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# Economic Empowerment Strategies Through Entrepreneurship in Reducing Household Waste

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**Abstract**

Household waste mismanagement remains a pressing issue in many regions, including Darul Imarah, Aceh Besar, Indonesia, leading to environmental degradation, health risks, and inefficient land use. Despite the persistence of poor waste management practices, community-driven entrepreneurial initiatives have emerged as an alternative pathway to strengthen the local economy and foster environmental awareness. This study aims to explore economic empowerment strategies through entrepreneurship to reduce household waste and promote community welfare. Employing a qualitative approach, data were collected via semi-structured interviews, focus group discussions, and document analysis involving 50 purposively selected participants, including entrepreneurs, community members, government officials, and environmental experts. Findings reveal that waste-based entrepreneurship has increased household income by 20–30%, generated over 100 jobs within two years, and reduced waste volume entering landfills by up to 35%. Compost production yielded the highest income growth (30%) and waste reduction (40%). Despite these benefits, challenges such as limited access to capital, inadequate infrastructure, and market barriers persist. This study contributes novelty by integrating the concepts of shared value and social business to show how local entrepreneurship can simultaneously drive economic and environmental outcomes. It also incorporates bibliometric mapping to visualize key thematic relationships in the field. In conclusion, a collaborative, policy-supported approach involving the government, private sector, and communities is crucial to sustaining waste-based entrepreneurship as a scalable model for green economic empowerment.

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## INTRODUCTION

The Sustainable Development Goals (SDGs), particularly Goal 11 (Sustainable Cities and Communities) and Goal 12 (Responsible Consumption and Production), emphasize the importance of sustainable waste management in supporting inclusive and environmentally friendly development (Budiman & Jaelani, 2023; Fatimah et al., 2020). However, in practice, household waste management in many developing countries continues to face serious challenges. According to the United Nations Environment Programme (2020), approximately 2 billion tons of municipal solid waste are generated annually worldwide, with more than 33% not managed safely. In several major cities in Southeast Asia, for instance, household waste is often burned in backyards, producing harmful air pollution, while in Sub-Saharan Africa, much of the waste ends up in open dumps that contaminate soil and water sources. These practices contribute to environmental pollution, public health hazards, and inefficient land use. The inability of waste management infrastructure to cope with increasing volumes of waste exacerbates the problem, particularly in

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regions lacking integrated systems (Sahrani et al., 2025). Therefore, solutions are required that not only address waste-related issues but also create economic opportunities for communities.

Circular economy and green entrepreneurship approaches have emerged as innovative alternatives for waste management. The circular economy emphasizes waste reduction through recycling, reuse, and efficient resource utilization (Kaur et al., 2024). Several studies have shown that community-based waste management programs, such as Waste Banks (*Bank Sampah*), can increase income and community engagement (Apriansah et al., 2025; Devi et al., 2024; Aisyah & Irwanuddin, 2025; Sofyan, 2024; Susantrin et al., 2025). However, the implementation of this approach is still limited to certain areas and often does not fully consider local conditions. This means that community-based waste management programs such as Waste Banks generally develop in large cities with adequate infrastructure, but have not yet reached many rural or semi-urban areas. For example, in several villages in Aceh, communities have struggled to implement the Waste Bank system due to a lack of transportation facilities, low public awareness about waste sorting, and the lack of a stable market for recycled products (Susantrin et al., 2025).

Furthermore, previous research has not sufficiently integrated social entrepreneurship models into household waste management, particularly at the village or sub-district level. These studies have focused more on community empowerment through a Waste Bank approach that emphasizes citizen participation, environmental education, and generating additional income. For example, Asteria & Heruman, (2016) studied the Pucuk Resik Waste Bank in Tasikmalaya, which successfully reduced waste generation and provided economic benefits to residents. However, it was limited to a waste savings scheme and did not yet lead to the development of social entrepreneurship. Research by Apriansah et al., (2025) showed that the Waste Bank in Rancamulya Village was able to increase household income, but its orientation remained focused on additional economic functions, rather than on developing sustainable social enterprises. Devi et al., (2024) study in Probolinggo even highlighted the social empowerment of housewives through the Waste Bank, but emphasized social solidarity rather than the creation of an independent social business model. Thus, there is still room to examine in more depth how the social entrepreneurship model can be integrated into household waste management, especially at the village community level, so that it not only creates environmental benefits but also builds economic independence based on social enterprises.

The context of Aceh Besar, specifically Darul Imarah Subdistrict, shows the common challenges faced by semi-urban areas in managing household waste. The lack of adequate waste collection and processing systems has led to increased illegal dumping and environmental health risks. Studies in Darul Imarah have also shown that limited household waste management facilities have resulted in open dumping and burning practices among the community (Sofia et al., 2021). Community participation in recycling activities remains low due to limited education and supporting infrastructure. This situation highlights the urgency of developing economic empowerment strategies through entrepreneurship in waste management (Alodwan et al., 2024). Although poor waste management practices persist, community-based entrepreneurial initiatives have begun to emerge as alternative pathways to strengthen the local economy and foster environmental awareness.

While numerous studies have addressed economic empowerment through waste-based entrepreneurship, most existing research tends to focus on generalized models such as *Bank Sampah* (Susantrin et al., 2025), frugal innovation (Shahid et al., 2023), or MSME digitalization in industrial contexts (Mondal et al., 2023). Although these studies contribute valuable insights, they lack a contextual focus on household-level initiatives in rural or semi-urban settings, particularly within Aceh. Research by Gayatri et al. (2017) and Hardaningrum (2015) highlights community empowerment through creative recycling and social entrepreneurship, but remains limited in scale, without empirical measurement of economic impact (e.g., income or employment growth). Moreover, despite increasing interest in circular economy and sustainability, few studies have explicitly integrated shared value frameworks (Porter & Kramer, 2011) or social business models (Yunus, 2010) into localized waste management entrepreneurship. This leaves a research gap regarding how these theories can be practically applied to empower marginalized communities economically while addressing environmental issues.

A bibliometric mapping using VOSviewer also illustrates recent developments in studies on waste-based entrepreneurship, economic empowerment strategies, and the circular economy (see Figure 1). The visualization highlights frequently occurring keywords such as waste management, social entrepreneurship, circular economy, and community empowerment, as well as the interconnections among these themes. It reveals that previous research has predominantly focused on the technical aspects of waste management and *Waste Bank* programs, while the integration of social entrepreneurship and the *shared value* approach in the context of household waste management remains underexplored. Thus, this bibliometric analysis not only clarifies the positioning of this study within the literature but also emphasizes the research gap it seeks to address.

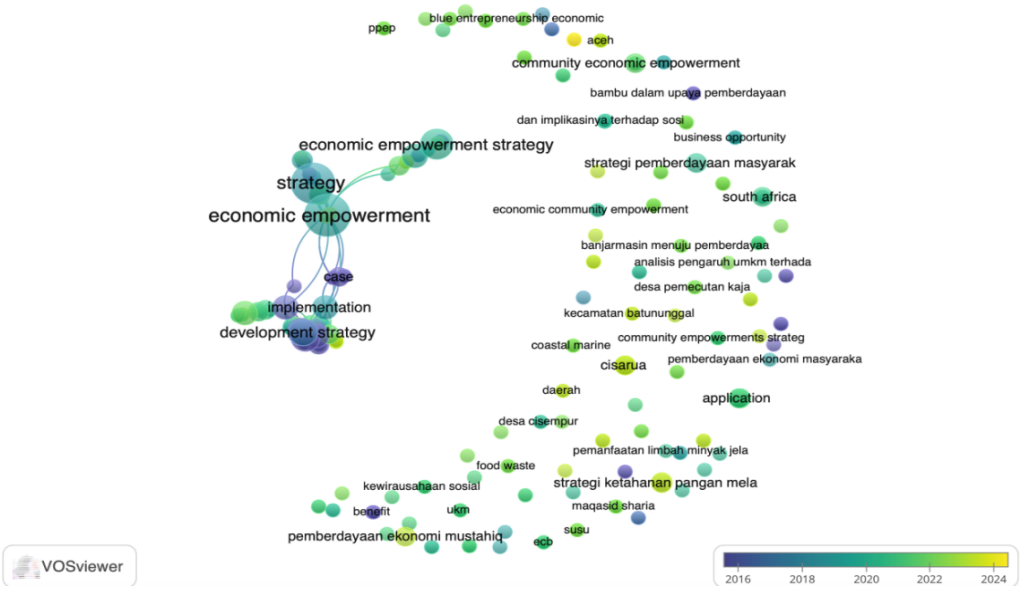


**Figure 1.** Bibliometric Analysis and Relationship Mapping of Economic Empowerment Strategies Through Entrepreneurship in Reducing Household Waste

This study addresses a research gap in the limited number of studies integrating social entrepreneurship into household waste management in rural areas, particularly in Darul Imarah, Aceh Besar. Prior research has focused primarily on the Waste Bank approach or community participation, but has not adequately linked these approaches to an entrepreneurial framework capable of simultaneously delivering economic, social, and environmental benefits. The novelty of this study lies in presenting location-specific empirical analysis supported by measurable socioeconomic and environmental indicators, while uniquely incorporating bibliometric mapping using VOSviewer to identify conceptual linkages and research gaps in the literature. The integration of the shared value framework (Porter & Kramer, 2011) and the social business model (Yunus, 2010) strengthens the theoretical foundation of this study and demonstrates how waste-based entrepreneurship can address multidimensional challenges.

Based on this foundation, the objectives of this study are to analyze the effectiveness of entrepreneurial initiatives in transforming household waste into tangible economic opportunities and to assess the extent to which local policies and practices support or hinder community-based waste management. Overall, this research makes practical and conceptual contributions by offering a replicable waste management model in developing regions, while expanding the discourse on the circular economy, sustainable entrepreneurship, and community empowerment.

## METHOD

This study adopted a qualitative exploratory approach to examine how entrepreneurship practices in household waste management contribute to community economic empowerment in Darul Imarah, Aceh Besar. The qualitative method was chosen because it enables researchers to

deeply explore participants' experiences, community dynamics, and socio-environmental changes (Creswell & Poth, 2018). The research design was adapted and modified from Yin's (2018) multiple case study model, integrating a grounded understanding of local entrepreneurial efforts in managing waste. This study aims to generate contextual knowledge and theoretical insights by analyzing how circular economy principles and social business models are implemented at the grassroots level. The qualitative approach is appropriate for the study's goal of constructing meaning from human interaction, identifying socio-economic outcomes, and assessing policy implications.

Participants were selected using purposive sampling (Patton, 2015), targeting individuals who are actively engaged or knowledgeable in community-based waste entrepreneurship. A total of 50 participants were included, categorized into four stakeholder groups: 20 waste-based entrepreneurs, 15 community members involved in waste initiatives, 10 representatives from government and NGOs, and 5 experts from academia and environmental organizations. Inclusion criteria required active or past involvement in waste recycling, environmental entrepreneurship, or policy development at the local level. Exclusion criteria included individuals with no engagement in waste-related practices or who declined participation in data collection activities. The sampling process ensured data richness and relevance to address the research objectives, which focus on economic empowerment, environmental outcomes, and stakeholder collaboration.

Data collection was conducted for three months using three main techniques: semi-structured interviews, focus group discussions (FGDs), and document analysis. Semi-structured interviews(Bryman, 2016) were conducted with 30 individuals across the four stakeholder groups. Each interview lasted 45–60 minutes and explored themes such as entrepreneurial motivation, income impact, market access, environmental awareness, and policy support. Interviews were recorded (with consent), transcribed verbatim, and translated where necessary. FGDs were held three times, each with 6–8 participants, following a guided protocol based on Krueger & Casey (Krueger & Casey, 2015), and were used to explore community participation, barriers to scaling waste-based businesses, and proposed interventions. Document analysis (Bowen & Thompson, 2009) was used to examine local government waste reports, NGO program evaluations, and academic sources to validate field data and provide background context.

The research instrument consisted of a semi-structured interview guide and FGD framework developed from previous literature and modified to reflect the local socio-economic conditions (Krueger & Casey, 2015). Key themes included: income generation, employment creation, waste reduction practices, and institutional support. These tools were piloted on a small sample and revised to improve clarity and cultural appropriateness. All instruments were designed to be open-ended to allow the emergence of unanticipated insights relevant to circular economy and social entrepreneurship principles.

Data were analyzed using thematic analysis, following Braun and Clarke's (2006) six-phase framework: data familiarization, initial code generation, searching for themes, reviewing themes, defining/naming themes, and report writing. Codes were manually and inductively developed based on repeated ideas and patterns emerging from the data. Themes such as "economic transformation," "social inclusion," "policy and access barriers," and "environmental impact" were categorized and interpreted using a modified version of the grounded theory approach. Triangulation (Denzin, 2012) was applied by comparing findings from interviews, FGDs, and documents, while member checking was conducted by sharing preliminary results with selected participants to ensure credibility and validity.

Through this methodological approach, the study ensures rigor, contextual relevance, and theoretical contribution. The integration of empirical stakeholder voices with documentary evidence provides a comprehensive analysis of waste-based entrepreneurship as a strategy for sustainable economic empowerment. By modifying established qualitative research models and aligning them with the research objectives, this study contributes to the evolving field of community-driven environmental entrepreneurship in Indonesia and supports SDG targets 11 and 12. To clarify the stages taken in this research, the following presents the research procedures for exploring economic empowerment through waste management, which describe the workflow from problem formulation to analysis of results.

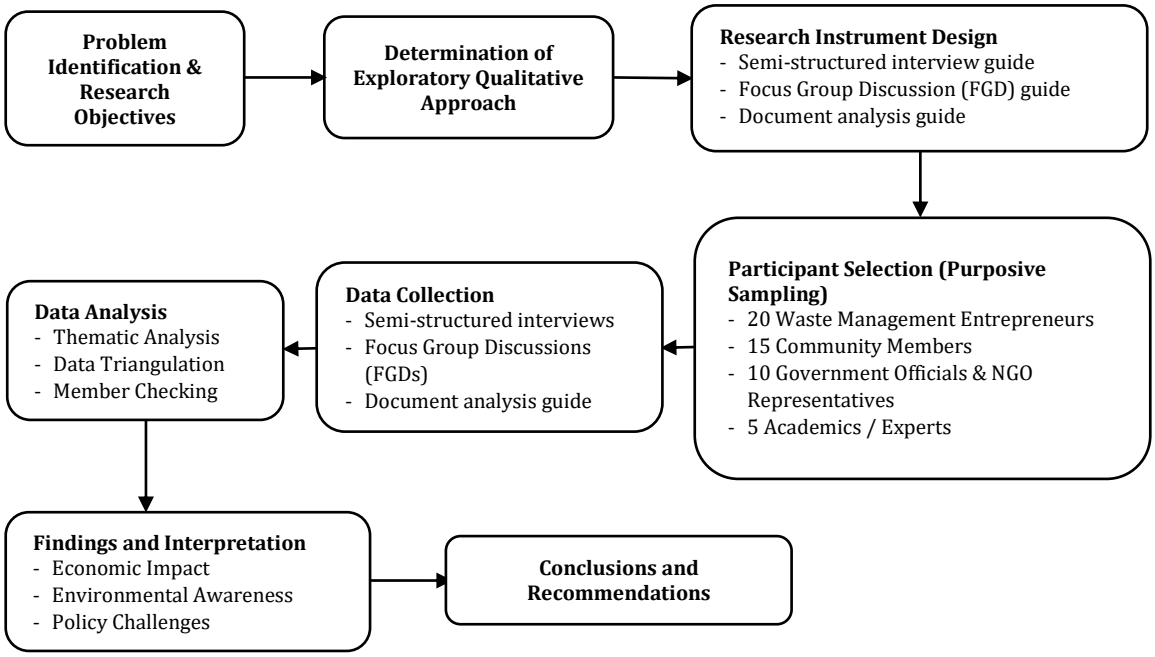


**Figure 2.** Research Procedures for Exploring Economic Empowerment through Waste Management

## RESULTS AND DISCUSSION

This study examines the impact of waste-based entrepreneurship on household income, employment opportunities, and waste reduction in Darul Imarah, Aceh Besar, through a qualitative lens grounded in the frameworks of shared value and social business. Utilizing data from in-depth interviews, focus group discussions (FGDs), and document analysis, the study reveals how locally initiated waste management enterprises have transformed both economic livelihoods and environmental practices. Waste-based entrepreneurship has emerged not merely as a livelihood strategy but as a vehicle for social empowerment, economic inclusion, and behavioral change about environmental sustainability. The findings demonstrate that such initiatives can foster inclusive growth by enabling low-income groups particularly women and informal workers to participate actively in the green economy. However, the degree of impact varies significantly based on the type of entrepreneurial activity, access to resources, and the extent of institutional and policy support available. These variations suggest the importance of contextualized strategies, flexible business models, and community engagement in ensuring the long-term viability and scalability of waste-based entrepreneurial ventures.

### Economic Impact

These findings indicate that households involved in waste-based businesses experienced a 20–30% increase in monthly income. It is important to note that this increase was not the result of a specific intervention provided by the researchers, but rather a reflection of existing entrepreneurial activities within the community. This increase largely stemmed from the production and sale of recycled products, including eco-friendly bags, compost, and handicrafts. These activities provide additional income sources for the community particularly women and low-income households and demonstrate the potential for sustainable economic practices born from local initiatives.

However, income growth varied depending on the type and scale of the business. For example, entrepreneurs focused on compost production reported more consistent income compared to recycled product artisans, who are more vulnerable to fluctuations in market demand. This aligns with previous studies that the stability of income streams is a key factor in the sustainability of waste-based businesses, particularly in resource-constrained areas (Apriansah et

al., 2025). To clarify this variation, the following table presents the average monthly income increase by business type based on collected field data.

**Table 1.** Presents a breakdown of the income variations based on business type

| Business Type | Average Monthly Income Increase |
|---|---|
| Compost Production | 30% |
| Eco-friendly Bags | 25% |
| Handicrafts (Upcycling) | 20% |

Table 1 illustrates the variations in average monthly income increase among households involved in different types of waste-based businesses. Compost production shows the highest income growth, with a 30% monthly increase, followed by eco-friendly bag production at 25%, and handicrafts from upcycled materials at 20%. This variation reflects the differing levels of market demand, production consistency, and operational sustainability associated with each type of business. Composting, for example, tends to generate a steady income due to constant organic waste availability and growing demand for organic fertilizers in local agriculture. In contrast, handicraft-based businesses often rely on seasonal markets or exhibitions, leading to fluctuating revenues.

The data also suggest that compost production offers not only higher but also more stable financial returns, making it a promising entry point for long-term waste-based entrepreneurship. Meanwhile, the production of eco-friendly bags appears to offer a moderate balance between income potential and market reach, especially when supported by local environmental campaigns. Although handicraft businesses generate lower average increases, they remain important in promoting creativity and community engagement in recycling practices. These differences underscore the need for targeted support and tailored business development strategies, depending on the specific type of waste-based enterprise. Understanding these distinctions is essential for policymakers and NGOs aiming to enhance economic empowerment through environmentally driven entrepreneurship.

## Waste Reduction and Environmental Awareness

In addition to its economic benefits, waste-based entrepreneurship has also contributed substantially to improving environmental conditions in Darul Imarah. One of the most notable impacts is the significant reduction in household waste volume, particularly in areas where community members have actively participated in recycling and composting initiatives. These improvements suggest that entrepreneurial efforts in waste processing can serve as practical solutions to local environmental challenges, especially when supported by community education and awareness programs. To better understand the environmental outcomes, this study categorized waste reduction rates by business type, revealing how different approaches to waste management produce varying levels of environmental benefit. The table below provides a comparative overview of the waste reduction achieved by compost production, plastic recycling, and upcycled handicrafts.

**Table 2.** Provides A Comparison of Waste Reduction Rates Based on Business Type

| Business Type Waste Reduction | % | Main Products Produced |
|---|---|---|
| Compost Production | 40% | Organic compost fertilizer for agriculture and plantations |
| Plastic Recycling | 35% | Eco-friendly shopping bags, plant pots, and recycled plastic paving blocks |
| Handicrafts (Upcycling) | 25% | Household accessories, wallets, small bags, and interior decorations from plastic/textile waste |

The data in Table 2 illustrates the varying degrees of waste reduction achieved by different types of waste-based entrepreneurial activities in Darul Imarah. Compost production leads with the highest waste reduction rate at 40%, indicating that organic waste management practices have a strong impact on minimizing landfill use. Plastic recycling follows closely with a 35% reduction, suggesting that initiatives targeting non-biodegradable waste are also effective in curbing environmental pollution. Upcycled handicrafts contribute a 25% reduction, which, while still significant, reflects the limitations of small-scale or craft-based recycling in diverting large volumes

of waste. These figures highlight the importance of integrating both high-volume processing methods and creative reuse strategies to achieve comprehensive waste reduction.

Furthermore, the disparity in waste reduction outcomes reflects differences in raw material availability, production scale, and community engagement. Composting tends to be more accessible and widely adopted due to the abundance of organic household waste and relatively simple processing methods. In contrast, handicraft production depends heavily on market demand and artisanal skills, which may limit its scalability. The success of plastic recycling is often linked to infrastructure support, such as collection systems and sorting facilities. These findings emphasize the need for diverse and locally tailored waste management approaches that combine environmental effectiveness with economic feasibility.

Despite this, waste management in Darul Imarah still faces structural challenges, but certain community groups have been able to develop effective local solutions. Thus, these findings illustrate that even though the overall waste management system is suboptimal, community-based entrepreneurial initiatives can have measurable positive impacts on a limited scale.

**External Factors Influencing Results**

External factors have played a pivotal role in shaping the outcomes of waste-based entrepreneurship initiatives in Darul Imarah. One of the most pressing challenges is limited access to startup capital. According to interview data, approximately 70% of micro-entrepreneurs in this sector face difficulties in securing initial funding to purchase equipment, raw materials, and workspace. This financial constraint often hampers business growth and innovation, especially among low-income individuals and women entrepreneurs who lack collateral or a formal credit history. The absence of microfinance institutions tailored to waste-based enterprises further exacerbates the issue. As a result, many potential entrepreneurs are unable to scale up their operations or invest in more efficient production methods that could enhance profitability and sustainability.

In addition to financial barriers, fluctuating market demand for recycled products significantly affects business continuity, particularly for enterprises producing upcycled handicrafts. These businesses are highly dependent on consumer trends, seasonal sales, and access to digital or local markets. Entrepreneurs expressed concerns about inconsistent buyer interest and a lack of promotional platforms to showcase their products. Furthermore, the absence of formalized waste management policies and limited government support creates a regulatory vacuum that fails to incentivize green business practices. Policy interventions, such as subsidies, tax incentives, and government-backed procurement of recycled products, could address these gaps and provide a stable ecosystem for waste-based businesses to thrive. The findings suggest that without structural and institutional support, the potential of waste-based entrepreneurship to drive sustainable development may remain underutilized.

**DISCUSSION**

The results of this study demonstrate that waste-based entrepreneurship in Darul Imarah can provide dual contributions, both economically and environmentally. However, as explained in the introduction, waste management in this region generally still faces limited infrastructure, gaps in public awareness, and a lack of integration of government programs with local initiatives. Therefore, the findings of this study should be understood as a representation of community groups that have successfully organized themselves, rather than a comprehensive picture of the region's conditions.

Based on the research findings, the strategy for economic empowerment through waste-based entrepreneurship can be clearly formulated through three main approaches. First, community capacity building is carried out through entrepreneurship training, technical assistance, and improving production skills so that communities are able to manage waste independently and with a business orientation. Second, integration with the household waste management system can be realized through strengthening waste banks, local cooperatives, or community-based incentive schemes, so that entrepreneurial activities are connected to the broader waste management system. Third, policy and infrastructure support is essential, including the provision of better waste collection systems, adequate access to capital, and regulations that support the creation of markets

for recycled products. This strategy aligns with the shared value framework (Porter & Kramer, 2011) and the social business model (Yunus, 2010), which emphasizes that entrepreneurship can simultaneously bridge economic, social, and environmental goals. With a clear strategy formulation, this research provides practical guidance for the development of waste-based entrepreneurship models in other regions facing similar challenges.

From an economic perspective, household involvement in the production of compost, eco-friendly bags, and upcycling crafts has been shown to increase income by 20–30% and create over 100 new jobs. These achievements demonstrate that entrepreneurship-based empowerment strategies can be a means of improving community welfare, particularly for women and low-income families. This also strengthens the argument that a stable income stream from waste-based businesses is a crucial factor for sustainability (Prasetyo et al., 2021). This finding affirms Porter and Kramer's (2011) theory of *shared value*, wherein business activities are designed not solely for profit but also to tackle societal challenges. The reported job creation with over 100 new employment opportunities for housewives and informal workers mirrors similar results found in Susantrin et al.'s (2025) systematic review of *Bank Sampah* programs, where waste-based microenterprises contributed to economic inclusion and local development.

From an environmental perspective, waste-based entrepreneurship practices have been shown to reduce household waste volume by up to 35%, primarily through the production of compost, which absorbs large amounts of organic waste. These results confirm that local initiatives can be a partial solution to broader problems, as emphasized in the introduction regarding the persistently high waste generation in Darul Imarah. However, their effectiveness depends heavily on the scale of the business, the availability of raw materials, and the support of the waste collection system. This aligns with the principles of the circular economy, which emphasizes maximizing resource use efficiency and minimizing waste (Lestary & Hadi, 2021; Sukoco et al., 2024). Kartini et al. (2024) also highlight how community involvement in waste segregation fosters environmental stewardship and social capital. In Darul Imarah, these results suggest that economic and ecological goals can be simultaneously pursued through bottom-up initiatives. This further supports the findings of Lestary and Hadi (2021), who documented the success of *BUMDes* in catalyzing sustainable development through community-led initiatives, especially in rural and semi-urban areas.

Strategically, this research indicates that economic empowerment through waste-based entrepreneurship can be implemented with three main approaches: (1) strengthening community capacity through entrepreneurship training and mentoring, (2) integrating entrepreneurship with household waste management systems, for example through waste bank programs and local cooperatives, and (3) policy and infrastructure support from local governments to expand positive impacts which are currently still limited.

Despite these positive developments, several systemic challenges threaten the scalability and sustainability of these initiatives. Foremost among them is limited access to capital. The findings indicate that 70% of the entrepreneurs struggle with startup investment, echoing similar observations by Mondal et al. (2023) and Gudadur et al. (2023), who emphasized the importance of technology infrastructure, financial subsidies, and dynamic digital capacity in enabling green entrepreneurship. In Darul Imarah, insufficient funding hinders the acquisition of equipment and raw materials, restricting production capacity. Moreover, while digitalization is recognized as a sustainability driver, its absence in these microenterprises limits growth potential, particularly for handicraft-based entrepreneurs who rely on market exposure and seasonal demand.

The infrastructural inadequacies further exacerbate these challenges. Inadequate waste collection systems and the lack of proper recycling facilities compromise the efficiency of existing waste-based businesses. These conditions mirror Mashudi et al.'s (2023) findings that point to the correlation between recycling infrastructure and operational sustainability. Similarly, Sugiharto (2021) and Anamika, and Malhotra (2024) note the persistent barriers to market access for small enterprises due to limited digital marketing literacy and integration with e-commerce platforms. The situation in Darul Imarah suggests that without strategic investments in logistics and digital enablement, waste-based enterprises may remain confined to hyper-local markets, limiting their growth and impact.

Government policy and institutional support play a critical role in shaping the future of waste-based entrepreneurship. While national and local waste management regulations provide a general framework, implementation gaps remain pronounced. The Ministry of Environment and Forestry (2020) reported that many local governments fail to match regulatory ambition with actionable financial and infrastructural commitments. In the context of Darul Imarah, this means that entrepreneurs operate within policy environments that lack adequate funding support, incentives, and simplified bureaucratic processes. Furthermore, existing community empowerment programs often miss the opportunity to embed sustainability practices and entrepreneurship training, limiting their long-term effectiveness (Adenutsi, 2023).

The study shows that low-cost, resource-efficient innovations can drive sustainable entrepreneurship in contexts marked by scarcity and informality. In Darul Imarah, for instance, many entrepreneurs utilize simple, cost-effective production techniques that combine traditional knowledge with modern sustainability values. The use of decoupage techniques in handicrafts, as seen in Putri et al.'s (2022) work with housewives in Kendari, illustrates how creativity and resourcefulness can overcome limitations in capital and infrastructure. Such practices affirm the potential of grassroots innovation as a catalyst for economic empowerment and environmental resilience.

Social entrepreneurship is another relevant framework for interpreting the findings of this study. Agamuthu and Babel (2023) emphasized the role of social entrepreneurship in reducing dependency on formal employment and empowering communities to create their economic opportunities. In Darul Imarah, waste-based enterprises operate not only as income generators but also as platforms for community education and behavior change. This dual function contributes to the long-term sustainability of the initiative and echoes the goals of *social business* as conceptualized by Yunus (2010), where enterprises are designed to solve social problems through sustainable market-based solutions (Dhiman, 2020).

From a gap analysis perspective, this study addresses several important voids in existing literature. First, while previous research often focused on the general benefits of recycling or community empowerment, few studies have explicitly examined how shared value and social business models intersect with circular economy principles in semi-urban Indonesian contexts. Second, the integration of bibliometric mapping to explore thematic gaps in waste-based entrepreneurship further strengthens the novelty of this research. Finally, by combining field-based qualitative data with policy and literature synthesis, this study provides a more grounded, localized understanding of how waste-based entrepreneurship can be leveraged for both socio-economic empowerment and environmental management. To enhance the long-term sustainability of these initiatives, several strategic recommendations emerge. First, multi-stakeholder collaboration involving government, NGOs, private investors, and academic institutions is essential to close the capital and infrastructure gaps. Second, tailored capacity-building programs on product innovation, digital literacy, and sustainable entrepreneurship are needed to boost the resilience and competitiveness of local businesses. Third, government policy should move beyond regulatory mandates to include incentive schemes, digital infrastructure support, and simplified licensing for waste-based enterprises. If implemented effectively, these recommendations could transform Darul Imarah into a replicable model of inclusive, sustainable development grounded in the principles of green entrepreneurship and circular economy.

In conclusion, waste-based entrepreneurship in Darul Imarah offers a compelling case of how community-driven initiatives can address the interlinked challenges of poverty, unemployment, and environmental degradation. By combining social innovation with circular economy strategies, and supported by enabling policies and infrastructure, such models can contribute significantly to the achievement of the Sustainable Development Goals (SDGs). The experiences from this region can serve as a valuable reference for other localities in Indonesia and beyond, especially those seeking low-cost, high-impact solutions to waste and livelihood challenges.

## LIMITATION

Although this study makes a significant contribution to explaining the economic empowerment strategy through household waste management-based entrepreneurship in Darul

Imarah, Aceh Besar, there are several limitations that need to be considered. *First*, the qualitative approach used makes the results of this study contextual and cannot be generalized widely to other areas with different social, economic, and cultural conditions. *Second*, the data collected only reflects conditions in a certain period, so it is not yet able to describe the long-term dynamics of the sustainability of waste-based businesses, especially related to market resilience and policy changes. *Third*, the involvement of informants is still limited to micro-entrepreneurs and local communities, so it has not explored further the role of the large-scale private sector, financial institutions, or the potential for strategic partnerships in supporting the recycling entrepreneurship ecosystem. *Fourth*, aspects of gender and social inclusion, especially the role of women and vulnerable groups in waste-based entrepreneurship activities, have not been the main focus of this study. In addition, the limitations of technological infrastructure and digital access faced by business actors have not been thoroughly explored, despite having a significant impact on the marketing of recycled products in the digital era. By considering these limitations, it is hoped that further research can use a mixed approach, expand the scope of the area, and include quantitative analysis to produce more comprehensive and widely applicable findings.

## CONCLUSION

The study's findings indicate that households involved in recycling businesses, particularly the production of compost, eco-friendly bags, and recycled crafts, experienced income growth of between 20% and 30%. Furthermore, more than 100 new jobs were created, particularly for marginalized groups such as housewives and low-income communities. In terms of environmental impact, the volume of household waste disposed of in landfills decreased by 35%, accompanied by increased public awareness about waste sorting and recycling. Furthermore, these findings confirm that such initiatives not only generate income but also encourage community participation, social responsibility, and sustainable behavior at the grassroots level. Furthermore, this study provides empirical evidence that small-scale, community-led circular economy models can function effectively even in areas with limited infrastructure, provided they receive adequate policy and institutional support.

The potential impact of implementing waste-based entrepreneurship more broadly is substantial. With the support of local governments, NGOs, and private stakeholders, this model can be replicated in other semi-urban or rural areas facing similar waste management and economic challenges. This model can stimulate microeconomic growth, reduce environmental pollution, and build local resilience. Furthermore, the integration of digital technology, training, and market access can further strengthen its impact, ensuring long-term sustainability and scalability.

The main contributions of this research include: (1) economic empowerment of vulnerable communities, (2) environmental improvement through waste reduction and increased recycling, and (3) policy recommendations related to access to funding, infrastructure, and capacity building. However, the research findings are limited to a specific community, requiring further study to broaden the scope, assess long-term impacts, and explore the role of public policy.

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