bottom Line (TBL), this study demonstrates that the implementation of Environmental Management Accounting (EMA) has evolved into a strategic business approach that integrates economic, social, and environmental objectives within the tourism industry on Rote Island.

From the profit perspective, EMA improves cost efficiency, strengthens financial performance, and enhances business competitiveness. From the people perspective, EMA promotes community empowerment, strengthens collaboration with local MSMEs, and improves relationships among tourism enterprises and their stakeholders. From the planet perspective, EMA encourages environmentally responsible management practices that protect the natural resources forming the foundation of Rote Island's tourism industry.

Despite these positive outcomes, the study also identified several barriers to broader EMA implementation. These include the absence of standardized environmental accounting systems, limited human resource capacity in environmental accounting, insufficient technical assistance, and the lack of specific government policies encouraging EMA adoption within the tourism sector. Accordingly, stronger collaboration among local governments, tourism businesses, universities, community organizations, and other stakeholders is required to develop an Environmental Management Accounting model that reflects the characteristics and sustainability needs of tourism destinations on Rote Island.

Overall, the findings indicate that Environmental Management Accounting has evolved beyond its traditional role as an environmental accounting tool to become a comprehensive business strategy supporting sustainable tourism development. By integrating the three pillars of the Triple Bottom Line Profit, People, and Planet EMA enables tourism enterprises to achieve economic success while simultaneously promoting community well-being and preserving the environmental resources upon which the long-term sustainability of Rote Island's tourism industry depends.

Triangulation of Qualitative Evidence

To enhance the credibility and trustworthiness of the findings, this study employed methodological triangulation by integrating interview data with documentary evidence and field observations. The triangulation process aimed to verify whether participants' perceptions regarding Environmental Management Accounting (EMA) practices were supported by observable evidence and organizational records. Rather than relying solely on interview narratives, the study compared participants' statements with available documents, including utility bills, procurement records, waste management records, tourism business documents, and direct observations of environmental management practices.

The triangulation results indicate that several environmentally responsible practices reported during interviews were consistently supported by documentary and observational evidence. For example, managers' claims regarding efforts to reduce electricity and water consumption were verified through monthly utility bills and direct observations of energy-efficient lighting, water-saving devices, and operational procedures encouraging resource conservation. Likewise, statements concerning local sourcing practices were supported by procurement records and observations showing the use of locally produced food, handicrafts, and tourism products.

However, the triangulation also revealed important limitations. Although tourism businesses routinely monitored operational expenditures related to electricity, water, and waste management, none maintained dedicated environmental cost accounts or formal environmental management accounting reports. Consequently, environmental expenditures remained embedded within general operating costs, making it difficult to quantify the direct financial contribution of environmental initiatives. Similarly, positive perceptions regarding stakeholder trust and community welfare were supported by interview narratives, visitor feedback, and observations of community participation, but were not corroborated by quantitative indicators such as customer satisfaction scores, occupancy trends, or longitudinal household income data.

These findings suggest that the evidence is strongest for demonstrating the existence of environmentally responsible operational practices and growing managerial awareness of environmental resource use. In contrast, claims regarding improvements in business performance, stakeholder trust, and social welfare should be interpreted as participants' perceptions supported by partial documentary evidence rather than as objectively verified outcomes. This triangulation process therefore strengthens the interpretation of the findings while maintaining analytical rigor by distinguishing observed practices, perceived benefits, and verified evidence.

Table 5. Research Findings

Research Finding	Interview Evidence	Documentary Evidence	Field Observation	Level of Verification
Energy and water efficiency	Managers reported monitoring electricity and	Monthly electricity and water bills	LED lighting, water-saving devices, reminder signage	High

Research Finding	Interview Evidence	Documentary Evidence	Field Observation	Level of Verification
Waste management practices	water consumption Informants described waste segregation and plastic reduction	Waste collection records (if available)	Waste sorting bins, reduced single-use plastics	High
Local sourcing	Managers stated they purchased products from local suppliers	Procurement records and purchase receipts	Local food, handicrafts, and woven products used in tourism services	High
Stakeholder appreciation	Tourism operators reported positive responses from tourists and local communities	Guest books, online reviews, or tourism feedback (where available)	Tourists' participation and community engagement activities	Moderate
Business performance	Managers perceived operational savings	Utility expenditure cost records (limited)	Efficient operational practices	Moderate
Community economic benefits	Community members perceived increased business opportunities	Limited procurement documentation	Community involvement in tourism activities	Moderate
Environmental cost accounting	Managers acknowledged the absence of dedicated environmental cost records	No separate environmental accounting reports were found	Environmental costs remained integrated into operational expenses	High (confirming absence of formal EMA)

5. Conclusion and Suggestion

The findings indicate that the implementation of Environmental Management Accounting (EMA) as a business strategy within the tourism sector on Rote Island continues to face a range of challenges arising from both internal and external factors. Although tourism businesses generally recognize the importance of environmental management in supporting long-term sustainability, the systematic implementation of EMA remains limited.

5.1 Limited Understanding of Environmental Management Accounting

One of the primary challenges identified is the limited understanding of Environmental Management Accounting among tourism business operators. Most respondents do not perceive EMA as an accounting system that integrates environmental information into business planning and managerial decision-making. Instead, environmental management is generally viewed as a collection of operational practices such as reducing electricity

consumption, minimizing plastic use, or maintaining the cleanliness of tourism areas without systematically measuring or recording environmental costs.

One homestay owner explained:

"We always try to save electricity and water, but we have never specifically calculated how much environmental cost we could actually save." (Informant 4)

This statement suggests that environmental management practices are largely intuitive and have not yet been integrated into formal business management systems.

5.2 Absence of a Structured Environmental Cost Accounting System

The research further reveals that almost all respondents continue to record environmental expenditures together with general operating costs. Expenses related to waste management, energy-saving initiatives, landscape maintenance, environmental conservation, and pollution prevention are typically classified as ordinary operational expenses rather than as separate environmental costs.

As a result, tourism enterprises lack sufficient information to evaluate the financial efficiency and long-term economic benefits generated by environmental investments. Without systematic environmental cost accounting, managers are unable to accurately assess the return on investment associated with sustainability initiatives.

5.3 Limited Human Resource Capacity

Human resource limitations constitute another major barrier to EMA implementation. Most tourism enterprises on Rote Island are small and medium-sized businesses that lack personnel with expertise in accounting, environmental management, or sustainability reporting. Administrative and financial management practices remain relatively simple, making Environmental Management Accounting a lower organizational priority despite its potential strategic benefits.

5.4 Financial Constraints on Environmental Investment

Interview participants also emphasized that investments in environmentally friendly technologies including energy efficient equipment, wastewater treatment systems, renewable energy technologies, and sustainable waste management infrastructure require substantial initial capital.

For small tourism enterprises operating with limited financial resources, these upfront investment costs often discourage the adoption of environmental innovations, even though managers recognize their potential long-term economic and environmental benefits.

5.5 Limited Government Support and Technical Assistance

The findings indicate that tourism businesses continue to require greater institutional support for implementing Environmental Management Accounting. Respondents highlighted the limited availability of technical assistance, environmental accounting training, environmental cost measurement guidelines, and sustainability management programs.

Consequently, EMA practices have developed primarily through individual business experience and personal initiative rather than through standardized frameworks or coordinated government programs.

5.6 Challenges Associated with an Island Tourism Destination

As an island tourism destination, Rote Island faces unique environmental management challenges that influence the implementation of Environmental Management Accounting. These include limited freshwater availability in certain areas, high logistics and transportation costs, inadequate coastal waste management systems, and the need to conserve sensitive coastal ecosystems and coral reefs.

Tourism operators must therefore balance operational efficiency with the protection of natural resources that constitute the island's principal tourism assets. These geographical characteristics make environmental management both more challenging and more essential for long-term destination sustainability.

5.7 Changing Tourist Preferences

Respondents also observed that tourists are becoming increasingly concerned about sustainability when selecting destinations and accommodation providers. This trend presents both opportunities and challenges. On one hand, environmentally responsible tourism businesses gain competitive advantages through stronger destination branding and increased customer loyalty. On the other hand, tourism operators are under increasing pressure to continuously improve their environmental performance in order to meet evolving market expectations.

5.8 Opportunities and Future Potential of Environmental Management Accounting

Despite these challenges, the study identifies significant opportunities for expanding the implementation of Environmental Management Accounting within the tourism sector on Rote Island.

5.9 Growing Global Demand for Sustainable Tourism

Global tourism trends increasingly favor sustainable travel experiences, environmental responsibility, and authentic cultural engagement. Environmentally conscious travelers—particularly those from Australia and Europe, who represent a substantial proportion of international visitors to Rote Island—are generally willing to pay premium prices for destinations that demonstrate strong environmental stewardship and sustainability practices. This trend creates a favorable market environment for businesses implementing Environmental Management Accounting.

5.10 Supportive National Tourism Policies

The Indonesian Government continues to promote sustainable tourism and green tourism as central components of national tourism development policy. Within this policy context, the implementation of Environmental Management Accounting on Rote Island has the potential to become a national best-practice model for integrating environmental sustainability into tourism management.

5.11 Unique Competitive Advantages

Rote Island possesses distinctive tourism assets that are difficult to replicate elsewhere, including the internationally recognized Nemberala surfing destination, rich marine biodiversity, the endemic Rote snake-necked turtle (*Chelodina mccordi*), and the island's cultural heritage represented by the traditional Sasando musical instrument. Preserving these unique natural and cultural assets requires an integrated environmental management approach, making Environmental Management Accounting an important strategic instrument for sustaining the island's competitive advantage.

5.12 Increasing Interest from Green Investors

Recent international investment trends indicate growing investor interest in environmental, social, and governance (ESG) performance and sustainable tourism development. According to PwC (2023), sustainability has become an increasingly important consideration in investment decisions. By providing transparent environmental cost information and demonstrating responsible environmental management, Environmental Management Accounting can enhance the attractiveness of tourism enterprises on Rote Island to

environmentally responsible investors and facilitate greater access to green investment opportunities.

5.13 Conclusion

This study examined the implementation of Environmental Management Accounting (EMA) as a business strategy for tourism enterprises on Rote Island by integrating the Triple Bottom Line (TBL) and Stakeholder Theory frameworks. Based on the findings and discussion, three major conclusions can be drawn in response to the research objectives.

First, the implementation of Environmental Management Accounting within the tourism sector on Rote Island remains at an early stage of development. Most tourism enterprises continue to rely on conventional accounting systems that do not explicitly separate environmental costs from general operating overheads. From the perspective of the Triple Bottom Line, the planet dimension faces significant environmental challenges, including plastic pollution, coral reef degradation, and inadequate wastewater management. The people dimension indicates that although tourism has contributed to local economic development, it has not yet fully realized its potential as an effective mechanism for poverty reduction and community empowerment. Meanwhile, the profit dimension demonstrates encouraging economic growth but remains constrained by economic leakage, seasonal fluctuations in tourist arrivals, and pricing structures that fail to incorporate the true costs of environmental impacts. From the perspective of Stakeholder Theory, the findings reveal that different stakeholder groups require different types of environmental information, highlighting the importance of adopting a double materiality approach within Environmental Management Accounting reporting.

Second, the study identified several major barriers to the effective implementation of Environmental Management Accounting. These challenges include limited human resource capacity in environmental accounting and sustainability management, resistance among small tourism enterprises to additional reporting costs, the complexity of inter-agency coordination, limited information technology infrastructure, dependence on seasonal tourism demand, and the absence of standardized baseline environmental data. Collectively, these constraints hinder the systematic integration of environmental information into managerial decision-making and long-term business strategy.

Third, the study identifies several strategic initiatives that could enhance the implementation of Environmental Management Accounting within the tourism sector. These include: (a) explicitly separating environmental costs from general overhead accounts to improve cost transparency and managerial decision-making; (b) establishing tourism package and accommodation pricing that reflects the true environmental costs associated with tourism activities; (c) developing stakeholder-oriented EMA reporting systems that provide relevant environmental information tailored to the needs of different stakeholder groups; and (d) capitalizing on external opportunities such as the growing global demand for sustainable tourism, supportive national tourism policies, Rote Island's unique natural and cultural assets, and increasing interest from green investors.

Overall, the integration of the Triple Bottom Line and Stakeholder Theory provides a more comprehensive analytical framework than either approach alone. The combined framework enables a balanced evaluation of environmental, social, economic, and stakeholder dimensions while addressing the complex sustainability challenges faced by tourism businesses. Furthermore, this study contributes to the existing academic literature by addressing an

important research gap concerning the implementation of Environmental Management Accounting within MSME-based tourism enterprises located in remote island destinations. Future research is recommended to validate these qualitative findings through quantitative approaches, particularly by measuring the magnitude of hidden environmental costs and examining their impact on the financial performance and profitability of tourism businesses on Rote Island. Future studies should also expand stakeholder participation by including additional stakeholder groups that were not represented in the present research, thereby providing a more comprehensive understanding of Environmental Management Accounting implementation within sustainable tourism destinations.

Reference

- Astuti P, Nurdiana S. Akuntansi Lingkungan sebagai Strategi Perusahaan dalam Mencapai Keberlanjutan. *J Akuntansi dan Keuangan Indonesia*. 2021;18(2):147-60. <https://doi.org/10.21002/jaki.2021.09>
- Aulia S, Kartawijaya I. Analisis Pengungkapan Triple Bottom Line dan Faktor yang Mempengaruhi: Lintas Negara Indonesia dan Jepang. *Simposium Nasional Akuntansi XIV Aceh*. 2011.
- Badan Pusat Statistik Kabupaten Rote Ndao. (2025). *Kabupaten Rote Ndao dalam angka 2025*. BPS Kabupaten Rote Ndao.
- Bennett M, James P. *The Green Bottom Line: Environmental Accounting for Management: Current Practice and Future Trends*. Routledge; 2017.
- Creswell JW. *Research Design: Pendekatan metode kualitatif, kuantitatif, dan campuran*. Terj. Achmad Fawaid dan Rianayati KP. Yogyakarta: Pustaka Pelajar; 2017.
- Devi S, Budiasih IGN, Badera IDN. Pengaruh Pengungkapan Enterprise Risk Management dan Pengungkapan Intellectual Capital Terhadap Nilai Perusahaan. *J Akuntansi dan Keuangan Indonesia*. 2017;14(1):20-45.
- Dianty, A., & Nurrahim, G. (2022). Pengaruh Penerapan Green Accounting dan Kinerja Lingkungan terhadap Kinerja Keuangan. *Economics Professional in Action (E-PROFIT)*, 4(2), 126–135. <https://doi.org/10.37278/eprofit.v4i2.529>
- Elkington J. *Cannibals with forks: Triple bottom line of 21st century business*. Capstone Publishing; 1997.
- Freeman RE. *Strategic management: A stakeholder approach*. Pitman; 1984.
- Font X, Tapper R, Schwartz K, Kornilaki M. Sustainable tourism and the tourism ecological footprint. *J Sustain Tour*. 2008;16(3):303-21.
- Gerged, A. M., Zahoor, N., & Cowton, C. J. (2024). Understanding the relationship between environmental management accounting and firm performance: The role of environmental innovation and stakeholder integration – Evidence from a developing country. *Management Accounting Research*, 62(February 2021), 100865. <https://doi.org/10.1016/j.mar.2023.100865>
- Halpiah, Hery AP. Implementasi Akuntansi Sebagai Strategi Bisnis UMKM. *J Ilmiah Bisnis dan Ekonomi Asia*. 2022;16(2):308-21. <https://doi.org/10.32812/jibeka.v16i2.1034>
- Hanif, S., Ahmed, A., & Younas, N. (2023). Examining the impact of Environmental Management Accounting practices and green transformational leadership on

- corporate environmental performance; the mediating role of green process innovation. *Journal of Cleaner Production*, 414(January), 137584. <https://doi.org/10.1016/j.jclepro.2023.137584>
- Hörisch J, Freeman RE, Schaltegger S. Applying Stakeholder Theory in Sustainability Management: Links, Similarities, Dissimilarities, and a Conceptual Framework. *Organ Environ*. 2014;27(4):328-46.
- Indah M, Arip S. Analysis of Tax Accounting Implementation at PT. Pou Yuen Indonesia. *Edusight Int J Multidiscip Stud*. 2024;1(4):1-9. <https://doi.org/10.69726/eijoms.v1i4.68>
- Kasmawati. (2014). Implementasi Akuntansi Lingkungan Berdasarkan Teori Triple Bottom Line Pada Perusahaan - Perusahaan di Kawasan Industri Makassar. Artikel: Universitas Islam Negeri Alauddin Makassar
- Liem, V. T., & Hien, N. N. (2024). The impact of managers' attitudes towards environmental management accounting and green competitive advantage in Vietnam manufacturers. *Heliyon*, 10(13), e33565. <https://doi.org/10.1016/j.heliyon.2024.e33565>
- Mowforth M, Munt I. *Tourism and sustainability: Development, globalisation and new tourism in the Third World*. Routledge; 2015.
- Panji Putra, G. B. N & Larasdiputra, G. D. (2020). Penerapan Konsep *Triple Bottom Line Accounting* Di Desa Wisata Pelaga (Studi Kasus Pada Kelompok Usaha Tani Asparagus). *Jurnal KRISNA: Kumpulan Riset Akuntansi; Vol. 11, No. 2;129-136*. <http://dx.doi.org/10.22225/kr.11.2.1419.129-136>
- Pflieger S, Fischer M, Kupfer T, Balzer S. Environmental management accounting (EMA) as the next step in the evolution of management accounting. *J Clean Prod*. 2005;13(12):119-32.
- Putri, M. D., Palupi, D., & Wahyudi, B. (2024). Pengaruh Green Accounting Dan Kinerja Lingkungan Terhadap Kinerja Keuangan Perusahaan Sub Sektor Tambang Batubara. *JURNAL MANEKSI*, 13(2).
- Ramadhani, K., Saputra, M. S., & Wahyuni, L. (2022). Pengaruh Penerapan Green Accounting dan Kinerja Lingkungan Terhadap Kinerja Keuangan dengan Tata Kelola Perusahaan Perusahaan sebagai Variabel Moderasi. *Jurnal Akuntansi Trisakti*, 9(2), 229–244. <https://doi.org/10.25105/jat.v9i2.14559>
- Ramadhani T, Hakim M. Praktik Green Accounting pada Perusahaan Tambang di Indonesia. *J Akuntansi dan Lingkungan*. 2020;6(1):56-70. <https://doi.org/10.25077/jal.2020.6.1.56>
- Schaltegger S, Burritt R. *Contemporary environmental accounting: issues, concepts and practice*. Routledge; 2017.
- Sugiyono. *Metode Penelitian Kuantitatif, Kualitatif, dan R&D*. Cetakan Ke-25. Bandung: CV Alfabeta; 2019.
- Talitha, N. (2022). Analisis Implementasi Environmental Management Accounting (EMA) Sebagai Bentuk Penerapan Eko-Efisiensi Dalam Mewujudkan Kinerja Ekonomi Perusahaan. *DIPONEGORO JOURNAL OF ACCOUNTING*, 11(2), 1–11. <http://ejournal-s1.undip.ac.id/index.php/accounting>

- Yagi, M., & Kokubu, K. (2020). A framework of sustainable consumption and production from the production perspective: Application to Thailand and Vietnam. *Journal of Cleaner Production*, 276, 124160. <https://doi.org/10.1016/j.jclepro.2020.124160>
- Yudhanta. Akuntansi Lingkungan dan Akuntansi Manajemen Lingkungan: Suatu Komponen Dasar Strategi Bisnis. *J Infestasi*. 2009;5(1):1-21. <https://doi.org/10.21107/infestasi.v5i1>