International Journal of Progressive Sciences and Technologies (IJPSAT)
ISSN: 2509-0119.

https://ijpsat.org/

Vol. 58 No. 1 July 2026, pp. 510-517

Analysis of Performance Disparities in Household Waste Management at the Urban Village Level in Bandar Lampung City

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Abstract - Household waste management is one of the major challenges in sustainable urban development, particularly in areas experiencing rapid population growth and economic activity. Although operating within the same policy framework, waste management performance at the local level often shows significant variation. This study aims to analyze the empirical conditions of household waste management at the urban village level and to explain performance disparities in waste management across urban villages in Bandar Lampung City. The study employed a mixed methods approach with an exploratory sequential design. Qualitative data were obtained through interviews, observation, and document study, while quantitative data were collected through a household survey in eight urban villages purposively selected based on variations in regional characteristics. The analysis focused on waste management conditions and performance dimensions comprising effectiveness, efficiency, participation, and sustainability. The results indicate that household waste management conditions at the urban village level still vary in terms of waste generation volume, waste separation levels, collection frequency, availability of facilities and infrastructure, and community participation. The study also found substantial performance disparities among urban villages. These performance differences are influenced by institutional capacity, availability of facilities and infrastructure, levels of community participation, quality of service operations, and environmental education activities. The study concludes that household waste management requires a more adaptive approach to local characteristics in order to improve service performance and reduce disparities across areas.

Keywords: household waste management, performance disparities, environmental services, urban village, Bandar Lampung City

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INTRODUCTION

Household waste management is one of the major challenges faced by developing cities in many countries. Population growth, urbanization, changing consumption patterns, and increasing economic activity have led to a significant increase in waste generation, thereby placing pressure on the capacity of waste services and the quality of the urban environment (Kaza et al., 2018; Aleluia & Ferrão, 2016). Waste problems are not only related to the technical aspects of collection, transportation, and disposal, but also involve social, institutional, and governance aspects that affect the overall effectiveness of waste management systems (Latanna et al., 2023; Aziz & Ariffin, 2024).

In Indonesia, household waste management remains a strategic issue in sustainable urban development. Various programs have been developed to encourage waste reduction at source, increase community participation, and strengthen waste service systems. However, the implementation of waste management often produces different results across areas, even though they operate under the same policy framework. These differences indicate that the success of waste management is not determined solely by the policies implemented, but also by local conditions that influence policy implementation (Tresiana & Duadji, 2023; Aziz & Ariffin, 2024).

Bandar Lampung City, as the center of government and economic activity in Lampung Province, faces increasingly complex challenges in household waste management. Population growth and the expansion of urban areas have increased the volume of waste that must be managed each day. At the same time, the capacity of waste services still faces various limitations, including facilities and infrastructure, service coverage, and community participation in waste reduction and separation activities (Kaza et al., 2018; Weissert et al., 2025). This condition requires a waste management system that can adapt to the diversity of local area characteristics. Although located within a single administrative territory and under the same management system, household waste management conditions at the urban village level show different characteristics. These variations can be observed in differences in waste generation volume, household waste separation levels, collection frequency, availability of supporting facilities, and the level of community participation in waste management activities (Sinthumule & Mkumbuzi, 2019; Kushwah et al., 2023). Such differences may result in uneven waste management performance across urban villages.

From the perspective of policy implementation, variations in achievement across areas demonstrate that the same policy can produce different outcomes when implemented in different local contexts. Waste management performance is influenced by a combination of social, institutional, economic, and environmental factors that shape implementation conditions in each area (Head, 2015; Tresiana & Duadji, 2023). Therefore, an analysis of performance disparities is important for understanding the factors that enable some areas to achieve better performance than others.

Studies on household waste management have generally focused on technical aspects of waste management, community participation, and program evaluation at the city or regency level (Aleluia & Ferrão, 2016; Latanna et al., 2023; Araiza-Aguilar et al., 2024). Although these studies make important contributions, most still use aggregate units of analysis and therefore have not sufficiently explained variations in conditions and performance at the urban village level as the implementation unit closest to the community. Consequently, the factors causing performance disparities across areas at a smaller scale remain insufficiently understood.

Based on these conditions, this study aims to analyze the empirical conditions of household waste management at the urban village level in Bandar Lampung City and to explain the disparities in waste management performance that occur across urban villages. By using a micro-level data approach at the urban village level, this study is expected to provide a more comprehensive understanding of variations in waste management conditions and the factors influencing performance differences across areas. The findings are expected to provide input for the development of waste management strategies that are more adaptive and aligned with the local characteristics of each area.

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LITERATURE REVIEW

A. Household Waste Management

Household waste management is an important component of urban environmental management aimed at reducing the negative impacts of waste on public health and environmental quality. Household waste management includes a series of activities ranging from waste reduction, separation, collection, transportation, treatment, to final processing (Kaza et al., 2018; Aleluia & Ferrão, 2016). Over time, the waste management paradigm has shifted from an approach oriented toward collection and disposal to a more sustainable approach through waste reduction at source, reuse, and recycling (Kaza et al., 2018; Weissert et al., 2025). The success of household waste management is determined not only by the availability of facilities and infrastructure, but also by community involvement and institutional capacity that support the delivery of waste services. Studies show that community participation in waste separation and waste reduction activities is an important factor in improving the effectiveness of household waste management (Sinthumule & Mkumbuzi, 2019; Kushwah et al., 2023). Therefore, household waste management is viewed as a system involving interactions among technical, social, and institutional aspects (Latanna et al., 2023).

B. Performance of Household Waste Management

The performance of household waste management can be understood as the degree to which a system succeeds in achieving its established waste management objectives. In the context of public services, performance is generally associated with the ability of a system to provide services that are effective, efficient, participatory, and sustainable (Head, 2015). Effectiveness relates to the achievement of waste management objectives, efficiency reflects the ability to use resources optimally, participation represents community involvement in waste management activities, while sustainability indicates the system's ability to maintain its performance over the long term (Latanna et al., 2023; Weissert et al., 2025). Performance measurement is important because it enables the identification of variations in achievement across areas as well as the factors that influence the success of waste management. Thus, performance analysis serves not only as an evaluation tool, but also as a basis for understanding variations in policy implementation at the local level (Cairney & Oliver, 2018).

C. Local Context and Performance Disparities

The policy implementation literature shows that the same policy can produce different achievements when implemented in different areas. These variations are influenced by social, economic, institutional, and environmental conditions that shape the context of policy implementation (Head, 2015; Tresiana & Duadji, 2023). In household waste management, area characteristics such as population density, economic activity, availability of waste facilities, local institutional capacity, and levels of community participation can influence service quality and the outcomes achieved (Aleluia & Ferrão, 2016; Araiza-Aguilar et al., 2024). In addition, governance capacity and the ability of organizations to adapt to local conditions also affect the success of environmental policy implementation. Research shows that an adaptive governance approach enables organizations to adjust strategies and services according to the needs and characteristics of different areas (Akther & Evans, 2024). Therefore, performance disparities across areas can be understood as a consequence of differences in the capacity of each area to manage resources and implement policies effectively (Aziz & Ariffin, 2024).

D. Analytical Framework

Research on household waste management has largely focused on technical aspects of waste management, community participation, and evaluation of waste management programs at the city or regency level (Aleluia & Ferrão, 2016; Latanna et al., 2023; Kushwah et al., 2023). However, most studies still use aggregate units of analysis and therefore have not sufficiently explained variations in conditions and performance at the urban village level as the implementation unit closest to the community (Araiza-Aguilar et al., 2024). Based on this gap, this study focuses its analysis on the urban village level to understand performance disparities in household waste management within local contexts. The analysis examines the empirical conditions of household waste management and performance differences across urban villages as measured through the dimensions of effectiveness, efficiency, participation, and sustainability. Furthermore, the study identifies the factors that contribute to differences in waste management performance in each area. Thus, this study seeks to broaden understanding of waste

management policy implementation through an approach that is more sensitive to variations in local context (Head, 2015; Cairney & Oliver, 2018).

RESEARCH METHODS

This study employed a mixed methods approach with an exploratory sequential design, integrating qualitative and quantitative methods in stages to understand the empirical conditions of household waste management and to explain performance disparities across urban villages in Bandar Lampung City. The exploratory sequential design is used when qualitative findings serve as the basis for developing or explaining quantitative analysis in the subsequent stage (Creswell & Plano Clark, 2018). This approach was selected because the study aims not only to describe waste management conditions, but also to identify the factors that contribute to performance differences across areas.

The study was conducted in Bandar Lampung City with eight urban villages as the units of analysis, selected purposively based on the principle of maximum variation sampling. The selection of urban villages considered variations in area characteristics, population density, availability of waste facilities, local institutional capacity, and levels of community participation. This approach was used to obtain a more comprehensive understanding of variations in household waste management conditions and performance at the urban village level (Patton, 2002).

Qualitative data were obtained through in-depth interviews, field observations, and document study. Interviews were conducted with officials of the Environmental Agency of Bandar Lampung City, urban village officials, waste bank managers, community leaders, and residents involved in waste management activities. Observations were conducted to identify actual waste management conditions, while document study was used to obtain supporting data related to policies, programs, and waste management reports. The use of multiple data sources was intended to deepen the information and support the validity of the research findings through triangulation (Patton, 2002; Yin, 2018).

Quantitative data were obtained through a household survey aimed at measuring waste management performance in each urban village. Performance measurement was based on four main dimensions, namely effectiveness, efficiency, participation, and sustainability. The data obtained were used to compare performance levels across urban villages and to identify patterns of disparity.

Data analysis was conducted in stages. Qualitative data were analyzed using thematic analysis to identify the empirical conditions of waste management and the factors affecting performance. Thematic analysis was carried out through coding, pattern identification, and the development of themes emerging from field data (Braun & Clarke, 2022). Quantitative data were analyzed using descriptive statistics and comparative analysis across urban villages to describe performance variations in each dimension. Subsequently, the qualitative and quantitative analysis results were integrated to produce a more comprehensive understanding of the relationship between local conditions and performance disparities in household waste management at the urban village level (Bryman, 2006; Creswell & Plano Clark, 2018).

RESULT AND DISCUSSION

A. Empirical Conditions of Household Waste Management

The results show that household waste management at the urban village level in Bandar Lampung City demonstrates diverse conditions. These variations are evident in waste generation volume, household waste separation levels, collection frequency, availability of supporting facilities, and the level of community involvement in waste management activities. The research data indicate that the volume of household waste generated by each urban village ranges from 3.8 to 7.5 tons per day. In addition, waste separation levels also show considerable differences. Some urban villages have demonstrated relatively high levels of waste separation, while others remain dominated by waste disposal patterns without separation. Waste collection frequency also varies, ranging from two to five times per week, depending on service capacity and area conditions. These different conditions indicate that household waste management at the urban village level has not been implemented uniformly. Variations in service capacity, area characteristics, and community involvement produce different waste management conditions across urban villages. This

finding indicates that household waste management is influenced not only by city-level policies in general, but also by local conditions that develop in each area.

Overall, the empirical conditions of household waste management in Bandar Lampung City show that although all urban villages operate within the same policy framework, waste management implementation demonstrates different levels of achievement. This condition provides an important basis for understanding the occurrence of performance disparities in waste management across urban villages.

B. Performance Disparities in Household Waste Management

The analysis of waste management performance shows substantial disparities across urban villages. Performance measurement was conducted based on four main dimensions, namely effectiveness, efficiency, participation, and sustainability. The measurement results show that several urban villages achieved relatively good results in most dimensions, while others showed lower achievements. Sukarame Baru and Bakung are among the urban villages with relatively better performance. These two areas demonstrated higher achievements in service effectiveness, levels of community participation, and the sustainability of waste management programs. Conversely, Kaliawi and Pasir Gintung showed lower achievements on several performance indicators, especially those related to service effectiveness and management efficiency. The results also show that performance differences do not always occur consistently across all dimensions. Some urban villages have relatively high sustainability but lower efficiency. Conversely, there are urban villages that are able to achieve good service effectiveness but still face limitations in building community participation. This finding indicates that waste management performance is a multidimensional phenomenon that cannot be explained by a single indicator. The disparities found demonstrate that the implementation of household waste management policies produces different achievements across areas. Thus, the success of waste management is determined not only by the policies implemented, but also by the ability of each area to manage resources and adapt policy implementation to the local conditions it faces.

C. Factors Contributing to Performance Disparities

The results show that disparities in household waste management performance are influenced by several interrelated factors. The first factor is institutional capacity at the local level. Urban villages with stronger institutional support tend to demonstrate better coordination in the delivery of waste services and have greater capacity to mobilize community participation. The second factor is the availability of waste facilities and infrastructure. Differences in the number of collection vehicles, waste collection facilities, and other infrastructure support affect the quality and continuity of services provided to the community. Urban villages with more adequate facility support tend to achieve better efficiency levels than areas facing facility limitations. The third factor is community participation. The results indicate that the level of community involvement in waste separation, waste reduction at source, and waste bank activities contributes to improved waste management performance. Urban villages with higher levels of participation tend to show better achievement in the sustainability dimension. In addition, service operational factors and environmental education activities also play a role in influencing waste management performance. The consistency of collection services, clarity of service mechanisms, and intensity of outreach and education to the community affect the success of waste management program implementation in each area.

The findings indicate that disparities in household waste management performance are not caused by a single factor, but rather result from the interaction among institutional capacity, availability of facilities and infrastructure, community participation, service operations, and educational activities. Thus, performance differences across urban villages reflect differences in the capacity of each area to manage the various factors that affect the implementation of household waste management policies.

D. Discussion

The findings show that household waste management at the urban village level in Bandar Lampung City still demonstrates considerable variation in conditions and performance achievements. Although all urban villages operate within the same waste management policy framework and service system, the results show that implementation produces different levels of effectiveness, efficiency, participation, and sustainability. This finding indicates that the success of waste management is not

determined solely by generally applicable policies, but also by the ability of each area to manage resources and adapt program implementation to the local conditions it faces. This finding is consistent with policy implementation studies showing that local context is an important factor influencing variations in policy outcomes at the implementation level (Head, 2015; Tresiana & Duadji, 2023). From the perspective of household waste management, this finding reinforces the view that waste management is a system that does not depend solely on technical aspects, but is also influenced by social and institutional factors. The availability of facilities and infrastructure plays an important role in supporting waste services; however, the success of waste management is also strongly determined by community involvement in waste separation, waste reduction at source, and participation in community-based waste management programs. Therefore, areas with higher levels of community participation tend to demonstrate better performance than areas that still rely entirely on government services. This finding is consistent with studies showing that community participation is one of the main factors determining the success of household waste management and the sustainability of community-based waste management programs (Sinthumule & Mkumbuzi, 2019; Kushwah et al., 2023; Latanna et al., 2023).

This study also shows that performance disparities across urban villages are closely related to differences in institutional capacity at the local level. Urban villages with stronger organizational support, better coordination, and greater capacity to mobilize community participation tend to achieve better performance. Conversely, areas with limited institutional capacity face difficulties in maintaining service effectiveness and the sustainability of waste management programs. This finding supports the argument that governance and institutional capacity are important factors in the successful implementation of environmental policies and waste management at the local level (Latanna et al., 2023; Aziz & Ariffin, 2024). Institutional fragmentation and weak coordination among actors are known to hinder the effectiveness of waste management policy implementation (Aziz & Ariffin, 2024).

In addition, the findings show that differences in area characteristics also influence variations in waste management performance. Population density, economic activity, settlement conditions, and access to waste facilities create different challenges in each urban village. This condition explains why the same policy can produce different achievements when implemented in different local contexts. This finding is in line with studies showing that spatial characteristics and local environmental conditions affect the effectiveness of waste service systems and the quality of waste management outcomes (Aleluia & Ferrão, 2016; Araiza-Aguilar et al., 2024). Thus, a uniform waste management approach may be less effective because it does not fully consider local characteristics that influence policy implementation. The findings also show that environmental education activities and the consistency of service operations make important contributions to improving waste management performance. Urban villages that regularly conduct outreach, environmental education, and community empowerment programs tend to show higher levels of participation. This result supports previous findings showing that changes in community behavior in waste management are strongly influenced by education processes, increased environmental awareness, and sustained institutional support (Kushwah et al., 2023; Sinthumule & Mkumbuzi, 2019).

Overall, this study strengthens the argument that disparities in household waste management performance result from the interaction of various interrelated factors, including institutional capacity, availability of facilities and infrastructure, community participation, service operations, and environmental education activities. This finding supports the adaptive governance approach, which emphasizes the importance of adjusting environmental management strategies to different local conditions (Akther & Evans, 2024). Therefore, efforts to improve waste management performance cannot be carried out through a single intervention, but require an approach that is more adaptive and responsive to the needs and characteristics of each area. Overall, this study shows that variations in local conditions have a significant influence on household waste management performance. These findings provide an understanding that improving the quality of waste management at the urban village level requires strategies that are not only oriented toward service provision, but also toward strengthening institutional capacity, increasing community participation, and developing more adaptive governance in accordance with the local characteristics of each area (Akther & Evans, 2024; Aziz & Ariffin, 2024).

CONCLUSION

This study shows that the empirical conditions of household waste management at the urban village (*kelurahan*) level in Bandar Lampung City vary considerably. These variations are reflected in the volume of waste generated, the level of waste segregation, the frequency of waste collection, the availability of waste management facilities and infrastructure, and the level of community participation in waste management activities. Although all urban villages operate under the same waste management policy and service system, each exhibits distinct characteristics and performance outcomes in managing household waste.

The study also reveals significant disparities in household waste management performance across urban villages, as reflected in the dimensions of effectiveness, efficiency, participation, and sustainability. These disparities are influenced by differences in institutional capacity, the availability of facilities and infrastructure, the level of community participation, the quality of service operations, and the intensity of environmental education programs. The findings indicate that variations in waste management performance are not solely attributable to technical factors but rather result from the interaction of multiple local factors that shape policy implementation in each area.

Recommendations for Policymakers and Practitioners. The Government of Bandar Lampung City should develop waste management strategies that are more adaptive to the specific characteristics of individual urban villages. Strengthening local institutional capacity, improving the quality of waste management facilities and infrastructure, expanding environmental education programs, and enhancing community participation should be prioritized to improve waste management performance. In addition, the planning and evaluation of waste management programs should take local variations into account to ensure that interventions are more targeted and capable of reducing performance disparities across areas.

Recommendations for Future Research. Future studies are encouraged to examine the relationship between the socio-economic characteristics of communities and waste management performance across a broader geographical scope. Comparative studies involving different cities or regions are also needed to provide a more comprehensive understanding of the factors influencing disparities in waste management performance and to identify effective waste management practices across diverse local contexts.

ACKNOWLEDGMENT

This article is part of dissertation research in the Doctoral Program in Development Studies, Faculty of Social and Political Sciences, Universitas Lampung. The authors express their gratitude to the Government of Bandar Lampung City, particularly the Environmental Agency of Bandar Lampung City, as well as all parties who provided support, data access, and information during the implementation of this research. The authors also extend their appreciation to urban village officials, waste bank managers, community leaders, and residents in the eight urban villages that served as research sites, who were willing to participate and contribute during the data collection process. The highest appreciation is also conveyed to the promoter team and all lecturers of the Doctoral Program in Development Studies at Universitas Lampung for their valuable guidance, direction, and input in completing this research.

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