



The role of traders in market waste management to promote sustainable environmental development

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ABSTRACT

Background: Human activities inevitably generate waste, and in Indonesia, the wholesale and retail trade sector that is employing 17.5% of the working population plays a major role in this process. Traditional markets, as key economic hubs, are significant waste contributors, with national data showing that households and markets produce 14.47% of Indonesia's total waste. This study examines the role of traders in waste management, where inadequate practices often lead to waste accumulation and unsanitary conditions. **Methods:** Using a qualitative case study approach, data were gathered through field observations and interviews with traders, managers, and cleaning staff. **Findings:** The study found that hold substantial day-to-day control over how waste is generated and sorted, yet most exercised this power inconsistently and individually, leaving their potential as central stakeholders largely untapped. Although market managers and cleaning staff held the formal legitimacy and authority to set procedures and supply facilities, limited budgets, irregular education, and weak enforcement constrained their capacity to alter vendor behavior. A persistent intention–behavior gap emerged across informants—many recognized the value of sorting but did not practice it—indicating that waste management at the market operates as much as a social process shaped by supervision, incentives, and peer norms as a technical one. **Conclusion:** These findings highlight an intention about behavior gap driven by limited facilities, weak supervision, and minimal incentives. The study concludes that improving trader participation through continuous education, better infrastructure, and collaborative programs is essential for achieving sustainable market waste management. **Novelty/Originality of this article:** This study provides novel insights into the intention–behavior gap in traders' waste management practices in traditional markets, highlighting the influence of limited facilities, weak supervision, and minimal incentives on participation in sustainable waste management.

KEYWORDS: sustainable development; traders; traditional markets; waste management.

1. Introduction

Human activities are inextricably linked to the production of waste. To meet their needs, humans engage in various activities, including work and other pursuits. Based on data from the Badan Pusat Statistik (2025), the three largest sectors of work for the population aged 15 years and over are in the first three sectors of agriculture, forestry, and fisheries (37.89%), secondly, wholesale and retail trade (17.5%), and thirdly, in the processing industry sector (12.68%). One of the main economic centers where Indonesians conduct trade is the traditional market. Furthermore, examining trade activities in conventional markets, as part of the community's efforts to support their livelihoods, remains a significant challenge in market management. This is explained in research on

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market waste management by Putri (2015), who noted that market activities, such as buying and selling and the movement of goods and services, lead to waste accumulation, unsanitary market environments, and unpleasant odors. Data released by the National Waste Management Information System/*Sistem Informasi Pengelolaan Sampah Nasional* (SIPSN), owned by the Ministry of Environment and Forestry (2024), indicates that household activities and traditional markets account for 14.47% of Indonesia's waste sources. This fact suggests that poor waste management in market environments will quickly exacerbate environmental problems, as markets are the largest sources of waste in Indonesia.

Market waste management depends greatly on the participation of key stakeholders, especially traders who are deeply involved in daily market activities—from selling goods to interacting with consumers (Durán-Sandoval et al., 2025). These activities produce large amounts of organic and inorganic waste, making traders' awareness and behavior essential for maintaining a clean and healthy market environment. In line with the principles of sustainable development, traders function not only as economic actors but also as agents of change who influence waste management practices at the micro level.

Traditional markets such as Kenari Market in Central Jakarta play a strategic role as economic and social hubs. However, poor waste management remains a problem. Reports by Martiyanti (2016) and field observations in 2025 showed waste accumulation and littering around the market. Studying traders' roles in this context provides insight into the challenges and opportunities for promoting sustainable environmental development in urban settings.

This research draws on the concepts of sustainable development and stakeholder theory. Stakeholder Theory (Freeman, 1984) underscores that effective systems depend on managing relationships among all parties involved. In Kenari Market's case, traders are not merely waste producers but crucial internal stakeholders whose engagement determines management success. According to Mitchell et al. (1997), stakeholder prioritization depends on power, legitimacy, and urgency such as attributes that traders possess. As Larasati & Santoso (2023) note, effective market waste management requires collaboration among market managers, local governments, and informal actors such as scavengers, shifting from fragmented authority toward integrated, cooperative governance.

The involvement of stakeholders, particularly traders, in market waste management is not only relevant in stakeholder theory but also aligns with the principles of sustainable development. This concept, popularized by Brundtland (1987), is defined as "development that meets the needs of the present generation without compromising the ability of future generations to meet their own needs." The environmental pillar of sustainable development emphasizes the importance of responsible resource management, in which waste is not treated as waste but as a mismanaged resource. In line with this, Purvis et al. (2019) assert that sustainable development requires "an integrated approach that recognizes the fundamental interrelationship between the environment, the economy, and society." In the context of this study, the involvement of traders in waste sorting and composting not only reduces environmental burdens (ecological pillar) but also creates economic opportunities through the sale of compost (economic pillar) and improves the health and welfare of the surrounding community (social pillar). This study seeks to develop a model that enables Kenari Market traders to become key actors in realizing the principles of sustainable development at the local level.

Recent studies further reinforce the importance of an integrated approach to traditional market waste management. Silfia & Surtikanti (2024) confirmed that environmental awareness and active participation of traders are determining factors in the effectiveness of sustainable waste management, while Marlina et al. (2023) emphasized that collaboration between traders, market managers, and local government is key to the success of sustainable waste management. Tulus et al. (2023), in their research in Manado City, developed an environmentally friendly traditional market waste management model by emphasizing a participatory approach involving all stakeholders. Consistent with these findings, Aye & Widjaya (2023) found that composting organic waste, combined with

recycling inorganic waste, yields the greatest economic and environmental benefits relative to landfill disposal. Research by Wahyuni et al. (2019) identified that knowledge, facilities, and the role of market managers significantly influence trader behavior in waste management at Wonodri Market, Semarang. Meanwhile, Klunbut et al. (2017) emphasized the importance of selecting waste management options that align with multi-stakeholder perspectives, including vendors' preferences for practical, cost-effective systems. Building on empirical findings from prior studies, this study seeks to integrate stakeholder engagement approaches to develop a model in which vendors at Kenari Market can become key actors in realizing sustainable development principles at the local level.

Several previous studies have addressed traditional market waste management, particularly vendor daily practices. For example, research at Gegerkalong Market in Bandung found that organic market waste remains poorly managed due to low vendor awareness (Silfia & Surtikanti, 2024). However, these studies have not extensively examined the role of vendors within the stakeholder theory framework, which emphasizes power, legitimacy, and urgency (Mitchell et al., 1997). In another study, Aye & Widjaya (2023) demonstrated that integrating formal and informal stakeholders is crucial for effective waste management. However, vendors' position as key stakeholders in market management has rarely been systematically studied. This highlights a research gap: how vendors can be positioned as key actors within the stakeholder theory framework in traditional market management, as exemplified by Kenari Market in Jakarta.

This study is novel in integrating stakeholder theory (Freeman, 1984) with sustainable development principles to analyze traders not only as waste producers but as agents of change in Kenari Market's dense, high-volume urban context (Hörisch et al., 2014; Purvis et al., 2019). It aims to: (1) assess traders' awareness, attitudes, and practices in sorting and reducing waste; (2) examine their interactions with market managers, local government, and informal actors; and (3) formulate strategies to strengthen their role in supporting local sustainable environmental development (Purvis et al., 2019). The findings are expected to enrich theory by foregrounding traders within the stakeholder framework and to inform policies—such as regulations, incentives, and educational programs—that enable Kenari Market to serve as a model of sustainable traditional market waste management, using a qualitative case study approach suited to exploring complex behaviors and interactions in real-life settings (Creswell & Poth, 2018).

This study uses a case study design to enable an in-depth examination of Kenari Market as a real-world example of an urban traditional market, consistent with Yin's view of case studies as investigations of contemporary phenomena in their real-life context (Yin, 2018). It applies methodological triangulation through field observations and in-depth interviews with purposively selected traders to capture practices, motivations, constraints, and perceptions, thereby strengthening validity and reliability (Flick, 2018). The data are then analyzed using thematic analysis (Braun & Clarke, 2006), guided by Stakeholder Theory (Freeman, 1984) and Sustainable Development principles (Purvis et al., 2019), to interpret how traders' roles can be optimized to support sustainable waste management at Kenari Market.

2. Methods

Data forms the foundation of scientific validity and reliability. As Knaflitz (2015) argues, it is the basis for meaningful narratives—without it, research becomes mere opinion. This study analyzes the role of traders in Kenari Market, Jakarta, in supporting sustainable environmental development, using Freeman's Stakeholder Theory and the concept of sustainable development management. A qualitative case study approach was adopted, following Creswell & Poth (2018), to explore this phenomenon within its real-world context.

Primary data were collected through semi-structured, in-depth interviews, which, according to Bryman (2016), are effective for uncovering participants' experiences, motivations, and perceptions. Interview themes included waste knowledge, sorting behavior, challenges, and expectations toward market management. Informants were

selected purposively (Creswell & Poth, 2018) to ensure data relevance and richness. Fourteen participants were involved: ten traders (three vegetable, two grocery, two clothing, and three cable or pipe sellers), two market managers, and two sanitation workers. Traders were chosen to represent different waste types and reach data saturation, while managers and cleaners provided institutional and operational perspectives on waste management practices.

The selection of informants employed purposive sampling to ensure that participants provided rich, relevant information related to the research focus, as suggested by Creswell & Poth (2018). There were 14 informants, consisting of three main groups. The first group consisted of 10 traders selected based on the variety of goods sold, such as vegetables, groceries, clothing, and cable or pipe sellers located in the Jaya Kenari market area and on the side of the road, because each type of goods produces different waste characteristics and requires different management strategies. This study examined the number of merchant informants by type: three vegetable merchants, two grocery merchants, two clothing merchants, and three cable and pipe merchants. This number was chosen to achieve data saturation, at which point adding informants no longer yielded new information. The second group consisted of two market managers who were interviewed to understand the policies, facilities, and institutional challenges in overall market waste management. Based on the data requirements, the market managers who served as informants were from Kenari Market Management. The third group consisted of two market sanitation workers who provided practical and field perspectives on traders' behavior and participation in waste management.

The selection of informants aligns with the application of Stakeholder Theory, which identifies three main stakeholder groups; traders as key actors, managers as regulators, and sanitation workers as operational partners. The combination of perspectives from these three groups enables the study to develop a comprehensive understanding of the market's waste management system. In addition to primary data, this study uses secondary data sources to enrich and corroborate the findings. These sources include waste management policy documents from the Central Jakarta Environment Agency, annual reports from Kenari Market managers (if available), and the results of non-participant observations of the physical condition of waste bins and waste flow in the market. Based on the above explanation of the selection of informants and secondary sources, Table 1. Research Resources Data Plan summarizes the plan for using secondary data sources and informants in this study.

Table 1. Research resources data plan

No	Data source or Informant	Number	Technique Collecting
1.	Waste Data Collection Report from Kenari Market Waste Management	1 document	Literature Review
2.	Kenari Market Traders	10 persons	Semi-structured interviews
3.	Kenari Market Management/Administrators	2 persons	Semi-structured interviews
4.	Kenari Market Cleaning Staff	2 persons	Semi-structured interviews

The study used the Miles & Huberman (1992) model because it offers a systematic, interactive process consisting of data reduction, data display, and conclusion drawing and verification. In the reduction stage, interview, observation, and document data from Kenari Market were selected and simplified to focus on traders' waste-sorting practices and their interactions with market managers, local government, and informal actors.

The reduced data were then organized in matrices or charts to show relationships between variables such as trader participation and facility support, while conclusions were drawn continuously to identify key patterns and challenges in waste management. Stakeholder Theory (Freeman, 1984) and Sustainable Development principles (Purvis et al., 2019), combined with open, axial, and selective coding (Strauss & Corbin, 1990) and

triangulation of interviews, observations, and policy documents, helped reveal core themes like environmental awareness and limited facilities.

3. Results and Discussion

This study employed a semi-structured interview method, guided by key questions that allowed informants to express their views freely. This technique was chosen to collect contextual data from parties involved in Kenari Market's waste management, including ten vendors representing various commodities, two market management staff members (Public Relations and Operations) from Perumda Pasar Jaya, and two cleaners. Respondents were selected purposively based on their roles and direct involvement in waste management activities. This approach enables the collection of rich data that encompasses both technical and social aspects, explaining the role of vendors and the dynamics of waste management. The questionnaire was developed based on stakeholder theory (Freeman, 1984) and on the attributes of power, legitimacy, and urgency proposed by Mitchell et al. (2011).

In this case, vendors hold both power (influence over the direction of waste flow from their stalls) and urgency (demands to maintain cleanliness in their stalls or to ensure that market operations run smoothly). Therefore, the interview questions were designed to capture how vendors exercise their power in waste management and the degree of urgency they feel to separate and dispose of waste properly. Urgency and legitimacy, in this case, are framed in relation to the social or formal recognition given to vendors by market managers. Understanding the interaction framework of attributes determines the prominence, or centrality, of vendors as stakeholders in the waste management system. This shapes how their treatment or engagement strategies can be more accurately calibrated.

Based on the previously derived variables from stakeholder theory, the researcher developed a set of questions. There are three attributes: 1) power; the discussion of traders at Kenari Market, Jakarta, in terms of "power" examines how much control they actually have over daily waste practices—such as deciding whether to sort or mix trash, how and where to dispose of it, and how their choices can either support or undermine the overall waste-management system; 2) legitimacy; the terms of "legitimacy" focuses on whether their everyday waste practices, responsibilities, and participation in sorting and maintaining cleanliness align with formal rules, management expectations, and socially accepted norms, and to what extent they are recognized and treated as rightful, responsible actors in the market's waste-governance system; 3) urgency; in terms of "urgency" within Freeman's stakeholder theory, the questions used in Kenari Market aim to uncover which trader-related problems in waste management are most pressing and require immediate action, such as stalls quickly piling up with unsorted trash during busy hours, overflowing TPS areas, and the health and odor impacts that directly disrupt daily trading activities.

Table 2. Verbatim Interview and Keypoint based Stakeholder Theory's attribute

Question	Keypoint based Stakeholder Theory's attribute	Informaat
Q: Assalamu'alaikum , sir. Let me introduce myself. I'm Shifa, currently conducting research on waste management at Kenai Market. May I talk to you for a moment? Mr. T: Wa'alaikumsalam , yes, go ahead, Sis. It's okay to clean up the vegetables, too. Q: Yes, sir, just relax . How do you usually throw away your trash every day? Mr. T: Usually, I put them in a small bucket behind the stall. The staff will come around and collect them. Sometimes I separate them, but when there are lots of customers, they pile up. Just put it all in the bucket.	Power 1. Limited control; relies on cleaning staff. 2. Separates waste only when not busy. Legitimacy 1. Aware of sorting rules but outreach is inconsistent. 2. Sees sorting as optional; weak compliance. Urgency 1. Main issue: waste piles up	Mr. T (39 years old), vegetable trader

Q: Have you ever received any outreach or training on waste sorting from market managers?

Mr. T: In the past, he said, separate organic from plastic. But yeah, it's not routine. After once or twice, nothing more.

Q: In your opinion, is there any benefit if traders like you regularly sort their trash?

Mr. T: Yes, if it is properly sorted, it might not be piled up a lot. But yeah... as long as someone picks it up, that's enough for me.

Q: Thank you, Mr Tono. It's been helpful to chat in the midst of busyness.

Mr. T: Yes, you're welcome, Miss. I hope your research goes smoothly.

Q: Good morning, Ms. S. I'm Shifa, from UI, and I'm conducting research on waste management in this market. May I talk to you for a moment?

Mrs. S: Good morning, Miss. Sure, but please pack some rice.

Q: Yes, ma'am, just relax. How do you usually dispose of leftover food and the plastic packaging?

Mrs. S: I just put it in the bin behind the stall. I've been asked to sort it, but no one supervises it every day. So sometimes it works, sometimes it doesn't.

Q: Do you know where the garbage is taken after it is collected?

Mrs. S: They said to the back of the polling station, then to a big place... What's it called, Bantargebang? Something like that. I just heard it.

Q: If there is a recycling program or waste bank at the market, are you interested in joining?

Mrs. S: I'm interested, as long as it's not complicated and the benefits are clear.

Q: Thank you very much, Ms. Siti. I hope your sales continue to be good.

Mrs. S: Amen, thank you, Sis.

Q: Good afternoon, sir. I'm Shifa, currently conducting research on market waste. May I chat with you for a moment?

Mrs. R: That's fine, Miss. But be careful, my stall is a bit muddy.

Q: Hehe, yes sir. How do you usually manage leftover meat or the plastic packaging?

Mr. R: I separate the plastic and cardboard and sell them to scavengers. Not bad for buying coffee. But if there's any leftover rotten meat, just throw it into the bin.

Q: So you are quite aware of the value of recycling, right?

Mrs. R: Yes, it's better to sell than throw it away. But if all the vendors were like me, the market would be cleaner, Miss.

during busy hours.

Cleanliness is not prioritized when workload is high.

Power

1. Limited influence; depends on existing collection system.
2. Sorting done inconsistently due to lack of supervision.

Mrs. S (51 years old),
cooked food
trader)

Legitimacy

1. Aware of sorting policy but unclear about waste flow.
2. Open to formal programs if simple and beneficial.

Urgency

1. Lacks consistent monitoring; causes irregular sorting.
2. Needs clearer guidance and visible benefits to sustain participation.

Power

1. Exercises individual control by sorting and selling recyclables.
2. Independently contributes to waste reduction through personal initiative.

Mrs. R (44 years old),
meat trader)

Legitimacy

1. Actions align with sustainable practices and social expectations.
2. Recognizes the broader benefit of collective participation ("if all vendors were like me").

Q: That's right. Thank you very much, Mrs. R.
Mrs. R: You're welcome, Miss. Be careful walking in the market, it's slippery .

Q: Excuse me, ma'am. I'm conducting research on market waste management. May I talk to you for a moment?
Mrs. Y: Yes, Miss. But I'll weigh the fruit while I'm at it.

Q: Yes, it's okay, ma'am. Do you know where the market waste is thrown?
Mrs. Y: They said it was to a big place outside Jakarta, Bantargebang, right? But I don't really understand the process.
Q: If there is a new training or program on sorting, would you like to participate ?
Mrs. Y: If the time is right, I'd like to , so the stall will be cleaner too.

Q: Ready, thank you , ma'am.
Ms. Yati: You're welcome, Miss. I hope your research is successful.

Q: Good afternoon, Mr. U. I'm from campus conducting research on cleanliness in markets.

Mr. U: Wow, from campus, huh. Okay , go ahead, Miss.

Q: How do you usually dispose of leftover spices or plastic?

Mr. U: If I just throw it in the bucket, the officers will pick it up. Sometimes scavengers will take the plastic first.

Q: Have you ever received any information about the correct way to dispose of rubbish?

Mr. U: Yes, but it was a long time ago. Now, I rarely do.

Q: Thank you very much, sir.

Mr. U: You're welcome. I'll let you know the results later, I'm curious too.

Q: Good morning, Mr. R. Thank you for taking the time.

Mr. R: Good morning, Ms. Shifa. You're welcome, it's okay.

Q: Sir, can you tell us about the waste management system at Kenari Market?

Mr. R: Here, every day, the sanitation workers collect trash from the stalls and then take it to the TPS (landfill site) behind the building. From there, the UPK (Use of Waste Management) truck arrives in the afternoon to transport it to the Cempaka Putih Landfill, and then to Bantargebang .

Urgency

1. No immediate problem raised, but implies need for wider vendor involvement.
2. Highlights potential improvement through shared responsibility.

Power

1. Minimal influence; follows existing disposal system.
2. Limited involvement beyond waste disposal at stall level.

Mrs. Y (36 years old),
fruit trader)

Legitimacy

1. Aware of waste destination but lacks understanding of the full process.
2. Open to training and improvement, showing alignment with institutional goals.

Urgency

No immediate issue mentioned but sees value in cleanliness.

Power

1. Limited control; relies on cleaning staff and scavengers for waste handling.
2. Passive role in the waste-management process.

Mr. U (50 years old),
spice trader)

Legitimacy

1. Aware of proper disposal from past outreach, but guidance is outdated.
2. Current practice shows weak alignment with formal expectations.

Urgency

1. Lack of recent education indicates declining awareness.
2. Highlights need for renewed outreach and consistent supervision.

Power

1. Holds structural authority over daily waste operations and coordination with UPK.
2. Has decision-making influence but limited implementation capacity due to vendor participation gaps.

Mr. R (47 years old),
operational staff of PPJ

Legitimacy

1. Actions aligned with institutional responsibilities

What about outreach or education for traders, Sir?

Mr. R: We held one with the Environmental Agency in 2023, teaching about separating organic and inorganic waste. But we haven't had another one since.

Q: Are there any plans to collaborate with third parties, such as a Waste Bank?

Mr. R: There's a plan, but it hasn't been implemented yet. Not all the vendors are interested in participating either.

Q: Okay, thank you very much, sir.

Mr. R: You're welcome, Miss. I hope the results can help improve our system as well.

Q: Ms. Nuraini, excuse me for a moment. I want to ask about the role of management in educating about market hygiene.

Mrs. N: Oh yes, please go ahead, Miss.

Researcher: How often is socialization usually done, ma'am?

Mrs. N: It used to be every three months, but now it's rarer because of a busy schedule and limited budget.

Q: What is the biggest obstacle, ma'am?

Mrs. N: It's the traders' awareness. We've provided two barrels, but they still mix them.

Q: Understood, ma'am. Thank you very much for your time.

Mrs. N: Yes, you're welcome, Miss.

and government partnerships.

2. Outreach conducted but irregular, reducing sustained compliance among traders.

Urgency

1. Needs renewed education programs and vendor engagement.

Urgent to implement planned collaborations (e.g., Waste Bank) to strengthen system effectiveness.

Power

1. Holds administrative responsibility but limited influence due to budget and scheduling constraints.
2. Can provide facilities but cannot enforce compliance effectively.

Resource person 7: Mrs. N (40 years old), market administration staff

Legitimacy

1. Acts within institutional duties by providing bins and conducting outreach.
2. Low trader compliance weakens perceived authority and effectiveness.

Urgency

1. Needs increased funding and time allocation for regular education.
2. Urgent to boost trader awareness and consistent sorting behavior.

Power

1. Limited authority; executes cleaning routines but cannot enforce sorting rules.
2. Depends on management for equipment and instructions.

Mrs. L (42 years old), cleaning staff

Legitimacy

1. Performs duties according to institutional procedures.
2. Traders' noncompliance reduces system effectiveness despite her adherence.

Q: Good morning, Ms. Lina. I'd like to ask you about your work in the market cleaning department.

Mrs. L: Good morning, Miss. It's okay, but don't take too long, I have a lot of work to do.

Q: Hehe, yes ma'am. Can you tell us about the waste collection workflow here?

Ms. Lina: Every morning, we go around sweeping the alleys and collect the waste from the small bin in front of the kiosk. We then collect it at the TPS (pollution control station) behind the kiosk. The UPK (Use of Waste Management) truck arrives in the afternoon. From there, we continue to Bantargebang.

Q: Are traders used to sorting their rubbish yet, Ma'am?

Mrs. L: Not yet, Miss. I've done it. I prepared two barrels, but still mixed them.

Urgency

1. Immediate issue: traders ignore sorting despite

Q: Is there any support from management for officers like you?

Ms. Lina: There are, but they're basic. Sometimes it's just new equipment or a vest.

Q: Thank you very much, Mrs. L

Mrs. L: You're welcome, Miss. Watch your feet, the floor is muddy.

Q: Good afternoon, Mr. D. I want to ask a few questions about daily work in the cleaning department.

Mr. D: Yes, Miss. But I'll push the cart.

Q: Yes sir, take it easy. What is the biggest obstacle in your daily work?

Mr. D: Sometimes the polling stations are full before the trucks arrive. So they pile up temporarily, and the smell is also pungent.

Q: Is there any form of support from market managers?

Mr. D: Yes, we'll probably provide cleaning equipment. But if we need more workforce, we can't do that yet.

Q: Thank you, sir.

Mr. D: You're welcome, Miss. I hope your research can help make the market cleaner.

facilities.

2. Needs stronger enforcement and management support to sustain waste discipline.

Power

1. Limited authority; focused on operational tasks, not decision-making.
2. Depends on managers and truck schedules for effective waste removal.

Mr. D (45 years old), cleaning officer

Legitimacy

1. Performs duties within assigned roles and regulations.
2. Receives institutional support mainly through equipment, not manpower.

Urgency

1. Key issue: TPS overflows before collection, causing odor and sanitation problems.
2. Urgently needs improved scheduling and additional cleaning staff.

Direct observations at Kenari Market show that waste management remains poorly integrated, with many vendors piling trash in front of their stalls and relying on cleaning crews to collect it. The back area looks more neglected than the road-facing front, and common waste types include plastic, cardboard, and leftover goods. Although cleaning staff work regularly, the large daily volume of waste makes these efforts appear inefficient, indicating the absence of a sustainable, collaborative system among vendors, managers, and agencies.



Fig. 1 (a) Kenari Market trading area; (b) Side stall area of Kenari Market main road; (c) Garbage accumulation area on the side of Kenari Street; (d) Condition of building materials trader kiosk.; (e) Collecting garbage by cleaning officer

3.1 Analysis based on criteria or variables

This field research was conducted at Kenari Market in Central Jakarta, a traditional market managed by the Pasar Jaya Regional Public Company. Kenari Market is characterized as a mixed-use market, serving as a venue for the buying and selling of a variety of daily necessities, including foodstuffs, processed products, and building materials and household items. This characteristic makes the market a source of various organic and inorganic waste. Field data collection took place over two days in the first week of October 2025. This data collection period was chosen due to the relatively consistent level of market activity and its representativeness of typical waste management days. The interview data was then processed and analyzed thematically to answer research questions related to waste types, management flows, actors involved, the roles of each party, and challenges in management.

3.1.1 Types and amount of waste

According to Mr. R (47 years old), operational staff for the market management, the most common types of waste come from vegetable scraps and plastic packaging. This data is in line with the records of Perumda Pasar Jaya and the DKI Jakarta Environmental Agency, which noted that traditional market waste is dominated by 50% organic and 20–25% plastic, in accordance with the average city composition in the 2025–2026 Waste Management Roadmap (WWF Indonesia, 2026).

"In Kenari, the most organic waste is generated daily, Miss. Vegetable peels, leftover chili peppers, rotten kale, and plastic wrappers. On average, one small truck can carry two loads, about 1 ton per day." (Informant, Mr. R)

3.1.2 Waste management flow

Mrs. L (42 years old), a cleaner who has worked for more than eight years, explains:

"Every morning, we go around sweeping the alleys, collecting waste from the small bins in front of the kiosks. We then collect it at the TPS (landfill site) behind the kiosk. Then, in the afternoon, the UPK (Cleanliness Management Unit) comes to transport it to the Cempaka Putih landfill. From there, we continue to Bantargebang." (Informant, Mrs. L)

The waste management process at Kenari Market follows an integrated system implemented by the Jakarta Provincial Government. Waste is collected from each vendor's stall by cleaning staff and then transferred to the market's waste collection point (TPS) for temporary storage and simple sorting. The waste is then transported by the Water Agency's Sanitation Management Unit (UPK) under the coordination of the Jakarta Environmental Agency (DLH) to the TPST/TPS3R before finally being disposed of at the Bantargebang Landfill. This process involves various parties, including the DLH, UPK, and the sub-district PPSU, who coordinate to maintain cleanliness and ensure the waste management process runs effectively according to the principles of integrated waste management.

3.1.3 The role of kenari market traders

Results Most traders admitted that they did not sort their waste regularly. Mr. T (39 years), vegetable trader:

"Sometimes I separate them, but when there are lots of buyers, they all pile up. just put it in the bucket. The important thing is to transport it later, Sis." (Informant, Mr. T)

"I've been told to look after the officers, but not every day there's someone watching. So, sometimes yes, sometimes no." (Informant, Mrs. S)

However, there are traders who are aware of the benefits. This indicates that the role of traders remains individual and uncoordinated. Not all traders understand the process of waste management after it is removed from the market.

"I separate the plastic and cardboard and sell them to scavengers. I can make enough to buy coffee." (Informant, Mrs. R)

3.1.4 Traders' knowledge of waste management flow

When asked whether they knew where the market waste was taken, most answered that they did not know for sure. Only two traders mentioned that there was a temporary place (TPS) behind the market before the goods were transported.

"They say they're dumped in a large dump outside Jakarta, what is that ... Bantargebang? But I don't really understand the process." (Informant, Mrs. Y)

3.1.5 Waste management socialization and education

According to the manager, socialization activities have been carried out before, but not routinely.

"We held a program with the Environmental Agency (DLH) in 2023 to teach vendors how to separate organic and inorganic waste, but we haven't done it since. If there's a Waste Bank program, we'd support it, but not all vendors have participated yet." (Informant, Mr. R)

According to the DKI Jakarta Environmental Agency Roadmap 2025–2026 , Communication, Information, and Education (KIE) activities are a priority to increase the participation of market business actors through community approaches and incentives.

3.1.6 Waste management challenges at kenari market

The main challenges expressed by respondents included: first, lack of awareness among traders to sort waste.

" That's it I prepared two barrels, but still mixed them. " (Informant, Mrs. L).

Second, limited facilities and supervision; The TPS behind the market is often full before the UPK truck arrives, causing temporary backlogs. Third, lack of ongoing educational activities; after the initial training, there is no follow-up mentoring or evaluation of trader behavior. Fourth, partnerships with third parties are still minimal; there are no official Waste Bank units operating in the Kenari Market area, although there are some in the surrounding neighborhood units (RW).

Freeman's Stakeholder Theory terms, traders, managers, cleaners, scavengers, and government agencies at Kenari Market all possess different combinations of power, legitimacy, and urgency that shape waste management outcomes. Traders hold day-to-day practical power over how waste is produced and sorted, yet most exercise this influence inconsistently and individually, so their potential as key stakeholders remains underutilized. Market managers and cleaning staff have formal authority and institutional legitimacy to set procedures and provide facilities, but limited budgets, irregular education, and weak enforcement reduce their capacity to change behavior. Meanwhile, cleaners and some proactive traders experience the urgency of overflowing TPS, unsorted waste, and operational burdens most directly, highlighting that effective governance requires

repositioning traders from passive policy objects into recognized, empowered partners within a collaborative, multi-actor system.

3.2 Comparison with previous studies

This section discusses previous studies on the role of vendors in market waste management, both in Indonesia and abroad. Avitadira & Indrawati (2023) found that collaboration between the government, private sector, and communities in Jakarta was hindered by weak engagement mechanisms. Surendra et al. (2016) in India emphasized the vital role of informal waste traders like Pheriwalas in resource conservation and job creation. Windanastiti et al. (2021) revealed poor compliance with national waste regulations at Kamulan Market due to a lack of sorting systems and weak enforcement. Suryakusuma (2024) showed that using BSF larvae reduced organic waste by 42% and was financially viable. In Nigeria, Olaseha et al. (2005) demonstrated that educational programs increased traders' waste segregation from 0% to 90%. Bruce & Storey (2010) highlighted the efficiency of informal waste networks in Bali, advocating for inclusive policies that support these actors. Meanwhile, Ray (2008) warned that international waste trade can harm developing countries, calling for collaboration in technology and capacity building.

Overall, the literature shows that vendors are key to effective waste management and sustainable environmental development. Their involvement, alongside supportive regulations, education, and collaboration with local authorities, determines the success of waste management systems. In the context, these findings underscore the need for synergy among vendors, market management, and local government to transform traditional markets toward sustainability.

3.3 Implications of findings and in-depth discussion

Traders at Kenari Market are central to waste governance because they both generate waste and can act as agents of change, giving the findings theoretical, practical, and policy significance within Stakeholder Theory and Sustainable Development in Indonesian traditional markets. The study shows that effective waste management depends on vendors' power, legitimacy, and urgency, yet their role remains underrecognized; limited facilities, weak education, and lack of incentives keep sorting practices low, so a collaborative model with continuous education, adequate infrastructure, and economic incentives is needed to shift traders from passive policy objects to active drivers of circular practices. To unlock this potential, market regulations must formally involve traders as partners, provide rewards for pro-environment behavior, and combine top-down policies with bottom-up participation and peer influence so that cleaners, managers, and traders together move the system beyond basic cleanliness toward broader social, economic, and environmental sustainability.

3.4 Synthesis of discussion and research limitations

This study shows that market traders hold a strategic role as drivers of change in traditional market waste management, with success depending on collaboration among stakeholders and shared awareness across technical, social, and institutional dimensions (Freeman, 1984; Purvis et al., 2019; Wahyuni et al., 2019; Silfia & Surtikanti, 2024). Many traders understand the importance of sorting waste but face an intention-behavior gap caused by limited facilities, weak supervision, and minimal incentives, indicating that waste management is as much a social process shaped by solidarity and peer influence as it is a technical task (Tarumingkeng, 2025; Bruce & Storey, 2010; Olaseha et al., 2005).

The research argues for positioning traders as central stakeholders and equal partners in multi-actor collaborations, supported by rewards, education, and recognition schemes, while also noting key limitations such as a single-case, short observation period, reliance on self-reported data, and the lack of quantitative economic and policy analysis (Tohpati & Sari,

2025). These constraints mean the recommendations remain largely descriptive and highlight the need for broader, longitudinal, and more quantitatively grounded studies to verify and deepen the findings on sustainable market waste management.

3.5 Implications and further recommendations

Future research is recommended to expand the scope of the study to different markets to obtain a more applicable model. Experimental evaluation is also crucial to assess the concrete impact of educational interventions and economic incentives on changing trader behavior. For policy, the emphasis should be on the synergy between education, facility provision, and reward ideas. system Community-based. Market managers are expected to act as a bridge between the government, the trading community, and the informal sector to foster sustainable waste management. A combination of top-down policies and bottom-up participation is key to overcoming the various systemic barriers . Ultimately, the transformation of traditional markets toward sustainable environmental development can only be achieved with the active participation of traders, collaborative systems, and adaptive policies rooted in local conditions.

4. Conclusions

This study shows that traders are central in determining the direction and quality of waste management at Kenari Jaya Market, yet their strategic role is still not optimal. Waste sorting is inconsistent and depends on individual initiative, while limited facilities, weak supervision, and lack of continuous education keep practices stuck in a conventional collect–transport–dispose pattern that provides little ecological or economic value.

Using a Stakeholder Theory lens, the findings emphasize the need to reposition traders from passive policy objects to key driving actors with clear legitimacy, interests, and capacity in waste governance. Their active involvement in sorting, reducing, and reusing waste is a critical entry point for sustainable development, with the potential to reduce environmental burdens, open circular-economy opportunities, and improve health and comfort in the market area.

The study recommends that future research examine multi-stakeholder partnerships, such as waste banks, organic waste processing units, and collaborations with the informal sector. Longitudinal studies on changing perceptions, incentives, and power relations are also needed to understand how traders can genuinely become influential agents of change and to refine institutional designs for more sustainable market waste management models.

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Author Contribution

The author was fully responsible for all stages of the research, including the development of the research concept and objectives, data collection and analysis, interpretation of the results, and preparation of the final manuscript. All parts of this article reflect the author's own ideas, analysis, and writing, with no contribution from other parties to the development of the scientific content.

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