

ENVIRONMENTAL MANAGEMENT ACCOUNTING BASED ON THE TRI HITA KARANA CONCEPT: INTERPRETATION AND PRACTICE AT VILLAGE CREDIT INSTITUTIONS (LPD) IN BALI

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Abstract:

This study aims to examine how environmental management accounting (EMA) is implemented in Village Credit Institutions (LPD) in Bali based on the local wisdom philosophy of Tri Hita Karana. The research approach used is qualitative with an interpretive paradigm through intrinsic case studies of LPDs spread across nine regencies/cities in Bali. Data were collected through in-depth interviews with LPD administrators, observation, and document analysis, then analyzed using thematic analysis techniques. The results show that EMA practices in LPDs have not been formally structured in a monetary accounting system, but have been internalized in values, policies, and decision-making oriented towards harmonious human relationships with God (Parahyangan), fellow human beings (Pawongan), and the environment (Palemahan). Environmental management is realized through energy savings, waste reduction, environmentally friendly financing, and consideration of ecological aspects in credit granting. The Tri Hita Karana philosophy serves as an ethical and cultural framework that strengthens the legitimacy of sustainability practices, although a comprehensive environmental cost measurement system does not yet support it. This research contributes to the development of the EMA concept that is contextualized with local wisdom and shows that cultural values can be an important foundation in building community-based sustainable banking practices.

Keywords: Environmental Management Accounting, Tri Hita Karana, Green Banking, Village Credit Institutions, Sustainability.

INTRODUCTION

The global business world, including the financial sector, has entered an era where sustainability is no longer merely an ethical discourse but a strategic imperative and operational prerequisite. Climate change, resource scarcity, and pressure from stakeholders—from investors and regulators to an increasingly environmentally conscious consumer society—have pushed corporations to internalize ecological issues into the core of their businesses. In this context, banking, as the driving force of the economy, bears a dual responsibility. On the one hand, banks have a direct operational impact on the environment through the consumption of energy, paper, water, and office waste. On the other hand, their indirect impact through credit and investment policies—which can fund projects with high environmental risks—is far more significant. The response to this pressure has given rise to the “green banking” or “sustainable banking” movement, which is committed to integrating environmental, social, and governance (ESG) principles into all its activities.

In Indonesia, the push towards sustainable banking has grown stronger with the issuance of regulations from the Financial Services Authority (OJK), namely Sustainability Roadmap I (2015-2019) and II (2021-2025). This roadmap establishes a framework that requires banks to apply sustainability principles in risk management, business processes, and governance. Banks are required not only to prepare sustainability reports, but also to manage and mitigate their



environmental impact substantively. However, this is where a fundamental challenge often arises: how to manage something immeasurable? The principle of "what gets measured, gets managed" becomes highly relevant. Banks need information systems capable of identifying, measuring, analyzing, and communicating information related to environmental costs, performance, and risks. It is where environmental management accounting (EMA) comes in as a vital tool. EMA is not simply recording waste costs, but a systematic approach to providing monetary and physical information on the flow of energy, materials, and environmental costs to support better, more efficient, and environmentally friendly internal decision-making.

However, the implementation of EMA does not occur in a cultural and value vacuum. Every organization adopts and adapts new management practices based on the local context in which they operate. Bali, as a global destination whose economy relies heavily on tourism and culture, offers a unique and interesting context to study. The island faces a development paradox: on the one hand, rapid economic growth from the tourism sector; on the other, worrying ecological pressures such as a waste crisis, land conversion, and water scarcity. Awareness of the need for balance between the economy and ecology has long been embedded in Balinese cultural values, manifested in the Tri Hita Karana philosophy – a concept of harmony encompassing a balanced relationship between humans and God (Parahyangan), humans with humans (Pawongan), and humans with nature (Palemahan). This philosophy is not merely a ritual, but has become a living paradigm that has the potential to be internalized in business practices, including in financial institutions.

Within the Balinese banking landscape, Village Credit Institutions (LPDs) occupy a unique position. As microfinance institutions owned by traditional villages (Pakraman), LPDs are not merely business entities but also integral parts of the socio-cultural and ecological life of Balinese communities. Their success is measured not solely by financial profit, but also by their contribution to the well-being and harmony of traditional village communities. With strong cultural roots and a strong belief in the Tri Hita Karana philosophy, LPDs theoretically possess a solid foundation of values for developing sustainable business models and management practices. However, a critical question arises: How are these local wisdom values actually translated into operational management and accounting systems? Is the commitment to "Palemahan" (harmony with nature) merely represented through symbolic CSR programs, or has it been integrated into the core of management decision-making processes through accounting instruments?

Previous research on environmental management accounting has focused largely on manufacturing companies, which have a more visible environmental impact. Meanwhile, studies in the service sector, particularly banking, are limited and tend to use conventional approaches that adopt the Western EMA framework. Research in the Balinese context has focused more on sustainable tourism or CSR in general, but has yet to delve into the in-depth understanding of how accounting information systems are designed and used to manage environmental performance in local financial institutions. There is a significant gap between the existence of local, pro-environmental values (such as Tri Hita Karana) and an understanding of how these values are operationalized through modern management techniques and systems like EMA. This gap is what this research aims to fill.

Therefore, this qualitative study was designed to explore the phenomenon of environmental management accounting implementation in an LPD (Local Development Bank) in Bali. This study starts from the assumption that EMA practices in institutions rooted in Balinese culture will not be identical to those in multinational commercial banks. This study aims to uncover in depth how local wisdom concepts, particularly Tri Hita Karana, are interpreted and realized in management accounting practices related to environmental management. A qualitative approach with an in-

depth case study was chosen because it is most appropriate to explore the complexity of meanings, interpretation processes, and the socio-cultural context surrounding this phenomenon. This study will analyze how LPD managers identify environmental costs and benefits, how this information is measured and reported internally, and how it is ultimately used for strategic and operational decision-making – such as in energy efficiency, office waste management, or even credit-granting considerations.

The findings of this study will not only contribute academically to the development of context-sensitive management accounting theory but also offer an inspiring practical model. For the national banking industry, this study can demonstrate how local values can be an authentic driver for sustainability, going beyond mere regulatory compliance. For the Balinese people in particular, this study can strengthen the position of the LPD (Lembaga Pembangunan Daerah/LPD) as a pioneer in re-establishing harmony between the economy, society, and ecology – a principle that is a universal message much needed by the world today. By delving into the practices of LPDs, this study essentially seeks answers to a larger question: Can local wisdom become the foundation for building a more responsible and sustainable capitalist system?

Environmental Management Accounting (EMA). Environmental Management Accounting (EMA) is defined as the identification, collection, estimation, analysis, internal reporting, and use of material, physical (such as energy, water, and materials) and monetary information related to the environment for decision-making within an organization (Schaltegger & Burritt, 2000). Unlike financial accounting, which focuses on external reporting, EMA is essentially an internal managerial information system aimed at providing managers with relevant data to improve both ecological and economic efficiency (Jasch, 2009). EMA extends conventional management accounting systems by incorporating environmental costs that are often hidden or allocated to general overhead, such as waste disposal costs, inefficient energy costs, or potential environmental risks. By quantifying these aspects, EMA enables organizations to more clearly see the relationship between environmental performance and financial performance, allowing for more accurate assessment of investments in green technologies or more efficient processes (UNSD, 2001). In the context of services such as banking, the application of EMA can be focused on measuring and managing the consumption of operational resources (electricity, paper, water), waste management, and the development of financial products that support environmentally friendly activities.

Green Banking and EMA Integration. The concept of Green Banking, or sustainable banking, emerged as a response from the financial industry to global sustainability issues. According to Jeucken (2001), banks' environmental evolution can progress through four stages: defensive, preventive, offensive, and sustainable. The sustainable stage is characterized by the full integration of environmental considerations into core business strategies and operations, for which EMA becomes a crucial supporting tool. Previous research by Bose & Khan (2012) showed that implementing EMA in the banking sector can help identify cost-saving opportunities through energy efficiency, support environmental and social risk (ESG) risk management, and enhance credibility and reputation. In Indonesia, the Financial Services Authority (OJK) Sustainability Roadmap has been a key regulatory driver encouraging banks to adopt sustainable practices. However, a study by Lestari & Priyanto (2020) indicates that sustainability implementation in Indonesian banking often focuses on external reporting and CSR aspects, while its integration into internal management accounting systems for day-to-day decision-making remains limited. The gap between strategic commitments to green banking and adequate operational measurement and control systems is a critical point that needs further exploration, particularly in unique local contexts.



Local Wisdom (Tri Hita Karana) as a Theoretical Lens. This study uses the Tri Hita Karana philosophy as a theoretical lens to analyze EMA practices. Tri Hita Karana, as a Balinese concept of local wisdom, emphasizes balance and harmony within three relationships: Parahyangan (spiritual), Pawongan (social), and Palemahan (ecological) (Suaryana, 2007). In an organizational context, this philosophy can be translated into a holistic governance and management framework. The Palemahan element is directly relevant to environmental management, requiring organizations to be responsible for preserving nature. However, the strength of this philosophy lies in its interconnectedness; commitment to the environment (Palemahan) is considered inseparable from responsibility for community welfare (Pawongan) and spiritual/ethical values (Parahyangan). The literature on business and accounting in Bali is beginning to recognize the potential for integrating these values, as reviewed by Sudibya & Dana (2018), who see them as the foundation for sustainable business models. However, empirical research specifically linking Tri Hita Karana to management accounting information systems, particularly EMA, remains scarce. Using this lens, this study argues that the implementation of EMA in Balinese LPDs cannot be fully understood solely through Western management theory, but must be seen as a process of interpretation and contextualization in which local values shape how environmental information is identified, measured, and given meaning. This approach opens up space to explore forms of "cultured EMA" that may differ from the universal model often assumed in the mainstream literature.

METHODS

This study uses an interpretive paradigm with a qualitative approach because the objective of the study is to deeply understand the meaning, interpretation, and social processes underlying the implementation of environmental management accounting (EMA) in the context of local wisdom. This study was designed as an in-depth intrinsic case study of a Village Credit Institution (LPD) in Bali that is considered to have relevant characteristics – such as a commitment to Tri Hita Karana values and visible environmental initiatives. The selection of a case study allows for a holistic and contextual exploration of a complex phenomenon that cannot be separated from its socio-cultural setting. The LPD heads selected as informants are spread across 9 regencies/cities in Bali, namely Denpasar City, Badung Regency, Tabanan Regency, Gianyar Regency, Bangli Regency, Klungkung Regency, Karangasem Regency, Jembrana Regency, and Buleleng Regency.

The primary data collection technique was in-depth semi-structured interviews with purposively selected key informants. These informants included: the LPD Supervisory and Management Board (as policymakers), heads of operational and financial units (as technical implementers), and staff involved in environmental and CSR-related activities. The interviews focused on exploring understandings, motivations, practices, and challenges in identifying, measuring, and using environmental information for internal decision-making. To enrich and test the validity of the data (triangulation), the study also involved passive participant observation within the LPD office environment to observe daily practices related to resource efficiency, as well as document analysis, such as internal reports, standard operating procedures, and sustainability-related communication materials.

Data collected from interview transcripts, observation notes, and documents were then analyzed interactively and iteratively using thematic analysis techniques according to Braun and Clarke (2006). The process began with transcription and in-depth reading for familiarization, followed by the development of initial codes emerging from the data. Codes were then grouped to form potential themes that reflected patterns of meaning related to EMA implementation. These themes were then reviewed, refined, and connected to the theoretical framework (Tri Hita Karana

and the EMA concept) to produce a coherent and in-depth understanding of how local wisdom values are operationalized in environmental management systems. The entire research process will be conducted with due regard for ethical research principles, including confidentiality of informants' identities and informed consent.

RESULT AND DISCUSSION

This study attempts to uncover the implementation of environmental management accounting (EMA) in Village Credit Institutions (LPD) in Bali through the lens of Tri Hita Karana local wisdom. Based on in-depth interviews with the chairpersons or senior representatives of nine LPDs across cities/regencies in Bali (Denpasar, Badung, Gianyar, Tabanan, Buleleng, Karangasem, Klungkung, Bangli, and Jembrana), observations, and document analysis, the research findings can be grouped into three main interrelated themes: (1) The Meaning of Environmental Responsibility as a Manifestation of Palemahan in a Socio-Business Context; (2) Practices of Measuring and Reporting Environmental Information: Between Awareness, Limitations, and Local Innovation; and (3) Integration of Environmental Values in Strategic and Operational Decision Making.

Understanding Environmental Responsibility as a Manifestation of Palemahan in a Socio-Business Context. The main findings of this study indicate that the primary motivation of LPDs in managing the environment does not stem directly from pressure from national banking regulations, but rather from the internalization of Tri Hita Karana values, particularly the aspect of Palemahan (harmony with nature), which is viewed as a moral and cultural responsibility. However, this understanding of Palemahan is not isolated but is always linked to two other aspects: Pawongan (inter-human relations) and Parahyangan (spiritual relationships). As explained by the Head of an LPD in Gianyar,

"For us, protecting the environment (Palemahan) is part of practicing dharma as a community and part of the customary village. If the environment is damaged, social life (Pawongan) and traditional ceremonies (Parahyangan) will also be disrupted. LPDs, as the backbone of the village economy, cannot escape this responsibility."

This statement underscores that environmental sustainability is understood as a prerequisite for the social and cultural sustainability of indigenous communities. The consequence of this interpretation is that LPD environmental initiatives are closely tied to the geographic context and specific issues of their traditional villages. In coastal LPDs like Jembrana, the focus is on addressing plastic waste polluting the ocean. *"We cannot stand idly by, watching the beaches where fishermen and residents rely on their livelihoods be threatened by waste. Our program focuses on education and the provision of separate trash bins in coastal areas, and we provide incentives for fishermen customers who actively participate,"* said the head of the local LPD. Meanwhile, in mountainous Bangli, the focus is on reforestation and water conservation.

"We have a soft 'Tree Credit' program for residents who want to plant fruit or hardwood trees on their land. It is to maintain soil fertility and water reserves (Palemahan), which in turn contributes to shared prosperity (Pawongan)."

This contextual approach demonstrates that EMA in LPDs begins with the identification of specific local environmental issues, rather than a uniform standard framework. However, interviews also revealed varying levels of understanding. In LPDs in cities like Denpasar and Badung, there is a stronger awareness of the terms "green banking" or "ESG" due to interactions with commercial banks and broader access to information.

"We are starting to realize that this is also a consideration for investors and potential external partners. However, for us, the core principle remains the same: Tri Hita Karana. It is just that the packaging is perhaps more modern," said the LPD Chairperson in Denpasar.



In some LPDs in certain regions, as acknowledged by one LPD Chairperson in Buleleng Regency,

"Palemahan is more about maintaining the cleanliness and beauty of the office environment and around the temple. Things like carbon or energy calculations have not entered our minds yet. The important thing is to take concrete action."

It demonstrates a spectrum of understanding, from the practical and local to those who are beginning to connect with global discourse.

Environmental Information Measurement and Reporting Practices: Between Awareness, Limitations, and Local Innovation. Regarding measurement and reporting – the core of EMA – the study found that formal and structured practices regarding environmental accounting remain very limited. None of the LPDs has a separate information system or dedicated ledger that consistently categorizes and measures all environmental costs and benefits in monetary terms. Environmentally related costs, such as electricity and water bills, and stationery purchases, are still mixed in general overhead accounts without any specific separation.

"We know electricity costs fluctuate, and we try to save by turning off the air conditioner and lights during the day. However, there is no way to specifically record the savings or our 'environmental costs' per month. What is important is awareness of not being wasteful," said the Head of an LPD in Tabanan.

Despite the lack of monetary measurement, LPDs have developed rich physical and narrative measurement systems that are more in tune with the community's mindset. This measurement is often qualitative and participatory. For example, some LPDs, such as those in Karangasem and Klungkung, maintain a "Palemahan Activity Record Book" that records tangible activities, such as how many kilograms of waste they have sorted in a month, how many tree seedlings they have distributed, or how many energy-saving outreach programs they have conducted.

"We do not count in dollars, but in participation. For example, our record: this Saka month, 50 customer families participated in a community service program to clean the river. That means more to us than a dollar amount," explained the Head of the LPD in Karangasem.

Reporting is also mostly internal and is presented in traditional village Sangkepan (meetings) or during special ceremonies, using language and methods that residents can easily understand, rather than formal financial reports. Local innovations also emerge in the form of measurable "social incentives." Some LPDs, such as those in Badung and Gianyar, link community participation in environmental programs to points that can influence access to or interest rates on loans (green microcredit).

"We give customers who are active in youth organizations that run waste recycling programs, or whose homes already have biopores, an additional creditworthiness score. We record this in the customer file's information column, not in the financial records," explained the Head of the LPD in Badung.

This practice represents the initial integration of non-monetary environmental criteria into the credit scoring system, which is the essence of the implementation of EMA on the bank's asset (credit) side.

Integration of Environmental Values in Strategic and Operational Decision-Making. The most significant finding of this research is how environmental values derived from Tri Hita Karana are integrated into the decision-making process, even without the support of sophisticated accounting figures. Decision-making in LPDs is collective and participatory, involving administrators and often community leaders. In this context, narrative and physical environmental information are crucial considerations. At the operational level, decisions to conserve resources are driven by shared values, not budget targets.

"We discussed the decision to install solar panels in our office at length. We did calculate the ROI (Return on Investment), but a more important consideration was whether this would set a good example for



residents and align with the teachings of not damaging the environment. Ultimately, we agreed, even though the ROI was long," said the Head of an LPD in Bangli.

At the LPD in Denpasar, the decision to switch to digital documents was also based on a desire to reduce paper waste ("reduce waste, reduce karma"), in addition to efficiency considerations. At the strategic level, particularly in credit policies, the integration of environmental values is becoming increasingly evident. Nearly all LPDs stated that they have unwritten rules for rejecting or providing guidance to potential customers whose businesses are clearly damaging the environment, such as illegal C mining or businesses that produce hazardous waste without processing.

"In principle, we cannot fund activities that damage Palemahan, because that will damage Pawongan and Parahyangan, our own villages. Even if the business is profitable, if it is damaging, we will reject it or ask them to change their practices," stated the Head of the LPD in Buleleng.

Decisions like this represent a concrete application of environmental risk management in a highly contextualized form, based on customary norms and local wisdom, rather than standard ESG risk guidelines. However, integration challenges also arise. The Head of the LPD in Jembrana expressed a dilemma,

"Sometimes we are faced with difficult choices. For example, a customer who is a pig farmer whose waste has not been properly processed, but he is a devout citizen and has economic needs. We cannot simply stop the credit. What we do is provide guidance and give him time to build a simple waste treatment plant."

This approach shows that EMA and environmental risk management in LPDs are not black and white, but are flexible, educational, and oriented towards behavioral change, in line with the function of LPDs as social institutions.

Cultivated EMA and the Tri Hita Karana Model. The findings of this study confirm and enrich EMA theory and green banking practice. This confirmation emerges that, even without a sophisticated monetary accounting system, environmental management can be effectively implemented through strong social, cultural, and value-based mechanisms (Burritt et al., 2019). LPDs in Bali demonstrate that non-monetary and non-standardized environmental information can be highly influential in decision-making if it has legitimacy and deep meaning within the community.

This study also enriches theory by concretizing the concept of EMA "contextualization." In LPDs, EMA undergoes a process of localization and enculturation. The concept of environmental costs is translated as "adverse impacts on Palemahan and their consequences for Pawongan." Performance measurement is not solely based on rupiah savings, but also on the level of participation, role models, and the sustainability of the village ecosystem. The emerging EMA model is "Community and Values-Based EMA," where the Tri Hita Karana philosophy serves as a conceptual framework that frames problem identification, information gathering, and action evaluation.

The findings regarding the integration of environmental considerations into credit policies are also consistent with, but more organic than, the Equator Principles or green credit policies in commercial banks. In LPDs, "environmental risks" are understood as "threats to village harmony," and their mitigation is carried out through a socio-collegial approach, rather than through strict audit and compliance procedures. It suggests an alternative model of sustainability governance based on trust, shared values, and social control.

The limitations of this model are also worth noting, namely the lack of capability for benchmarking, rigorous comparative analysis, and communication with external stakeholders (such as central banking regulators) in a standard language they understand. It is where strengthening the

technical capacity of simple environmental accounting can be beneficial, without displacing existing local values.

CONCLUSION

This study concludes that the implementation of environmental management accounting (EMA) in LPDs in Bali does not follow a standard technical-formal model, but rather develops as a community-based value management system imbued with the Tri Hita Karana philosophy. The value of Palemahan (harmony with nature) serves as an intrinsic motivation and moral framework that drives action, although monetary measurements of environmental costs and performance are still limited. Instead, LPDs rely on physical measurements, narratives, and meaningful social participation within the local context. This practice creates a form of enculturated EMA, where environmental considerations are organically integrated into operational and strategic decision-making, particularly through selective and educational credit policies. These findings underscore that sustainability in culture-based institutions can be achieved through authentic pathways, prioritizing local wisdom as a foundation, which in turn enriches the global discourse on accounting and sustainability.

REFERENCES

- Bose, S., & Khan, H. Z. (2012). The role of environmental management accounting and voluntary disclosure in corporate environmental strategy. *International Journal of Accounting & Information Management*, 20(4), 309–329.
- Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, 3(2), 77–101. <https://doi.org/10.1191/1478088706qp0630a>
- Burritt, R. L., Hahn, T., & Schaltegger, S. (2019). Sustainability accounting and reporting: Fad or trend? *Accounting, Auditing & Accountability Journal*, 32(7), 2079–2094.
- Jasch, C. (2009). *Environmental and Material Flow Cost Accounting: Principles and Procedures*. Dordrecht: Springer.
- Jeucken, M. (2001). *Sustainable Finance and Banking: The Financial Sector and the Future of the Planet*. London: Earthscan.
- Lestari, D., & Priyanto, B. (2020). Implementasi green banking dan kinerja keberlanjutan perbankan di Indonesia. *Jurnal Akuntansi dan Keuangan Indonesia*, 17(2), 123–140.
- Otoritas Jasa Keuangan (OJK). (2021). *Roadmap Keuangan Berkelanjutan Tahap II (2021–2025)*. Jakarta: OJK.
- Schaltegger, S., & Burritt, R. (2000). *Contemporary Environmental Accounting: Issues, Concepts and Practice*. Sheffield: Greenleaf Publishing.
- Sudibya, G. A., & Dana, I. M. (2018). Tri Hita Karana sebagai dasar pengembangan model bisnis berkelanjutan di Bali. *Jurnal Manajemen dan Kewirausahaan*, 20(1), 1–10.
- Suaryana, A. (2007). Konsep Tri Hita Karana dalam pembangunan berkelanjutan di Bali. *Jurnal Ilmiah Akuntansi dan Bisnis*, 2(1), 1–16.
- United Nations Division for Sustainable Development (UNSD). (2001). *Environmental Management Accounting: Procedures and Principles*. New York: United Nations.

