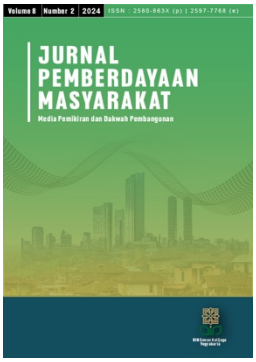

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From Waste to E-Money: The Role of Village-Owned Enterprise in Community Empowerment in Jember, Indonesia

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ABSTRACT

Waste management is a significant global challenge as waste volumes increase worldwide. International organizations like UNEP and the World Bank promote the circular economy and 3R (reduce, reuse, recycle) principles to mitigate waste's environmental impact. In Indonesia, similar challenges arise, notably in Jember Regency, which produced 370,362 tons of waste in 2022, making it the second-largest contributor in East Java. This reflects broader waste management issues in developing countries, where infrastructure and public awareness remain limited. This study explores how BUMDes (Village-Owned Enterprises) contribute to community empowerment through a waste-to-electronic-money program. This innovative approach not only supports sustainable waste management but aligns with global trends of incentivizing waste management through financial rewards, as seen in countries integrating waste management with the digital economy. By converting waste into electronic money credit, the program addresses waste issues while promoting economic empowerment. A qualitative approach was employed, with data collected through observation, interviews, and documentation. An interactive model was used to analyze how the BUMDes waste management system integrates with the global circular economy framework. The findings of this study reveal that BUMDes plays an important role in adopting community-based innovations that not only reduce waste volume but also encourage economic empowerment through financial incentive mechanisms. developing community potential, improving the regional economy, improving the institutional framework, and encouraging environmental sustainability through processing waste into electronic money.

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Waste Management, Community Empowerment, Public Policy, Village-Owned Enterprise, Stakeholder Collaboration

Introduction

The waste problem has become a major environmental issue in various countries, including Indonesia. Waste management is becoming increasingly important along with

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the increasing population and human activities that contribute to waste generation (Saputro et al., 2015). One way village development is put into practice is by maintaining and making the most of the outcomes of development initiatives (Helpiastuti, 2017). The preservation and utilization aim to improve the welfare of village communities through sustainable management of local resources, including effective village waste management to reduce environmental impacts and convert waste into useful products that can improve the community's economy. Various studies have examined waste management efforts to overcome this problem. For example, the results of research by (Wijayanti & Suryani, 2015) proposed an end-of-pipe approach and integrated management as a solution in waste management, but this approach still faces obstacles in implementation at the local level.

The end-of-pipe approach refers to a method that handles waste and pollution after it is produced, or at the end of the production cycle. Basically, this approach focuses on handling waste at the end of the flow, such as processing and disposing of waste in a final disposal site (TPA), rather than minimizing waste production at the source. Although this approach is still commonly used in many countries, including Indonesia, end-of-pipe is considered less effective because it does not target the root of the problem, namely the volume and composition of waste that continues to increase along with population and consumption growth.

Another study by (Khajuria, 2020) highlighted the importance of implementing the 3R principle (reduce, reuse, recycle) to reduce the environmental impact of waste generation. However, although this concept is widely known, its implementation in the field is still far from optimal. Many people have not consistently implemented this principle, and littering is still common. Globally, the challenges in waste management vary widely and depend on the infrastructure capacity, economic level, and regulations implemented by each country. Developed countries often face the problem of very high volumes of waste from excessive consumption, while developing countries, such as Indonesia, face challenges in terms of adequate management and infrastructure to process the increasing waste. For example, in many developing countries, access to landfills (TPA) is still limited, and most waste is still managed through open burning or indiscriminate dumping methods, which can pollute soil, air, and water (Olawade et al., 2023).

According to the National Waste Management Information System (Ministry of Environment and Forestry of the Republic Indonesia), Indonesia's total waste accumulation in 2022 reached 35 million tons. Meanwhile, East Java contributed 4.95 million tons, making it the third-largest waste-producing province in the country. Within East Java, Jember was second-largest contributor of waste, with total 370,362 tons in 2022. As reported by the *Radar Jember* (Safitri, 2022), the daily waste volume in Jember reached 1,250 tons in 2022, with only around 275 tons were transported to the landfills. The increasing population and the limited capacity of waste collection and disposal services have contributed to the growing waste problem. On the other hand, the availability of garbage trucks is insufficient, which is only 34 units. This number is not enough to reach the entire Jember area. Low public awareness in waste management is

also the cause of high waste generation in Jember. Waste management requires long and complex procedures, not only covering technical challenges but also management paradigms.

The solution to waste management extends beyond an end-of-pipe approach and requires an integrated management system involving waste reduction at the source, waste sorting, and recycling processes. Therefore, an effective environmental management system is essential (Wijayanti & Suryani, 2015). According on (Law Number 18 of 2008), stated that waste management must follow the 3Rs principle (reduce, reuse, recycle). Applying the 3Rs concept, alongside policies and technologies focused on resource efficiency, can minimize environmental impacts (Khajuria, 2020). However, the application of the 3Rs concept has not been fully optimized by the community. Many individuals continue to dispose of waste carelessly in waterways, along the roadside, or by burning it, making negative effects on the environment. Therefore, public understanding and awareness of waste management need to be improved, so that they can manage waste properly and foster a sense of concern for the environment. Waste has become a pressing public issue, necessitating attention from both the government and community. Therefore, the government holds responsibility for establishing waste management policies. Waste management regulation in Indonesia are outlined in Law Number 18 of 2018, which requires the national and regional governments to implement sustainable and environmentally friendly waste management practices. Therefore, waste management in Indonesia must start at the regional level. Additionally, (Ministry of Home Affairs Regulation Number 33 of 2010) mandates that regents and mayors issue regional waste management policies. In Jember, the waste management is regulated under Jember Regional Regulation No. 2 of 2023. The government is responsible for providing adequate waste management facilities and infrastructure to address growing waste problems. However, community participation and empowerment are equally important in ensuring the success of these efforts. Empowering the communities to manage waste at the source fosters a greater sense of ownership and environmental responsibility (Fahriani A. et al., 2016). Effective waste management cannot be achieved solely by the government. Public engagement is essential for addressing the increasing waste problem (Olawade et al., 2023). Environmental management should involve community-based facilities and strategies that enhance community access to environmental resources (Harjito et al., 2022). In this study, the role of Village-Owned Enterprise (BUMDes) in Jember is examined as mechanism for community empowerment in waste management. Village-Owned Enterprise is established to maximize local potential and empower communities. In rural areas, villages have the authority to manage waste independently. (Ministry of Village, Development of Disadvantaged Regions and Transmigration of Republic of Indonesia Regulation Number 8 of 2022) empowers villages to create, develop, and enhance Village-Owned Enterprise as part of national economic recovery efforts, including the establishments of waste management units. One example of this is the creation of waste bank as a waste management initiative. (Regional Regulation of

Jember Number 2 of 2023) states that in both the regional government and communities are encouraged to establish waste bank at the village level. These waste banks provide facilities for sorting waste and offer a sustainable solution for local waste management.

A waste bank is a community-driven waste management initiative that encourages and empowers people to take an active role in caring for the environment (Wijayanti & Suryani, 2015). Based on this, Village-Owned Enterprise management established a waste utilization unit, with the waste bank and waste processing which commenced in 2021. These two activities are integrated and interrelated. These activities represent an attempt to shift the community's perspective of waste. The activities bring a positive impact to shift the community's paradigm regarding waste and reduce waste management issues. According to the several explanations presented above, this research aims to investigate how Village-Owned Enterprise contribute to empowering the community in Jember in terms of waste management.

Literature Review

Community Empowerment

Community empowerment refers to the ability of individuals to collaborate efficiently within their community, aiming to enhance collective empowerment by exploring innovative approaches to community development (Suprapto, 2019). Empowerment involves a process of community learning, which serves a means to improve the quality of life within the community. Through this learning process, knowledge and skills are transferred from agents to those who need (Suprapto, 2019). (Anwas, 2013) states that empowerment carries the meaning of encouragement, motivation, guidance, or support in enhancing the community's ability to be self-reliant, where these efforts constitute a stage in the empowerment process in changing old behaviors to better new behaviors.

Based on several definitions above, community empowerment can be understood as an effort to engage community members in realizing their potential through a learning process, ultimately leading to an empowered community capable of improving their well-being and quality of life. In the context of human resource development, Mardikanto (as cited in Suprapto, 2019) outlines six key objectives of community empowerment: (1) institutional improvements; (2) business improvement; (3) increased income; (4) environmental improvement; (5) improvement of human life; (6) improvement of society.

Good Governance Paradigm in Community Empowerment

Good governance is a concept that refers to processes and principles used by the government to operate efficiently, transparently, and in alignment with the needs of stakeholders and the public. In general, good governance is defined as a theory that seeks to establish a balanced relationship among three crucial actors in the management and development of the state, namely the community, the government, and the private sector (Maksudi, 2018). In the context of empowerment from good governance perspective, the active participation of the community, the government, and the private sector is essential for the successful implementation of good governance. The empowerment framework

involves these three mutually supportive actors: the government as a facilitator, the private sector through partnership programs, and the community through active involvement (Setyowati, 2012). This collaborative model will be able to enhance the well-being and autonomy of the community.

This study focuses on Village-Owned Enterprise (BUMDes), institutions operating under government supervision, which aim to empower communities through waste management initiatives. In collaboration with private sectors, Village-Owned Enterprise promotes waste utilization activities. A community-driven waste management system, known as a waste bank is implemented through collaboration among the public, local government, and business sectors (Wijayanti & Suryani, 2015).

Village-Owned Enterprise and Waste Management Transformation

Village-Owned Enterprise (BUMDes) are local economic institutions formed to improve the welfare of village communities through the utilization of local potential and resources. According to (I Kadek Darwita & Redana, 2018), BUMDes aims to support village economic independence and contribute to improving community welfare. As a fundamental component of the village economy, Village-Owned Enterprises function as social and commercial institutions. As a social institution, Village-Owned Enterprises are committed to serving the needs of the community through the provision of social services, while as a business entity, the goal is to generate profit (Ridlwan, 2015). Village-Owned Enterprise can be one way to advance villages by encouraging the local economy to achieve community welfare, providing public services, and utilizing local potential to improve the economy of the community and village (Rahayu & Febrina, 2021). An organization is formed with a specific purpose with the hope that the organization will behave and act in accordance with the goals that have been set. Each organization has its own role with the hope that the organization will behave in accordance with its role. This role determines what the community does and the opportunities provided by the community. (Lantaeda et al., 2017) defines a role as an action that limits an individual or organization to carry out an activity based on agreed goals and provisions, to be carried out to the best of their ability. Village-Owned Enterprises as an organization that contributes, play a role in improving community welfare through its various activities.

In relation to waste management activities, BUMDes can play a central role in organizing a waste bank system, which not only reduces waste but also generates income for the community through the conversion of waste into electronic money. In the context of waste management transformation, the role of BUMDes is very significant, especially through innovations such as digital-based waste management, which converts waste into electronic money. (Seyadi, 2003) the role of Village-Owned Enterprise includes:

1) fostering the addition and development of the potential and economic capacity of rural communities, especially to improve socio-economic welfare, playing an active role in efforts to improve the quality of life of humans and society.
2) participating in efforts to improve the welfare of individuals and society.

3) increasing the nation's economic resilience by strengthening the community economy based on Village-Owned Enterprise.
4) striving to realize and develop the rural community economy.
5) assisting communities in increasing their income to improve community welfare and income.

This system allows village communities to be involved in effective waste management while getting financial incentives that improve their economic welfare. Seyadi pointed out that BUMDes has a big responsibility in building village economic capacity. In terms of waste management, this role can be realized through the provision of infrastructure for recycling and processing waste and connecting waste collected by the community with a digital platform that allows them to gain financial benefits from this activity. This effective and structured waste management can utilize local potential, both in terms of natural resources and labor. Local potential as power, strength, ability, and capacity inherent in a village that can be processed to improve community welfare (Soleh, 2017). Local potential can be categorized into two types. The first is physical potential, which includes land, water, the geographic environment, and human resources. The second is non-physical potential, which encompasses community dynamics, village structure, and local social institutions. (Drs. Abdurokhman, 2014). Furthermore, (Lestary & Hadi, 2021) stated that by utilizing physical potential such as land and human resources in the village, waste management can become a new source of sustainable income for the community. They highlighted that the village has resources that can be maximized for waste management. This potential includes local workers who can be trained to manage waste efficiently and natural resources that can be processed through initiatives such as recycling or compost production. BUMDes acts as a facilitator to ensure that this potential is used optimally.

Theory and Operationalization of Waste Management Transformation

The updated recycling hierarchy extends the traditional 3R concept (Reduce, Reuse, Recycle) into the 5R framework. The 5R's function as guidelines for a less wasteful and more sustainable life which is imperative for the benefit of individuals and nature (Balwan et al., 2022). Within this framework, integrated waste management involves various stages, such as waste collection, transportation, and processing into value-added products. (Balwan et al., 2022) shows that recycling is a great final option to be focused on waste management to provide the maximum practical benefits from products, which is in line with efforts to create added value from waste that has so far only been considered as a final product. In the context of this research, this concept can be applied through the development of technology that allows people to convert waste into electronic money, with more systematic waste management steps.

In terms of operations, BUMDes can facilitate a waste bank system that works with a digital system. The community can collect waste, which is then assessed and converted into electronic credit through a digital application or platform. This credit can be used by

the community for various transactions or saved as a digital asset. This model allows the creation of a non-cash financial ecosystem in the village while solving environmental problems sustainably. (Asmal et al., 2023) also stated that the integration of technology in waste management, such as the use of digital applications for waste banks, can accelerate community participation in waste management. The application of technology, such as digital applications for waste banks, makes it easier for the community to be involved in waste management, because they can see direct benefits in the form of economic incentives. In the village context, this kind of application can be operated by BUMDes to ensure that the community is consistently involved in a more effective and efficient waste management system. With clear economic incentives, the community is more motivated to actively participate in this program, which ultimately helps reduce waste significantly and improves the quality of the environment and the village economy.

Community-Based Waste Management

Waste management is a crucial practice that society must adopt to mitigate environmental issues arising from improper waste handling. Waste management encompasses all activities related to the regulation, collection, transportation, processing, and proper disposal waste, following principles that prioritize public health, economic efficiency, technology, conservation, aesthetics, and environmental sustainability (Indrianti, 2016). Taking a comprehensive approach that includes all aspects of waste management is essential. In this framework, waste management procedures are typically categorized into collection, transportation, recycling, and disposal (Kannan et al., 2023). Community involvement plays a vital role in fostering unity and addressing shared environmental challenges. As a key actors in waste management, the community must actively participate by adopting behavior changes that support effective waste handling. This includes practicing discipline in waste segregation, using appropriate containers, and making eco-friendly purchasing decision. (Indrianti, 2016). The need for community participation is especially urgent given the significant amount of unmanaged or improperly disposed waste, which poses serious environmental risks. Simple initiatives, such as developing waste bank programs can provide significant benefits, both for the community and the surrounding ecosystem (Ramayadi & Sariningsih, 2020). Improperly handling waste can have detrimental effects on both the environment and society. Therefore, effective management is essential to mitigate the negative effects, and it should include the active participation of both the community and government (Asmal et al., 2023). According to (UU No. 18 Tahun 2008) waste management should be guided by the 3Rs concept (Reduce, Reuse, Recycle). However, in practice, the 3Rs concept has evolved into the 5Rs framework (Refuse, Reduce, Reuse, Repurpose, Recycle) represented by an inverted triangle, as illustrated in Figure 1 (Balwan et al., 2022).

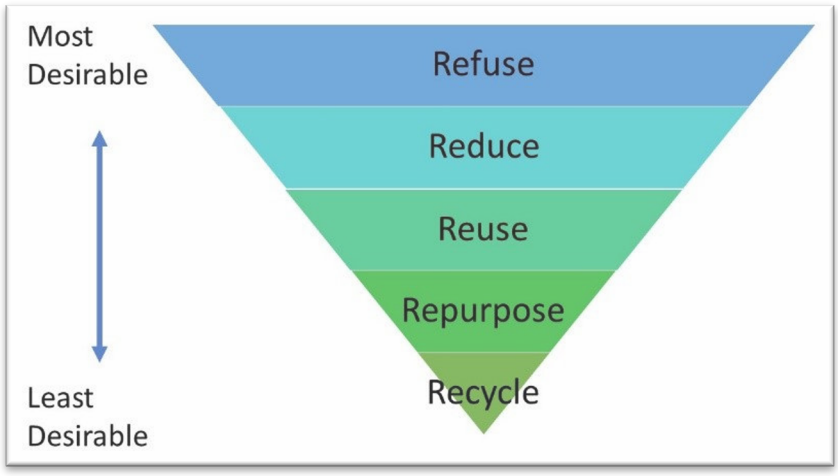

Figure 1. Hierarchy of 5Rs Concepts. *Source*: (Balwan et al., 2022)

Methods

This study uses a qualitative method with a case study approach conducted at Village-Owned Enterprise (BUMDes) in Jember Regency. This location was chosen because of the relevance of BUMDes in the area to the focus of the research, especially in the context of empowering the village community economy. The case study approach was chosen to explore in depth the dynamics of BUMDes management, while the constructivist paradigm underlies this study to understand how the meaning of BUMDes management is constructed by related actors. The selection of informants was carried out using informant criteria (Creswell & Creswell, 2018). In this study, researchers selected informants consisting of BUMDes managers, waste management officers at BUMDes, and communities involved in waste recycling activities. Primary data were collected through semi-structured interviews and passive participant observation. Interviews were chosen because they allow researchers to explore the subjective experiences of BUMDes managers, waste management officers, and communities involved in waste recycling activities. Interviews were conducted during the research period between April - May 2023, with each interview session lasting 45 to 90 minutes. The interview process was recorded and transcribed verbatim, then analyzed using thematic analysis methods to identify relevant patterns and themes. Observations were conducted for one week, during which researchers observed waste management activities, social interactions, and BUMDes infrastructure. Observation data were recorded in field notes and analyzed to reveal behavioral patterns and operational processes.

This research employs the interactive data analysis model proposed by Miles, Huberman & Saldana (2014), which consists of three main stages: data condensation, data presentation, and verification of Conclusions, as in Figure 2.

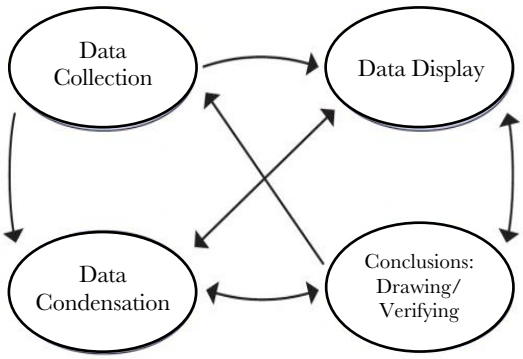

Figure 2.Component Interactive Data Analysis Model.*Source*: (Miles et al., 2014)

Based on the framework proposed by Miles, Huberman, and Saldana Data condensation is carried out by coding raw data obtained from interviews and observations, then simplifying and selecting the main categories that are relevant to the research questions. After the data is condensed, the researcher begins to present the data based on the identified patterns and themes. Verification of conclusions is carried out by triangulating data from various sources, such as interviews, observations, and secondary data, to ensure that the conclusions drawn are accurate and reliable. This process is interactive and iterative throughout the study.

Results

Implementation of Waste Utilization Activities in Village-Owned Enterprise

Jember Regency is a region in East Java, covering a total area 3,293.34Km^2. One of the significant challenges faced by Jember waste management. In 2022, the volume of waste generated in the regency reached 1,250 tons per day, with only about 275 tons being transported to the landfill. The remaining waste was disposed of improperly, ending up in rivers or along roadsides. According to Law No. 18 of 2008, the responsibility for ensuring proper and environmentally friendly waste management is assigned to both the government and local authorities. Therefore, waste management efforts should ideally begin at the local level. As outlined in Minister of Village, Development of Disadvantaged Regions, and Transmigration Regulation No. 8 of 2022, villages are encouraged to participate in waste management by establishing and supporting Village-Owned Enterprise. In Jember, an example of such involvement is a Village-Owned Enterprise dedicated to waste management, which has been operational since 2021 as part of its activities.

The significant waste management issues have prompted the managers of the Village-Owned Enterprise to explore ways to utilize waste that has been neglected by the community. These efforts involve implementing a waste bank and processing waste into valuable products. The initiative begins with introducing the waste bank to the public and raising awareness about its presence within the Village-Owned Enterprise. Awareness-raising activities include visits to the neighborhood communities, announce it during village events, door-to-door outreach, and other forms of public engagement. To support

these efforts, the Village-Owned Enterprise collaborates with various partners, including the central waste bank *Karya Mandiri*, the University of Muhammadiyah Jember, *Pegadaian*, and the Sugar Factory.

Waste Bank

The waste bank operated by the Village-Owned Enterprise, known as *Shinta Waste Bank*, has been in operation since 2021 under permit number SKT 660.1/031.SKTBS/35.09.319/2023. The community participates in the waste bank system by depositing their solid waste, which can be converted into gold or cash savings. The presence of a waste bank offers several advantages, as household waste, which is often regarded as a worthless thing, can generate an increase in the community's income. The segregation and recycling of household waste represent informal practices that hold the potential to create additional earnings for the community (Singhirunnusorn et al., 2012). Similar to a traditional banking system, a committee is established to manage both administrative and operational tasks. In the initial phase of the waste bank's establishment, individuals depositing materials receive credit in their accounts (Singhirunnusorn et al., 2012).

In its implementation, *Shinta Waste Bank* not only accepts direct deposits from the community but also provides waste collection services to local neighborhood. Through the waste bank, the Village-Owned Enterprise offers education and support to the community on proper waste management and sorting practices. These efforts aim to motivate to adopt clean and healthy living behaviors.

Waste-product Processing

The waste processing activities are divided into the processing of inorganic and organic waste. Inorganic waste processing uses materials collected from the waste bank, while organic waste processing utilizes waste obtained from the traditional markets. The waste processing activities carried out by the Village-Owned Enterprise are illustrated in the following diagram:

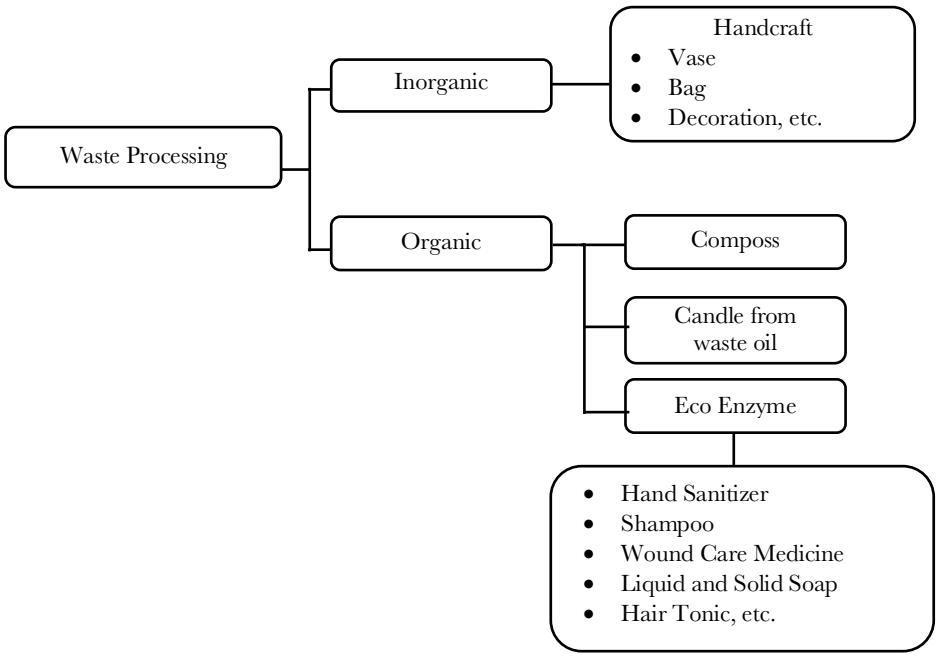

Diagram 1: Waste-Product Processing Diagram. *Source*: Research Result, 2023

In waste-product processing, involves several workers with various skills and expertise. To enhance their abilities, the Village-Owned Enterprise frequently sends them to training sessions or activities related to waste processing.

Impact of Waste Utilization Activities

The waste utilization activities carried out by the Village-Owned Enterprise have had various positive impacts on both the environment and society. These initiatives have raised awareness and provided knowledge about the importance of effective waste management and utilization, particularly to individuals who previously gave attention to these issues. As a result, the community's self-awareness regarding waste management within their environment has increased. Although this awareness is not yet perfect, the progress reflects the program's positive influence, indicating a shift in the community's mindset toward waste management.

In addition to influencing behavior, these activities have also positively impacted the community's environment. Effective waste management has resulted in a cleaner environment and reduced the negative effects associated with improper waste disposal. The program's impact on both mindset and environmental improvement can be seen through the increase in the number of waste bank customers and the rise in the volume of waste deposits received by *Shinta Waste Bank*, as shown in Table 1.

NO.	Year	Total Customers	Waste Deposit (KG)
1.	2021	32	1.050
2.	2022	62	2.400
3.	2023 (Jan-August)	208	5.088

Table 1: Data of Total Customers and Waste Deposit per Year. *Source*: *Shinta Waste Bank*, 2023

Waste utilization activities also have a positive impact on the economy. Through the waste bank, the community members have the opportunity to earn additional income by exchanging household waste. Furthermore, customers can accumulate their waste savings and convert them into cash or gold savings, providing a form of long-term investment. These activities contribute to the community's income, as evidenced by table 2, which presents data on the income generated from waste savings by *Shinta Waste Bank* customers during January-March period.

No.	Customer's Name	Waste Savings (Kg)	TOTAL	
1	I P	135.22	IDR	76.638,00
2	D A	63.6	IDR	55.710,00
3	D A	134.9	IDR	73.885,00
4	Ms. U	224.4	IDR	139.070,00
5	A	241.34	IDR	149.308,00
6	S	120.3	IDR	71.904,00
7	I	249.54	IDR	142.626,00
8	I	42.6	IDR	23.410,00
9	R	17.9	IDR	20.817,00
10	W A	123.584	IDR	123.409,00
11	Unit S	324	IDR	344.350,00
12	Unit N S	87.9	IDR	79.780,00
13	Unit S	276.5	IDR	62.325,00

Table 2: Waste Savings Data From the Customers Period Jan-March. *Source*: *Shinta Waste Bank*, 2023

The economic impact of these activities on the workers is that they earn income through waste sorting, with their earnings is determined by the weight of the waste they process. Additionally, the workers also generate income from product sales, as when waste processing products are sold and profits are made, the workers receive a share of those profits. The waste processing products by Village-Owned Enterprise are introduced and marketed at various events. Through these activities, they get profits from the sale of these

products. The following impacts of economic changes resulting from waste products are summarized in Table 3:

No.	Year	Product	Amout	Unit	Price	Total
1.	2021	Hand Sanitizer	75	Pieces	IDR 8.000	IDR 600.000
		Waste-Oil Soap	45	Pieces	IDR 4.000	IDR 180.000
		EE Soap C	38	Pieces	IDR 8.000	IDR 304.000
Total 2021						**IDR 1.084.000**
3.	2022	EE Soap C	125	Pieces	IDR 8.000	IDR 1.000.000
		EE Soap A	43	Pieces	IDR 12.000	IDR 516.000
		EE Soap B	95	Pieces	IDR 10.000	IDR 950.000
		Waste-Oil Soap	35	Pieces	IDR 4.000	IDR 140.000
		Hand Sanitizer	140	Pieces	IDR 8.000	IDR 1.120.000
		Candle	45	Pieces	IDR 5.000	IDR 225.000
		Handcraft	4	-	-	IDR 445.000
Total 2022						**IDR 4.396.000**
4.	2023	Creative Village (event)	50	Package	IDR 20.000	IDR 1.000.000
		National Waste Awareness Day (event)	200	Pieces	IDR 8.000	IDR 1.600.000
		Hand Sanitizer	75	Pieces	IDR 8.000	IDR 600.000
		Candle	38	Pieces	IDR 5.000	IDR 190.000
		EE Soap C	55	Pieces	IDR 8.000	IDR 440.000
		EE Soap B	75	Pieces	IDR 10.000	IDR 750.000
		EE Soap A	30	Pieces	IDR 12.000	IDR 360.000
		Shampoo	13	Pieces	IDR 25.000	IDR 325.000
		Handcraft	8	-	-	IDR 725.000
Total 2023						**IDR 5.995.000**

Table 3: Product Sales Data. *Source*: Shinta Waste Bank, 2023

Discussion

Based on the research findings, Village-Owned Enterprise plays several roles in empowering the community through the utilization of waste. *First*, they contribute to the development of local potential. In expanding local potential, Village-Owned Enterprise address waste, a pressing environmental issue. Previously, the community's mindset regarding waste management was limited to disposal or burning. Therefore, the waste management paradigm in the community needs to change. Socialization and mentoring efforts are implemented to educate the community on the importance of managing waste and encourage their participation in waste banks. These activities can enhance the community's self-awareness in waste management. In every empowerment initiative, mentoring is a crucial element and one of the most important aspects to consider (Pratiyudha et al., 2022). The increasing number of people joining as waste bank customers reflects growing self-awareness within the community regarding waste

management. Through such activities, Village-Owned Enterprise enhances human resource capacity by providing guidance and mentoring in waste management and utilization. They facilitate the empowerment by transferring knowledge on waste management, from sorting to processing. As (Suprapto, 2019) notes, empowerment involves a learning process in which knowledge and skill are transferred from agents to the community to improve overall quality. The waste bank initiative goes beyond mere savings, it also empowers the community to take control of waste management. This empowerment includes training in skills to reduce, reuse, and recycle waste, transforming it into higher value products (Purba et al., 2014). According to (Asteria & Heruman, 2016) The presence of waste bank has the potential to increase resident's capacity by fostering self-reliance through greater environmental consciousness, knowledge, and competencies that motivate community involvement in managing their local environment. In addition to developing the human resources, Village-Owned Enterprise also explore the potential through waste processing. They utilize waste to create valuable products, such as handicrafts from inorganic waste, and produce various products from organic waste. These activities aim to transform environmental challenges into a potential that can be developed. Through these efforts, Village-Owned Enterprise contributes to both the physical development of local potential and the enhancement of human resource knowledge and waste-product processing.

Second, waste bank and waste processing are efforts to enhance the activities of Village-Owned Enterprise. These initiatives involve collaborations with various stakeholders. The first collaboration is with the University of Muhammadiyah Jember, which assists in testing product content used to obtain products permit. The second collaboration is with the Sugar Factory, which provides raw materials such as sugarcane molasses for the production of eco-enzymes, which a key component in organic waste products. The third partnership is with *Pegadaian* as part of their CSR initiative through the waste bank. The fourth collaboration involves the Central Waste Bank *Karya Mandiri*, in which unprocessed waste is deposited and exchanged for money, generating income and funds for Village-Owned Enterprise. The fifth collaboration is with the Forum of Village-Owned Enterprises in East Java's marketplace, providing a platform to promote products and reach a broader market. Collaborating with multiple partners ensures smooth operations and supports the successful execution and growth of these activities. Institutional development is also achieved by sending workers to waste-related events and training programs. These opportunities, encourage workers to think creatively, enhancing their ability to develop and improve to produce the waste-processing products, thereby increasing product quality. A well-organized institution also helps attract community participation. This is consistent with (Maryani & Nainggolan, 2019) it is stated that improving activities should contribute to institutional development, including the expansion of partnership networks. A structured and well-managed institution fosters community involvement. When Village-Owned Enterprise is professionally run, it generates positive outcomes and benefits for the company. In this context, Village-Owned Enterprise plays a crucial role as a driver and motivator, encouraging the community to

actively engage in various activities, leading to empowerment and the ability to meet their basic needs (Mulianingsih, 2022). Through the development of local potential and the enhancement of activities, the institutional capacity of Village-Owned Enterprise can be strengthened, with the aim of increasing community participation. This aligns with (Soleh, 2017), who emphasizes that the goal of developing local potential is to promote community self-reliance through the cultivation of local strengths, institutional improvement, and community empowerment.

Third, the presence of waste bank within Village-Owned Enterprise provides economic benefits to the community by making waste management more attractive and financially valuable. Through a waste bank, the community can save the inorganic waste, which can later be converted into gold savings or money savings. While the income earned may not be substantial, these savings offer long-term benefits. Additionally, waste-product processing contributes to a sustainable circular economy. Transforming waste into marketable products generates income opportunities for the community. Workers involved in waste-product processing can earn income from the sale of these products, with profits shared between th workers and the Village-Owned Enterprise. Through these activities, Village-Owned Enterprise plays a role in economic improvement, especially by enhancing the community's income. This is in line with (Abidin Basri, 2009), stating that income is a key indicator of economic improvement, as it correlates with well-being and individual economic capacity. While these activities may not yet serve as the primary source of income for the community, they have potential to increase economic benefits and create entrepreneurial opportunities if properly nurtured. This is consistent with Iswanto's observation (cited in Saputro et al., 2015) that almost all types of waste can be utilized and sold after sorting, giving waste products economic value. Waste banks, as an innovative approach to waste management, not only enhance environmental awareness within the community but also have the potential to improve both the community and the skills of waste bank customers (Pratama et al., 2020).

Fourth, Village-Owned Enterprise plays a role in improving the environment. Their waste utilization activities encourage the community to address waste-related issues by managing waste from its source, shifting the focus from neglecting waste management to giving it more proper attention. Effective waste management is essential for preventing pollution, and utilizing organic waste as a product feedstock, such as eco enzymes, can increase the potential uses of waste (Adetunji et al., 2023). Efficient waste management practices are also crucial to minimizing the risk of disease transmission and protecting the environment (Olawade et al., 2023). These activities offer an effective approach to tackling waste-related problems and reducing the volume of waste that harms the environment. In this way, Village-Owned Enterprise raises community awareness about the importance of maintaining a clean and healthy environment, contributing to environmental preservation and resource conservation. Waste banks are considered a valuable initiative, especially in developing countries like Indonesia, as they assist the government in waste management efforts (Purba et al., 2014). This aligns with (Sudrajat

et al., 2021), highlight that Village-Owned Enterprise can foster environmental improvement by promoting a clean and comfortable living environment, starting with a shift in the community's mindset toward managing waste as a valuable resource.

Empowerment through waste bank by Village-Owned Enterprise has resulted in tangible changes felt by the community. As (Haris, 2014) states, empowerment activities within communities can bring positive transformations across various aspects of life. In this study, several changes have been identified, as outlined in Table 4 below.

(1)	(2)	(3)
Aspect	**Before**	**After**
Social	• Lack of community expertise in managing waste. • Indiscriminate littering behavior	• Growth in community and workers' in expertise waste management. • Shift in the community's mindset regarding waste. • The community implements basic waste management practices based on the 5Rs principles (Refuse, Reduce, Reuse, Repurposing, Recycle).
Economy	• The community is unaware of the economic value of waste.	• Community members now have gold savings through waste bank. • Economic opportunities have emerged from waste-product processing.
Institutional	• No institution previously involved in waste management. • No active waste management activities.	• Establishment of waste bank by Village-Owned Enterprise. • Regular socialization and education programs on waste management for the community. • Workers participate in waste management and join training to get more skills to produce waste products. • Village-Owned Enterprise form partnerships to support waste management activities.
Environment	• No use of organic and inorganic waste. • Traditional market's waste was unmanaged • Waste was mostly discarded or burned.	• Organic waste is processed into fertilizer eco-enzymes, and derivative products. While inorganic waste is transformed into crafts. • Organic waste from traditional market is managed and utilized. • Effective waste segregation prevents environmental pollution.

Table 4. Changes due to Activities. *Source*: Research Result, 2023

BUMDes in Jember plays an important role in community empowerment through waste management. However, critical evaluation shows that the paradigm shift in waste management has not been evenly distributed across all levels of society. In addition, although BUMDes has succeeded in increasing community income through the waste bank program, the economic benefits generated are still limited. This study provides a

unique contribution by showing that waste banks not only function as a means of saving waste, but also as a platform for community empowerment. From a theoretical perspective, this study strengthens the argument about the importance of integrating local potential and cross-sector partnerships in developing a circular economy in rural areas. In practice, the waste bank model developed can be used as a reference for similar programs in other villages. The limitations of this study include the limited geographical scope and the lack of exploration of factors that influence community participation in waste management programs.

Verification of Research Result

Qualitative research using interactive model data analysis concludes with verification, or the confirmation of temporary research findings. Verification focuses on ensuring data accuracy through source triangulation, narrative consistency checks, and participant validation. The methodological approach also determines the extent to which the results can be generalized. Therefore, the verification process ensures that the findings are not only accurate but also aligned with the research context and the objectives.

(1)	(2)	(3)	(4)
Concept	**Dimension**	**Research Result**	**Analysis**
The Role of Village-Owned Enterprise in Community Empowerment	• Development of Local Potential	The development of local potential through Village-Owned Enterprise involves processing both inorganic and organic waste into valuable products. It also includes improving human resource knowledge by shifting community paradigms about waste management	Village-Owned Enterprise convert waste into valuable products while enhancing the skills and knowledge of human resources in proper waste management. In this context, Village-Owned Enterprise foster the physical development of potential resources in Jember.
	• Community's Economic Improvement	Waste utilization activities in provide economic benefits to the community by offering additional income. Customers can have gold savings through waste bank, and workers benefit from economic opportunities such as sorting waste and profit sharing from sold products.	The use of waste enables the community to earn additional income through waste savings and economic activities. Customers accumulate gold savings, while workers participate in profit-sharing and waste-sorting opportunities.

Concept	Dimension	Research Result	Analysis
	• Institutional Improvement	Institutional improvement is achieved through the establishment of waste banks and other activities. The enterprise shifts community paradigms by offering training, guidance, and socialization related to waste management. Collaborations with other institutions ensure smooth, sustainable activities.	Village-Owned Enterprise improves operations through training and creative activities workers, along with socialization programs. They also establish partnerships to support sustainable activities, encouraging greater community participation.
	• Environmental Improvement	Waste utilization reduces waste generation and promotes a cleaner, healthier environment, preventing disease transmission. However, the use of organic waste is currently limited to traditional market waste.	Waste utilization efforts reduce environmental waste and promote cleanliness. Through these activities, Village-Owned Enterprise plays a vital role in improving environmental conditions.

Table 5. Verification of Research Results. *Source*: Research Result, 2023

Conclusion

This research examines community empowerment through waste utilization activities conducted by Village-Owned Enterprise in Jember. These activities focus on developing the knowledge and skills of human resources while transforming waste –an environmental challenge- into resource with economic value. In this context, Village-Owned Enterprise plays a crucial role developing local physical potential in Jember. Waste utilization activities also create circular economic opportunities for the community. Waste banks provide additional income by converting waste into gold savings, and the sale of processed waste products offers new economic prospects for the community, contributing to economic improvement. Additionally, Village-Owned Enterprise strengthen institutional capacity through waste banks, public socialization, and skill development initiatives. Training programs foster community creativity and improve the quality of processed waste products. Collaborations with external stakeholders further support the implementation of these activities, establishing a solid foundation for community empowerment. These initiatives also have a significant environmental impact by reducing the volume of waste, leading to a cleaner environment and mitigating the negative effects of unmanaged waste. In conclusion, this study finds that the implementation of waste utilization activities by Village-Owned Enterprise plays a vital role in community empowerment by fostering the development of physical local potential, economic improvement, institutional strengthening, and environmental enhancement.

The success of these activities depends on high community participation. However, many community members are still not actively involved in the programs by Village-Owned Enterprise. To achieve sustainable waste management goals, it is essential for Village-Owned Enterprise to continuously improve strategies to engage the community

in every activity. Additionally, the current focus of Village-Owned Enterprise on processing organic waste from the traditional market means that organic waste from households remains unutilized. Therefore, providing training to the community on organic waste processing is necessary to address the issue of unmanaged waste in residential areas.

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The authors made substantial contributions to the conception and design of the study. The authors took responsibility for data analysis, interpretation and discussion of results. The authors read and approved the final manuscript.

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