

Dynamic Governance in Sustainable Waste Management: A Case Study of The Waste Bank Program in Makassar City

Rezky Surya Wandira¹, Gita Susanti², Amril Hans³

*Department of Public Administration, Faculty of Social and Political Sciences,
Hasanuddin University, Makassar, Indonesia*

KEYWORDS

Innovation,
Dynamic
Capabilities,
Cross-Sector
Collaboration,
Waste
Management

ABSTRACT:

Effective waste management is a major challenge in developing cities, including Makassar City, with increasing waste volume and low public awareness. This study aims to analyze the implementation of dynamic governance in the management of waste banks in Makassar City through organizational culture, dynamic capabilities, and changes that occur. This study uses a qualitative approach with data collection through in-depth interviews, observations, and documentation, involving informants from the Environmental Service, Waste Bank managers, and the community. The study results show that the organizational culture that prioritizes collaboration, transparency, and active community participation is supported by ongoing education and coordination. Dynamic capabilities are reflected in thinking ahead (innovations such as exchanging waste for gold), thinking again (regular evaluation for strategy adaptation), and thinking across (cross-sector collaboration). The Waste Bank program has reduced the volume of waste in landfills, increased public awareness, and provided economic benefits. However, challenges such as low community participation and interagency coordination still exist. This study concludes that the implementation of dynamic governance supports the sustainability of waste management through multi-sectoral collaboration and changes in collective mindsets. Success requires stronger cross-sector commitment, with ongoing education and innovation as the keys to program sustainability.

1. Introduction

The problem of waste management is becoming an increasingly complex global issue, especially in developing countries with rapid population growth and high urbanization. In Indonesia, waste production reaches 64 million tons per year, with 3.2 million tons of it being plastic waste that ends up in the sea, placing Indonesia as the second largest contributor of plastic waste in the world after China (Jambeck et al., 2015).

Table 1.
Estimated Amount of Mismanaged Plastic Waste

Rank	Country	Econ. classif.	Coastal pop. [millions]	Waste gen. rate [kg/ppd]	% plastic waste	% mismanaged waste	Mismanaged plastic waste [MMT/year]	% of total mismanaged plastic waste	Plastic marine debris [MMT/year]
1	China	UMI	262.9	1.10	11	76	8.82	27.7	1.32–3.53
2	Indonesia	LMI	187.2	0.52	11	83	3.22	10.1	0.48–1.29
3	Philippines	LMI	83.4	0.5	15	83	1.88	5.9	0.28–0.75
4	Vietnam	LMI	55.9	0.79	13	88	1.83	5.8	0.28–0.73
5	Sri Lanka	LMI	14.6	5.1	7	84	1.59	5.0	0.24–0.64
6	Thailand	UMI	26.0	1.2	12	75	1.03	3.2	0.15–0.41
7	Egypt	LMI	21.8	1.37	13	69	0.97	3.0	0.15–0.39
8	Malaysia	UMI	22.9	1.52	13	57	0.94	2.9	0.14–0.37
9	Nigeria	LMI	27.5	0.79	13	83	0.85	2.7	0.13–0.34
10	Bangladesh	LI	70.9	0.43	8	89	0.79	2.5	0.12–0.31
11	South Africa	UMI	12.9	2.0	12	56	0.63	2.0	0.09–0.25
12	India	LMI	187.5	0.34	3	87	0.60	1.9	0.09–0.24
13	Algeria	UMI	16.6	1.2	12	60	0.52	1.6	0.08–0.21
14	Turkey	UMI	34.0	1.77	12	18	0.49	1.5	0.07–0.19
15	Pakistan	LMI	14.6	0.79	13	88	0.48	1.5	0.07–0.19
16	Brazil	UMI	74.7	1.03	16	11	0.47	1.5	0.07–0.19
17	Burma	LI	19.0	0.44	17	89	0.46	1.4	0.07–0.18
18*	Morocco	LMI	17.3	1.46	5	68	0.31	1.0	0.05–0.12
19	North Korea	LI	17.3	0.6	9	90	0.30	1.0	0.05–0.12
20	United States	HIC	112.9	2.58	13	2	0.28	0.9	0.04–0.11

Source: Jambeck et al., (2015)

Makassar City, one of the big cities in Indonesia, faces significant challenges in waste management due to the increasing population that is not balanced by an effective waste management system. Makassar's Final Disposal Site (TPA) is experiencing overcapacity, while the low public awareness of waste management based on the principles of reduce, reuse, recycle (3R) is worsening the situation.

The Makassar City Government has initiated a Waste Bank program to support the implementation of 3R-based waste management. The Waste Bank aims to reduce waste to the TPA by converting waste into economic resources through a management system such as banking. However, although there are more than 667 Waste Bank Unit (BSU) units, data shows that only 60.87% of BSUs are active, while community participation in this program is still low. Another challenge faced is the less-than-optimal cross-sectoral coordination between the government, community, and private sector in supporting the sustainability of the program (Fatmawati et al., 2019).

Table 2.
Existing Data of Makassar City Waste Bank Units (BSU) in 2024

Sub-district	Status of Unit Waste Bank					Customers			Tourist Hallway		
	Active	Inactive	New	Reactivated	Total	Active	Inactive	Total	There	None	Total
Biringkanaya	45	18	3	1	67	1510	20	1530	24	43	67
Bontoala	9	13	3	0	25	347	0	347	0	25	25
Makassar	34	5	1	1	40	637	0	637	10	29	39
Mamajang	10	5	0	0	26	234	0	234	9	16	25
Manggala	68	11	5	1	80	1816	0	1816	19	56	75
Mariso	15	9	4	2	27	387	0	387	3	37	40
Panakkukang	45	22	12	0	70	2107	0	2107	16	63	79
Rappocini	33	16	13	0	28	916	0	916	12	36	48
Tallo	21	12	0	0	33	391	0	391	10	28	38
Tamalanrea	28	19	0	5	29	770	0	770	8	42	50
Tamalate	26	21	6	0	53	853	0	853	13	62	75

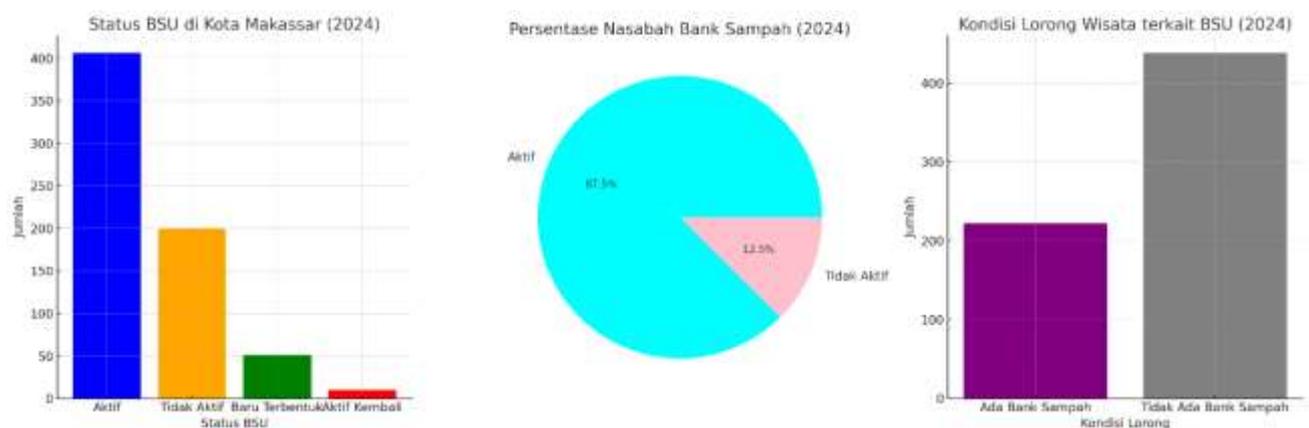
Sub-district	Status of Unit Waste Bank					Customers			Tourist Hallway		
	Active	Inactive	New	Reactivated	Total	Active	Inactive	Total	There	None	Total
Ujung Tanah	27	4	0	0	30	403	0	403	10	21	31
Ujung Pandang	32	11	0	0	43	273	0	273	11	8	19
Wajo	15	8	2	0	31	60	0	60	3	5	8
Kep. Sangkarrang	5	1	2	0	8	60	0	60	3	5	8
Total Number	406	200	51	10	667	9145	1310	10.455	222	438	660

Source: Makassar City Central Waste Bank (September, 2024)

Based on the existing data table of Waste Bank Units (BSU) in Makassar City for 2024 above, there are a total of 667 BSU units. Of that number, 406 units (60.87%) are in active status, while 200 units (29.99%) are inactive. In addition, there are 51 newly formed BSU units (7.65%) and 10 units that are reactivated (1.50%). For customers, the total reaches 10,455 people, with 9,145 people (87.47%) recorded as active customers and 1,310 people (12.53%) as inactive customers.

On the other hand, related to tourist alleys, there are a total of 660 locations, of which 222 locations (33.64%) have waste banks, while 438 locations (66.36%) do not. When analyzed by sub-district, Manggala Sub-district has the highest number of active customers with 1,816 people, while Biringkanaya Sub-district leads in the number of active BSU with 45 units. In contrast, Kepulauan Sangkarrang Sub-district recorded the lowest number of active BSU, which is only 5 units. Active BSU dominates with a proportion of more than 60%, but there are still many inactive BSU, providing an opportunity for reactivation. Meanwhile, although 222 tourist alley locations have waste banks, this figure is still relatively low (33.64%), which indicates the potential for further development and expansion in the implementation of waste banks in these areas.

Figure 1.
Visualization of Existing Data of Bank Sampah Unit (BSU) of Makassar City



Source: researcher data processing (2024)

From a public administration perspective, the governance paradigm has developed to accommodate the shift in government functions from a single actor to a multi-party collaboration. This concept

emphasizes the active role of the community, private sector, and government in formulating policies and implementing inclusive and effective programs.

Governance is different from traditional hierarchical government because it focuses on participatory mechanisms and synergy between stakeholders to achieve common goals (Sumarto, 2003). Thus, modern governance requires a dynamic approach, which allows government institutions to respond to change with relevant and innovative policy adaptations.

Governance aims to create more inclusive and efficient governance by involving various stakeholders. Governance also opens up space for a dynamic approach to deal with ever-evolving social, economic, and environmental changes (Kooiman, 1994).

One of the relevant modern governance approaches is dynamic governance. According to Neo and Chen (2007), dynamic governance integrates organizational culture, dynamic capabilities, and adaptation mechanisms to create policies that are responsive to environmental changes. The main elements of dynamic governance include thinking ahead (the ability to plan for the future with strategic innovation), thinking again (continuous evaluation of policies and programs), and thinking across (learning across sectors or countries). This concept has proven successful in countries such as Singapore, which uses this approach to drive public policy reform and create an adaptive and sustainable governance system.

Waste Bank is one of the innovations in waste management based on the 3R principle (reduce, reuse, recycle). Based on the Regulation of the Minister of State for the Environment Number 13 of 2012, Waste Bank is a place for sorting and collecting waste that can be recycled to provide economic value. This system works on the principle of banking, where waste is considered an asset that is exchanged for monetary value through a savings book. In addition to reducing the amount of waste in the landfill, Waste Bank aims to increase public awareness of community-based waste management.

In Makassar City, Waste Bank was initiated through Mayoral Regulation Number 63 of 2014 concerning the establishment of UPTD Waste Recycling Management. Since 2011, the number of Waste Bank Units has continued to increase, but challenges such as low community participation and coordination between institutions are still major obstacles. By involving various parties such as the Environmental Service, PT Unilever, Yayasan Peduli Negeri, and local communities, Waste Bank in Makassar tries to create a collaborative management model. However, its success requires a more adaptive and innovative approach to address the dynamics faced.

Several studies have explored the application of dynamic governance and management of the Waste Bank program, both at the local and global levels. Previous studies provide insights into governance innovation, dynamic capabilities, and the role of cross-sector collaboration in various contexts.

Sufi (2023), analyzed dynamic governance in public services at Dukcapil Pekanbaru, showing the importance of policy adaptation and technology-based innovation in improving service efficiency and responsiveness. Zainal et al., (2021), explored the dynamics of governance in forestry policy in the Meranti Islands, highlighting collaboration between government, indigenous communities, and the private sector as key to the success of sustainable policies.

Other studies, such as those conducted by Wulandari et al., (2017), focused on a waste management model based on a Waste Bank, showing a direct economic impact on households through increased income. Meanwhile, Fatmawati et al., (2019), examined the performance of Waste Bank services in

Makassar City, finding that the lack of community participation was a major challenge to the effectiveness of the program.

In the context of dynamic governance, Kamil et al., (2021), discussed waste management in Malang with the principle of agile governance, which emphasizes the role of the community and government in creating more adaptive waste management. Research by Khalil & Belitski (2020), links dynamic capabilities to the success of information technology governance, emphasizing the importance of adaptive strategies in dealing with technological change.

This research plan focuses on the application of dynamic governance with an analysis of dynamic capabilities in the Waste Bank program in Makassar City. Unlike previous studies that are more diverse in sectors and locations, this study will provide a specific contribution to how adaptive governance is applied to improve the effectiveness of waste management, create changes in community behavior, and support environmental sustainability at the city level.

Neo and Chen (2007), showed the success of implementing dynamic governance in developed countries, such as Singapore, in reforming public governance. However, the adaptation of this concept in Indonesia is still minimally explored, especially in the context of community-based waste management. This study attempts to bridge this gap by analyzing how dynamic governance is implemented in the management of Waste Bank in Makassar City while evaluating its impact on organizational culture, dynamic capabilities, and socio-economic changes that occur.

This study aims to provide an in-depth understanding of the role of dynamic governance in improving waste management efficiency. In addition, this study offers a new perspective on the integration of innovation, evaluation, and cross-sector collaboration as the main strategy for building sustainable waste management governance. Thus, the results of this study are expected to not only provide theoretical contributions to the dynamic governance literature but also become a practical reference for other city governments in designing community-based waste management policies.

2. Methods

This study uses a qualitative approach with the main objective of understanding the dynamics of the implementation of dynamic governance in the management of Waste Banks in Makassar City. A qualitative approach was chosen because this study seeks to explore social phenomena in depth, especially those related to organizational culture, dynamic capabilities, and changes that occur in community-based waste management. This study is based on the interpretive principle, focusing on the meaning behind the data collected from various sources (Creswell, 2016).

The location of the study was determined purposefully, namely in Makassar City, which has a Waste Bank program that has been running for more than a decade. This city was chosen because of the complexity of its waste problems and the existence of local policies such as Mayor Regulation Number 63 of 2014, which supports the Waste Bank program. The research was conducted from August to November 2024, starting from data collection to analysis, involving various relevant actors, such as Waste Bank managers, the government, and the community.

Data was collected through three main methods. The first is observation conducted at the location of the Pelita Bangsa Waste Bank Unit (BSU) and BSU Asoka V, as well as the Central UPT of Waste

Bank in Makassar City. Researchers directly observed the working mechanism of the Waste Bank, the interaction between managers and the community, and community participation in this program. This observation helps researchers understand the real process of 3R-based waste management (reduce, reuse, recycle).

The second is an in-depth interview conducted using the purposive sampling method. Informants consist of employees of the Makassar City Environmental Service, managers of the Central Waste Bank, managers of the Unit Waste Bank, and the community as customers of the Waste Bank. Interview questions are designed to explore aspects of organizational culture, dynamic capabilities (thinking ahead, thinking again, thinking across), and changes that occur.

The third is a documentation study conducted by reviewing official documents, such as the annual report of the Environmental Service, operational data of the Waste Bank, local policies related to waste management, and previous research results. These documents provide context and support data triangulation.

The data obtained through interviews, observations, and documentation were analyzed qualitatively using thematic analysis techniques (Braun & Clarke, 2006). The steps in data analysis include data transcription, where interview data is recorded and transcribed to ensure accuracy and facilitate the analysis process. Furthermore, each piece of data is coded to identify themes or patterns that are relevant to the focus of the research, such as cross-sector collaboration, innovation in waste management, and community participation. Key themes were then identified based on the elements of dynamic governance, namely thinking ahead, thinking again, and thinking across, with additional themes such as organizational culture and socio-economic change to provide a more comprehensive picture. Data triangulation was carried out by comparing data from various sources to ensure the validity of the findings, such as verifying interview data on the number of Sampah Bank customers with official reports from the Environmental Agency.

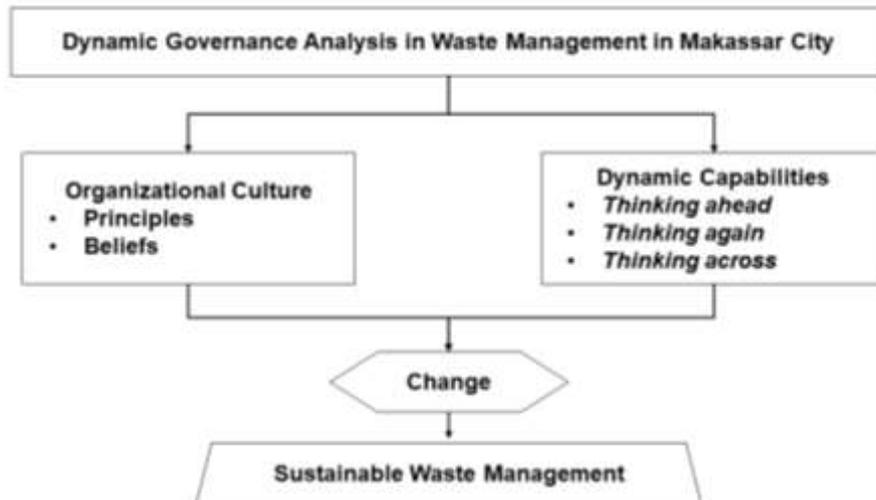
Data analysis was carried out iteratively following the interactive model of Miles & Huberman (2009), which includes three main steps: data reduction, data presentation, and drawing conclusions. Data reduction was carried out by selecting information that was relevant to the research objectives, such as the role of the community and challenges in waste management. The data was then arranged in a matrix and descriptive narrative to facilitate interpretation.

Conclusions were drawn based on patterns found and verified through data triangulation and discussions with colleagues. Validation of findings was carried out by member checking to ensure data accuracy, as well as analysis of various data sources, including official reports and field data.

3. Result and Discussion

This study uses a dynamic governance framework, adapted from Neo and Chen (2007) conceptual framework that includes organizational culture and dynamic capabilities relevant to waste management in Makassar City.

Figure 2.
Research framework



Source: Neo and Chen's Dynamic Governance conceptual framework, adapted by researchers (2024)

Organizational Culture

Organizational culture is formed from principles such as transparency, participation, openness, accountability, and flexibility, as well as beliefs in member empowerment, collaboration, sustainability, continuous learning, and adaptation to change. These principles support inclusive and adaptive dynamic governance.

Table 3.
Data Reduction of Organizational Culture Interviews

Informant	Coding of interview data
Mrs. YL (Asoka V BSU Community)	Community Participation, Waste Sorting Education, Management Efficiency, Challenges of Waste Disposal Habits
Mr. FB (Asoka V BSU Director)	Cooperation between Managers and the Community, Continuous Education, Low Public Awareness, Challenges of Waste Disposal Habits
Mrs. RB (BSU Pelita Bangsa Director)	Household Level Education, Basic Waste Sorting, Challenges of Lack of Community Participation
Mr. AR (Central Waste Bank Manager)	UPT Organizational Structure, Unit Waste Bank Cooperation, Collaboration Between Parties, Law Enforcement, Unenforced Policies
Mr. JU (Environmental Service Employee)	Role of Government in Waste Management, Education and Collaboration, Waste Transportation, Mismatch of Transportation Time with Community Habits

Source: researcher data processing (2024)

The following is a review of the results and discussion related to organizational culture in dynamic waste management in Makassar City.

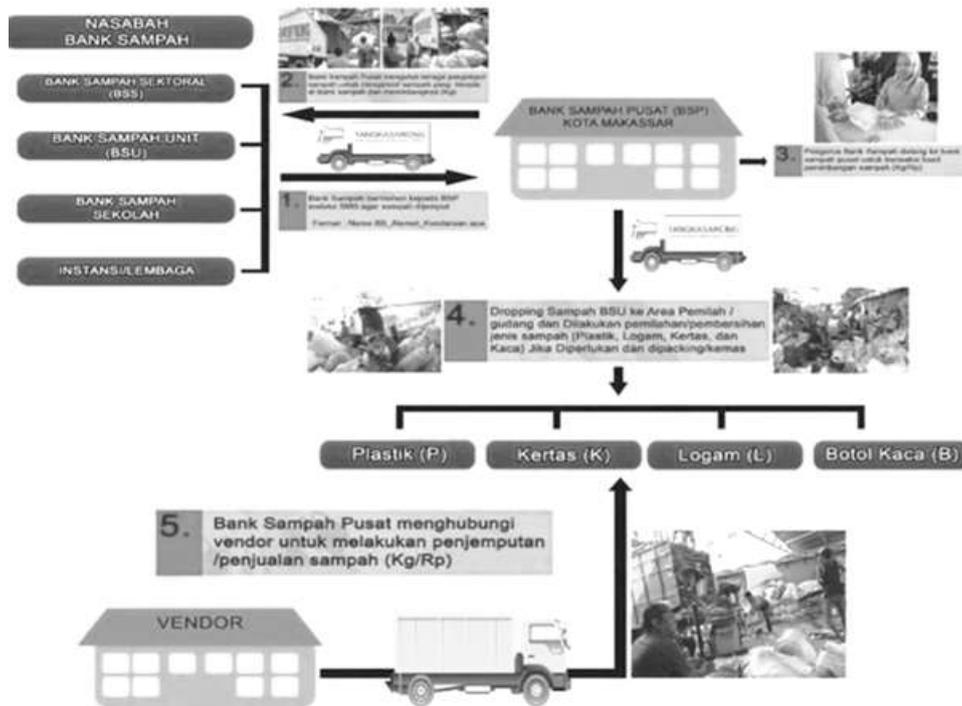
Implementation of Governance in the Waste Bank Program

The implementation of good governance in the Waste Bank program in Makassar City shows that community participation is the main key to program effectiveness. As expressed by Mr. FB (Director of BSU Asoka V), "Cooperation and collaboration are as I explained earlier, namely we provide education to the community in terms of waste selection so that its selling value is higher" (Interview, November 14, 2024). This efficient management is based on strong collaboration between the community and managers, which is in line with the theory of adaptive organizational culture outlined by (Schein, 2010). An organizational culture that supports openness and participation is a major factor in creating effective collaboration, which is essential in community-based waste management.

In the context of dynamic governance, the application of thinking ahead can be seen in the efforts of managers to create economic value from waste, such as exchanging waste for gold. This illustrates innovation in responding to the challenges of waste management by utilizing the potential of waste as a resource that can improve community welfare.

This finding is also supported by Robbins (2016) opinion, which states that the success of an organization is greatly influenced by the commitment of members to common goals. However, the challenge of aligning community perceptions and motivations in waste sorting shows the importance of strengthening organizational culture through ongoing training.

Figure 3.
Working Mechanism of Makassar City Waste Bank



Source: Makassar City Central Waste Bank (September, 2024)

Factors Influencing Waste Bank Program Governance

The main factors influencing the governance of Waste Bank in Makassar City are community involvement, management commitment, fluctuations in waste prices, and support from government policies. Public awareness of the importance of waste sorting is the main obstacle found in this study. As expressed by Mrs. RB (Director of BSU Pelita Bangsa), *"For me as a waste bank activist, the main inhibiting factor is from the community who are less or even do not care about waste"* (Interview, November 14, 2024). This is in line with the concept of dynamic capabilities by Teece *et al.*, (1997), which states that organizations need to think again, namely evaluating and adjusting to environmental changes that occur.

The implementation of cross-sector collaboration is also an important factor in the success of this program. Collaboration between Waste Bank managers and the private sector, as conveyed by Mr. AR (Central Waste Bank Manager), *"The first form of governance is the organizational form of UPT. We partner and collaborate with waste bank units that have been established first"* (Interview, November 11, 2024), shows the importance of coordination between various parties to create an ecosystem that supports the sustainability of the program. Multi-level governance proposed by Hooghe & Marks (2016), very relevant and emphasizes the importance of cooperation between various levels of government and non-government sectors in achieving common goals.

Government Role in Developing the Waste Bank Program

The Makassar City Government plays a strategic role in developing the Waste Bank program through clear regulations, such as Mayor Regulation No. 63 of 2014, as well as providing technical and financial support. As conveyed by Mr. JU (Environmental Service Employee), *"This waste bank program is a program of the Mayor of Makassar, namely that each RW is required to have one waste bank. Therefore, it is included in one of the 7 assessment indicators for RT RW to get incentives"* (Interview, October 22, 2024). In this context, the role of the government is that described by Walker *et al.*, (2012), which suggests the importance of the government in creating policies that can adapt to changing challenges, including in waste management.

Challenges in managing the Waste Bank also arise due to budget and infrastructure limitations that can hinder expansion and more effective management at the sub-district level. Therefore, it is important to strengthen coordination between local governments and the private sector so that existing policies can be implemented more effectively in the field.

Challenges in Managing the Waste Bank Program

The main challenges faced in managing the Waste Bank are low public awareness and the incompatibility of the waste collection schedule with community habits. As expressed by Mr. JU (Environmental Service Employee), *"The incompatibility between the waste collection time and community habits makes it difficult to ensure that waste is properly sorted"* (Interview, October 22, 2024). This illustrates the challenges raised by Ajzen (1991), where the intention to sort waste is greatly influenced by subjective norms and the control that the community feels over the behavior.

Fluctuations in waste prices are also a significant challenge to the sustainability of the program. Waste Bank managers face difficulties in determining stable prices for collected waste products, which can affect economic incentives for the community. To overcome this, continuous evaluation and

adjustment (thinking again) are needed, as well as efforts to maintain price stability through collaboration with the private sector and government.

Dynamic Capabilities

Dynamic capabilities include "thinking ahead" by identifying problems, exploring possibilities, and developing strategies; "thinking again" through routine evaluation, feedback analysis, and program adjustments; and "thinking across" by learning from international practices and adapting to local contexts. This approach aims to increase effectiveness, sustainability, and innovation in waste management.

Table 4.
Interview Data Reduction Dynamic Capability

Informant	Coding interview data
Mrs. YL (BSU Asoka V Community)	Waste sorting based on type and quality to obtain economic value and benefits of savings for household needs
Mr. FB (Director of BSU Asoka V)	Innovation of exchanging waste for gold, education about waste sorting, benefits of waste bank savings
Mrs. RB (Director of BSU Pelita Bangsa)	Waste sorting education that increases economic value; savings are used for household needs and education
Mr. AR (Central Waste Bank Manager)	Waste is labeled and valued, cooperation with Pegadaian to exchange waste for gold, evaluation of BSU inactivity due to external factors
Mr. JU (Environmental Service Employee)	Reduction of waste volume at the TPA, waste bank savings contribute to the economy and more efficient waste management

Source: researcher data processing (2024)

The following describes the results and discussion related to the three elements of dynamic capability in dynamic waste management in Makassar City.

Thinking Again

Thinking again in the context of Waste Banks in Makassar City is implemented through routine evaluations and feedback analysis carried out by managers. This evaluation focuses on identifying challenges faced, such as the inactivity of several Waste Bank Units (BSU) caused by external factors, such as fluctuations in waste prices after the COVID-19 pandemic and unstable management changes. One of the Waste Bank managers explained, *"This ongoing evaluation is important so that we can find out what needs to be fixed, such as overcoming unit inactivity and adjusting policies to changing socio-political conditions"* (Interview with Mr. AR, November 11, 2024). This approach is in line with the dynamic capability theory put forward by Teece *et al.*, (1997), which states that re-evaluation allows organizations to adapt to changes in the external environment as well as identify and address weaknesses in the management system.

For example, Waste Bank managers identified that BSU's inactivity was often caused by a lack of manager commitment and problems related to waste prices, which required adjustments in management strategies and community participation.

Thinking Ahead

The implementation of thinking ahead is reflected in the efforts of the Waste Bank managers to project the long-term impact of waste management, both in terms of economic and environmental sustainability. One example of innovation carried out is the waste exchange system for gold, which provides economic incentives for the community to be more active in sorting and collecting waste.

Mrs. YL, one of the customers of the Asoka V Waste Bank, stated, *"Of course, it is very economically valuable for mothers who understand this opportunity when collecting waste and then selling it. Waste that is sorted properly produces more profit"* (Interview with Mrs. YL, November 14, 2024).

This waste exchange program for gold reflects the integration of economic and ecological innovation, which is in line with Boons & Freund (2013), who emphasize that organizations must be able to integrate economic and environmental dimensions to create sustainable value. This program not only provides economic benefits to the community but also encourages more efficient and environmentally friendly waste management, which supports the principle of sustainability in waste management.

Although this innovation is very economical, Waste Bank managers also realize the importance of ensuring that this program is inclusive of all levels of society. As stated by Hosan *et al.*, (2023), social justice in environmental innovation is very important, so this program must be able to reach the underprivileged community so that no one is left behind in the benefits offered.

Thinking Across

Thinking across the management of the Waste Bank in Makassar City is reflected in the efforts of managers to learn from international practices and adapt them to the local context. One example is the adaptation of technology for utilizing organic waste into compost and the use of used cooking oil for soap production, which has been implemented in several Waste Bank units.

As explained by Mr. FB (Director of BSU Asoka V), *"We learn from international practices, such as converting used cooking oil into soap or organic waste into compost"* (Interview, November 14, 2024). This is from the organizational learning theory by Argyris & Schön (1997), which emphasizes the importance of cross-context learning to find innovative solutions by adopting best practices from elsewhere. This adaptation allows the Waste Bank to increase the economic value of waste and open up opportunities for the community to gain additional economic benefits.

The implementation of thinking across is not without challenges. Heikkila & Gerlak (2013), noted that cross-sector learning often faces adaptation barriers, especially if international practices do not match local capacities. In Makassar City, challenges such as low public awareness of waste sorting can hinder the effective implementation of innovation. Therefore, this program needs to continue to adapt to local social and cultural conditions so that it can be accepted and successfully implemented at the community level.

Change

Change is related to the ability to adapt to existing habits. Changes that occur both in the way waste is managed (which includes the transition from collection to sorting and reducing the amount of waste entering the landfill) and in changes in community habits that adapt to the implementation of the waste bank program.

Table 5.

Interview Data Reduction Related to Change

Informant	Coding of interview data
Mrs. YL (BSU Asoka V Community)	Waste sorting reduces volume to the landfill; organic waste becomes compost
Mrs. FB (Director of BSU Asoka V)	Waste sorting education, reducing waste to the landfill, changes in community behavior
Mrs. RB (Director of BSU Pelita Bangsa)	Utilization of waste for soap, eco enzymes, and compost; increasing awareness of cleanliness
Mr. AR (Central Waste Bank Manager)	Waste is given economic value, changes in people's mindsets, economic-based waste management
Mr. JU (Environmental Service Employee)	Reduction in waste volume to landfills, positive impact on cleanliness and welfare

Source: researcher data processing (2024)

The following describes the results and discussion related to changes in dynamic waste management in Makassar City.

Impact of the Makassar City Waste Bank Program

The Waste Bank Program in Makassar City has had a significant impact in changing the way people view waste, as well as introducing the concept of waste as a resource that can generate economic value. Based on an interview with Mrs. YL (BSU Asoka V Community), *"Of course, it is very economically valuable for mothers who understand and realize the opportunities when collecting waste and then selling it. For example, I collect plastic bottles, cardboard, and so on; what is it? Then I sort it out"* (Interview, November 14, 2024).

This statement shows that people are now more aware of the potential of waste that can generate income if managed properly. Another impact found in this study is the reduction in the volume of waste entering the final disposal site (TPA). As expressed by Mr. JU (Environmental Service Employee), *"With the establishment of a waste bank, the unit that sorts waste to have economic value will go to the waste bank, not to the TPA. Previously, the volume of waste entering the TPA was around 1,000 tons per day; now, with the waste bank, it is around 900 tons more"* (Interview, October 22, 2024).

This reduction in waste volume is one of the real impacts of the Waste Bank program, which also contributes to more efficient and environmentally friendly waste management. The Ellen MacArthur Foundation (2013), states that recycling-based waste management can turn waste into resources. By utilizing waste to produce compost, soap, or other valuable products, the waste bank program supports a circular economic system that focuses on sustainability.

This success reflects a paradigm shift in waste management, from what was originally seen as useless waste to goods that have economic value. In line with the theory of social change by Stinchcombe et al., (1987), this program has succeeded in changing the mindset of the community regarding waste by emphasizing the importance of efficient waste sorting and processing to create economic benefits. This program also has a significant social impact, where people involved in the Waste Bank program get access to training on waste management as well as direct benefits in the form of money or goods that can be used for household needs. As expressed by Mrs. YL, *"If it is collected, I can usually buy rice*

and side dishes such as fish at the market" (Interview, November 14, 2024). The Waste Bank program provides direct benefits to the community, especially in helping to reduce household expenses.

Changes in Waste Management after the Existence of the Waste Bank

Along with the development of the Waste Bank, there have been significant changes in the waste management system in Makassar City. Before the Waste Bank program, waste management in this city was still conventional, with the main focus on collecting and disposing of waste in landfills. However, with the introduction of the Waste Bank program, waste management has transformed to be more systematic and based on the 3R principle (*reduce, reuse, recycle*).

As conveyed by Mr. AR (Central Waste Bank Manager), *"Waste that has entered the waste bank can be guaranteed not to end up in the landfill. Because the waste that has entered the waste bank has been made into a product and labeled, everything that we have collected and purchased already has its price" (Interview, November 11, 2024).*

Another major change lies in organized waste management, where waste collection is not only carried out based on volume but also on the type and quality of waste. This shows that the Waste Bank is not only changing the way waste is managed but also increasing public awareness to better sort waste, which in turn can improve the quality of waste processed.

Waste Bank managers play an active role in providing education on how to maximize the value of waste, with an emphasis on cleanliness and proper sorting. Ms. RB (Director of BSU Pelita Bangsa) said, *"The assessment is, for example, based on the type of waste brought and the level of cleanliness after being sorted" (Interview, October 26, 2024).*

Changes in the incentive system given to the community are also an important aspect of this program. Through various innovations, such as exchanging waste for gold, the Waste Bank provides attractive economic incentives for the community. Mr. FB (Director of BSU Asoka V) emphasized, *"The most unique or different innovation is that waste can be exchanged for gold" (Interview, November 14, 2024).* This program not only provides direct benefits to the community but also encourages them to participate more actively in waste management because they feel that the waste they collect has more value.

Moser & Dilling (2007), showed that education and incentives alone are often not enough to create lasting behavioral change. They emphasize the importance of a holistic approach that includes strengthening culture and supporting infrastructure. In the context of Makassar, strengthening the management system at the community level and cross-actor coordination need to be considered to maintain the positive impact of the program. Cross-sector collaboration is an aspect that drives the success of this change. The Makassar City Government, through the Environmental Service, together with the private sector, also plays a role in supporting the smooth running of the Waste Bank program.

The collaboration between Waste Bank managers and various related parties shows that changes in waste management cannot be achieved only with government policies but require active participation from all levels of society and related sectors. Hooghe & Marks (2016), stated that managing environmental problems, such as waste, requires the involvement of many parties from various levels of government and non-government sectors.

Overall, the changes that have occurred in waste management in Makassar City through the implementation of the Waste Bank program have shown a major positive impact. This program not only increases efficiency in waste management but also creates new economic opportunities for the community. These changes include more systematic management, reducing the volume of waste entering the landfill, and empowering communities through incentives and education. However, the remaining challenge is ensuring the sustainability of the program, especially in terms of public awareness and the stability of Waste Bank managers, which requires further attention in evaluation and development.

4. Conclusion

The Waste Bank program in Makassar City demonstrates an inclusive and collaborative organizational culture, where community participation and transparency in waste management are key factors. Through education and economic incentives such as exchanging waste for gold, the program encourages changes in community behavior and raises awareness of the economic value of waste.

The dynamic capabilities implemented, including thinking ahead, thinking again, and thinking across, have increased the effectiveness and sustainability of the program. Waste Bank managers conduct regular evaluations and adjust policies to address challenges and adopt innovations such as utilizing waste for valuable products such as soap and compost, which have been successfully implemented in the local context.

Changes in waste management in Makassar City are seen from the shift from conventional collection systems to 3R-based sorting. The reduction in the volume of waste entering the landfill shows the positive impact of this program, which also provides social and economic benefits to the community.

Challenges such as low public awareness and limited infrastructure still require more attention. Overall, the implementation of dynamic governance in the Waste Bank in Makassar has resulted in significant changes in waste management and community empowerment.

Limitations in this study include the lack of data on the long-term impact of the program, as well as limitations in the scope of the sample, which only focused on several Waste Banks in Makassar City. Further research can expand the scope of locations and time periods to identify the long-term impact and effectiveness of the program more comprehensively. Further research is recommended to dig deeper into the sustainability of community participation and the challenges faced in managing Waste Banks at a broader level.

References

- Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes*, *Disability, CBR and Inclusive Development*, 33(1), 52–68.
- Argyris, C., & Schön, D. A. (1997). Organizational Learning: A Theory of Action Perspective. *Reis*, 77/78, 345. <https://doi.org/10.2307/40183951>
- Boons, F., & Lüdeke-Freund, F. (2013). Business models for sustainable innovation: State-of-the-art and steps towards a research agenda. *Journal of Cleaner Production*, 45, 9–19. <https://doi.org/10.1016/j.jclepro.2012.07.007>

- Braun, V., & Clarke, V. (2006). Qualitative Research in Psychology Using thematic analysis in psychology Using thematic analysis in psychology. *Qualitative Research in Psychology*, 3(2), 77–101.
<http://www.tandfonline.com/action/journalInformation?journalCode=uqrp20>
<http://www.tandfonline.com/action/journalInformation?journalCode=uqrp20>
- Creswell, J. W. (2016). *Research Design Pendekatan Metode Kualitatif, Kuantitatif dan Campuran (ke-4)*. Pustaka Pelajar.
- Ellen MacArthur, F. (2013). Towards the Circular Economy Vol. 2: Opportunities for the Consumer Goods Sector. *Ellen MacArthur Foundation*.
- Fatmawati, A., Muhsin, M. A., & Taufik, A. (2019). Kinerja Pelayanan Bank Sampah Kota Makassar. *Jurnal Inovasi Dan Pelayanan Publik Makassar*, 1(18), 1–15.
- Heikkila, T., & Gerlak, A. K. (2013). Building a conceptual approach to collective learning: Lessons for public policy scholars. *Policy Studies Journal*, 41(3), 484–512.
<https://doi.org/10.1111/psj.12026>
- Hooghe, L., & Marks, G. (2016). *Community, Scale, and Regional Governance: A Postfunctionalist Theory of Governance, Vol. II*.
- Hosan, S., Rahman, M. M., Karmaker, S. C., Sen, K. K., Chapman, A. J., & Saha, B. B. (2023). Transformation of ecological footprint through financial development and technological innovation. *Clean Technologies and Environmental Policy*, 25(10), 3363–3380.
<https://doi.org/10.1007/s10098-023-02590-4>
- Jambeck, J. R. ., Wilcox, C. ., Siegler, T. R. ., Perryman, M. ., Andrady, A. ., Narayan, R. ., & Law, K. L. . (2015). Plastic waste inputs from land into the ocean. *Science*, 347(6223), 768–771.
- Kamil, M., Roziqin, A., & Rahmawati, Y. (2021). Dynamic Governance Model Within Integrated Waste Management In Malang City: Agile People And Process In Actions. *Jurnal Studi Pemerintahan*, 12(3). <https://doi.org/10.18196/jgp.123140>
- Khalil, S., & Belitski, M. (2020). Dynamic capabilities for firm performance under the information technology governance framework. *European Business Review*, 32(2), 129–157.
<https://doi.org/10.1108/EBR-05-2018-0102>
- Kooiman, J. (1994). *Modern Governance*. Sage, 280.
<http://scholar.google.com/scholar?hl=en&btnG=Search&q=intitle:No+Title#0>
- Miles, M. B., & Huberman, A. M. (2009). *Analisis Data Kualitatif*. UI-Press.
- Moser, S. C., & Dilling, L. (2007). Creating a climate for change: communicating climate change and facilitating social change. *Choice Reviews Online*, 45(02), 45-0931-45-0931.
<https://doi.org/10.5860/choice.45-0931>
- Neo, B. S., & Chen, G. (2007). *Dynamic Governance –Embedding Culture, Capabilities and Change in Singapore*. World Scientific Publishing. Co. Pte. Ltd.
- Robbins, S. P. (2016). *Perilaku Organisasi Edisi 16*. Salemba Empat.
- Schein, E. H. (2010). *Organizational Culture and Leadership (4th ed.)*. Jos.
- Stinchcombe, A. L., Boudon, R., & Whitehouse, J. C. (1987). Theories of Social Change: A Critical Appraisal. *Social Forces*, 66(2), 557. <https://doi.org/10.2307/2578756>
- Sufi, W. (2023). Implementation of Public Service Innovation in Dynamic Governance of Dukcapil Pekanbaru City. *JESS (Journal of Education on Social Science)*, 7(3), 337.
<https://doi.org/10.24036/jess.v7i3.520>
- Sumarto, H. S. (2003). Inovasi, Partisipasi, dan Good Governance. *ICB Research Reports*, 9, 1–394.
- Teece, D. J., Pisano, G., & Shuen, A. (1997). Dynamic capabilities and strategic management. *Strategic Management Journal*, 18(7), 509–533.

<http://doi.wiley.com/10.1002/%28SICI%291097-0266%28199708%2918%3A7%3C509%3A%3AAID-SMJ882%3E3.0.CO%3B2-Z>

- Walker, B., Carpenter, S. S. R., Anderies, J., Abel, N., Cumming, G., Janssen, M., Norberg, J., Peterson, G. D., Pritchard, R., Stanley, L., Pengra, B., Häyhä, T., Franzese, P. P., Folke, C., Carpenter, S. S. R., Walker, B., Scheffer, M., Chapin, T., Hahn, T., ... Nightingale, A. J. (2012). Resilience Thinking: Integrating Resilience, Adaptability and Transformability. *Ecological Modelling*, 15(1), 1–17.
<http://phg.sagepub.com/content/36/4/475%5Cnhttp://phg.sagepub.com/content/36/4/475.full.pdf>
<http://phg.sagepub.com/content/36/4/475.short%5Cnhttp://www.ecologyandsociety.org/vol15/iss4/art20/%5Cnhttp://dx.doi.org/10.1016/j.ecolmodel.2014.07.002>
- Wulandari, D., Utomo, S. H., & Narmaditya, B. S. (2017). Waste bank: Waste management model in improving local economy. *International Journal of Energy Economics and Policy*, 7(3), 36–41.
- Zainal, Z., Syaprianto, S., Yusraini, N., & Arnita, F. (2021). *Dynamic Governance in Forestry Policy at Kepulauan Meranti District*.
[https://repository.uir.ac.id/19436/%0Ahttps://repository.uir.ac.id/19436/1/Dynamic Governance in Forestry Policy.pdf](https://repository.uir.ac.id/19436/%0Ahttps://repository.uir.ac.id/19436/1/Dynamic%20Governance%20in%20Forestry%20Policy.pdf)