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WASTE MANAGEMENT TOWARDS A CLEAN CITY CASE STUDY OF THE KUPANG CITY ENVIRONMENTAL AND SANITATION SERVICE

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Abstract:
This study aims to examine waste management in Kupang City through the lens of George R. Terry's POAC (Planning, Organizing, Actuating, Controlling) management theory. Waste problems in Kupang are increasingly complex due to rapid population growth, limited infrastructure, and insufficient public awareness. Effective waste management requires synergy among the local government, the community, and the private sector. Based on the study, the Kupang City Department of Environment and Hygiene (DLHK) has implemented the POAC functions to some extent. Planning and organizing have been conducted through regional policies and work programs, while actuating is reflected in the daily operations of waste collection and public education efforts. However, challenges remain—such as a lack of community participation, limited budget and waste-handling equipment, and weak supervision mechanisms. Despite these obstacles, the study found several supporting factors: existing mayoral regulations (Perwali), backing from security forces in law enforcement, and community-driven initiatives in independent waste management. To address current gaps, the study recommends strengthening institutional capacity, increasing funding allocation, improving public awareness, and fostering better coordination across stakeholders. In the long term, a collaborative and participatory approach is essential to achieve a clean, healthy, and sustainable urban environment in Kupang City.

Keywords: Management, Waste, Clean City

INTRODUCTION

Waste is all waste produced by human and animal activities in the form of solids, sludge, liquids or gases that are discarded because they are no longer needed or wanted. Although considered useless and unwanted, these materials can sometimes still be reused and used as raw materials (Damanhuri & Padmi, 2010). Population and waste are two things that are related to development in big cities. The increase in the number of urban residents is influenced by the birth rate and urbanization of society (Hasibuan, 2016), so that the increase in the number of residents in urban areas is faster than in rural areas. According to Tchobanoglous et al. (1993), waste management is a scientific discipline related to the control of the generation, storage, collection, transportation, processing, and disposal of waste in a manner that is in accordance with the principles of public health, economy, and the environment. Reported from the media, The Asian Parent.com on June 3, 2022, Kupang City has again retained its title as the dirtiest city by the Ministry of Environment and Forestry (KLHK). It is not the first time, because previously in 2019, Kupang City was also named by the Ministry of Environment and Forestry as one of the dirtiest medium cities in Indonesia in the Adipura program assessment for the 2017-2018 period (Kompas.com, 2019).

Table 1. Waste Generation Based on Sub-district In Kupang City

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Subdistrict	Total population	Waste generation	
		Ton/Day	Ton/Year
Alak	84.111,00	42,06	15.350,33
Maulafa	106.884,00	53,44	19.506,33
Oebobo	103.795,00	51,90	18.942,59
Kota raja	58.960,00	29,48	10.760,20
Kelapa lima	77.308,00	38,65	14.108,71
Kota lama	35.574,00	17,79	6.492,26
Kota kupang	466.632,00	233,32	85.160,34

Source: Kupang City Environmental and Sanitation Service 2024

It reflects that the population has a significant influence on waste generation. The higher the population in an area, the greater the potential for waste generation, especially if consumption patterns and waste disposal habits are not managed properly. Therefore, effective waste management is needed, including community-based management and infrastructure strengthening, to offset the surge in waste that is in line with population growth. Kupang City is growing rapidly in both social and economic aspects; as a result, piles of waste cannot be avoided along with development.

Problem Formulation.

1. How is waste management towards a clean city in Kupang City?
2. What are the inhibiting and supporting factors for waste management towards a clean city in Kupang City?

Research Objectives.

1. To determine waste management towards a clean city in Kupang City.
2. To determine the inhibiting and supporting factors for waste management towards a clean city in Kupang City.

Previous Research.

1. Sayrani & Tamunu (2020) found that community participation in waste management is still low because the community considers waste management to be the sole responsibility of the government, not a shared responsibility.
2. Djani et al. (2019) showed a gap between the results of academic research and policy implementation in the field. Scientific recommendations are often not implemented by local governments due to a lack of political will.
3. Irmawan et al. (2019) examined the implementation of Regional Regulation No. 3 of 2011 concerning waste management in Liliba Village, Kupang City. The results showed that a lack of socialization and community participation still hampered policy implementation. This approach complements George Terry's POAC theory, which emphasizes the internal managerial process of the government, while Irmawan focuses more on the challenges of implementing regulations at the local level.

Management Theory. Management is a process that includes planning, organizing, implementing or directing (actuating), and controlling. George R. Terry (1975) stated that management is a unique process to achieve certain goals through the utilization of available resources. The POAC (Planning, Organizing, Actuating, Controlling) approach is the basis for managing public organizations, including waste management, to ensure that each stage runs systematically, efficiently, and effectively.

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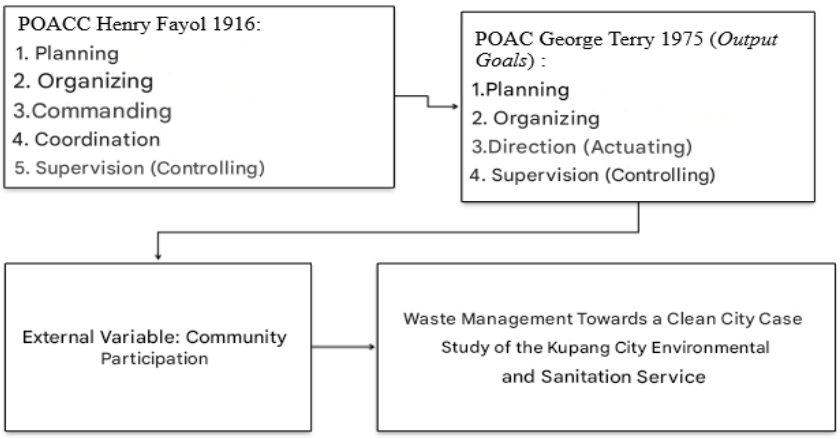
Waste Theory. According to the WHO, waste is material that is discarded because it is no longer used and comes from human activities. Based on Law No. 18 of 2008, waste is the remains of human activities or natural processes in solid or semi-solid form that no longer have any use value. The types of waste are divided into organic waste (easily decomposed) and inorganic waste (difficult to decompose). The sources come from households, markets, offices, and public facilities.

Waste Management Concept. Waste management includes efforts to reduce, reuse, and recycle—known as the 3R principle. Law No. 18 of 2008 stipulates waste management as a systematic, comprehensive, and continuous activity to improve the quality of the environment.

Framework of Thought. The framework of waste management in Kupang City needs to be improved and enhanced. It can be done by improving planning, organizing, directing, and monitoring. Thus, waste management in Kupang City can be improved in order to increase the effectiveness of the city's waste management system and produce a cleaner and more sustainable environment for the community.



Source: Researcher Analysis Results (Processed from POACC and POAC Theories)

Figure 1. Framework of Thinking

METHODS

Research Approach. This research uses a descriptive qualitative approach. This approach was chosen to explore in depth the social phenomena related to waste management in Kupang City. According to Moleong (2018), qualitative research aims to understand the meaning behind social phenomena through data descriptions in the form of words and behavior.

Research Location. The research was conducted at the Kupang City Environmental and Sanitation Service (DLHK) as the main institution in waste management.

Research Focus and Sub Focus. This research uses POAC (Planning, Organizing, Actuating, Controlling) management theory with the following focus and sub-focus:

1. Planning: Infrastructure, community participation, and collaboration.
2. Organizing: Human, material, and financial resources.
3. Actuating: Motivation, communication, and task delegation.
4. Controlling: Measurement, evaluation, and corrective action.

Research Informants. Informants were selected by purposive sampling, namely those who are considered to be most knowledgeable and relevant to waste management issues. Informants include: Mayor, Head of DPMPTSP, Head of DLHK, Head of Waste Management, Head of Section, Cleaning Officers (4 people), and the Community (5 people). The total number of informants is 15.

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Data Sources.

1. Primary Data: Direct interviews with key informants at DLHK.
2. Secondary Data: Official documents, activity reports, policies, and related literature sources.

Data Collection Techniques.

1. Structured interviews with all informants.
2. Direct field observation of waste management activities.
3. Documentation in the form of photos, documents, and field notes

Data Analysis Techniques. Analysis using the Miles and Huberman model (Sugiyono, 2012) includes:

1. Data Collection: From interviews, observations, and documents.
2. Data Reduction: Sorting relevant data.
3. Data Presentation: In the form of narratives and tables.
4. Drawing Conclusions: From patterns and relationships between data.

Data Validity. Data validity is tested through:

1. Source Triangulation: Comparing data from various informants.
2. Technique Triangulation: Using interviews, observations, and documentation.
3. Time Triangulation: Data collection is carried out at different times to ensure consistency

RESULT AND DISCUSSION

Kupang City produces ±233 tons of waste per day. With an open dumping system at the Alak TPA and low community participation, efforts towards a clean city still face major challenges. Although POAC has been implemented, success will depend heavily on political will, mass education, technology strengthening, and circular economy incentives. This study shows that the Kupang City DLHK has adopted the POAC (Planning, Organizing, Actuating, Controlling) approach from George R. Terry as a managerial framework in waste management. However, implementation still faces structural and cultural obstacles.

Planning. According to the Secretary of the Task Force, the main vision of the Kupang City Government in waste management is to handle waste comprehensively and reduce waste generation significantly. For this reason, two types of Task Forces were formed: the Waste Handling Task Force and the Waste Reduction Task Force, which operate down to the sub-district level by involving community leaders. The waste management roadmap consists of five stages, starting from waste sorting in households, collection to sub-district containers, processing at the sub-district TPST, until only 15% of the residue goes to the Alak TPA. The target for waste processing at the sub-district level is 85%. This roadmap includes two main dimensions:

1. Governance: technical and administrative aspects.
2. Trade: economic and market aspects of processing results

The government encourages the establishment of waste banks in each sub-district, provides a budget to purchase waste and processed products (for example, bokashi fertilizer in Oesapa), and builds a circular economic system. Success is measured through statistical data, with a projected reduction in waste going to landfills of 10–12% in the first six months of the Task Force's operation. The Mayor emphasized that the main challenge is building a consistent waste management culture in the community, not just dealing with piles of waste. DLHK has prepared a roadmap for TPST development, strengthened the 3R program, and established cross-sectoral cooperation. However, realization is limited due to budget allocations of <1% of the APBD and damage to infrastructure,

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such as truck fleets. It is in line with the findings of Djani et al. (2019) regarding the imbalance between planning and implementation capacity.

Organizing. The institutional structure of DLHK is not yet optimal. The waste task force is experiencing fragmented coordination and a lack of human resources. The ratio of officers to area is still below standard. However, functionally, DLHK has implemented a systematic division of labor.

Actuating (Implementation). Community participation is still low, as evidenced by 87% of unsorted waste. DLHK has provided incentives and routine coaching to officers and implemented a participatory approach. The direction function is considered to be running, but has not been maximized socially.

Controlling (Supervision). Supervision is carried out through the GPS/CCTV system and administrative sanctions. However, weak law enforcement is still found. Evaluation is carried out through documentation, daily reports, and annual assessments. This mechanism reflects the control function, but requires strengthening the sanction and reward system.

Table 2. Research Result

Waste Management Towards a Clean City	Sub Focus	Results	Supporting Factors	Inhibiting Factors
Planning	Infrastructure and Facilities	Not Enough	Several fleets and containers are available	Old fleet age, insufficient number of TPS, and budget limitations
	Community Participation	Not Enough	Education through the PKK, schools, and media	Low awareness, no participation measurement tools available
	Collaboration	Sufficiently Sufficient	Partnership with state-owned enterprises, communities, and community organizations	Sectoral ego, not yet comprehensive in all regions
Organizing (Organizing)	Human Resource Management	Not Enough	Availability of shift system, workforce data	Lack of sweepers, TPA status is not yet an independent UPT
	Material Management	Not Enough	Routine distribution of tools, cooperation with external parties	Not all PPE and work tool needs are met
	Financial Management	Sufficiently Sufficient	Availability of regular budget, monitoring mechanism	Budget <1% APBD, not all priorities can be met

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Directing (Actuating)	Employee Motivation	Sufficiently Sufficient	Morning roll call, overtime incentives and from the government	Not all officers receive incentives consistently
	Effective Communication	Sufficiently Sufficient	Two-way communication between leaders and officers	Not all field obstacles have been handled quickly
	Delegation of Tasks	Sufficiently Sufficient	Division of tasks based on region and expertise	Fuel and fleet limitations impact transportation frequency
Supervision (Controlling)	Performance Measurement	Sufficiently Sufficient	Daily reporting system through work groups, photo documentation	There is no tool to measure community participation
	Performance Evaluation	Sufficiently Sufficient	Annual evaluation, attendance list, and coaching	Consistency and sustainability of evaluation are still weak
	Corrective Action	Not Enough	Plan to revise sanctions, tiered coaching	The sanctions of the old regional regulation were too severe, and the application of the law was inconsistent.

CONCLUSION

Based on the results of the research conducted by the author entitled "Waste Management Towards a Clean City (Case Study of the Kupang City Environmental and Sanitation Service)", it is concluded:

1. Planning. The Kupang City DLHK has developed a strategy through the construction of TPST, strengthening waste banks, cross-sector collaboration, and public education. Despite facing budget and facility constraints, the policy direction has been systematic and measurable.
2. Organizing. The work structure has been formed with the allocation of resources that adjust to management priorities. However, limited human resources and incentives are obstacles to optimizing the organization.
3. Directing. The DLHK mobilizes employees through routine roll calls, coaching, and communication. Tasks are adjusted to expertise, leaders are actively involved, but the implementation of activities in the field is not evenly distributed.
4. Supervision. Supervision is carried out through daily reporting, annual evaluations, and documentation. The DLHK also imposes sanctions and attempts to revise regulations to improve the control system.

Suggestions. Waste management in Kupang City still faces challenges in every POAC function. Synergy is needed between the government, community, and private sector so that waste management becomes effective and sustainable towards a clean and healthy city.

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1. For Kupang City DLHK. Need to strengthen data-based planning, improve cross-sector coordination, expand education to the community, and optimize supervision with technology. In addition, innovation in waste banks and the implementation of a circular economy need to be continuously developed.
2. For the Community. Expected to be active in sorting waste from its source, support the 3R principle (Reduce, Reuse, Recycle), and participate in socialization and waste bank programs in the residential environment.

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