



# Understanding Community Involvement Behaviors in Waste Bank Programs: A Qualitative Study

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**Abstract:** This study aims to examine the factors shaping community involvement with the Waste Bank Program in Makassar City, focusing on sustaining pro-environmental behavior. These findings highlight that effective participation is shaped by the intersection of institutional frameworks and personal drivers rather than environmental awareness alone. The study contributes by integrating behavioral theories, social capital, and economic mechanisms into a single model. Insights offer actionable strategies for policymakers to strengthen capacity building, enhance transparency of incentive systems, and improve leadership credibility to sustain long-term community participation.

**Keywords:** Waste Bank, Community Participation, Pro-Environmental Behavior, Social Capital, Environmental Psychology, Urban Waste Management, Community Involvement.

## Introduction

Municipal solid waste (MSW) continues to pose one of the most pressing environmental challenges in urban areas worldwide. With rapid urbanization and population growth, the global production of solid waste reached approximately 2.01 billion tons in 2021, and this figure is expected to rise steadily in the coming decades (Ferronato & Torretta, 2019). The issue of waste management is not solely about the increasing volume but also the complexity of systems that often fail to operate effectively. In many cities, particularly in developing countries, waste collection, transportation, and disposal infrastructures remain inadequate (SEN, 2022). Consequently, improper and unregulated waste disposal practices persist, resulting in the contamination of soil, groundwater, and

air, and increasing the risk of vector-borne diseases such as dengue fever and leptospirosis (Raab et al., 2021).

Urban areas face additional constraints due to high population density, which limits available space for disposal facilities. In many cases, waste is disposed of in inappropriate locations, leading to visual pollution, foul odors, and threats to public health (Chikukula et al., 2024; SEN, 2022). Furthermore, the widespread linear consumption and disposal model—“take-make-dispose”—exacerbates waste accumulation in final disposal sites, thereby accelerating environmental degradation and contributing to greenhouse gas emissions (Cheremisinoff, 2003; Kanojia & Visvanathan, 2021).

In Indonesia, waste management has become an increasingly urgent issue amidst rapid urban development. The country generates approximately 67.8 million tons of waste annually, with 23.8% originating from urban areas (Handayani et al., 2018). Major cities such as Jakarta, Surabaya, and Bandung are at the forefront of this crisis due to their high population density and corresponding waste volume. Plastic waste has emerged as one of the most alarming issues, as Indonesia ranks among the top contributors to marine plastic pollution, placing the nation at the center of a global environmental crisis (A Abus et al., 2024; Salsabila et al., 2023). The quality of domestic waste management in Indonesia remains far from ideal. Only about 50% of total waste is properly managed, while the remainder is left to accumulate or is discarded indiscriminately (Al Fariz et al., 2023). This situation is worsened by limited infrastructure and challenges related to waste collection and transportation systems (Tuanaya, 2024). Additionally, the urban-rural divide exacerbates disparities in waste management services, where urban centers often suffer from overcapacity, and rural areas lack access to basic waste management infrastructure (Handayani et al., 2018).

As an alternative, community-based initiatives such as waste banks have been introduced as participatory strategies to address these challenges. These programs encourage waste separation at the source and provide economic incentives for households, thereby fostering behavioral change in waste handling (A Abus et al., 2024; Salsabila et al., 2023; Suwerda et al., 2018). When supported by adequate environmental education and heightened public awareness, community involvement in waste management can be significantly improved. However, the effectiveness and sustainability of waste bank programs remain inconsistent. Many units have ceased operations due to a lack of incentives, insufficient policy support, and weak internal management (Alam, 2020; Meidiana et al., 2019). In Makassar, for example, despite a growth in the number of

operational waste banks since 2011, community participation has shown stagnation and even decline in recent years (van Leeuwen et al., 2022).

A key challenge lies in maintaining consistent community participation. While initial enthusiasm tends to be high, engagement often diminishes over time due to psychological, economic, and structural barriers. These include delayed waste collection, lack of feedback mechanisms, unmet expectations, and declining public trust in the system (Farizqiani et al., 2024; Putra et al., 2020). The absence of institutional support and growing community apathy further compromise the sustainability of such initiatives (Shahreza et al., 2020).

Behavioral theories have been widely employed to understand this phenomenon. The Theory of Planned Behavior (TPB) posits that pro-environmental behavior is influenced by individual attitudes, social norms, and perceived behavioral control (Ajzen, 2011). Interventions such as educational programs, awareness campaigns, and incentive systems—such as those implemented through waste banks—are designed to strengthen these components (Hao et al., 2020; Y. Zhou et al., 2022). However, empirical studies continue to reveal a significant intention-behavior gap, where strong environmental intentions do not necessarily translate into concrete action (Dong et al., 2020; Wang & Mangmeechai, 2021).

This gap reflects inherent limitations in behavior-based approaches to waste management. Psychological barriers, limited knowledge, low self-efficacy, and insufficient structural support contribute to widening this gap (Tan et al., 2022). Inconsistent policy implementation and low public trust in institutions also discourage long-term engagement (Nguyen-Van et al., 2021; Wang & Mangmeechai, 2021). Despite previous research efforts, in-depth exploration of behavioral and social dimensions of community participation in waste bank programs remains limited, particularly in urban Indonesian contexts such as Makassar. Most existing studies emphasize technical and operational aspects, overlooking the complex interplay of individual, social, and policy factors that shape community behavior (Amalia, 2020; Suwerda et al., 2019).

Moreover, thematic analysis remains underutilized in this area of study, even though it offers several advantages for understanding community perspectives. This method allows researchers to explore how social norms and cultural values influence pro-environmental behavior, as demonstrated by Ali et al. (2021) in the context of indigenous communities. Thematic analysis also facilitates deeper understanding of individuals' lived experiences and how these shape environmental values and attitudes (Mathers & Brymer, 2022). It provides a structured framework for identifying patterns and organizing behavioral

influences, including personal values, perceptions of sustainability, and environmental awareness (Tran et al., 2022).

To address these gaps, the present study aims to explore how communities in Makassar perceive and engage with the waste bank program, with particular attention to sustaining pro-environmental behavior. Using a qualitative approach supported by NVivo-assisted thematic analysis, this research synthesizes key themes that explain fluctuations in participation. The findings are expected to offer theoretical and practical contributions toward the development of effective policies and community empowerment strategies for sustainable urban waste management.

## **Methodology**

Methods should be described with sufficient details to allow others to replicate and build on the published results. Please note that the publication of your manuscript implies that you must make all materials, data, computer code, and protocols associated with the publication available to readers. Please disclose at the submission stage any restrictions on the availability of materials or information. New methods and protocols should be described in detail while well-established methods can be briefly described and appropriately cited.

## **Research Design**

This study employed a qualitative multi-strategy design to explore key themes related to community involvement in the Waste Bank Program in Makassar City. Data were primarily collected through semi-structured interviews and analyzed using thematic analysis facilitated by NVivo 14 software. This methodological choice aligns with the objective of capturing complex and nuanced perspectives on waste management behavior and community participation (Naeem et al., 2023). The thematic analysis framework was selected for its flexibility and systematic approach to identifying, analyzing, and reporting patterns within qualitative data (Braun & Clarke, 2021). NVivo 14 was utilized to support the coding process, theme development, and visualization of interrelationships among emergent concepts, enabling a more rigorous and transparent analysis (Kalpokas & Radivojevic, 2021; Limna, 2023).

## **Population and Sampling**

Participants in this study were purposively selected from various stakeholder groups involved in the Waste Bank Program in Makassar, including community members, program managers, local government officials, NGO representatives, academics, environmental activists, and private sector actors. The inclusion criterion required a minimum of five years

of experience with the program, either through direct participation or as stakeholders supporting its implementation through innovation, education, or collaboration.

The sampling strategy followed theoretical and purposive principles, allowing for maximum variation and saturation in data collection. The final sample consisted of eight informants (see Table 1), whose professional and demographic diversity enriched the dataset and provided multidimensional insights into program dynamics.

**Table 1.** Characteristics of Study Informants

No	Code	Gender & Age	Education	Description
1	SR	Male / 50	Master's	Initiator of Waste Bank in Makassar, Chair of Yayasan Peduli Negeri (YPN)
2	DH	Male / 52	High School	Waste Bank Operator in Makassar
3	FB	Male / 45	High School	Director of Waste Bank in Makassar
4	AA	Male / 45	Bachelor's	Waste Bank Manager in Central Makassar
5	VR	Female / 50	Master's	Head of UPT Waste Bank, Makassar
6	JR	Male / 54	Bachelor's	Sub-Coordinator of Waste Management, Environmental Agency
7	RM	Female / 50	High School	Household Waste Bank Customer
8	NM	Female / 37	High School	Household Waste Bank Customer

### Instruments and Data Collection Procedures

Data were collected using an interview guide designed to probe participants' experiences, perceptions, attitudes, and understanding regarding the implementation of the Waste Bank Program. The guide was open-ended and flexible, enabling the interviewer to explore emerging themes during each session.

All interviews were recorded with the participants' consent using the Plaud Note AI device. Verbatim transcripts were produced and carefully checked against the audio recordings multiple times to ensure accuracy. In addition to audio data, field notes were

taken during each interview to capture contextual cues and non-verbal expressions. Ensuring the accuracy and completeness of the transcription was a critical step prior to the coding and thematic development process.

### **Data Analysis**

Qualitative content and thematic analysis were conducted using NVivo 14, following the six-phase framework by Braun & Clarke (2021): data familiarization, initial code generation, theme searching, theme reviewing, theme defining/naming, and report writing. The thematic analysis aimed to reveal patterns that reflect participants' experiences and perspectives on the factors influencing community engagement with the Waste Bank Program.

The data analysis process involved multiple iterations and incorporated descriptive coding as described by Morse and Richards (Watts, 2008). Each transcript was read line-by-line, and meaningful text segments were labeled with relevant keywords, codes, and categories. In NVivo, these codes are referred to as 'nodes,' which group together references associated with a particular topic, theme, or field of interest (Jackson & Bazeley, in Almaiah, 2018). To further clarify the end-to-end process, Figure 1 (Analytical Framework) visually summarizes the workflow adopted in this study.

### **Transcription, Familiarization, and Quote Selection**

The interview recordings were transcribed verbatim using Plaud.ai. The research team conducted a close reading of the transcripts to identify initial patterns and extract meaningful passages that illustrated key ideas relevant to the study's objectives. Quotes were selected based on their ability to convey participant voices authentically and represent emerging themes across multiple informants.

### **Keyword Identification**

The next stage involved identifying frequently repeated words, concepts, and expressions across the dataset. This included data from interviews, field notes, and any supplementary materials. The keywords extracted served as the foundation for subsequent coding activities, capturing core experiences and perspectives directly derived from participants' narratives.

### **Coding**

Each keyword or meaningful phrase was then translated into a short code representing the core message of the associated text segment. This step helped transform the textual dataset into a manageable and structured format using NVivo 14. The software allowed for visual mapping of codes and their frequencies, thus streamlining the identification of

dominant patterns. Codes were continuously refined through constant comparison as new data segments were analyzed.

## Conceptualization and Theme Development

The final stage involved developing broader conceptual categories and defining thematic domains. The coding matrix tool in NVivo 14 was used to explore relationships between nodes and to cluster related ideas into overarching themes. These themes were refined and interpreted to construct a comprehensive narrative about community engagement in the Waste Bank Program. The outcome of this process was a coherent analytical framework grounded in empirical data.

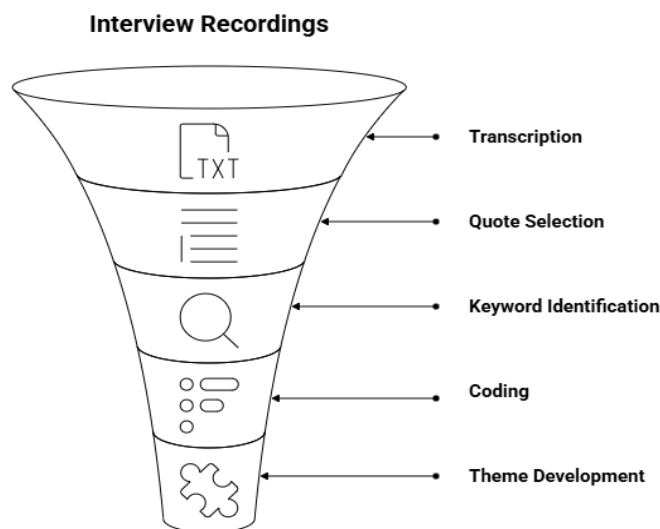


Figure 2. Qualitative Data Analysis Framework

## Trustworthiness and Ethics

To ensure trustworthiness, the study adhered to qualitative research quality criteria, including credibility, transferability, dependability, and confirmability. Techniques such as data triangulation, researcher reflexivity, and member checking were employed. Anonymity and confidentiality of participants were strictly maintained throughout the research process.

## Result and Discussion

Based on the analysis of interview transcripts conducted using NVivo, a number of codes, categories, and overarching themes were identified. These themes represent the

synthesized results of coding and serve as the analytical framework for understanding the factors that support community engagement in the Waste Bank program. Two principal themes emerged from the data: community capability and community willingness. The theme of capability refers to the extent to which individuals and groups have access to structural and institutional support, as well as adequate individual capacity to engage in waste management practices through Waste Bank mechanisms. This includes knowledge, skills, experience, and learning processes that enable consistent participation. On the other hand, the theme of willingness emphasizes the influence of psychological factors and social capital, in addition to economic incentives and the ease of operational processes, which shape residents’ decisions to participate in the program.

The relationship between these themes, categories, and codes is systematically visualized in Figure 4.1, which serves as a conceptual map for constructing the findings narrative. The elaboration of each theme and category is substantiated by in-depth quotations from interviews with various informants. These excerpts provide contextual richness and help to strengthen the interpretation of the complex that underpin community participation in the Waste Bank program in Makassar City.

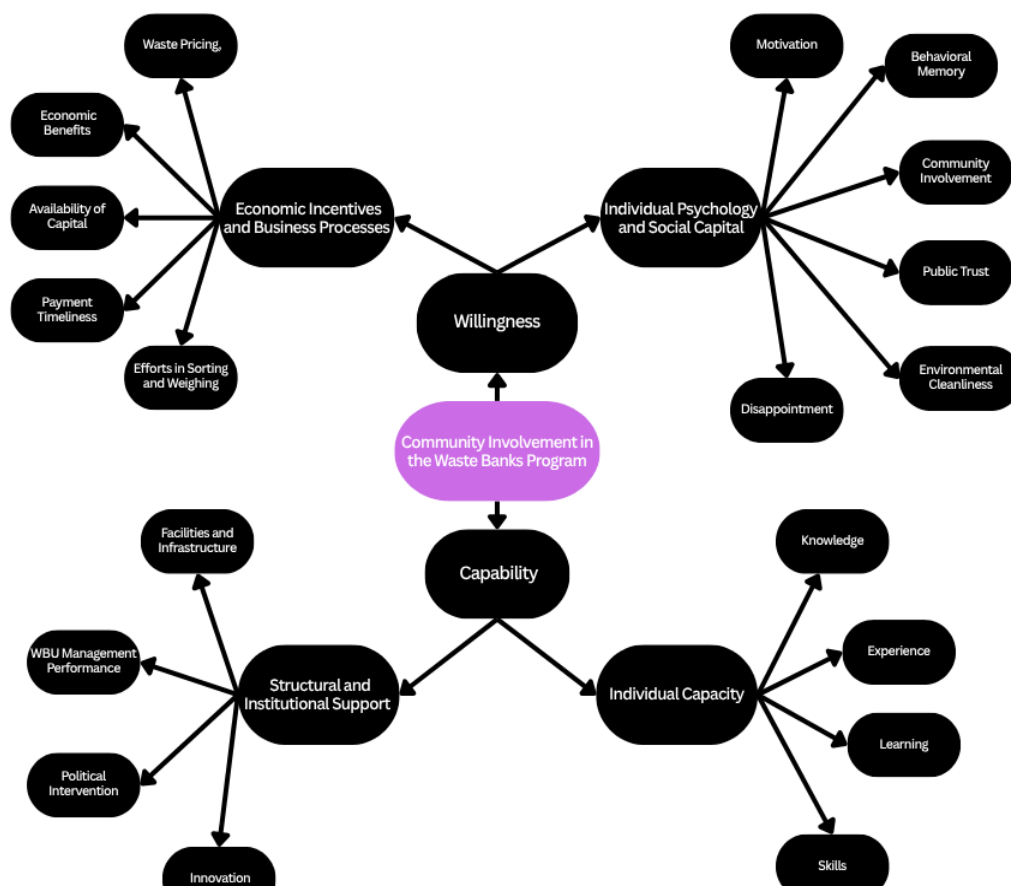


Figure 2. Mind Map of Field Findings on Community Involvement in the Waste Bank Program

### 3.1 Capability

The capability of Makassar City residents to engage actively in community-based waste management through the Waste Bank program is not an instantly formed condition. Rather, it is the product of a developmental process shaped by two interrelated and mutually reinforcing pillars: structural and institutional support on one side, and individual capacity on the other. These two elements form the crucial foundation that enables community participation to be voluntary, consistent, and sustainable.

### 3.1.1 Structural and Institutional Support

Structural and institutional support emerged as a critical factor enabling community capability to engage meaningfully in the Waste Bank program. This support manifests through innovations in operational systems, policy interventions, managerial performance, environmental cadre assistance, and the provision of essential infrastructure. Innovations such as "waste-for-rice" and "waste-for-gas" programs, savings used to pay electricity or waste fees, and scholarship schemes were found to significantly enhance program appeal. As Mr. DH recalled, "I once launched a program where people could exchange waste for gas... if the amount of waste reached the required level, we would provide gas in return" (DH, personal interview, 2025). These innovations are further reinforced through collaboration with the private sector, such as Unilever, which provided incentives like soap during events to boost volunteer enthusiasm (DH, personal interview, 2025). Political intervention also plays a dual role, strengthening or disrupting sustainability depending on policy continuity and local leadership alignment. Mr. DH explained that Waste Bank participation is integrated into local RT/RW performance evaluations, stating, "RT and RW must have a Waste Bank to meet assessment criteria" (DH, personal interview, 2025). However, inconsistency in local leadership may hinder progress, as Mr. FB noted, "Whenever there is a change in government, policies often shift or become weaker" (FB, personal interview, 2025). The managerial performance of Waste Bank Unit (BSU) leaders is equally crucial; effective and consistent administrators build trust and maintain operations, as emphasized by Ms. VR, "We strive to motivate unit leaders to collect economically valuable waste... some, however, treat the role as mere formality" (VR, personal interview, 2025). Continuous mentorship from environmental cadres and external agencies like Pegadaian and local NGOs further enhances capacity through training and technical support. Mr. FB shared, "We received training from BUMNs like Pegadaian, which helped us develop recycling initiatives and understand government policies" (FB, personal interview, 2025). Finally, the availability of infrastructure, including weighing scales, savings books, waste bins, and even operational vehicles, was reported to significantly ease technical barriers. Mr. JR from the Environmental Agency stated, "We provide scales, sacks, savings books... even pickup vehicles for operational Waste Banks" (JR, personal interview, 2025). Without these systemic supports, community involvement would remain fragmented and unsustainable. Therefore, structural and institutional reinforcement is not merely

complementary but foundational to the success of community-based waste management systems.

### 3.1.2 Individual Capacities

Individual capacity emerged as a fundamental factor shaping the community's ability to actively participate in the Waste Bank program. This capacity comprises four interrelated dimensions: knowledge, skills, learning, and experience. Knowledge refers to community members' awareness of waste types, their economic value, and environmental impact, often gained through outreach, direct engagement, or informal forums. This foundational knowledge plays a crucial role in shaping attitudes and motivating involvement. For instance, Ms. NM recalled her initial introduction to the program: "She told me, 'Instead of throwing the waste away, better to give it and get money in return'" (NM, personal interview, 2025). Despite this awareness, she also noted that some residents remain reluctant, perceiving the economic benefit as insufficient: "Some people already know the information... but they say, 'The benefit is too small'" (NM, personal interview, 2025). Ms. RM reinforced this point, highlighting the need for simple education on waste sorting: "They told us to separate the wet and dry waste... so we can sort it and bring it to the Waste Bank, and it can have selling value" (RM, personal interview, 2025). Skills, as the second dimension, include technical abilities in sorting, weighing, and managing household waste. These are developed through hands-on training and direct community guidance. However, Ms. RM expressed a lack of localized training: "We need someone to come here and teach us recycling skills, especially for the mothers in the neighborhood" (RM, personal interview, 2025). Learning represents the process of internalizing knowledge and environmental values through repeated exposure, training, and peer interaction. Learning was often informal, gained from community meetings, peer modeling, and everyday practice. As Ms. RM described, "We learned the benefits of a clean environment, how to gain value from sorted waste, and to involve even our children at home in the habit" (RM, personal interview, 2025). Meanwhile, Mr. SR noted that social obstacles became educational moments: "Obstacles are part of our 'education.' When there are problems, it shows we want to fix them" (SR, personal interview, 2025). Lastly, experience plays a crucial role, as individuals with sustained involvement in Waste Bank activities developed stronger commitment and self-efficacy. Ms. NM emphasized how routine participation became a habit: "I never get tired of collecting waste... three times a month, we sometimes get 50 thousand rupiah" (NM, personal interview, 2025). Similarly, Ms. RM noted that her savings from the Waste Bank had once helped her family during financial hardship: "I once withdrew 1.5 million rupiah... according to my needs... thankfully, there was something saved" (RM, personal interview, 2025). Mr. FB reflected on his long-standing dedication since 2015: "It became a principle of mine... rain or shine, I kept going" (FB, personal interview, 2025). These real-world experiences not only built operational familiarity but also

embedded deeper environmental consciousness. Together, these four elements—knowledge, skills, learning, and experience—form a cumulative capacity that enables community members not merely to participate in the Waste Bank program but also to sustain and advocate for its success.

### 3.2 Willingness

The willingness of Makassar residents to engage in the Waste Bank program emerges as a complex interplay between internal psychological and social capital factors, and external drivers such as economic incentives and accessible business processes embedded in the community-based waste management system. This study reveals that participation is not solely rooted in environmental awareness; rather, it is influenced by multifaceted motivations shaped by both individual and contextual dynamics. Internal drivers include psychological predispositions, such as personal motivation and behavioral norms shaped by social influence, while external factors encompass the availability of tangible benefits and the perceived ease of participating in the program.

#### 3.2.1 Individual Psychological Factors and Social Capital

In the context of individual psychological factors and social capital, the willingness of Makassar's residents to participate in the Waste Bank program is shaped by an interplay of motivational drivers, communal ties, behavioral memory, trust, past disappointments, and environmental awareness. Motivation acts as a foundational psychological factor, emerging from a desire to contribute to environmental improvement, emulate peers, or benefit from perceived economic gains. As Mrs. RM recounted, her initial involvement stemmed from a desire to address local waste issues: "I joined just to anticipate waste problems... started sorting waste... the alley became clean... and eventually I realized it had value..." (RM, personal interview, 2025). Community involvement further strengthens willingness through a sense of belonging, collective responsibility, and emotional ties. Mr. AA emphasized the role of Waste Banks in reinforcing these bonds: "The Waste Bank strengthens social ties... even mothers who usually gossip end up sorting waste together—it's meaningful" (AA, personal interview, 2025). Behavioral memory also influences participation: if waste sorting is not reinforced through regular routines, it tends to decline. As Mr. FB noted, "If someone weighs their waste just once and then stops for a year... the cycle breaks" (FB, personal interview, 2025), and Mrs. NM added, "People tend to forget because they haven't weighed trash for a while" (NM, personal interview, 2025). Trust is another critical dimension—both in the integrity of the system and the people leading it. Mr. FB highlighted that trust is earned through consistency and sincerity: "People believe that the person does not exaggerate; that's where community trust begins" (FB, personal interview, 2025). However, disappointment can undermine willingness, especially when expectations about payment or benefits are not met. Mrs. RM expressed frustration: "It may look like a lot of trash, but once weighed, it's worth only five thousand rupiah" (RM,

personal interview, 2025), and Mr. DH confirmed that such dissatisfaction can discourage further involvement: “If someone is disappointed, they may no longer want to join” (DH, personal interview, 2025). Lastly, environmental awareness emerges as a sustaining force, particularly for those who recognize the link between clean surroundings and waste management. Mr. JR stated, “The drains are clean because people now realize that trash has economic value” (JR, personal interview, 2025), while Mr. AA underscored the primary benefit as ecological rather than financial: “What matters is the environment. Once it’s clean, the economy will follow” (AA, personal interview, 2025). Together, these interconnected psychological and social dimensions form a comprehensive foundation for understanding community willingness in waste bank participation.

### 3.2.2 Economic Incentives and Streamlined Business Processes

Economic incentives and streamlined business processes play a pivotal role in shaping community willingness to engage in the Waste Bank program in Makassar. The availability of capital is a critical enabler, ensuring smooth operations, particularly in purchasing waste from customers and managing logistics. When adequate funding is available, whether from local government subsidies or individual initiatives, trust in the system strengthens, thereby sustaining participation. As Mrs. VR explained, “The business process runs because it’s subsidized by the local government... we were given capital from the regional budget, which we used to pay for the waste” (VR, personal interview, 2025). In contrast, the absence of initial capital often discourages participation, as noted by Mr. DH: “The Waste Bank lacks initial capital... people collect waste expecting immediate payment... but often there’s no money available” (DH, personal interview, 2025). Immediate payment upon waste delivery significantly impacts motivation, with some participants like Mrs. RM stating, “Some residents want the money right away after weighing... it becomes a motivation when it’s paid immediately” (RM, personal interview, 2025). However, delays in payment can lead to distrust and withdrawal: “I gave the waste, and it took a month to be paid... so they became reluctant to participate” (DH, personal interview, 2025). The effort required to sort and weigh waste also influences engagement, as it demands consistency and patience for minimal financial gain. “Sorting takes time... sometimes I weigh it and get only five thousand rupiah, but I think it’s better than letting it go to waste,” said Mrs. RM (2025). Despite this, several community members remain committed due to routine motivational efforts by facilitators and the perceived value of environmental cleanliness. Economic benefits, though modest, serve as powerful motivators—acting both as emergency funds and long-term savings. For instance, Mrs. RM shared, “I’ve withdrawn up to one and a half million... and I now have nine grams of gold savings” (2025), while Mr. FB noted that residents even use the money to pay for waste collection services: “They asked if the waste savings were enough to pay for the garbage fees... and it was” (FB, personal interview, 2025). Moreover, fluctuations in waste prices affect perceptions of fairness and influence loyalty. As Mrs. VR pointed out, “If prices drop even slightly, people start complaining... we have

to manage it carefully” (VR, personal interview, 2025). Higher prices encourage participation, while inconsistent or low prices discourage it and sometimes drive members to sell to private vendors offering better rates and faster payments.

## Discussion

This study identifies two central themes that determine community engagement in the Waste Bank Program in Makassar City: community capability and community willingness. These findings reinforce the core premise of the COM-B model (Shano et al., 2024), which posits that behavior is the outcome of capability, opportunity, and motivation. Both elements, capability and willingness, serve as essential preconditions for sustained pro-environmental behavior and collective action in solid waste management. In the following sections, we compare these findings with existing literature and relevant behavioral theories to discuss their theoretical significance and contextual novelty.

### 4.1 Community Capability

The study reveals that community capability in Makassar is shaped by two interrelated dimensions: structural and institutional support, and individual capacity. These findings echo earlier studies by Saleh et al. (2020) and Fatmawati et al. (2022), who highlighted the importance of hard (infrastructure) and soft (leadership, policy) enablers in ensuring the functionality of Waste Banks. The presence of enabling infrastructure, such as weighing scales, savings books, and transportation systems, mirrors the findings of Astuti and Khoirun Nisa (2021) and Widyaningsih and Sasaki (2020), who emphasized the role of infrastructure accessibility in promoting engagement. What distinguishes the Makassar case is the innovation and political endorsement integrated into operational practices. Unique incentive schemes such as "waste-for-gas" and the use of waste savings to pay utility bills demonstrate a localized and adaptive innovation strategy that extends beyond traditional models (Challcharoenwattana & Pharino, 2015; Yu et al., 2024). These innovations reflect a hybrid model that combines economic pragmatism with environmental consciousness, resonating with the Protection Motivation Theory (PMT), which posits that individuals are motivated to act when there is both threat perception and a clear, effective response mechanism (Tchetchik et al., 2021).

Institutionally, the formal integration of Waste Bank participation into RT/RW performance evaluations is a noteworthy mechanism that institutionalizes environmental behavior at the micro-political level. This mechanism, however, is vulnerable to local political shifts, a challenge also observed in studies by Latanna et al. (2023) and Fatmawati et al. (2022), which identified political transitions as barriers to continuity in community-based waste governance. Nonetheless, the Makassar case offers novel insight into how decentralized urban politics can serve as both an enabler and risk factor. Regarding individual capacity, four subdimensions were identified: knowledge, skills, learning, and

experience. These findings align with the Social Cognitive Theory (Bandura in Baishya et al., 2022), where self-efficacy, developed through knowledge and repeated experience, serves as a predictor of consistent behavior. The importance of informal learning and community mentoring, as emphasized by respondents, supports the Affective Event Theory (S. Zhou, 2023), which acknowledges that emotionally meaningful interactions (e.g., community meetings or shared environmental experiences) can reinforce long-term behavioral change. Notably, this study adds to the literature by showing how experiential learning, even in low-income contexts, builds enduring behavioral memory that sustains participation even when economic returns are modest. Respondents shared stories of deriving not just monetary value but also social and emotional satisfaction from regular participation, an intersection between intrinsic and extrinsic motivation that echoes the Self-Determination Theory (Cheng et al., 2022; Spitzer et al., 2024). While previous studies (Challcharoenwattana & Pharino, 2015) emphasized financial incentives, the current findings highlight that sustained engagement is often rooted in environmental consciousness and experiential identity.

#### 4.2 Community Willingness

The second major theme, community willingness, is driven by psychological, social, and economic dynamics. Findings show that psychological factors such as motivation, memory, trust, and disappointment play a critical role. These are complemented by social capital, particularly community bonding and group norms, which reinforce individual intentions and reduce behavioral fatigue. This aligns with earlier findings from Astuti and Khoirun Nisa (2021) and Amalia (2020), who identified trust in management and community support as critical to engagement longevity. The study's emphasis on behavioral memory expands on previous research by identifying habit formation and routine as mediators of sustained behavior. These insights resonate with the Theory of Interpersonal Behavior and Habit Formation (Mumtaz et al., 2022), suggesting that behavior repeated under consistent social conditions evolves into an internalized routine. Importantly, the findings indicate that these routines are fragile and can be disrupted by delayed rewards or inconsistent scheduling, echoing results from Farizqiani et al. (2024).

Trust emerged as a decisive factor, particularly trust in program managers, fellow participants, and the incentive system. This supports the Theory of Planned Behavior (Ajzen, 2011), which positions perceived behavioral control and subjective norms as key behavioral drivers. In Makassar, positive role modeling by Waste Bank leaders contributed to social influence, affirming the significance of Social Identity Theory (Dedman & Lee, 2023). However, the novel contribution of this study lies in showing how emotional disappointment, such as from unmet expectations in payment or recognition, can disrupt trust and participation, an aspect less explored in current literature.

From an economic standpoint, this research confirms previous findings (Challcharoenwattana & Pharino, 2015; Fatmawati et al., 2022) that immediate and tangible

rewards significantly enhance engagement. However, it also adds nuance by identifying how delayed payments and low price transparency undermine community confidence and willingness. This reflects the rational actor assumption embedded in the Construal Level Theory, where immediacy and material gain shape decisions about distant environmental outcomes (Griffioen et al., 2019). Furthermore, the study underscores the role of streamlined business processes in improving perceptions of fairness and operational efficiency. This observation mirrors findings from Rimantho et al. (2022) and Dewi et al. (2024), who argued that service transparency and ease of participation are essential for long-term loyalty. Community members in Makassar viewed payment delays and fluctuating waste prices as demotivators, highlighting the need for responsive systems and fair pricing mechanisms. The emphasis on economic resilience through waste savings, as illustrated by respondents who used their Waste Bank earnings for emergency needs, confirms that even minimal economic gains can serve as strong behavioral motivators. This supports findings from Widyaningsih & Sasaki (2020) and (van Leeuwen & Surya, 2024), who observed that Waste Banks serve dual roles as financial safety nets and environmental platforms. Notably, this financial motivation did not exist in isolation; it was complemented by identity, reputation, and environmental values, a finding consistent with Budiman and Jaelani (2023), who posited that integrated values (economic, social, ecological) create durable behavioral change.

This study contributes to pro-environmental behavior research by offering an integrated framework that bridges capacity (external enabling factors) and willingness (internal motivational factors). While prior studies often isolate structural or behavioral aspects, this research demonstrates the synergy between them. Its findings advocate for hybrid interventions that include policy alignment, local leadership engagement, streamlined service design, and continuous community education to cultivate and sustain community participation. Future research could test this framework across varying demographic and geographic contexts to explore its transfer-ability and to refine localized strategies for pro-environmental community programs.

## Conclusion

This study reveals that community participation in the Waste Bank Program in Makassar City is shaped by two interrelated pillars: community capability and willingness. Community capability is grounded in structural and institutional support, as well as individual capacity, comprising knowledge, skills, learning, and experience, that collectively enables consistent and voluntary engagement. In contrast, community willingness is influenced by the interplay between individual psychological factors, social capital, economic incentives, and streamlined business processes. These findings indicate that pro-environmental engagement is not merely a spontaneous behavior but rather the outcome of alignment between institutional frameworks and personal motivation. This research contributes to the existing body of knowledge by offering a comprehensive

framework that integrates behavioral theory, social capital, and economic mechanisms within the context of community-based waste management. This integrated approach enhances our understanding of how capacity building, leadership credibility, and transparent incentive systems can sustain community participation. Future research is encouraged to explore the scalability of this framework in diverse socioeconomic and cultural settings to refine strategies aimed at strengthening behavioral consistency and ensuring the long-term sustainability of community-driven waste management initiatives.

### Suggestion

Future research should employ a mixed-methods approach, including quantitative surveys, to test the generalizability of the identified factors (capability and willingness) across different Indonesian cities and waste management contexts. Specifically, studies could develop and validate scales to measure the impact of variables like leadership credibility and transparency of incentive systems on participation rates. Practically, policymakers should focus on pilot programs that integrate behavioral science insights—such as using social norm nudges and commitment devices—into Waste Bank operations to directly increase community willingness. Furthermore, recommendations include developing standardized national guidelines for enhancing the financial transparency of waste-to-value chains to strengthen economic incentives and ensure long-term community trust and participation.

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