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Public Private People Partnership (4ps) in Waste Management Services: A Review of Efficiency and Effectiveness

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ABSTRAK

Penelitian ini bertujuan untuk mengevaluasi efisiensi dan efektivitas layanan pengelolaan sampah di Kota Pekanbaru melalui peran kemitraan pemerintah, sektor swasta dan masyarakat. Metode kualitatif dengan studi kasus dilakukan. Data dikumpulkan melalui observasi, wawancara mendalam dan analisis dokumen. Analisis data melalui pengkodean tematik. Triangulasi dilakukan untuk memverifikasi temuan dengan membandingkan data dari berbagai sumber dan memastikan konsistensi hasil. Hasil penelitian menunjukkan bahwa efisiensi dan efektivitas layanan pengelolaan sampah sangat bergantung pada sinergi antara pemangku kepentingan, transparansi informasi dan upaya kolektif. Program bank sampah dan pengomposan terbukti mampu mengurangi volume sampah yang harus dikelola, mempercepat proses daur ulang dan memperpanjang masa operasional tempat pembuangan akhir (TPA). Namun, meskipun kemitraan dengan sektor swasta dan peningkatan partisipasi masyarakat merupakan solusi penting, masih terdapat hambatan dalam berbagi informasi, pemahaman masyarakat, tanggung jawab kolektif dan mekanisme komunikasi. Untuk itu pemerintah kota perlu membangun saluran komunikasi yang lebih efektif dan interaktif melalui aplikasi pengaduan dan informasi layanan berbasis digital yang memungkinkan umpan balik dua arah.

ABSTRACT

This study aims to evaluate the efficiency and effectiveness of waste management services in Pekanbaru through the role of partnerships between the government, the private sector, and the community. Qualitative methods with case studies were applied in this research. Data were collected through observation, in-depth interviews, and document analysis. Data analysis through thematic coding. Triangulation were conducted to verify the findings by comparing data from various sources and ensuring consistency of results. The results of the study indicated that the efficiency and effectiveness of waste management services are highly dependent on synergy between stakeholders, transparency of information, and collective efforts. The waste bank and composting programs have been proven to reduce the volume of waste that needs to be managed, accelerate the recycling process, and extend the operational period of the Final Disposal Site (FDS). However, although partnerships with the private sector and growing community participation are important solutions, there are still obstacles to sharing information, community understanding, and collective responsibility and communication mechanisms. For this reason, the city government needs to build more effective and interactive communication channels through digital-based complaint applications and information services that enable two-way feedback.

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INTRODUCTION

The quality of waste management services greatly determines the sustainability of a city (Othman et al., 2013), considering that every year around 1.46 billion metric tons of community waste is generated globally, equivalent to 435 kg per person (Zaman & Swapan, 2016). Waste management services are not only about technical aspects but also involve economic dimensions, regulations, policies, and resource management by the government.

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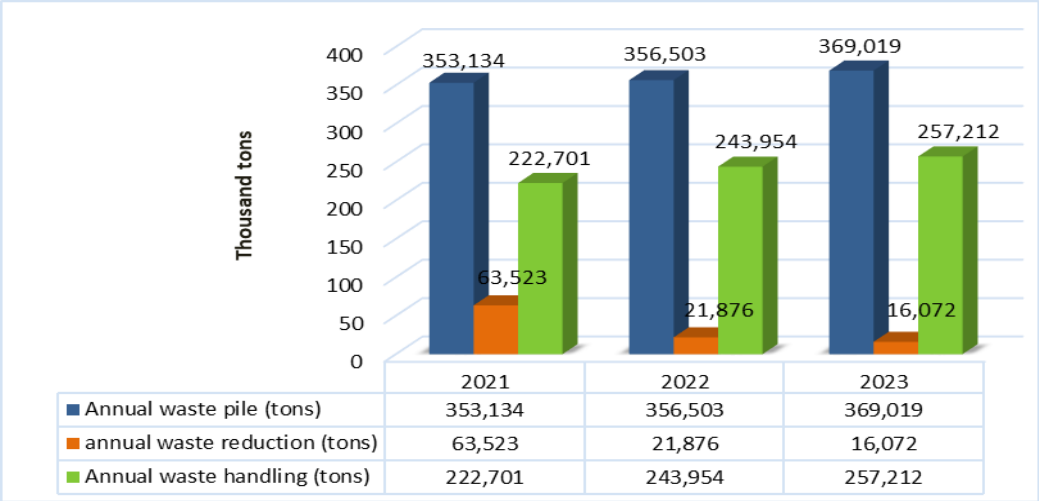
As a multidimensional process, the success of waste management services is highly dependent on community participation, especially since management must start from the source. To address this challenge, several governments have adopted decentralization policies aimed at increasing public participation in decision-making and implementation of waste management services (Kinuthia, 2016).

As the capital city of Riau Province, Pekanbaru City faces major challenges in waste management services as a result of the rate of urbanization, and increasing industrial, commercial, and service activities. Most of the waste in Pekanbaru City is simply disposed of in the final disposal site without proper treatment, such as composting and recycling. Although landfills are a relatively inexpensive method, their long-term impacts, such as groundwater contamination, air pollution, and soil pollution, pose significant risks.

According to the (Acting) Head of the Pekanbaru City Environment and Sanitation Agency, the volume of waste produced continues to increase. Infrastructure such as Temporary Waste Storage (TWS) and Final Disposal Sites (FDS) in this city can no longer accommodate the continuously increasing waste, causing waste to frequently accumulate in full Temporary Waste Storage (TWS) facilities and even be disposed of in inappropriate places, leading to negative impacts on the environment and public health. In addition, the lack of community participation in waste management and less than optimal coordination between stakeholders provokes this problem.

Figure 1.
City Waste Piles



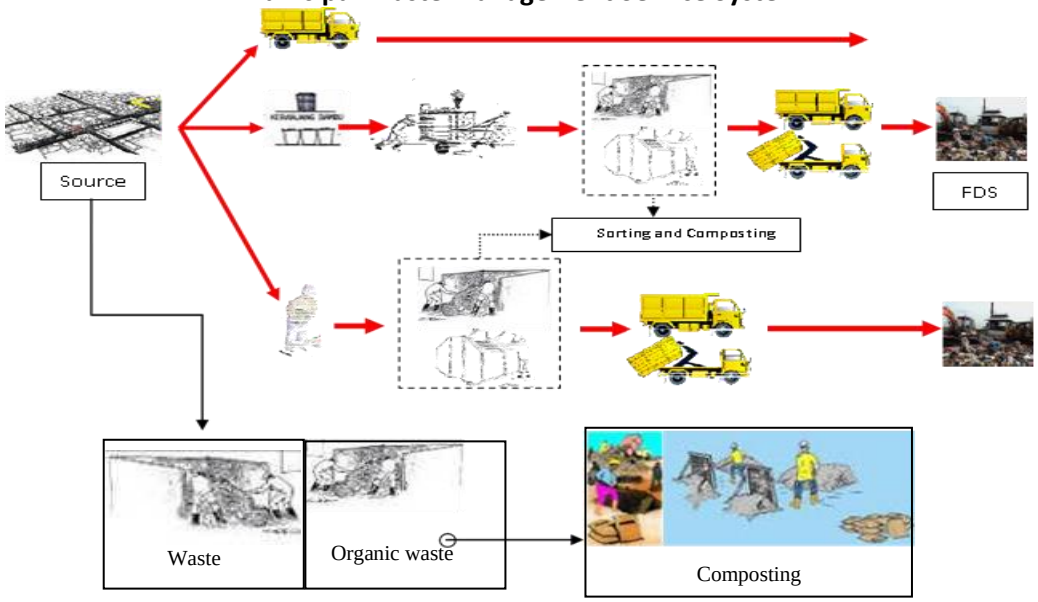
	2021	2022	2023
Annual waste pile (tons)	353,134	356,503	369,019
annual waste reduction (tons)	63,523	21,876	16,072
Annual waste handling (tons)	222,701	243,954	257,212

Source: Pekanbaru City Environment and Sanitation Agency, 2024

Figure 1 above shows that the amount of waste in Pekanbaru continues to increase every year. Regulation number 18 of 2008 Article 9 mandates that district/city governments have the authority to organize waste management, including determining the location of temporary shelters, integrated waste management sites, and/or final waste processing.

In the waste management service system in Pekanbaru City, the process follows several stages. It starts with collecting waste at the source (households, businesses, and public facilities). After being collected, the waste is transported to the temporary waste storage (TWS), which serves as a transit area to reduce the burden on the final disposal site (FDS) and facilitate initial sorting. At the temporary waste storage (TWS), waste is often sorted to separate recyclable materials and organic waste, which are then processed into compost. Waste that cannot be recycled is subsequently disposed of in the Final Disposal Site (FDS).

Figure 2.
Municipal Waste Management Service System



Source: Pekanbaru City Environment and Sanitation Agency, 2024

In reality, the performance of the public sector in providing waste management services in Pekanbaru City is still far from expectations. The city government faces various challenges, ranging from limited infrastructure capacity, and increasing waste volume, to a lack of coordination between the government, private sector, and the community. In addition, the government's commitment to providing adequate financial, material, and employee resources for waste management services is still lacking in fulfilling its responsibilities.

Given the failure of the public sector to provide efficient and effective waste management services, many parties view the involvement of the private sector and the community in the provision of public services as a promising solution. This approach has gained global attention with varying degrees of success across cities and economic sectors (Zhu et al., 2008). However, the challenges faced by city governments in delivering these services require a deeper understanding of the roles and responsibilities of the stakeholders involved. Therefore, this research intends to evaluate the efficiency and effectiveness of waste management services through the role of government, private sector, and community partnerships.

Literature Review

The efficiency and effectiveness of public services are key issues in current research in the field of public management. Contemporary theories on the provision of public services, such as community waste management services, include various theoretical approaches and paradigms to address the issues of efficiency and effectiveness. The first approach emphasizes the active involvement of public authorities in the provision of public services, with arguments regarding potential market failures (Bailey, 2002). In contrast, the second group, such as neo-Taylorism or new public management, argues that the role of the public sector should be limited due to the inefficiency of the public sector in providing services. This approach emerged in response to the transfer of private-sector governance principles to the public sector (Bouckaert, 2014). Discussion of public management reform (Pollitt & Bouckaert, 2011) shows that both approaches, although theoretically contradictory, seek to find new alternative forms of public service delivery through multilateral and mutually beneficial cooperation between the public, private, and non-profit sectors.

Previous studies, such as those conducted by (Volsuuri et al., 2023; Bui et al., 2020; Olukanni & Nwafor, 2019; Brotosusilo et al., 2020), have explored various approaches and theories for improving the efficiency of public services. Although these approaches often differ in how public services are provided, their similarities lie in their efforts to improve the efficiency of public services and analyze the role of various factors in the resulting economic effects.

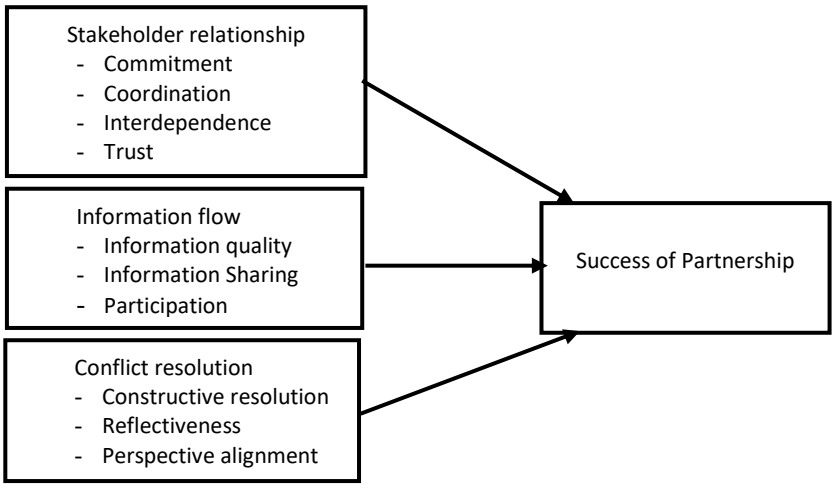
Public services are an integral part of the structure of government administration and perform an important role in shaping the dynamics of the relationship between government institutions and the community (Jenhaug, 2020). The success of public services which can be measured through effectiveness and efficiency is a fundamental element in meeting the requirements of citizens and improving welfare.

Collaboration and partnership have been identified as two important aspects of public services and are challenging (Kapucu, 2012). Given this, the need to develop effective public-private-people partnerships (4Ps) to improve waste management services has become important (Vedeld et al., 2016). The 4Ps are an instrument to coordinate and align efforts made across sectors related to waste management services.

In the context of this study, partnerships are defined as strategic relationships between independent entities that share the same goals, seek mutual benefit, and recognize a high degree of interdependence. There are various types of partnership agreements, both formal and informal. Thus, the 4Ps in the context of waste management services are formal and informal arrangements developed between the government, the private sector, and the community to improve public services. A successful partnership is a partnership that achieves goals effectively with contributions from all partners involved (Mohr & Spekman, 1994).

Based on the studies above, this study reveals that although the formation of partnerships and cooperative relationships in public services has been widely explored in the literature, understanding the characteristics of partnerships in efficient and effective waste management is still lacking. This understanding is important to reconcile the provisions in forming a successful partnership. The discussion will be examined through three partnership attributes, namely (1) stakeholder relationships, (2) information flow, and (3) conflict resolution.

Figure 3.
Theoretical Framework



Source: Mohr and Spekman, 1994

RESEARCH METHODS

This study uses a qualitative method with a case study to evaluate the efficiency and effectiveness of waste management services in Pekanbaru City through the role of partnerships between the government, private sector, and community (Yin, 2016). The qualitative approach was chosen because it allows for an in-depth understanding of the dynamics and interactions between stakeholders and the processes that affect the performance of waste management services.

This study explores how the partnership between the government, private sector, and community contributes to the efficiency and effectiveness of waste management services in Pekanbaru. To obtain relevant data, researchers used a purposive sampling technique to select informants who have knowledge and experience related to the research topic (Denzin & Lincoln, 2018). The informants involved were 10 participants representing the government, private sector, and community.

The government refers to the relevant agencies within the Pekanbaru City Government responsible for planning, oversight, and infrastructure provision. The private sector consists of companies responsible for managing waste transportation from the source to the final disposal site, as well as businesses concerned with waste management issues. The community represents local groups that actively participate in waste management efforts. The government was selected based on its role and responsibilities in policy, infrastructure provision, and oversight. The private sector was chosen for its operational involvement and concern about waste issues, while the community was selected for its active participation in waste management programs.

The concept of public refers to the government, which plays a role in representing the public interest and is responsible for providing waste management services. The government, as the public sector, carries out various functions, including policy-making, regulation, infrastructure provision, and oversight.

The data collection process was carried out through observation, in-depth interviews, analysis of government documents, journal publications, and research. After the data was collected, an analysis was carried out through thematic coding (Braun & Clarke, 2013). Thematic analysis revealed key patterns in interactions between stakeholders and their impact on the quality of waste management services. Triangulation was carried out to verify the findings by comparing data from various sources and ensuring consistency of results. The main findings are presented in the report which includes a discussion on the implications of the findings and recommendations for improving the waste management service system in Pekanbaru.

Table 1.
Types, Roles, and Responsibilities of Stakeholders

Types of Stakeholders	Stakeholder Positions	Roles and Responsibilities
Government (Public)	Head of the Pekanbaru City Environment and Sanitation Agency	Responsible for overall environmental and municipal waste management
	Head of the Pekanbaru City Market Agency	Manage and regulate waste management systems in traditional and modern markets, including the collection, transportation, and disposal of waste generated from market activities.
	Head of the Regional Development Planning Agency	Planning and coordination of waste management programs in regional development plans.
	Head of the Pekanbaru City Housing and Settlement Areas Agency	Managing and developing the necessary infrastructure for waste management, such as landfills, recycling facilities, and waste collection systems
	Head of the Pekanbaru City Health Agency	Monitoring the potential spread of disease due to piles of rubbish and carrying out preventive measures in the form of health education.

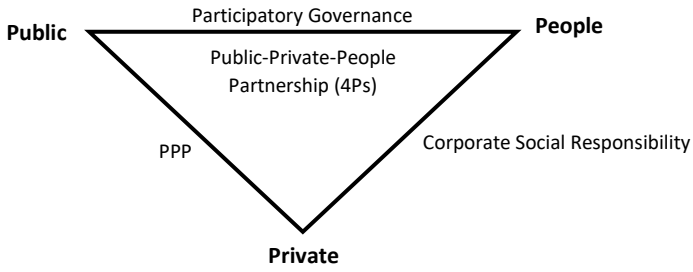
Types of Stakeholders	Stakeholder Positions	Roles and Responsibilities
Private	Head of PT. Godang Tuah Jaya (GTJ)	Responsible for managing the transportation of waste from its sources (households, markets, offices, and public places) to the Final Disposal Site (FDS)
	Head of PT. Samhana Indah (SHI)	Responsible for managing the transportation of waste from its sources (households, markets, offices, and public places) to the Final Disposal Site (FDS)
	VP Corporate Affairs PT Pertamina Hulu Rokan (PHR)	Community empowerment and waste bank development through corporate CSR assistance programs
Community (People)	Leader of the Dalang Collection waste bank	Manage and facilitate the collection of recyclable waste and coordinate with various communities to raise awareness of waste management through waste bank activities.
	Leader of the Berkah Bersama waste bank	manage and facilitate the collection of recyclable waste and coordinate with various communities to raise awareness of waste management through waste bank activities.

Source: Processed by researchers, 2024

RESULTS AND DISCUSSIONS

This study presents evidence of partnerships formed in waste management services in Pekanbaru City. Involving stakeholders in the community waste management service process is not an easy thing because of differences in interests. (McConnell & Drennan, 2006). Stakeholders must realize that their collaboration can bring benefits to the waste management service process and also to themselves. Given this, the need to carry out public-private-people (4Ps) partnerships that facilitate multi-level governance in efficient and effective waste management services becomes important.

Figure 4.
Public-Private-People Partnership (4Ps)



Source: Mohr and Spekman, 1994

A framework that lists the characteristics of the 4Ps in effective and efficient waste management services has been developed. The framework identifies and explains the characteristics of the 4Ps based on the dimensions: (1) stakeholder relationships: commitment, coordination, interdependence, and trust; (2) information flow: information quality, information sharing, and participation; (3) conflict resolution: constructive resolution, reflectiveness, perspective alignment.

Stakeholder relationship dimensions

Commitment

In the context of the 4Ps model for efficient and effective waste management services, as proposed (Mohr & Spekman, 1994), commitment refers to the willingness of partners to exert joint efforts in partnership and set aside self-interest. The efficiency and effectiveness of waste management services depend largely on the ability to engage representatives from public entities, private companies, and the community (Adams, 2016).

Based on the results of the interview analysis, it was revealed that the Pekanbaru City Government has shown its commitment by issuing Pekanbaru City Regional Regulation Number 8 of 2014 concerning Waste Management. The partnership between the government and the private sector is realized through cooperation with PT. Godang Tuah Jaya (GTJ) and PT. Samhana Indah (SHI) in the transporting of waste from Temporary Waste Storage (TWS) to the Final Disposal Site (FDS). The City Government has also provided 63 TWS and 1 FDS in 15 sub-districts and is currently building an Integrated Waste Processing Facility (IWPF), where waste will be processed into fertilizer and biodiesel fuel. The government also regulates waste service zones which are divided into three areas:

1. Zone 1 is managed by PT. GTJ which covers 4 sub-districts. The potential waste transported to the final disposal site (FDS) is around 355.29 tons/day, with 200 officers and supported by a fleet of 8 motorized pedicabs, 9 pick-up units, 40 dump trucks, 2 large dump trucks, and 1 backhoe loader.
2. Zone 2 is managed by PT. SHI which covers 8 sub-districts. The potential waste transported is around 314.03 tons/day, with 150 officers with a fleet of 7 motorized pedicabs, 8 pick-up units, 34 dump trucks, 2 large dump trucks, and 1 backhoe loader.
3. Zone 3 which includes 3 sub-districts is still managed independently by Pekanbaru City Environment and Sanitation Agency.

The government's commitment can be seen in partnerships with the community through various waste management outreach programs. The government also empowers the community by forming environmental care groups that play a role in waste management in their respective areas. In addition, the government provides training, funding, and incentives for community groups to manage waste independently through composting, recycling, and waste bank programs. Currently, Pekanbaru City has 2 main waste banks and 109 unit waste banks. Participation and support of community groups are key to ensuring effective commitment from the government (Zuhdi et al., 2024).

Partnerships between the private sector and the community are also realized through corporate social responsibility (CSR) programs that support community-based waste management initiatives. The private sector provides equipment for waste bank requirements provides waste recycling training and holds waste reduction campaigns.

This collaboration shows that the commitment of all stakeholders creates a strong synergy in facing the challenges of waste management services. The government provides policies, infrastructure, education, and supervision while the community plays an active role in waste sorting, participation in waste banks, and reducing waste at the source. Thus, integrated participation can produce a better and more sustainable waste management service system.

Coordination

Coordination refers to the importance of setting boundaries of responsibility for each partner and defining the tasks that must be carried out by each party. Setting boundaries of roles, developing collaboration networks, and carrying out activities across public, private, and community entities are important parts of coordination. In addition, access to the necessary resources, such as skills, funding, infrastructure, and knowledge, must also be facilitated to strengthen coordination (Doyle et al., 2015).

In waste management services, the government acts as the main director and controller that bridges communication between the private sector and the community. The government is responsible for ensuring that no miscommunication can hinder waste management services. The government also coordinates operations in the field by setting schedules, regulating procedures, and ensuring that all parties understand their roles and responsibilities in waste management services.

The private sector through partnership contracts coordinates with the government in the technical aspects of waste transportation from Temporary Waste Storage (TWS) to the Final Disposal Site (FDS) and ensures that operational schedules and procedures are in accordance. On the other hand, the community coordinates with the government and the community in their participation through programs, such as waste banks and cooperation activities to clean the environment. Education and socialization programs carried out by the government and the private sector help the community understand their responsibilities in sorting waste and reducing the use of single-use items. Great efforts are needed to build cooperation and coordination across institutions so that these goals can be achieved (Bahasoan, 2024)

Interdependence

Interdependence refers to the ability of partners to achieve mutually beneficial goals by relying on each other. In waste management services, interdependence between stakeholders creates a strong network of cooperation to achieve common goals (Zuhdi et al., 2024). Each stakeholder has a specific role that is interrelated and only through close cooperation can the waste management service system function optimally and identifying the right stakeholders to involve is a key element (Doyle et al., 2015).

The government plays a major role in establishing policies, and regulations, providing infrastructure and monitoring mechanisms. Without clear regulations, such as Pekanbaru City Regional Regulation Number 8 of 2014 concerning Waste Management, there will be no legal framework governing waste management services. The government relies heavily on the private sector to manage operational aspects, such as waste transportation and waste processing. The private sector has resources and technology that the government often does not have to carry out these technical tasks.

On the other hand, the private sector also relies on government policies and support to operate efficiently. For example, the private sector needs direction from the government regarding waste collection schedules and procedures so that their services can run smoothly and by established standards.

Then the community also depends on the government to provide waste management facilities, such as TWS and FDS as well as education. This interdependence is increasingly visible in the context of waste banks, where the community is directly involved in sorting and selling economically valuable waste. This program is supported by the government with regulations and infrastructure, as well as the private sector in terms of transportation and waste processing. Without the active role of the community, waste banks will not function, and without support from the private sector and government, this program will not be sustainable.

Trust

Trust refers to the belief that a partner is reliable and will fulfill its obligations in an exchange. Trust fosters open communication between partners, creating the belief that each party is being fairly represented (Fitzpatrick & Molloy, 2014). In the context of waste management services, trust between stakeholders is very important.

The government plays a role in building trust by providing fair policies and regulations, adequate infrastructure, and consistent oversight. Consistency in policy implementation and transparency in management make the community and private sector believe that the government is strongly committed to providing effective waste management services. This trust encourages the active involvement of both parties in the system.

The private sector also plays an important role in building trust through professional, timely, and standardized services. The government relies on the private sector to handle the technical aspects of

waste management efficiently, while the community trusts the private sector to manage waste responsibly. This trust allows the private sector to gain greater support from the government and the community.

The community strengthens trust in the waste management service system through their participation. When people experience direct benefits from their involvement, such as a cleaner environment and better services, their trust in government and the private sector increases; the relationships between stakeholders occur in the form of trust and policy resources (Zuhdi et al., 2023).

This trust is built through transparency and open communication between all stakeholders. Each party shared clear and timely information regarding roles, challenges, and results achieved. This openness ensures that each stakeholder feels included and valued, which ultimately strengthens mutual trust.

Information Flow Dimension

Information Quality

Information quality refers to the timeliness, accuracy, and relevance of the information exchanged, which is essential to support effective communication between partners. In waste management services, information quality enables each party to make better decisions. Implementing an effective way to exchange quality information is not an easy task to do (Allen et al., 2014).

The government as the main responsible party has set policies related to waste collection schedules, the locations of Temporary Waste Storage (TWS), and regulations for waste sorting. This information is conveyed clearly and in detail to the public and the private sector, so that they can comply with applicable regulations and support waste management services.

The private sector, as the operational implementer, also provides important information to the government and the public. They report data related to the amount of waste collected, challenges faced, and operational performance to the government to assist in policy evaluation and adjustment. To the public, the private sector provides information about their services including waste collection schedules and service mechanisms offered. This accurate and timely information helps the public to optimally utilize waste management services.

Communities play a role in providing feedback to the government and private sector. In community-based waste management programs, communities provide important information regarding conditions on the ground, levels of community participation, waste sorting constraints, and the need for additional facilities. This information helps governments and the private sector tailor services and policies to better suit local needs.

Information Sharing

Information sharing refers to the extent to which information is distributed and communicated between partners so that tasks can be completed more effectively. It is key to successful collaboration (Fitzpatrick & Molloy, 2014), preventing duplication of effort and resources, and ultimately increasing the effectiveness of the partnership. However, information sharing is not always easy, as barriers such as information overload and lack of cognitive understanding can hinder the process (Givens & Busch, 2013).

In waste management services, information sharing among governments, the private sector, and communities is a critical element in creating efficient and effective systems. However, challenges in information sharing often arise primarily due to a lack of community understanding of the importance of proper waste management. Lack of public knowledge about the negative impacts of

improper waste management and the benefits of their active participation in waste sorting, recycling, and waste bank programs is an obstacle that hinders the effectiveness of waste management services. The public must be protected in obtaining the necessary information (Sawir et al., 2023)

Many people still consider waste management services as the sole responsibility of the government and are therefore not motivated to participate in existing programs. When awareness of this collective responsibility is low, information provided by the government and the private sector is often not followed by real action, such as sorting waste at home or participating in recycling activities.

The communication mechanism between the community and the government is also an obstacle. Currently, the government only provides a complaint call center, which tends to be one-way and reactive. Although intended to receive community reports, this mechanism does not reflect the two-way communication needed to build stronger relationships and increase community participation in waste management services.

Participation

Participation refers to the extent to which partners are involved in planning, setting goals, dividing responsibilities, and implementing tasks in waste management services. One form of real participation is sorting waste at the source which reduces the amount of waste that must be managed overall. By separating organic and inorganic waste, the waste management process becomes more efficient.

In addition, waste banks have become an important initiative where communities collectively manage economically valuable waste, such as plastic and paper, for recycling. This program not only reduces waste that ends up in FDS but also provides direct economic benefits to the community. Comprehensive knowledge is needed about the integration of circular economy principles of waste management into public policy (Fuka & Šrámková, 2023). Through active participation in waste banks, waste management becomes more environmentally friendly and community-based while raising awareness of the importance of recycling. Although community participation is high, the challenge is how to maintain this participation in waste management (O'Sullivan et al., 2015).

By listening to the aspirations and input of the community, the government can design policies that are more in line with local needs, thereby maximizing the effectiveness of the program. Effective participation encourages a sense of community responsibility in maintaining environmental cleanliness and strengthening collaboration between the community, government, and the private sector in realizing sustainable waste management services.

Conflict resolution dimensions

Constructive resolution

Constructive conflict resolution refers to how to resolve differences between partners to produce solutions that take into account the interests of all parties. In the context of waste management services, conflict resolution aims to resolve problems through dialogue and ensure that all parties feel heard and produce better solutions.

When the community complained about the accumulation and delays in waste collection, the government facilitated a meeting between the community and the private sector responsible for transportation. In the forum, the community expressed their complaints, while the private sector explained operational constraints in the form of a limited fleet and technical problems.

Through this mediation, joint solutions can be achieved, such as adjusting transportation schedules, optimizing routes, and improving communication between them. This conflict resolution not only

solves short-term problems but also prevents future conflicts from recurring and becomes part of continuous service improvement. Partnerships in waste management services must include ongoing dialogue to encourage stakeholders to engage in collaborative problem-solving and address potential conflicts (O'Sullivan et al., 2015).

Reflectiveness

Reflectiveness refers to the ability of the partnership to use past experiences as a basis for future decision-making by modifying relevant procedures and behaviors. In the context of waste management services, reflectivity means evaluating and learning from previous conflict resolution experiences involving government, the private sector, and communities. This process is essential to review how conflicts were resolved, what worked, and what aspects need improvement.

Reflection on the conflict resolution process helps stakeholders identify more effective methods. For example, if mediation was successful in addressing delays in waste collection services, this reflection can encourage the use of similar approaches in the future. Conversely, if open discussions were less effective due to low participation or poor communication, this reflection can help stakeholders choose other, better methods.

Reflectiveness also helps evaluate the long-term impact of conflict resolution. For example, a revised collection schedule may have solved a temporary problem, but reflection can reveal whether the solution was effective in the long term or whether it created new challenges. With ongoing reflection, stakeholders can ensure that the solutions adopted are sustainable and improve the overall effectiveness of waste management services. Identifying and framing collective experiences, analyzing successes and failures, and assessing performance are essential to ensuring long-term collaboration among partners (Pfefferbaum et al., 2013).

Perspective Alignment

Perspective alignment refers to the ability to analyze and align each partner's interests and views to achieve common goals. In the context of waste management services, alignment of perspectives involves recognizing differences in views and expectations between stakeholders. The government focuses on budget provision and management, the private sector on operational efficiency and profits, and society prioritizes environmental cleanliness. The joint process development strategy involves representatives from public agencies, private companies, and the community, thereby encouraging the type of collective decision-making that identifies community needs to align all future decisions and activities (Addison et al., 2015).

The first step in alignment is to recognize that efficient and effective waste management services are a shared goal. Cross-sector coordination is very important in this process. The government acts as a facilitator and connects the private sector and society to ensure that all parties are moving in the same direction. For example, when the City Government issues a waste management policy, they involve transport companies and the community in initial discussions to ensure the policy can be implemented and well received.

Perspective alignment is only effective if all affected parties are actively involved in decision-making. Inclusive participation enables the integration of community views and needs into program planning and implementation. For example, waste bank initiatives established by local communities can be integrated into the city's waste management system, thereby creating synergies between local initiatives and broader government policies. The positive outcomes of a successful partnership can be limited by misalignment in stakeholders' personal interests and individual goals (Atela et al., 2015).

Efficiency and Effectiveness of Waste Management Services

The efficiency and effectiveness of waste management services in Pekanbaru City depends on the synergy between the government, the private sector, and the community in building a sustainable management system. Through close collaboration and constructive conflict resolution, this system can address waste problems effectively and efficiently and provide long-term benefits for cities and communities.

The main challenge is limited resources, such as personnel and waste collection fleet, which causes difficulties in providing timely and comprehensive services. To overcome these limitations, collaboration with the private sector and the community is very important. This condition causes the government to fully delegate authority in public services to other sectors (Rasdi & Kurniawan, 2019). The private sector contributes by providing fleet and infrastructure as well as speeding up the waste collection and transfer process. This partnership allows the government to expand service capacity without major investment in new fleets.

Through the waste bank program and independent waste processing, the volume of waste that must be transported to the Final Disposal Site (FDS) can be reduced and more waste can be processed into new products by maximizing the use of materials that are still useful. One effort is to apply the zero waste concept which prioritizes recycling plastic waste into useful goods through the innovative ecobrick method (Sugiyanto et al., 2023). Waste banks also have economic value, especially from waste savings, so in waste management, it is necessary to emphasize the importance of implementing the circular economy concept to maintain added value at every stage of the production process. (Abdussamad et al., 2022).

Government support in the form of training, funding, and incentives strengthens community participation and increases awareness of responsible waste management. Data shows that in the last three years, a reduction in waste volume has been recorded every year, which reflects the success of this initiative. Apart from that, the increase in waste handling every year shows that the community is increasingly active in waste management (figure 1). A successful partnership can be described as a scheme that produces high-quality final products and services that can achieve government targets or objectives and provide financial benefits for the stakeholders involved (Supachai & Pathranarakul, 2023).

The partnership between the government as a policy maker and supervisor, the private sector as a fleet provider, and the community as the main actors in waste reduction is the key to success in creating a sustainable waste management service system. With synergy between stakeholders, transparency, and joint information efforts, the efficiency and effectiveness of waste management services in Pekanbaru City can be achieved optimally.

CONCLUSIONS

This research concludes that partnerships between the government, private sector, and society (4Ps) play an important role in increasing the efficiency and effectiveness of waste management services in Pekanbaru City. Strong partnerships between government, the private sector, and society as well as support through regulations and incentives are the keys to success in creating an efficient and effective waste management service system. The synergy between stakeholders in sharing responsibilities and shared resources has helped the government overcome existing limitations. Active community participation through the waste bank program and waste sorting at the source has proven effective in reducing the volume of waste that must be managed, speeding up the recycling process, and extending the operational period of the Final Disposal Site (FDS).

Although partnerships with the private sector and increasing community participation have had a positive impact, there are still several obstacles faced, especially in terms of sharing information,

community understanding, shared responsibility, and communication mechanisms. Therefore, information transparency and collaborative efforts are needed to overcome these challenges and achieve optimal results in waste management services. City governments need to develop more effective and interactive communication channels through the implementation of digital applications that enable real-time complaints and information dissemination and support two-way feedback. With these improvements, it is hoped that the 4Ps partnership will be even more optimal to create an efficient and effective waste management service system in the future.

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