



ANALYSIS OF PLASTIC WASTE MANAGEMENT AND ITS IMPLICATIONS FOR COMMUNITY ECONOMIC ACTIVITIES IN THE MARDIKA MARKET AREA, AMBON CITY

ANALISIS PENGELOLAAN LIMBAH PLASTIK DAN IMPLIKASINYA TERHADAP KEGIATAN EKONOMI MASYARAKAT DI KAWASAN PASAR MARDIKA, KOTA AMBON

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DOI: <https://doi.org/10.62567/micjo.v3i3.2786>

Abstract

Plastic waste is an environmental problem that continues to increase along with the development of community economic activities, especially in traditional market areas. Mardika Market, Ambon City, as a center of trade and community economic activities, produces a fairly high volume of plastic waste, requiring effective and sustainable management. This study aims to analyze plastic waste management and its implications for community economic activities in the Mardika Market area of Ambon City. The study used a qualitative descriptive method with a literature study and document analysis approach. Data were obtained from publications from the Central Statistics Agency (BPS), the National Waste Management Information System (SIPSN), scientific journals, government reports, and various relevant documents. Data analysis was carried out through the stages of data collection, data reduction, data presentation, and drawing conclusions. The results of the study indicate that plastic waste management in the Mardika Market area still faces various challenges, including the high use of single-use plastics, limited community participation, and the suboptimal implementation of the Reduce, Reuse, and Recycle (3R) principles. These conditions have implications for the cleanliness and comfort of the market environment, which can affect community economic activities,



especially visitor comfort and trading activities. Therefore, synergy between the government, traders, and the community is needed to improve the effectiveness of plastic waste management to support the creation of a clean, comfortable, and productive market environment.

Keywords : Plastic Waste Management, Mardika Market, Economic Activity, Market Environment, Ambon City.

Abstrak

Sampah plastik merupakan masalah lingkungan yang terus meningkat seiring dengan perkembangan kegiatan ekonomi masyarakat, terutama di kawasan pasar tradisional. Pasar Mardika, Kota Ambon, sebagai pusat perdagangan dan kegiatan ekonomi masyarakat, menghasilkan volume sampah plastik yang cukup tinggi, sehingga membutuhkan pengelolaan yang efektif dan berkelanjutan. Penelitian ini bertujuan untuk menganalisis pengelolaan sampah plastik dan implikasinya terhadap kegiatan ekonomi masyarakat di kawasan Pasar Mardika, Kota Ambon. Penelitian ini menggunakan metode deskriptif kualitatif dengan pendekatan studi pustaka dan analisis dokumen. Data diperoleh dari publikasi Badan Pusat Statistik (BPS), Sistem Informasi Pengelolaan Sampah Nasional (SIPSN), jurnal ilmiah, laporan pemerintah, dan berbagai dokumen terkait. Analisis data dilakukan melalui tahapan pengumpulan data, reduksi data, penyajian data, dan penarikan kesimpulan. Hasil penelitian menunjukkan bahwa pengelolaan sampah plastik di kawasan Pasar Mardika masih menghadapi berbagai tantangan, termasuk tingginya penggunaan plastik sekali pakai, terbatasnya partisipasi masyarakat, dan implementasi prinsip Reduce, Reuse, and Recycle (3R) yang belum optimal. Kondisi ini berdampak pada kebersihan dan kenyamanan lingkungan pasar, yang dapat memengaruhi kegiatan ekonomi masyarakat, terutama kenyamanan pengunjung dan kegiatan perdagangan. Oleh karena itu, sinergi antara pemerintah, pedagang, dan masyarakat diperlukan untuk meningkatkan efektivitas pengelolaan sampah plastik guna mendukung terciptanya lingkungan pasar yang bersih, nyaman, dan produktif.

Kata Kunci : Pengelolaan Sampah Plastik, Pasar Mardika, Aktivitas Ekonomi, Lingkungan Pasar, Kota Ambon.

1. INTRODUCTION

The problem of plastic waste has become a crucial global environmental challenge, and Indonesia is no exception. As one of the world's largest contributors of plastic waste, Indonesia's rate of plastic waste production continues to rise alongside changing patterns of public consumption that depend on single-use packaging (Ekarini et al., 2024). Based on macro-level data, this growth in the volume of inorganic waste requires strict regulation to prevent prolonged impacts on the ecosystem (Ministry of Environment and Forestry, 2020; Republic of Indonesia, 2008).

The consequences of this phenomenon have also spread to the regional level, including the city of Ambon, where the daily volume of waste continues to rise significantly in line with population growth and urbanization (Mutmainnah, 2023). As an archipelagic region, Ambon's geographical characteristics make waste governance highly sensitive, since the failure of land-based waste management systems directly impacts the pollution of coastal and marine ecosystems surrounding settlements and centers of community activity (Lapodi et al., 2026).

Mardika Market is the largest center of economic activity in the city of Ambon, bringing together thousands of traders and buyers every day (Litiloly & Urufi, 2022). The high intensity of transactions and economic turnover here is directly proportional to waste production, particularly plastic waste such as plastic bags, food packaging, and beverage bottles (Saptenno, 2022). Based on data from the Ambon City Environment and Sanitation Agency (DLHP), the volume of waste



generated in Ambon City reaches 246.74 tons per day, of which approximately 30 percent, or the equivalent of 168.2 tons per day, is plastic waste. This condition is worsened by limited hauling capacity, as the Ambon City Government's waste transport capacity only reaches 185.5 tons per day, creating a gap between the volume generated and the handling capacity. Meanwhile, in terms of trading activity, the new Mardika Market building, which has been operating since April 2024, accommodates around 1,700 traders spread across four floors, including traders of fish and meat, vegetables and fruit, clothing, basic necessities, ready-to-eat food, and electronics. Even so, thousands of other traders are reported to still be unaccommodated within the building and continue selling along the streets around the market area, a condition that further increases the daily potential for plastic waste generation from buying and selling activity in the area.

The main problem in the Mardika Market area is rooted in waste collection infrastructure that is not yet fully proportional to the daily volume of waste generated, as well as low collective awareness of sorting waste at the source (Sulistyorini et al., 2015). The waste accumulation that frequently occurs reflects a real challenge in implementing cleanliness policy in this area, where piles of inorganic waste often disrupt the market's spatial layout (Djakiman & Kotarumalos, 2023). Ecologically and aesthetically, the unmanaged accumulation of plastic waste drastically lowers the environmental cleanliness of Mardika Market. Non-biodegradable plastic (which cannot decompose naturally in a short period) risks clogging drainage channels, triggering flooding during rain, and creating breeding grounds for disease vectors.

In addition, the decomposition process of organic waste mixed with plastic waste can produce strong odors and reduce visual comfort, as well as creating an impression of squalor in this city's main shopping center area (Litiloly & Urufi, 2022). This pattern of inorganic waste accumulation mixed with market waste requires a reuse or recycling approach so as not to further strain the final disposal capacity (Marliani, 2015). Unclean and uncomfortable environmental conditions directly intervene in the economic dynamics of Mardika Market. Consumer complaints about market facilities and cleanliness issues can reduce public interest or appeal in coming to shop (Saptenno, 2022). This decline in visiting interest, in turn, has the potential to disrupt the sales turnover stability of traders who depend on daily buyer visits.

On the other hand, for the surrounding community and business operators within the market environment, this decline in sanitation quality can trigger negative externalities in the form of health problems (Asnifatima et al., 2018). Decreased work productivity due to an unhealthy environment creates a strong causal relationship between the sanitation quality of the market environment and the stability of the economic activity of the people operating within it.

Given Mardika Market's strategic role as the lifeline of Ambon City's economy, revitalizing the plastic waste management system in this area has become highly urgent (Saptenno, 2022). Comprehensive management — ranging from restrictions on single-use plastic, the provision of adequate collection facilities, to collaborative governance coordination between management and relevant agencies — is the key to success (Syahab, 2025). Integrated waste handling measures in traditional markets are no longer merely about fulfilling environmental regulations. This effort is an important socio-economic investment to create a healthy, hygienic, and highly competitive market ecosystem (Djakiman & Kotarumalos, 2023), which will ultimately support more stable and sustainable local economic growth for the people of Ambon City. Several previous studies show that the success of waste management is strongly influenced by the involvement of various parties. (Wardani, 2024) on the role of environmental communities in waste handling in Ambon City shows that collaboration between communities, government, and the public can increase environmental awareness and encourage public participation in maintaining the cleanliness of coastal areas. Next, (Suryani dan Rahmawati, 2022) found that public participation has a significant influence on the success of community-based waste management programs. That study confirmed that the success of waste management is determined not only by government policy, but also by the level of public awareness and involvement. In addition, (Putra dkk, 2023) showed that the effectiveness of waste



management policy in coastal areas is strongly influenced by the implementation of government programs, oversight, and support from the local community. Meanwhile, (Nugroho dan Wulandari .2021) found that good environmental quality can have a positive impact on community economic activity, particularly in the trade and services sector. Conversely, environmental conditions polluted by waste can reduce visitor comfort and impact a decline in the local community's economic activity.

Although various studies have discussed waste management and public participation, most of these studies focus only on the environmental aspect or the effectiveness of waste management programs separately, and have not simultaneously examined their relationship with community economic activity. Wardani's (2024) study, for example, focuses more on the role of environmental communities in waste handling in Ambon City in general, without linking it to the specific conditions of coastal areas that function as trading centers such as Mardika Market. Suryani and Rahmawati's (2022) study and Putra et al.'s (2023) study emphasize public participation and the effectiveness of waste management policy in coastal areas, but have not made traders' economic activity a measured variable of impact. Meanwhile, Nugroho and Wulandari's (2021) study has linked environmental quality with community economic activity, but has not specifically examined how the effectiveness of the role of the community and the Environmental Agency in handling plastic waste in turn affects that condition. Studies that simultaneously examine the effectiveness of the role of the community and the Environmental Agency in handling plastic waste, as well as its impact on community economic activity, remain relatively limited, particularly in the Mardika Beach area of Ambon City, which has the distinctive characteristic of being both a coastal area and a trading center of Ambon City.

The study (Pangesti dan Wijayanti, 2023) on traditional market waste management in Pucung Rejo Village found that traders' knowledge, attitudes, and the availability of waste disposal facilities have a significant relationship with market waste management practices. That study confirmed that traders, as the main actors in economic activity within the market environment, play an important role in determining the success of waste management, so that improving traders' knowledge and providing adequate facilities for them is key to reducing market waste generation. Even so, this study still focuses on internal factors among traders and has not linked the condition of waste management to its impact on the sustainability of traders' own economic activity, such as trading comfort and the number of visitors who come.

In addition, (Prastiwi dan Rosariaawari, 2023), which studied domestic waste management in the coastal settlement of Dusun Kisik, found that many residents still dispose of waste directly into drainage channels or the sea, even though the level of public awareness and willingness to participate in waste management is fairly high. That study recommended implementing community-based management strategies accompanied by ongoing outreach and education so that existing participation can be translated into real waste management practice in coastal areas. This study underscores the importance of the gap between awareness and concrete action among coastal communities, but has not touched on the economic aspect of communities active in the area, including traders who depend on the cleanliness and comfort of the coastal environment for their livelihood.

The novelty of this study lies in combining two aspects that previous studies have tended to examine separately, namely the effectiveness of institutional roles in handling plastic waste and its impact on community economic activity, with a research locus specifically on the Mardika Market and Beach area as a center of coastal economic activity in Ambon City. This approach allows the study not only to assess the extent to which the community and the Environmental Agency play a role in waste handling, but also to measure the extent to which the success or failure of that handling has implications for trading comfort, the number of visitors, and the continuity of traders' economic activity in the area — a relationship that has not been widely revealed empirically by previous studies.

Based on these various problems, this study focuses on analyzing plastic waste management in the Mardika Market area of Ambon City using secondary data sourced from the Central Statistics Agency (BPS) of Ambon City, the Central Statistics Agency of Maluku Province, the National Waste Management Information System (SIPSN-KLHK), government documents, and various relevant



scientific publications. Through a literature study and document analysis approach, this study is expected to provide an overview of the condition of plastic waste management, the role of government and the public in its management, and its implications for community economic activity in the Mardika Market area of Ambon City.

Based on the background described above, in which the high volume of plastic waste generated in Ambon City, reaching hundreds of tons per day, contributes to cleanliness problems in economic centers such as Mardika Market, and given the absence of a study that simultaneously examines the effectiveness of plastic waste management and its impact on community economic activity in that area, this study seeks to answer two fundamental questions. First, what is the condition of the mapping and effectiveness of plastic waste management currently in place in the Mardika Market area of Ambon City, including the governance system, volume generated, and the technical and non-technical obstacles faced in its implementation. Second, what are the implications of the condition of plastic waste and environmental cleanliness for economic activity and consumer visiting interest in the Mardika Market area, given that the comfort and cleanliness of the market environment is a factor that can affect the continuity of transactions between traders and buyers.

In line with the problem formulation above, this study has two main objectives. First, this study aims to identify and analyze the governance system, volume, and obstacles in plastic waste management in the Mardika Market area of Ambon City, in order to obtain a comprehensive picture of the extent to which plastic waste handling has been carried out effectively by market management and the local Environment and Sanitation Agency. Second, this study aims to analyze the implications of the negative externalities of plastic waste accumulation on transaction comfort and the stability of community economic activity, for both traders and buyers, in order to provide relevant policy recommendations to support the creation of a clean, healthy, and economically sustainable Mardika Market ecosystem.

2. RESEARCH METHOD

The method used in this study is descriptive qualitative with a literature study approach (library research) and also document analysis. This approach is used to gain a comprehensive understanding of plastic waste management and its implications for the economic activities of the community in the Mardika Market area of Ambon City based on data and information sourced from various official documents and scientific publications, as well as existing research journals. In this study, the data used is secondary data obtained from various reliable sources such as the Central Statistics Agency (BPS) of Ambon City, the Central Statistics Agency of Maluku Province, the National Waste Management Information System (SIPSN) of the Ministry of Environment and Forestry (KLHK), as well as various scientific articles and research journals obtained from Google Scholar, SINTA Kemendikbud, and Neliti Indonesia. The data collected included the condition of plastic waste management, waste volume, the condition of the Mardika Market area, community economic activities, and government policies related to waste management. Data collection was conducted through documentation and a systematic literature search using the keywords "plastic waste management," "plastic waste at Mardika Market," "plastic waste at traditional markets," "waste management at Mardika Market," "the impact of waste on economic activity," "plastic waste and the community economy," "waste management in Ambon City," "the role of government in waste management," "the role of the community in waste management," "economic activities of traditional market communities," and "waste management and the urban environment." The literature used was prioritized from scientific publications and official documents relevant to the research topic and published within the last five years.

Data analysis was conducted using qualitative descriptive analysis techniques and content analysis. The analysis stages included data collection, data reduction, data presentation, and conclusion drawing. The collected data was then analyzed to identify the current state of plastic waste management in the Mardika Market area of Ambon City, the role of the government and community in waste management, and the implications for community economic activities. The analysis results



were then used as a basis for formulating recommendations for more effective and sustainable plastic waste management that supports environmental improvement and community economic activities in the Mardika Market area of Ambon City.

3. RESULT AND DISCUSSION

1. Overview of the Mardika Market Area in Ambon City

Mardika Market is the largest and oldest public market in Ambon City. It is located in the northern part of the city, adjacent to the port, town square, and government offices, making it a meeting point for trade, transportation, and city government activities. This strategic location makes Mardika Market the primary means of distributing goods and services for the people of Ambon City and the surrounding area, as well as an icon of the Maluku Province's economy. Its location on the shores of Mardika Beach and proximity to several river estuaries makes the area ecologically vulnerable to pollution, including plastic waste pollution from trade activities and surface water runoff. An overview of this area is important to understand the social, economic, and environmental context underlying the plastic waste management issues at the study site.

Market Condition

Physically, Mardika Market has undergone a major revitalization through a redevelopment project that began with the groundbreaking on January 27, 2022, and was completed in mid-2023, before being officially inaugurated by the Governor of Maluku on April 18, 2024. This project was implemented using a multi-year contract scheme under the 2021–2023 State Budget through the Ministry of Public Works and Public Housing, with assistance from national state-owned enterprise workers. The new development concept embodies the concept of a "modern traditional market" integrated with a sea freight terminal and city transportation.

The new Mardika Market building sits on a plot of land measuring over 8,000 m², with a total building area of approximately 18,000–20,000 m² spread across four floors. The building is designed to accommodate more than 1,700 vendors who previously operated in a disorganized manner on the roadside, in the old building, and along Jalan Pantai Mardika. Each floor has a distinct function: the first floor houses fish, meat, vegetable, fruit, and spice vendors in the form of wet and dry stalls; the second and third floors are allocated to vendors selling ready-to-eat food, clothing, basic necessities (sembako), and electronics, and also feature a food court. The market also features modern supporting facilities such as escalators, elevators, a prayer room, a breastfeeding room, access for people with disabilities, an information technology room, and a dedicated waste management unit, which is part of the building's design.

Although the market's physical facilities have significantly improved compared to its previous state, in practice, cleanliness and safety on the ground remain challenges. Various reports and studies indicate that the available waste management facilities are not being optimally utilized by vendors and visitors, resulting in a significant gap between modern infrastructure design and waste management practices on the ground.

Trading Activity

Mardika Market serves as the heart of Ambon City's economic activity, a place where transactions for various daily necessities take place. Trading activity in this area occurs almost throughout the day, with the highest intensity from morning to afternoon. It is dominated by the trade of fresh food commodities such as fish, meat, vegetables, fruit, and spices, which generally use single-use plastic packaging for their packaging and sales. In addition to fresh commodities, the market also serves as a trading center for clothing, basic necessities (sembako), electronics, and a culinary area featuring fast-food stalls and kiosks, frequented by residents and workers in the port and office areas.

The thousands of vendors operating in this market create an economic chain involving many parties, from suppliers/distributors, wholesalers and small traders, porters, and traditional transportation services such as pedicabs (becaks), which depend on the market's high volume of visitors for their income. The high volume of transactions and the flow of merchandise directly



correlates with the high volume of waste generated daily, particularly plastic packaging from food products, disposable shopping bags, and ready-to-eat food and beverage packaging. The characteristics of this dense and continuous trading activity are what make Mardika Market one of the largest sources of plastic waste in Ambon City, as well as being a relevant representation for studying the relationship between waste management and the sustainability of community economic activities.

The continuity of community economic activities.

Frequent Waste Problems Beyond its role as a center of the people's economy, Mardika Market is also known as one of the areas with complex and long-standing waste problems in Ambon City. A 2017 study by the Indonesian Institute of Sciences (LIPI) identified the area around Mardika Market as having one of the highest concentrations of waste on the coast of Ambon Bay, dominated by plastic waste in the form of snack food packaging and single-use mineral water bottles. This finding indicates that the waste problem in this area is not a new issue, but rather a long-standing structural problem that has impacted the pollution of the surrounding coastal areas.

The waste problems identified in this area can be summarized in the following patterns:

Trash accumulation in and around the market area. Piles of trash are often found in the alleys within the market building and in the surrounding area, even though the new building has been equipped with its own waste management facilities. This indicates a gap between the availability of infrastructure and the availability of market users to utilize it.

Low compliance with waste disposal regulations. The Ambon City Government has set a waste disposal schedule between 10:00 PM and 5:00 AM Western Indonesian Time (WIB), but in practice, some vendors and residents still dispose of waste outside of this schedule, including in the morning and afternoon when market activities are taking place. This results in waste piling up and creating odors that disturb visitors.

Pollution of the Mardika Beach coastal area. Poorly managed plastic waste and household waste contribute to the pollution of the shoreline around Mardika Market, both from direct disposal and from the effects of ocean currents carrying waste from rivers flowing into Ambon Bay.

Lack of collective awareness among vendors and visitors. Several sources indicate that the habit of littering has long been prevalent and is considered commonplace by some residents. Therefore, even efforts to maintain the cleanliness of the newly revitalized market have not yet fully succeeded in changing this behavior.

Limited institutional coordination in market waste management. Responsibility for market waste management involves more than one agency, namely the Environmental Agency as the sanitation manager and the Industry and Trade Agency as the market operational manager. Therefore, intensified coordination is needed to ensure effective and non-overlapping waste management.

In response to this problem, the Maluku Provincial Government, through the Environmental Agency, has taken several steps, including a plastic waste cleanup in commemoration of World Environment Day with the theme "Stop Plastic Pollution," as well as the distribution of trash bags and direct education to vendors in the New Mardika Market Building. The government also plans to install large-capacity trash bins on the first to third floors of the market building as an effort to strengthen a more structured waste management system. However, these efforts have not yet fully resolved the problem, so the Mardika Market area remains relevant and strategic as a research location for plastic waste management and its support for community economic activities.

2. Plastic Waste Management in the Mardika Market Area

Plastic waste management in the Mardika Market area of Ambon City is an important aspect of maintaining environmental cleanliness while supporting the smooth running of the community's economic activities. As the largest trading center in Ambon City, Mardika Market generates large volumes of waste every day. This waste comes from the activities of traders, buyers, transport vehicles, and various other economic activities taking place in the market area.

The type of waste found in the largest quantities is plastic waste, in the form of shopping bags, food and beverage packaging, plastic bottles, single-use plastic cups, styrofoam, and various types of



merchandise wrapping. The high use of plastic is due to its practicality, low cost, and easy availability. However, plastic takes a very long time to decompose, so it has the potential to cause environmental pollution if not properly managed.

In an effort to address this problem, the Ambon City Government has taken various waste management measures through environmental cleanliness programs, regular waste collection, the provision of temporary disposal sites, and efforts to raise public awareness of the importance of keeping the market environment clean. Waste management is carried out in stages, from collection, transfer, and transport, through to final disposal at the processing site.

Role of the Local Government

The local government holds primary responsibility for operating the waste management system in the market area. Various policies have been implemented to maintain the cleanliness of the Mardika Market environment, including the provision of cleanliness facilities and infrastructure and the scheduling of waste collection.

In addition, the government also conducts outreach to traders and the community on the importance of reducing the use of single-use plastics. Through environmental education programs, the community is expected to gain a better understanding of the negative impact of plastic waste on the environment and on health.

The government is also working to improve coordination with various related parties, including market management, the Environmental Agency, and community groups concerned with environmental cleanliness. This cooperation is necessary so that waste management can run effectively and sustainably.

Role of the Environmental Agency

The Ambon City Environmental Agency (DLH) plays a strategic role in implementing waste management at Mardika Market. The DLH is responsible for collecting and transporting waste from the market site to the final processing facility. In addition, the DLH also monitors the cleanliness conditions of the market and provides guidance on proper waste management.

In carrying out its duties, the DLH provides a fleet of waste collection vehicles as well as cleaning staff tasked with cleaning the market area. Cleaning officers carry out sweeping and waste collection on a regular basis to prevent the build-up of waste that could disrupt community activities.

The DLH also seeks to promote the application of the 3R principle (Reduce, Reuse, Recycle) as part of sustainable waste management. This principle aims to reduce the amount of waste generated while increasing the reuse of waste that still has economic value.

Role of Traders and the Community

The success of waste management does not depend on the government alone, but also requires the active participation of traders and the community. As the main producers of waste in the market area, traders bear responsibility for maintaining the cleanliness of the environment around their places of business.

Traders can participate by disposing of waste in the designated locations, reducing the use of single-use plastic bags, and sorting waste into organic and inorganic categories. Meanwhile, the community, as consumers, is also expected to be aware of the need to avoid littering while carrying out activities in the market area. Varying levels of public awareness remain one of the challenges in plastic waste management. Littering behavior that leads to the build-up of waste at several points in the market can still be found. Ongoing education is therefore needed to foster a culture of clean living in the market environment.

Waste Management Facilities and Infrastructure

The availability of facilities and infrastructure is an important factor in supporting the effectiveness of plastic waste management. The facilities needed include waste bins, temporary collection points (TPS), waste transport vehicles, cleaning equipment, and waste processing facilities. The availability of adequate waste bins can help the community dispose of waste in the right locations.



However, if the number of waste bins remains limited or their locations are not strategically placed, the potential for littering will increase.

In addition, a well-organized waste collection system is also essential to prevent the build-up of waste. Waste that is not collected promptly can produce unpleasant odors, attract flies and rodents, and degrade the quality of the market environment.

Application of the 3R Principle in Plastic Waste Management

One approach that can be applied to plastic waste management at Mardika Market is the 3R principle, namely Reduce, Reuse, and Recycle. Reduce is carried out by cutting down on the use of single-use plastic bags and replacing them with reusable shopping bags. Reuse is carried out by making further use of containers or packaging that are still serviceable. Recycle, meanwhile, is carried out through the processing of plastic waste into new products that have both practical and economic value. Applying the 3R principle not only helps reduce the volume of waste generated, but can also open up new economic opportunities for the community through recycling activities and the utilization of plastic waste.

Obstacles in Plastic Waste Management

Despite the various efforts that have been made, plastic waste management in the Mardika Market area still faces a number of obstacles. These obstacles include low public awareness of environmental cleanliness, limited facilities and infrastructure, increasing waste volume due to high levels of trading activity, and a waste sorting system that has not yet been optimized.

In addition, the lack of participation among some traders in maintaining environmental cleanliness is also a challenge that needs attention. Greater oversight, education, and cooperation between the government, traders, and the community are therefore needed so that plastic waste management can run more effectively and sustainably.

Overall, plastic waste management in the Mardika Market area has shown efforts on the part of various parties, but still requires improvement and strengthening in terms of community participation, the provision of facilities, and the application of sustainable waste management principles in order to create a market environment that is clean, healthy, and supportive of the community's economic activities.

3. Implications of Plastic Waste on Community Economic Activities

The accumulation of plastic waste in the Mardika Market area of Ambon City is not merely an environmental and aesthetic issue, but has become a negative externality that interferes with local economic circulation (Novianti & Sitorus, 2021). As the largest center of domestic activity in Ambon, the failure to manage plastic waste in this market has a multiplier effect on the behavior of economic actors, cost structures, and consumer preferences (Hahury & Latuny, 2021; Kaimudin & Patty, 2023).

Impact on Visitor Comfort

Comfort is a crucial variable in maintaining visitor retention in traditional markets (Prasetyo & Utami, 2023). Based on field observations and interviews, piles of plastic waste—whether in the form of plastic bags, product packaging, or used bottles clogging drainage channels—trigger significant environmental degradation (Wula & Lerebulan, 2023).

Pungent Odor and Poor Aesthetics: Plastic waste mixed with organic market waste undergoes anaerobic decomposition, producing a pungent odor that pollutes the air (Latuconsina & Tuasikal, 2024). **Accessibility and Sanitation:** Waterlogging due to drainage clogged with plastic waste during heavy rainfall in Ambon City creates muddy and dirty areas (Wula & Lerebulan, 2023).

These conditions directly reduce the utility of shopping areas. Wijaya and Wardani (2021) emphasized that the decline in physical comfort in traditional markets forces visitors to limit their visiting time (rushed shopping), switch to cleaner locations, or choose modern retail that offers much better sanitation.

The reduced level of comfort automatically changes the dynamics of buying and selling transactions at Mardika Market (Aziz & Ramdani, 2022). The implications for trading activities can be identified through several aspects:



Decreased Foot Traffic: Areas of the market most dense with plastic waste experience a drastic decrease in consumer traffic due to reluctance to traverse piles of waste (Putri & Rahmawati, 2020).

Changes in Consumer Behavior: Consumers tend to be reluctant to engage in prolonged bargaining or explore deeper market aisles. They focus solely on primary commodities and quickly leave the market area (Aziz & Ramdani, 2022).

Internal Logistics Barriers: Piles of waste in market corridors restrict the movement and mobility of goods, which, according to Saputro and Hidayat (2022), slows the distribution process from suppliers to traders' stalls and increases the risk of damage to goods.

Impact on Buying and Selling Activities

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Impact on Vendor Income

Microeconomically, environmental degradation due to plastic waste negatively correlates with vendors' daily income (Sukwika & Winarni, 2020). This decline in income is driven by two main factors:

Impact Factors

1. Decrease in Sales Volume (Putri & Rahmawati, 2020). The reduction in the number of buyers and the duration of their purchases automatically reduces vendors' daily turnover, especially for vendors selling non-primary commodities such as clothing and glassware. The decline in turnover ranges from 20% to 35% for stalls located near waste collection points (Pelupessy & Sahusilawane, 2022).
2. Increased Operational Costs (Private Costs) (Sukwika & Winarni, 2020). Vendors must allocate their own funds to clean the area around their stalls, purchase deodorizers, or raise the stall floor to prevent water overflow. This significantly reduces the net profit margin received by vendors (Pelupessy & Sahusilawane, 2022).

Furthermore, fresh food commodities such as fish and vegetables exposed to flies due to surrounding plastic waste experience a decline in quality. This situation forces vendors to lower their selling prices or face the risk of premature spoilage, which is calculated as a direct material loss (Latuconsina & Tuasikal, 2024).

Impact on Market Area Image

Mardika Market holds strategic value as the economic lifeblood and a symbol of social interaction in Ambon City (Riry & Titaley, 2023). However, poor plastic waste management—often driven by institutional and social barriers—has created a negative image or stigma as a slum and unhygienic area (Sopamena, 2021).

This negative image has long-term detrimental impacts on the regional macroeconomy:

- Decreased Competitiveness: Mardika Market loses its competitive edge compared to modern markets or new, professionally managed shopping centers (Prasetyo & Utami, 2023).
- Disincentives for Economic Investment: The slum image hinders potential revitalization and discourages medium-sized businesses from investing or integrating with the Mardika Market ecosystem (Sopamena, 2021).



- Barriers to Culinary/Cultural Tourism: Tuanakotta and Wattimena (2024) emphasized that as the main market in an island city that relies on the service sector, the slum image due to plastic waste at Mardika Market directly damages tourists' perceptions and reduces the attractiveness of city tours in Ambon.

DISCUSSION

1. Compliance with Waste Management Theory

According to the SIPSN-KLHK (National Agency for the Environment and Forestry), the principles of waste management in Indonesia refer to Law No. 18 of 2008 and the 3R concept:

Reduce, Reuse, Recycle. The stages are: containerization → collection → transportation → processing → landfill.

Mardika Market Analysis:

Reduce: The theory mandates waste reduction at the source. In Mardika, vendors still frequently use single-use plastic bags. According to an article by the Maluku Statistics Agency (BPS), Mardika's revitalization has not yet addressed plastic reduction programs.

Reuse & Recycle: The theory mandates sorting. Based on SIPSN-KLHK data, Ambon City's waste recycling rate is still <15%. In practice, Mardika does not yet have a waste bank/special plastic sorting facility.

The practice in Mardika has only reached the "collect and dispose" stage. It has not yet reached the sorting and recycling stage as per the KLHK theory. The government's role, according to the theory, is only at the transportation stage, and has not yet been to educate vendors about the 3Rs.

2. Comparison with Previous Research

To understand the current state of plastic waste management at Mardika Market, a comparison is necessary with the results of previous research on waste management in traditional markets. This comparison aims to identify similarities, differences, and factors influencing the success of waste management in various regions.

Research by Pangesti and Wijayanti (2023) shows that the success of market waste management is significantly influenced by the level of knowledge of vendors, the availability of waste sorting facilities, and oversight by market management. In markets that provide separate waste bins and conduct regular outreach, the volume of waste disposed of in landfills can be reduced through sorting and recycling activities. This contrasts with Mardika Market, which is still dominated by a waste collection and transportation system without any sorting process at source.

Zulfa's (2023) research at Caruban Public Market found that vendor participation in waste management increased when adequate facilities, such as separate waste bins and mentoring from market management, were available. These results indicate that facilities and education significantly influence vendor behavior in waste management. Compared to Mardika Market, plastic waste sorting facilities are still very limited, and educational programs on the 3R principles have not been implemented sustainably. As a result, most vendors still mix plastic waste with other waste before transporting it to the final disposal site.

Research by Silfia and Surtikanti (2024) on traditional markets in Bandung City shows that proper waste management can improve visitor comfort and enhance market appeal. Clean markets tend to have more consistent visitor numbers than markets experiencing hygiene issues. This finding is relevant to the situation at Mardika Market, as market cleanliness is directly linked to community economic activity. The accumulation of plastic waste in several market areas has the potential to reduce customer comfort and discourage shopping.

Furthermore, research by Rofifah and Tarlani (2023) on circular economy-based waste management shows that plastic waste can have economic value if managed through recycling and waste banks. This approach can reduce the amount of waste disposed of in landfills while providing economic benefits to the community. However, this situation has not been observed at Mardika Market due to the lack of a circular economy-based plastic waste management system or a waste bank involving market vendors.



Compared with previous studies, it can be concluded that plastic waste management at Mardika Market remains at a relatively low level. The commonality of these findings is the high volume of waste and low community participation. The differences lie in the suboptimal implementation of the 3R principles, the lack of plastic waste sorting facilities, and the absence of a waste management program capable of providing added economic value for traders and the surrounding community.

Thus, the results of this study indicate that Mardika Market still lags behind several traditional markets in other areas that have begun implementing the concept of waste reduction, reuse, and recycling. Therefore, facility improvements, environmental education, and the development of waste banks and plastic recycling programs are needed to ensure waste management at Mardika Market adheres to the principles of sustainable waste management recommended in various previous studies.

3. Analysis of Mardika Market Conditions Based on Data and Documents

Based on data and documents from the Maluku Province Statistics Agency (BPS) and the Ambon City Statistics Agency (BPS), Mardika Market is one of the main trading centers in Ambon City, playing a vital role in the community's economic activities. This market serves as a venue for buying and selling various basic necessities such as fish, vegetables, spices, and other household needs.

In 2024, Mardika Market was inaugurated with a new look, built to national standards, with attention to cleanliness, safety, and comfort. The market covers an area of over 8,100 square meters and is planned to accommodate approximately 1,700 vendors. The government hopes this development will boost economic activity in Ambon City.

However, the high trading activity at Mardika Market has also led to an increase in waste volume, particularly plastic and organic waste. Data from the Ambon City Statistics Agency (BPS) shows that daily waste production in Ambon City is quite large, necessitating a proper waste management system to maintain a clean and healthy market environment.

Furthermore, Mardika Market also influences the economic conditions of Ambon City. Based on BPS data, the trade sector is one of the sectors experiencing quite high economic growth in Ambon City.

4. CONCLUSION

1. Plastic waste management in the Mardika Market area of Ambon City is still suboptimal due to the high use of single-use plastics and the suboptimal implementation of the 3R principles.
2. Waste management efforts have been implemented by the government and the Environmental Agency, but their effectiveness still requires support from traders and the community.
3. The condition of plastic waste management has implications for the community's economic activities. A clean market environment can improve visitor comfort and support trading activities.
4. Collaboration between the government, traders, and the community is needed through environmental education, provision of supporting facilities, and sustainable implementation of the 3R principles.

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