Waste Financial Value Creation Model: Advancing Sustainable Finance Through Waste-Based Innovation

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Abstract

Budget deficits remain a persistent challenge for local governments, requiring innovative approaches beyond conventional macrofiscal policies. This study proposes a Waste Financial Value Creation Model (WFVCM) as a financial innovation that transforms waste into an economic resource capable of contributing to local government revenue. This study employed a qualitative research design using a phenomenological approach to explore the economic potential of waste and its role in regional financial development. The findings indicate that waste possesses substantial economic value and can be transformed into a sustainable source of regional income when managed using the WFVCM framework. The model demonstrates that waste can generate financial benefits for both local governments and communities while supporting more effective waste management. The WFVCM can be adopted as a practical strategy to increase local revenue, reduce dependence on traditional fiscal instruments, and address budget deficit challenges. This study is limited to qualitative assessments and predictions of waste potential; therefore, it does not provide quantitative estimates of its financial contribution. Further quantitative studies are required to validate and generalize these findings. This study introduces a novel perspective on utilizing waste as a source of regional income, promoting community welfare through waste banks, supporting sustainable waste management, and strengthening the implementation of a circular economy that maximizes resource utilization while reducing environmental burden.

Keywords: *Budget Deficit, Circular Economy, Financial Innovation, Local Revenue, Sustainable Waste Management*

1. INTRODUCTION

The growing stigma in society suggests that waste is viewed as a burden. Waste imposes financial burdens on both the public and government. Some governments in developing countries spend enormous amounts on waste. The large amount of allocated funds has led to budget imbalances. The value of expenditures far exceeds the revenues received by the Government. This condition is known as a budget deficit (Annisa & Hamzah, 2025). The resulting budget deficit disrupts the fiscal balance. This disruption can lead to economic downturns. The government struggles to develop infrastructure due to a lack of funding. Investors will delay or withdraw their investments in areas managed by governments with high budget deficits. Unemployment arises due to the government's failure to create business opportunities that absorb labor. Budget deficits lead to various economic and social problems (Issa, AbdelHaffez, Abdel-Hafez, & Assaf, 2025).

Fiscal balance is a goal that every regional government in Indonesia strives to achieve. While regional governments strive to ensure that expenditures do not exceed revenues, budget deficits occur. A budget deficit is a phenomenon characterized by expenditures exceeding revenues in a single fiscal year (Aritenang, 2014; Aulia, Asnawi, & Widiarsih, 2025). Regional budget deficits cannot be addressed through macro-scale fiscal policies. The characteristics of economic potential can vary across countries. Macro-level fiscal policies often fail to leverage the local economic potential of each region. Macro-level fiscal policies without the support of knowledge about regional economic potential can exacerbate a country's economic problems (Rachmawaty, Oktrima, & Jati, 2024).

The best solution is to increase regional revenues. Local governments can identify the economic potential within their jurisdiction. Identification is crucial for understanding the economic value of each potential species. However, many governments are reluctant to do this. They are often trapped by existing revenue patterns. Fear of the risk of failure in developing this potential is a major barrier to government business development (Amirullah, Edy, & Mus, 2024). Increased regional spending can be directed toward enhancing sectors with the potential to increase regional revenues. Regional governments often fall into the trap of routine spending within their budgets. Routine

spending has become an unavoidable budget item (El Fallahi, Ibenrissoul, & El Amri, 2022). This situation is exacerbated by the presence of many unproductive items in the budget. The government considers a budget deficit to be normal, thus avoiding budget amendments. Budget amendments can be made by restructuring the existing budget items. (Marasabessy & Nikijuluw, 2026; Samudera, Irwansyah, & Lestari, 2025).

Denpasar is experiencing a steadily increasing budget deficit. The average ratio of the budget deficit to local revenue from 2020 to 2025 was 14.13%. The persistent budget deficit since 2020 indicates a bottleneck in innovation for expansionary measures that could increase revenue. Denpasar City's budget deficit necessitates the development of new and innovative revenue sources. Locally generated revenues come from regional taxes, regional levies, revenues from regionally owned companies, the management of regional assets, and other legitimate sources of income. These other legitimate sources of income can provide opportunities for regional governments to innovate. Innovation that drives revenue generation from various sectors must be developed. Innovation can increase the economic potential of a sector that was previously considered to have no potential (Yulsiati, Sartika, & Febriantoko, 2025). A common phenomenon in almost all regions of Indonesia is the stigma that garbage or waste is not considered an object of economic value (Bahtiar, 2024; Purnia, Simpony, Cahyadi, Mujahidillah, & Fauziah, 2025).

Trash or waste as an object of high economic value remains a discourse. Governments and the public generally view waste as a material that is worthy of being discarded. Localized waste disposal is a practical solution; however, as land becomes increasingly scarce and piles of waste mount, the cost of waste management and disposal becomes a significant problem. Several developed countries have transformed waste into valuable resources across many sectors. Waste not only has economic value, increasing government revenue, but has also been used to address energy shortages in some developed countries (Fernandes, Junianto, Sekarsari, Rismala, & Amirullah, 2026; Marwiyah & Pamungkas, 2025). The existence of waste banks or waste management communities to increase the economic value of waste has not received sufficient attention. Institutions outside the government have expressed strong concerns about waste. Waste bank initiatives, particularly in Denpasar City, have not yet been well developed. Government support for communities operating waste banks is essential to ensure sustainability. The government generates revenue from these activities.

The success of utilizing waste to help a country's economy is not merely a theory. Waste utilization, which has successfully had a positive impact on macroeconomic growth, has occurred in Armenia. Armenia is a country in the Caucasus region with an area equivalent to 1.5% of Indonesia. Public awareness of sorting and recycling waste has apparently driven increased macroeconomic growth. The types of waste processed include organic and inorganic waste (Asatryan et al., 2025; Gevorgyan & Aleksanyan, 2024). Ghana has succeeded in utilizing waste, especially electronic waste. Ghana has achieved several points in the Sustainable Development Goals (SDGs) by implementing proper waste management. Ghana has enjoyed good economic growth by implementing waste cost efficiency and gaining financial benefits (Adom & Simatele, 2025; Anokye et al., 2025).

Several studies have proposed waste-based financial innovation. Hapsari, Wiksuana, Artini, and Dewi (2025) stated that implementing the 3R concept (Reduce, Reuse, and Recycle) can produce green products. These products have the potential to be exported from the Bali Province. Bali has enjoyed export profits from waste-based green product. The diversification of export products has provided financial benefits. Fitriana, Suranto, Akalili, Wulansari, and Agustinova (2025) stated that sustainable waste management can only be realized with the support of political policies and the participation of all parties. This study demonstrates the success of the Yogyakarta City Government in developing policies and building community participation for sustainable waste management. This policy aims to further increase community incomes. Hadibarata and Kristanti (2025) stated that massive infrastructure development in Hong Kong and the UK has led to increased waste volume. This waste creates long-term financial burdens. This study emphasizes the importance of infrastructure development using green technology to minimize the financial burden of waste management on the government. Dantas et al. (2025) stated that waste problems do not only originate from inorganic waste and residues. Organic waste has become a major problem in Brazil's

food industry. Proper organic waste management impacts the financial efficiency of both businesses and governments. Zarro, Ferranti, Garagozzo, Fico, and Pecchia (2026) stated that waste from medical devices is a major problem facing countries within the European Union. This issue was addressed by the introduction of the Medical Device Regulation 2017/745/EC. This regulation emphasizes the criteria for medical devices used in Europe. Medical devices must be designed and packaged in an environmentally friendly manner that meets the 3R requirements. The resulting waste can be managed using a management system oriented toward financial benefits.

Previous research has shown that waste is a global problem faced by governments and communities worldwide. The WFVCM presents a new and more comprehensive discourse with more concrete financial calculations than previous studies. The WFVCM manages waste from infrastructure development Hadibarata and Kristanti (2025), food industry waste Dantas et al. (2025), and residual waste (Zarro et al., 2026). The WFVCM is expected to become a comprehensive and sustainable waste management system. The WFVCM produces a management model that can be practically implemented by the Denpasar City government and the community. Therefore, the WFVCM is more practical than the model proposed by Fitriana et al. (2025), which only examines the success of political policies and community participation in waste management. The WFVCM does not solely focus on waste with the potential to produce export-quality products, as demonstrated by Hapsari et al. (2025). Denpasar City's ongoing budget deficit and the growing burden of waste on the city's surrounding areas have sparked innovative ideas. This study explores a model that could provide a new source of revenue for Denpasar City. This new revenue source will come from waste, which has historically burdened both public and government sectors.

2. LITERATURE REVIEW

Budget deficits appear to be common in Indonesia's macroeconomic landscape. This phenomenon has been under scrutiny since the New Order era, highlighting the sharp disparity between government spending and revenue from the central to regional levels. Reckless fiscal policies, including massive money printing, have led to increased inflation. This situation has prompted the government to reform by designing a balanced and dynamic budget (Kusumasari & Soebagiyo, 2024; Sriyana, 2022). The primary cause of the budget deficit is government spending that fails to take into account the fiscal multiplier in budget planning (Wiranatakusuma, Yuliadi, & Rahma, 2025). The proportion of spending on productive infrastructure, research, and development is often smaller than that on consumptive spending (Udodiugwu, 2024). The government has attempted to streamline routine consumptive spending, but the result is that the remaining funds are not optimally utilized to fund productive spending (Albani, Ramadhani, Hidayat, Ilham, & Siswajanthy, 2023).

The phenomenon of budget deficits, with their main causes empirically proven, has given rise to the need for more progressive fiscal policies in the country. There are two types of deficit policies: expansionary and contractionary. Expansionary policies aim to boost economic growth by increasing the spending. Contractionary policies aim to control economic growth by reducing spending (Elisabeth & Sugiyanto, 2024; Kloosterman, Bonam, & van der Veer, 2024). The volume of waste in urban areas is greatly influenced by economic activity, population growth, and lifestyle. The dynamics of continuously growing cities have caused waste volumes to increase (Ragazou, Zournatzidou, Sklavos, & Sariannidis, 2024; Udessa, Nuro Wako, & Erbo, 2026). Control and management are two temporary policies that do not produce comprehensive solutions (Handayani, Naldi, Larasati, Khaerunnisa, & Budiatmaka, 2021). The involvement of urban communities in waste management, facilitated by the government, has positively impacted waste management. Waste, which previously burdened the region, now has economic value that benefits both the community and the government. Synergy among various stakeholders, realized in a single system, has proven successful in making waste a potential economic resource for a region (Asfaw et al., 2024; Mngomezulu, Mbanga, & Adeniran, 2024; Riani, Harris, Astut, & Handayani, 2023).

Sustainable waste management has been implemented globally with varying focus and models. This concept has been implemented by small and medium-sized industries (SMEs) in Bali Province. The focus is on creating export-oriented green products (Hapsari et al., 2025). WFVCM

focuses on producing various products aimed at meeting domestic needs in Denpasar City and other regencies in Bali Province. Fitriana et al. (2025) proposed a political policy and community participation scheme for Yogyakarta City. This scheme substantially proposed a solution to the waste problem, generating financial benefits. Hadibarata and Kristanti (2025) proposed a waste management model resulting from infrastructure development in Hong Kong and the UK. The waste that was the focus of this study originated from infrastructure development. Dantas et al. (2025) focused on organic waste management in the food industry in Brazil. Organic waste, which should be easily biodegradable, when massive in quantity can cause major problems for the country Zarro et al. (2026), who conducted research in Europe, stated that residues, especially from medical activities, are crucial to consider. Medical residual waste must be addressed through a policy approach with certain conditions. Several countries have attempted to implement solid waste management systems and have shown significant improvements. The initial improvement was a 40% increase in waste-cost efficiency. Consistent cost efficiency has allowed countries to allocate their budgets to areas where they are most needed. This significant cost efficiency has significantly reduced persistent budget deficits. Proper waste management can provide fiscal benefits to a country (Haydar, 2024).

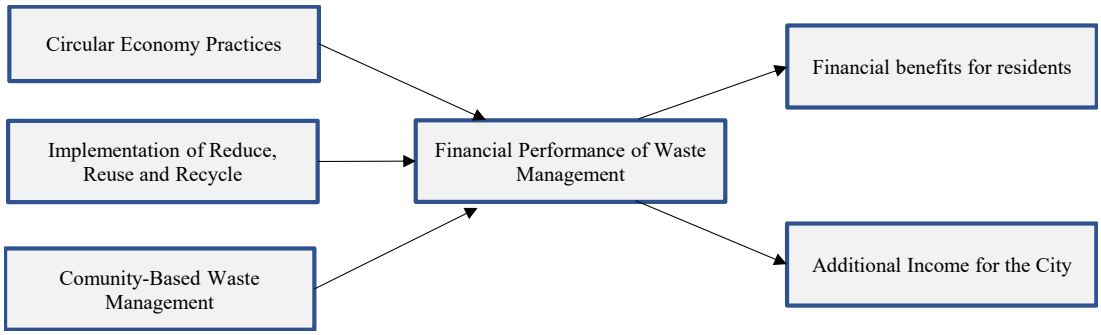

Figure 1. Conceptual framework of the research

Figure 1 shows the financial performance of waste management is influenced by three key factors: circular economy practices, the implementation of Reduce, Reuse, and Recycle (3R) principles, and community-based waste management. These practices enhance the efficiency and sustainability of waste management, leading to improved financial outcomes. In turn, better financial performance generates two primary benefits: financial benefits for residents through income-generating waste management activities and additional income for local governments through increased revenue from waste-based economic initiatives. The framework highlights how sustainable waste management can simultaneously create economic value for communities and strengthen local government financial resources.

3. METHODOLOGY

The design developed in this study was qualitative. The approach used was phenomenology. This approach focuses on an in-depth understanding of the life experiences, perceptions, and meanings felt by individuals or groups when adopting, using, or creating innovations. Phenomenology explores hidden narratives of experience, not just quantitative data (Adikaram & Surangi, 2025). The data used in this study are primary and secondary data. Primary data were obtained through observations and interviews. Primary data collection targeted communities and waste managers in Denpasar City. Secondary data collection focused on the statistical data collected by third parties.

Qualitative data analysis can be conducted by examining data validity based on credibility, transferability, dependability, and confirmability, ensuring that the findings genuinely emerge from the data rather than the researcher's assumptions. Several techniques may be used, including extended participation in the research field, persistent observation, triangulation of sources, methods, investigators, and theories, peer debriefing, negative case analysis, referential adequacy,

and member checking to verify the analytical categories, interpretations, and conclusions. Detailed descriptions are also needed to support transferability by providing accurate accounts of the research context of the study. In addition, auditing can be conducted by examining raw data, reduced data, synthesized findings, process notes, personal reflections, motivations, expectations and predictions (Moleong, 2018).

4. RESULTS AND DISCUSSION

Urban waste management is generally viewed as a public service that incurs costs (a cost center) for local governments. However, from a circular economy perspective, waste is no longer positioned as waste to be disposed of but rather as an economic resource that still has value. The circular economy approach emphasizes that materials used in consumption can be reprocessed to generate new economic value through reduce, reuse, recycling, and resource recovery activities. In this context, the implementation of the 3R principle (Reduce, Reuse, Recycle) and Community-Based Waste Management (CWM) not only reduces waste volume but also has the potential to create financial benefits for the community and local government. Therefore, the waste management system can be transformed from a service cost model to a circular economic system that generates economic value. The proposed waste management model is the Waste Financial Value Creation Model (WFVCM). The WFVCM is a waste management system that creates a circular economic ecosystem to generate financial value for residents, communities, and city governments. The model design that serves as the research innovation is shown in Figure 2.

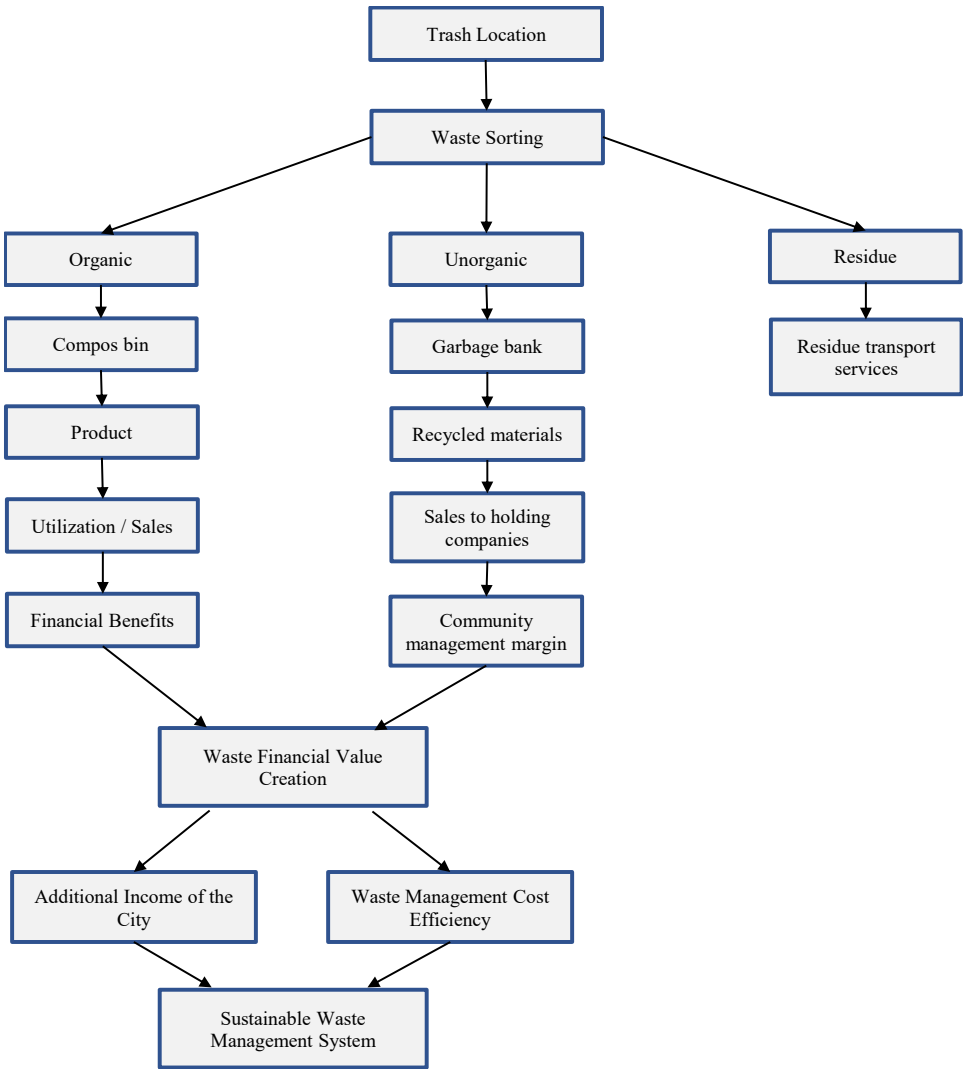

Figure 2. Waste financial value creation model design

This model design can be effectively implemented in Denpasar City. The presence of a community that has existed long before waste became a widespread public issue is a key resource for implementing this model. The high quantity and potential economic value of waste also guarantee the success of the program. The WFVCM model design is based on an environmentally sound waste management system that prioritizes increasing the economic value of waste.

4.1 Waste Sorting

Waste sorting should be carried out independently by the community itself. This independent sorting will provide financial efficiency for the government. This independent activity will accelerate waste management. A common obstacle is the lack of public awareness regarding waste sorting. This obstacle can be overcome by providing public education on the topic. Sanctions for violators must be implemented consistently without discrimination against individuals or groups. Rewards can be prioritized for communities that consistently separate waste.

4.1.1 Organic Waste Management

Organic waste is derived from the remains of living organisms, including plants, animals, and humans, and can be naturally decomposed by microorganisms. This type of waste is generally biodegradable, has a high moisture content, and can be processed into useful products such as compost, animal feed, and biogas. Organic waste includes food scraps, such as fruit peels, vegetables, leftover rice, and fish bones. Yard waste, such as dry leaves, grass, and tree branches, as well as other biodegradable materials, including paper, cardboard, and animal waste. Owing to its decomposable nature, proper management of organic waste can contribute to environmental sustainability and support circular economy practices.

Organic waste will be processed into compost and used as fertilizer. The processing can be performed using a compost bin. A compost bin is a special container used to process household organic waste (food scraps, dry leaves, and vegetables) into nutrient-rich compost. This tool facilitates the natural decomposition process by microorganisms, making it faster and more efficient than conventional composting. Organic waste processing using a compost bin can be performed independently by the community. Compost bins are relatively easy to obtain, and the simple production process allows communities to independently process organic waste.

Compost has many benefits, especially in restoring natural elements to the soil. Communities can use compost to fertilize their soils. Denpasar has agricultural land that requires compost to fertilize its soil. The large volume of compost produced due to the large volume of waste will lead to an abundance of compost. This abundant production volume can be distributed to agricultural areas on Bali. The sale of compost products from Denpasar City to agricultural areas in Bali will generate revenue for the government. The large production volume and sustained production intensity will undoubtedly affect government revenue. The process, from sorting to product sales, requires effective management. This management requires consistency to ensure its sustainability. A Sustainable Waste Management System (SWM) was implemented to ensure sustainable waste management. Its broader impact is the sustainability of income from composting production and sales.

A sustainable waste management (SWM) system is expected to provide a solution to the main problems in organic waste management. The problems are as follows:

1) Low awareness of waste sorting at the source. Approximately 80% of the public does not separate their waste, resulting in organic waste being mixed with inorganic waste (plastic, metal, etc.), which hinders composting.
2) The lack of public awareness is exacerbated by inadequate education from competent authorities. The habit of littering and a lack of understanding of the importance of the 3Rs (Reduce, Reuse, Recycle) remain high.
3) Technical and operational problems result from low carrying capacity. Organic waste requires prompt handling because it decomposes and produces an odor. The composting process often requires special treatments, such as mixing with water or adding activators.

4) Limited facilities and infrastructure for organic waste processing exist. This includes limited land for final processing facilities and suboptimal organic waste processing facilities (composters and biopores) at the household level and temporary processing facilities.
5) Environmental impacts (leachate and gas) are often unknown, leading to neglect by both the government and the public. Piles of organic waste produce leachate that pollutes groundwater and produces methane gas, increasing greenhouse gas emissions.
6) Suboptimal processing due to the burden of responsibility solely on the government. Not all organic waste is processed; therefore, the burden on the final processing facilities remains high.

4.1.2 Inorganic Waste Management

Inorganic waste is derived from non-biological materials, synthetic products, or technological processes involving mined materials that are difficult to decompose naturally. This type of waste is long-lasting and may take hundreds of years to break down, such as plastics, cans, glass, metal, and styrofoam. Inorganic waste is generally non-biodegradable because it cannot be decomposed by soil microorganisms, causing its accumulation and pollution over time. It usually originates from human processing or mining activities, has a strong and durable physical structure, and does not easily decompose. Although difficult to break down, most inorganic waste can be recycled into new products or craft materials. However, it also has a high pollution potential because it can release hazardous chemicals if left unmanaged or burned carelessly. Inorganic waste that has been independently sorted by the community can be submitted to waste banks. A waste bank is a community-based dry waste management system that adopts a banking concept, wherein residents sort waste at home and deposit it into the waste bank. The waste is then weighed, valued, and recorded in a savings account, so residents save recyclable inorganic waste that can be converted into monetary value.

Waste bank management activities include receiving and sorting waste, weighing and recording deposits, storing and packaging collected materials, selling recyclable waste to collectors or recycling industries, creatively processing waste, and conducting public education. In practice, waste banks receive pre-sorted waste from residents or customers based on its type, such as plastic, paper, metal, or glass. The deposited waste is then weighed, valued in rupiah according to its type and price per kilogram, and recorded in the customer savings account. Subsequently, the collected waste is stored in a warehouse and may be compacted or repackaged to facilitate transportation. Once accumulated in large quantities, the waste is sold to large collectors or recycling industries, generating income for the customers. Some waste banks also carry out creative processing by upcycling waste into handicrafts or by processing organic waste into compost. Waste banks also play an educational role by raising public awareness of household waste sorting and promoting a zero-waste lifestyle.

The presence of waste banks will significantly assist the government in reducing the budget deficit caused by the costs of managing inorganic waste. The waste banks will assume the cost burden. Community income will also increase due to the benefits received from waste banks. The sale of recycled materials and products will increase the income of waste bank managers. This implies the potential for taxation that can contribute to local government tax revenue.

The management of inorganic waste by waste banks cannot be effective without government support. The government plays an important role as a facilitator by providing human resources, infrastructure, institutional assistance, and capital for business development. Through synergy between waste banks and the government, a Sustainable Waste Management System can be developed to address key challenges in inorganic waste management, including low public awareness of 3R practices, high waste production, limited recycling facilities and budgets, poor household waste sorting, littering that causes drainage blockages and flooding, and the lack of proper electronic waste processing facilities. This system is expected to improve waste management effectiveness and reduce environmental pollution.

4.1.3 Residual Waste Management

Residual waste refers to solid waste generated from household or industrial activities that cannot be composted, is difficult to recycle, and has little or no economic value. Examples include disposable diapers, sanitary napkins, used tissues, cigarette butts, and multi-layer plastic packaging. As this type of waste is difficult to process, it is generally disposed of through landfilling or by incineration. Effective residual waste management should focus on strict segregation at the source, reduction of single-use products, and proper disposal through licensed waste management facilities. Residual waste should be separated from organic and recyclable inorganic waste to prevent contamination and ensure efficient waste processing. Communities are encouraged to reduce the use of disposable products by adopting environmentally friendly alternatives such as reusable shopping bags and cloth diapers. In addition, residual waste should be kept as clean and dry as possible to minimize odor and environmental impact. Proper transportation and disposal of residual waste require support from sanitation services and designated processing facilities. Under the Waste Financial Value Creation Model (WFVCM), the responsibility for handling residual waste is primarily assigned to the local government, which provides transportation services and ensures that residual waste is managed safely and sustainably.

The implementation of the Waste Financial Value Creation Model (WFVCM) is expected to have several positive impacts. First, it can increase public awareness and participation in waste management, thereby improving urban ecosystems and supporting environmental sustainability. Second, by enhancing the economic value of waste, the model can provide additional income opportunities for communities, thereby improving purchasing power and overall welfare. Third, WFVCM can reduce the budget burden on local governments by lowering waste management costs, as government efforts can be focused on residual waste management. Observations from several waste management communities indicate that the waste composition consists of approximately 60% organic waste, 15% plastic waste, 10% paper waste, 5% metal and glass waste, and 10% residual waste. This composition highlights the significant potential for value creation through waste recovery, recycling, and resource utilization, which can contribute to environmental sustainability and regional economic development. Observations from several waste management communities in Denpasar City indicate the following types of waste: organic ±60%, plastic ±15%, paper ±10%, metal + glass ±5%, and other residues ±10%. The predicted economic value is as follows:

1) Economic potential of organic waste
   Organic volume 60% × 1,000 tons/day = 602 tons/day
   If only 30% is processed into compost: ≈ 180 tons/day
   Compost production: 1 ton of organic waste = ±300 kg of compost
   180 tons = 54 tons of compost per day
   Average compost price: Rp 800 – Rp 1,500/kg
   Conservatively speaking: Rp 1,000/kg
   Economic value: 54,000 kg × Rp 1,000 = Rp 54 million per day or ≈ Rp 19.7 billion per year
2) Economic potential of plastic waste
   Plastic volume = 15% × 1,000 tons = 150 tons/day. If 50% is successfully sorted, ≈ 75 tons/day.
   Average mixed plastic price: IDR 2,000/kg
   Economic value: 75,000 kg × IDR 2,000 = IDR 150 million per day or ≈ IDR 54.7 billion per year
3) Economic potential of paper
   10% paper volume × 1,000 tons ≈ 100 tons/day
   If 50% is sorted: ≈ 50 tons/day
   Recycled paper price: IDR 1,200/kg
   Economic value: 50,000 kg × IDR 1,200 = IDR 60 million per day or ≈ IDR 21.9 billion per year
4) Economic potential of metal and glass
   5% paper volume × 1,000 tons ≈ 50 tons/day
   If 50% is sorted: ≈ 25 tons/day
   Average mixed price: Rp3,000/kg

Economic value: 25,000 kg × Rp3,000 = Rp75 million per day or ≈ Rp27.3 billion per year

5) Total potential economic value of Denpasar waste
Added up:
Source: Economic value per year
Organic compost Rp19.7 billion
Plastic Rp54.7 billion
Paper Rp21.9 billion
Metal & glass Rp27.3 billion
Total potential: ± Rp123 billion per year

The Waste Financial Value Creation Model (WFVCM) for Denpasar City will position waste not merely as a burden on public services but as a source of financial value creation for residents, communities, local managers, and the Denpasar City Government. This model is relevant to Denpasar's policy direction, which already has a regulatory basis through Denpasar City Regional Regulation No. 8 of 2023, Mayoral Regulation No. 15 of 2023, Mayoral Regulation No. 7 of 2024, and Mayoral Instruction No. 1 of 2024, concerning the optimization of source-based waste management.

The WFVCM presents a sustainable waste management model. The WFVCM is equipped with a mechanism that provides detailed management technical recommendations and revenue predictions. The WFVCM can manage organic, inorganic, and residual waste. This comprehensive model is expected to maximize the impact of physical waste management. Compared with the research results of Fitriana et al. (2025), WFVCM is superior in terms of its impact. The policy and community participation scheme simulated by Fitriana et al. (2025) successfully addressed waste problems in Yogyakarta City. The success rate was estimated to be between 15% and 30%. The WFVCM is predicted to achieve a higher success rate. This is possible because the WFVCM promises revenue to the community and the government. This real income will motivate the community and government to work together to implement the WFVCM. The WFVCM is also predicted to minimize the budget deficit, which can be explained logically. These advantages have created optimism for the success of the WFVCM for the community and government in Denpasar City.

5. CONCLUSIONS

5.1 Conclusion

This study produced a waste management model that economically provides an understanding of the potential for new revenue for the City of Denpasar. Conceptually, the WFVCM is expected to contribute to a more effective fiscal decentralization policy by optimizing local revenue. The implementation of the WFVCM will require funding, which will increase regional spending. This will undoubtedly create an additional burden, but as budget deficit pressure intensifies, increasing capital expenditures with a guaranteed high multiplier effect is a necessary consequence.

5.2 Research Limitations

This research is limited to the development of a basic concept for waste management to achieve economic value. The technical aspects of waste production for achieving high economic value have not been discussed in detail. The production aspects in question include transportation from the waste origin, sorting, packaging, and marketing to collecting companies. These technical aspects are not discussed in detail, given that the research focuses on financial innovation as a solution to the budget deficit in Denpasar.

5.3 Suggestions and Directions for Future Research

Further research is required to analyze the production costs required for the technical implementation of the WFVCM. This analysis is necessary to better determine the revenue generated by the Denpasar City Government. Identifying the necessary human resources and capital is crucial for a more comprehensive WFVCM study.

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