PROCEEDINGS THE 4th INTERNATIONAL CONFERENCE ON ECONOMICS, BUSINESS, AND MANAGEMENT RESEARCH (ICEBMR) "Cultural Tourism as a Tool for National Building or Neocolonialism in the Bandung Spirit"
https://e-conf.usd.ac.id/index.php/icebmr/ | ISSN: 3032-596X | Vol 4, 2025

THE *MAPALUS* CIRCULAR ECONOMIC MODEL

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ABSTRACT

*Research on the **circular economy** has increasingly gained attention in recent years, focusing on promoting sustainable business practices and optimizing resource use. Nevertheless, studies on the circular economy in the context of agricultural products remain limited and require further exploration. Although previous findings suggest that agricultural derivative products can reduce waste, there is still no empirical evidence confirming whether these products meet community needs. This study introduces the Mapalus circular economy model for rural communities in Indonesia. The model addresses gaps in prior research by emphasizing the development of agricultural derivative products that are both community-oriented and value-added. It seeks to establish a production and consumption cycle within the community, thereby fostering a localized economic system that may enhance rural welfare. However, transforming village communities into both producers and consumers necessitates active participation, cooperation, and synergy. In this regard, the Mapalus tradition provides a foundation of collaboration grounded in kinship values.*

***Keywords**: Circular Economic, Mapalus Tradition, Rural Communities, Agricultural Products, Derivative Product.*

1. Introduction

The study of the circular economy has grown rapidly in recent years, with scholars noting its contribution to sustainability, economic growth, and resource efficiency (Urbinati et al., 2017). The circular economy is essentially a design aimed at optimising resources, for example through upstream-to-downstream business strategies that reduce waste and add value (Lieder & Rashid, 2016; Shubhrajyotsna Aithal & Aithal, 2023). However, most research has focused on the manufacturing sector, while studies in the rural agricultural context remain limited.

In agriculture, the development of derivative products such as ethanol, biogas, limonene, coconut oil, and VCO can optimise production and reduce waste (Dahiya et al., 2020; Machin Ferrero et al., 2022; Apriyanto, 2019; Muslim & Darwis, 2017; Sondak et al., 2023; Zikopoulos, 2022). Indonesia has even launched a biofuel program using agricultural resources (Lubad, 2010). Yet, research rarely asks whether these derivatives meet community needs. For instance, bioethanol production may not be directly consumed, while VCO and coconut oil are produced without clear justification. Marketing theory suggests that products should satisfy human needs (Gamble et al., 2011), and recent studies highlight the importance of consumer-oriented approaches (Ganesh et al., 2020).

Thus, circular economy is not only about optimising production but also about ensuring products fit societal demand (Geissdoerfer et al., 2018; Corvellec et al., 2022; EPA, 2023; De Angelis et al., 2018). This is particularly relevant in rural areas, which face constraints in technology, finance, and skilled labour compared to urban industries (Wuryaningrat et al., 2017, 2023). Therefore, there is a need for a circular economy model adapted to rural limitations to support local economic welfare in Indonesia.

2. Literature Review

Indonesia's economic development has shown consistent growth, yet evidence from 1990–2014 indicates that this growth is not always sustainable (Kurniawan & Managi, 2018). Regional disparities persist, with Western Indonesia more advanced in economy, technology, and human resources (Statistics Indonesia, 2019). In North Sulawesi, many villages remain disconnected from the internet, limiting technological potential. Despite this, villages such as Lalumpe maintain vibrant agricultural activities, producing copra, cloves, rice, and pigs. However, most agricultural businesses remain upstream-focused, selling products directly without processing them into higher-value derivatives. The

circular economy, which minimises waste through derivative product development, is therefore not yet fully visible.

Circular economy creates regenerative systems by slowing, closing, and narrowing material and energy loops (Geissdoerfer et al., 2018). While not new, it has gained traction globally as a framework for economic, political, and social actors to address environmental challenges (Ghisellini et al., 2016). It is also linked to green supply chain management, where production involves all actors from producers to consumers (Hazen et al., 2020). The concept applies to rural economies as well, helping reduce waste and improve environmental health (Bhunia et al., 2022; Mihai et al., 2021; Surya Adnyani et al., 2023; Vinti & Vaccari, 2022; Wang et al., 2018) while contributing to poverty reduction (Barrett et al., 2005; Leal Filho et al., 2020; Si et al., 2021; Zhang et al., 2020). Yet, many rural resources remain underutilised. Developing agricultural derivative products can reduce waste, but these must match community needs. Otherwise, products risk being irrelevant (Gamble et al., 2011; Ganesh et al., 2020). Marketing more widely requires resources and competitiveness, thus two or three relevant derivatives are better than many unused ones. When agricultural products are processed and consumed locally, they create an internal economic cycle. Such community-based development empowers rural communities, requires collective participation, and preserves local knowledge and social cohesion (Nugraha & Maryono, 2018).

Figure 1 illustrates the mapalus circular economy supply chain, starting from planting and harvesting through production, distribution, and consumption. Success requires collaboration, kinship-based cooperation, and support from governments, resources, and education. Other countries have transformed coconuts into 20–30 derivatives, first consumed locally and later exported (Peng & Zhang, 2021). Similarly, China's rise highlights the role of domestic consumption, as seen in Huawei's resilience after the 2019 U.S. ban, supported by its domestic market (Peng & Zhang, 2021).

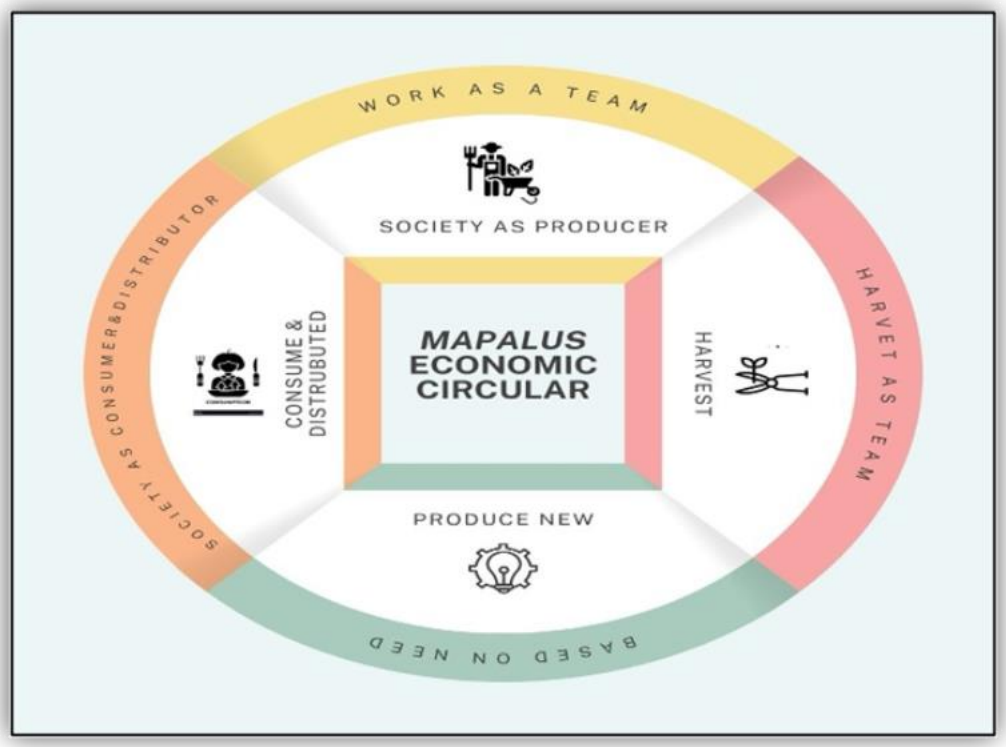

Figure 1. Mapalus Circular Economy Model

3. Discussion

Indonesia has experienced consistent economic growth, yet evidence from 1990–2014 indicates that such progress does not always guarantee sustainability (Kurniawan & Managi, 2018). Regional disparities remain evident, as Western Indonesia demonstrates greater advances in economic capacity, technology, and human resources compared to other regions (Statistics Indonesia, 2019). In North Sulawesi, for instance, many villages remain disconnected from the internet, limiting technological integration, though agriculture remains vibrant with commodities such as copra, cloves, rice, and pig farming. However, most activities remain upstream-oriented, as products are sold without further processing into value-added derivatives, leaving the circular economy largely underdeveloped.

The circular economy emphasises regenerative systems by minimising waste and resource use through strategies of slowing, closing, and narrowing loops (Geissdoerfer et al., 2018). While not new, it has emerged as a global framework for economic, political, and social actors to address environmental challenges (Ghisellini et al., 2016), closely linked to green supply chain management where production involves all stakeholders (Hazen et al., 2020). In rural contexts, circular approaches support waste reduction, environmental health (Bhunia et al., 2022; Mihai et al., 2021; Surya Adnyani et al., 2023; Vinti & Vaccari, 2022; Wang et al., 2018), and poverty alleviation (Barrett et al., 2005; Leal Filho et al., 2020; Si et al., 2021; Zhang et al., 2020). Yet, many local resources remain underutilised. Developing derivative agricultural products can create local economic cycles and strengthen social cohesion, provided they align with community needs (Nugraha & Maryono, 2018).

Experiences from other countries demonstrate the potential of transforming agricultural commodities into multiple derivatives that initially serve local consumption and later evolve into export products (Peng & Zhang, 2021). Moreover, China's economic transformation highlights the role of domestic empowerment and market resilience, exemplified by Huawei's ability to sustain global competitiveness after the 2019 U.S. ban (Peng & Zhang, 2021).

Some of the research referenced in this study posits that a circular economy is crucial for both economic and environmental sustainability. Furthermore, the results of previous research indicate that derivative products derived from agricultural products are a viable option. However, there is no clear evidence that these derivative products are products that have been developed based on community needs. In this study, a circular economic model is introduced that enables the community to not directly sell their agricultural products to the market but to develop derivative products of agricultural products that meet the community's needs. In other words, the *mapalus* circular economic is a model that aims to position the village community as both producers and consumers.

This can be achieved through the *mapalus* tradition, which necessitates the full participation and collaboration of the village community. This model aims to help village communities develop and consume their agricultural derivative products, leveraging the *mapalus* tradition of community collaboration. In other words, it can be concluded that the model being introduced places the main focus on the village community, with the objective of benefiting the village community as a whole.

The current state of this study is that it is in its initial form. The *mapalus* circular economic model has been developed based solely on a literature review. As of now, there is no empirical evidence from field research to validate the model, indicating a significant need for further investigation. To establish the validity and effectiveness of the *mapalus* circular economic model, it is crucial to continue this research with comprehensive field studies. It is imperative that the model undergoes empirical validation to ensure that it meets the needs of the community and can be effectively implemented in real-world settings. Moreover, the preservation of the indigenous tradition of *mapalus* represents another crucial issue that renders the continuation of this study imperative. Further research has been initiated with the objective of testing the model in a qualitative exploratory study conducted in the villages of Lalumpe and Keroit in South Minahasa District, Indonesia. The communities in these villages continue to adhere to the *mapalus* tradition, yet face challenges in fully exploiting the agricultural potential of their local produce.

References

Barrett, C. B., Reardon, T., & Webb, P. (2005). Nonfarm income diversification and household livelihood strategies in rural Africa: Concepts, dynamics, and policy implications. Food Policy, 26(4), 315–331. https://doi.org/10.1016/S0306-9192(01)00014-8

Bhunia, P., Sinha, A., Rathi, S., & Hazra, T. (2022). Waste management in rural areas: A review. Waste Management & Research, 40(1), 3–15. https://doi.org/10.1177/0734242X211044002

Geissdoerfer, M., Savaget, P., Bocken, N. M. P., & Hultink, E. J. (2018). The Circular Economy – A new sustainability paradigm? Journal of Cleaner Production, 143, 757–768. https://doi.org/10.1016/j.jclepro.2016.12.048

Ghisellini, P., Cialani, C., & Ulgiati, S. (2016). A review on circular economy: The expected transition to a balanced interplay of environmental and economic systems. Journal of Cleaner Production, 114, 11–32. https://doi.org/10.1016/j.jclepro.2015.09.007

Hazen, B. T., Russo, I., Confente, I., & Pellathy, D. A. (2020). Supply chain management for circular economy: Conceptual framework and research agenda. International Journal of Logistics Management, 31(2), 456–474. https://doi.org/10.1108/IJLM-12-2018-0329

Kurniawan, R., & Managi, S. (2018). Economic growth and sustainable development in Indonesia: An assessment. Environmental Economics and Policy Studies, 20, 1–22. https://doi.org/10.1007/s10018-017-0184-5

Leal Filho, W., Brandli, L., Becker, D., & Skanavis, C. (2020). Sustainability and poverty in developing countries: Challenges and opportunities. Sustainability, 12(3), 1–17. https://doi.org/10.3390/su12031102

Mihai, F.-C., Gnoni, M. G., Meidiana, C., & Ezeah, C. (2021). Waste management in rural areas: A global overview. Environmental Engineering and Management Journal, 20(5), 623–634. https://doi.org/10.30638/eemj.2021.057

Nugraha, B., & Maryono, M. (2018). Community participation in rural development: Empowering local resources for sustainable economy. Journal of Rural Development, 37(2), 145–160.

Peng, Y., & Zhang, Y. (2021). Circular economy practices in China: Lessons from the development of the coconut and technology sectors. Sustainability, 13(6), 1–15. https://doi.org/10.3390/su13063205

Si, Z., Scott, S., & McCordic, C. (2021). Rural livelihoods and food security in the context of circular economy. World Development, 137, 105–182. https://doi.org/10.1016/j.worlddev.2020.105182

Statistics Indonesia. (2019). Human development index by province 2019. Badan Pusat Statistik. https://www.bps.go.id

Surya Adnyani, N. P., Astawa, I. B. M., & Sudarmadewi, A. A. I. (2023). Circular economy in rural communities: Strategies for sustainable agriculture. Journal of Environmental Science and Sustainable Development, 6(1), 12–25.

Vinti, G., & Vaccari, M. (2022). Waste management in rural areas and its role in achieving sustainable development goals. Sustainability, 14(9), 1–18. https://doi.org/10.3390/su14095288

Wang, H., Liu, X., & Zhang, J. (2018). Waste management and circular economy in rural China. Journal of Cleaner Production, 197, 1228–1238. https://doi.org/10.1016/j.jclepro.2018.06.123

Zhang, D., Li, Y., & Wang, X. (2020). Circular economy and poverty alleviation: Evidence from rural communities. Resources, Conservation and Recycling, 162, 105–126. https://doi.org/10.1016/j.resconrec.2020.105126