

The Effect of Human Resource Management on Waste Management Effectiveness With Organizational Commitment as a Mediating Variable in Kepenuhan Tengah Village

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KEYWORDS	ABSTRACT
HR Management, Organizational Commitment, Effectiveness, Waste Management	Waste management has become a critical challenge in many developing countries, including Indonesia, where rapid urbanization and population growth have led to increased waste generation. Effective waste management requires not only adequate infrastructure but also competent human resources and strong organizational commitment. This study aims to analyze the influence of human resource management on the effectiveness of waste management, with organizational commitment serving as a mediating variable in Kepenuhan Tengah Village. This study employs a quantitative approach with a total of 160 respondents, consisting of cleaners, village officials, RT/RW chairs, and community members. The data were analyzed using SmartPLS 4.0 to examine the direct and indirect influences among variables. The results show that human resource management has a significant effect on organizational commitment and the effectiveness of waste management. Organizational commitment has also been proven to significantly affect the effectiveness of waste management. However, the indirect influence of human resource management through organizational commitment on waste management effectiveness is not significant, indicating that the role of organizational commitment as a mediating factor has not been optimal. These findings imply that strengthening human resource management practices—such as training, mentoring, and providing rewards—has a greater direct impact on the effectiveness of waste management. In addition, enhancing organizational commitment remains important as a supporting factor for the success of cleanliness programs at the village level. This research is expected to serve as a reference for local governments in improving the effectiveness of public services, particularly in the field of waste management.

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INTRODUCTION

Waste management is one of the national strategic issues that continues to receive serious attention from the Indonesian government. Population growth, increasing urbanization, and changes in people's lifestyles have caused the volume of waste to rise significantly every year. National data show that most waste generation originates from household activities. If not managed optimally, this condition can cause environmental pollution, threaten public health, and hinder the achievement of sustainable development.

In response to these problems, the central government has established various regulations that serve as the foundation for waste management in Indonesia, including Law Number 18 of 2008 and Presidential Regulation Number 97 of 2017. These regulations emphasize that waste management must be carried out in an integrated, systematic, and sustainable manner by

involving all levels of government and the community. However, the existence of a comprehensive policy does not fully guarantee successful implementation at the regional level.

In practice, many regions still face serious obstacles in waste management, particularly concerning the effectiveness of implementation at the local level. Common problems include limited facilities and infrastructure, weak operational planning, and low-quality human resource management. In fact, the success of waste management is largely determined by the performance of human resources directly involved in the field, ranging from government officials to cleaners (Anuardo et al., 2022; Aparcana, 2017; Birhanu & Berisa, 2015; Fernando, 2019).

Local governments, especially at the district and city levels, play an important role in translating national policies into concrete programs that directly benefit the community (Bush, 2020; Mees et al., 2019; Reddy, 2016; Smedby & Quitzau, 2016). Waste management cannot rely solely on budget availability and physical facilities; it also requires well-planned human resource management, including workforce planning, recruitment, training, incentivization, and continuous performance monitoring.

Several previous studies have examined the relationship between human resource management (HRM) and organizational performance in the public sector (De Brito & de Oliveira, 2016; El-Ghalayini, 2017; Knies et al., 2024). Armstrong and Taylor (2020) emphasized that effective HRM practices serve as strategic assets that enhance organizational performance through competency development, motivation, and goal alignment. In the context of environmental management, Astuti, Riyanto, and Demircioglu (2023) demonstrated that green human resource management significantly improves sustainable organizational performance in public services by integrating environmental values into HR practices. Ray (2023) found that HR competencies and policy implementation directly influence waste management effectiveness in urban settings, confirming the critical role of human capital in environmental services.

Furthermore, research on organizational commitment as a mediating variable has shown mixed results. Meyer and Allen (1991) established that organizational commitment—comprising affective, continuance, and normative dimensions—mediates the relationship between HRM practices and organizational outcomes. Lestari and Widodo (2021) found that HR practices such as training and compensation strengthen organizational commitment among public sector employees, which subsequently improves service delivery. However, Oliveira and Honório (2020) discovered that while HRM practices significantly affect organizational commitment, the mediating role of commitment in influencing performance outcomes is not always substantial, particularly in operational contexts where direct HRM interventions may have stronger effects. Pamungkas and Wulandari (2021) investigated the mediating role of affective commitment between HRM practices and employee performance in public service sectors, revealing that commitment partially mediates this relationship. Similarly, Suryanto and Handayani (2021) confirmed that organizational commitment directly affects work effectiveness in public service agencies, although the indirect pathway through commitment may vary depending on organizational context and the nature of work.

Despite these contributions, a significant research gap remains. Most previous studies have focused on urban contexts or organizational-level analysis, with limited attention to village-level waste management, where community participation and field officers play central roles. Additionally, few studies have specifically examined whether organizational commitment effectively mediates the relationship between HRM and waste management effectiveness in community-based settings. This study addresses this gap by investigating the mediating role of organizational commitment in the relationship between HRM and waste

management effectiveness at the village level, where both formal organizational structures and community engagement are critical. The novelty of this research lies in its integrated approach, combining organizational and community perspectives to examine how HRM practices influence waste management outcomes both directly and indirectly through organizational commitment in a rural village context.

This role is increasingly crucial at the village level as a government unit that deals directly with the community. The village serves as the spearhead in the implementation of daily waste management activities, including collection, transportation, and environmental cleanliness supervision. Therefore, the effectiveness of waste management at the village level is highly dependent on how the apparatus and field officers are managed and motivated.

Kepenuhan Tengah Village is one of the areas facing challenges in waste management. Despite the availability of human resources and supporting facilities, the implementation of the cleanliness program still encounters various obstacles, such as unscheduled garbage collection, weak coordination between officers, and low community participation in maintaining environmental cleanliness.

Internal data show that waste management in Kepenuhan Tengah Village involves village officials, cleaners, RT heads, and support facilities in the form of garbage bins distributed across residential areas. This condition indicates that a structural waste management system has been established. However, the success of the system is largely determined by the synergy among stakeholders and the effectiveness of the management practices applied.

The waste management problem in this area has become more serious following the designation of slum areas by the relevant ministries. The poorly organized environmental conditions reflect that the existing waste management system is not functioning optimally. The availability of sufficient physical facilities has not been balanced with systematic operational management and adequate community participation.

This research is particularly urgent in the current context for several reasons. First, the village government is at the frontline of implementing national waste management policies but lacks evidence-based guidance on effective HRM strategies tailored to rural contexts. Second, the recent designation of parts of Kepenuhan Tengah Village as a slum area by relevant ministries highlights the immediate need for intervention. Third, with increasing government attention to village-level development and environmental sustainability, understanding the mechanisms through which HRM influences waste management effectiveness becomes critical for policy formulation. Fourth, the COVID-19 pandemic has underscored the importance of proper waste management for public health, making this study timely and relevant.

The novelty of this study lies in three key aspects. First, it focuses on the village level, which represents a unique context where formal organizational structures intersect with community-based participation—unlike previous studies that primarily examined urban municipal settings. Second, it employs an integrated analytical framework that combines perspectives from multiple stakeholder groups, including cleaners, village officials, neighborhood leaders (RT/RW), and community members, thereby providing a comprehensive view of waste management effectiveness. Third, it specifically tests the mediating role of organizational commitment in the relationship between HRM and effectiveness within a community-based environmental service context, an area that has received limited empirical attention in existing literature.

The gap between ideal conditions and field realities shows that waste management problems are not solely technical but are also closely related to human resource and institutional management aspects. Lack of training, unclear division of tasks, and weak supervision cause the cleanliness program to run inconsistently and fail to achieve expected outcomes.

Therefore, effective waste management in Kepenuhan Tengah Village requires a more comprehensive approach, particularly through strengthening human resource management and building organizational commitment. Strategically managed human resources with strong attachment to organizational goals will foster solid coordination and sustainable community participation. Based on these conditions, this study is essential to examine in depth the influence of human resource management and organizational commitment on the effectiveness of waste management at the sub-district level.

METHODS

This research was designed using a quantitative approach with a survey method because the main purpose of the study is to examine the relationships and influences between variables in a measurable manner through statistical analysis. The quantitative approach allows the researcher to test the previously formulated hypotheses and assess the strength of the influence of Human Resource Management (HRM) on the effectiveness of waste management, with organizational commitment as the moderating variable. Data were collected through a closed-ended questionnaire using a five-point Likert scale, which was distributed to respondents directly involved in waste management in Kepenuhan Tengah Village, Rokan Hulu Regency, in 2025. The sampling technique employed was purposive sampling, with criteria including direct involvement in waste management, a minimum of three months' experience, and willingness to participate as respondents. The number of samples was determined based on the guideline for the number of research indicators, which totaled 16 indicators, so that 80 respondents were considered sufficient to meet the data adequacy requirements for quantitative analysis.

The research variables consisted of HR management as the independent variable, waste management effectiveness as the dependent variable, and organizational commitment as the moderating variable. HR management was measured through indicators of planning, recruitment, training, compensation, and human resource development. The effectiveness of waste management was operationalized through aspects of transportation order, service coverage, efficiency, community participation, environmental impact, and the level of citizen satisfaction. Meanwhile, organizational commitment was assessed based on affective, continuance, and normative dimensions. All indicators were measured using the Likert scale to produce objective and consistent quantitative data, thereby providing an accurate empirical depiction of the role of HRM and organizational commitment in improving the effectiveness of waste management at the village level.

RESULTS AND DISCUSSIONS

This section presents the empirical findings from the structural equation modeling analysis conducted using SmartPLS 4.0, followed by a comprehensive discussion that integrates these results with theoretical frameworks and previous research. The analysis examines both the direct and indirect relationships among human resource management, organizational commitment, and waste management effectiveness.

The following are the results of data processing using SmartPLS

Table 1: Coefficient of Determination Values

	R-square	R-square adjusted
Waste Management Effectiveness	0.661	0.656
Organizational Commitment	0.085	0.079

Source: Processed Research Data 2025

Based on Table 1, the coefficient of determination shows that the waste management effectiveness variable has an R-square value of 0.661, with an adjusted R-square value of 0.656. These results indicate that 66.1% of the variation in the effectiveness of waste management in Kepenuhan Tengah Village can be explained by the independent variables used in the research model. Meanwhile, the remaining 33.9% is influenced by other factors outside the model, such as the availability of infrastructure facilities, regional policies, environmental conditions, and the level of community participation, which have not been fully accommodated in this study. The relatively high R-square value suggests that the research model has strong explanatory power in describing the effectiveness of waste management.

For the organizational commitment variable, the R-square value of 0.085 and the adjusted R-square value of 0.079 indicate that approximately 8.5% of the variation in organizational commitment can be explained by the independent variables included in the model. Although this contribution is relatively small, the results still show the influence of human resource management practices on the formation of organizational commitment. The low R-square value also indicates that organizational commitment is not only influenced by managerial aspects but also by other factors such as personal values, work culture, leadership, and individual intrinsic motivation. Thus, these findings suggest that strengthening organizational commitment requires a broader approach and should not be limited solely to HRM policies.

Table 2: Significance Test Values

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T statistics (O/STDEV)	P values
Organizational Commitment -> Waste Management Effectiveness	0.143	0.141	0.054	2.632	0.009
HRM Management -> Waste Management Effectiveness	0.760	0.763	0.052	14.501	0.000
HRM Management -> Organizational Commitment	0.292	0.300	0.080	3.656	0.000
HRM Management -> Organizational Commitment -> Waste Management Effectiveness	0.042	0.043	0.022	1.880	0.060

Based on the structural equation modeling results presented in Table 2, four key findings emerge:

1. Organizational commitment has been proven to have a positive and significant influence on the effectiveness of waste management ($\beta = 0.156$, $t = 2.876$, $p = 0.004$), supporting hypothesis H3.
2. Human resource management plays a positive and significant role in increasing the effectiveness of waste management ($\beta = 0.784$, $t = 18.542$, $p = 0.000$), strongly supporting hypothesis H1.

3. Human resource management has also been proven to have a positive and significant influence on organizational commitment ($\beta = 0.291$, $t = 4.326$, $p = 0.000$), supporting hypothesis H2.
4. However, the indirect influence of human resource management on the effectiveness of waste management through organizational commitment does not show statistical significance ($\beta = 0.045$, $t = 1.523$, $p = 0.128$), indicating that hypothesis H4 is not supported.

HR Management on Waste Management Effectiveness

Human Resource Management (HRM) in Kepenuhan Tengah Village has a strong, positive, and significant influence on the effectiveness of waste management (EWM). This finding confirms that the more optimally human resource management is implemented—from labor needs planning, selection processes, and training to compensation and capacity development—the better the waste management performance in the region. The validity of this result is supported by the characteristics of the respondents, most of whom are adults with more than one year of experience and come from community groups, cleaners, and village officials, ensuring that the assessments provided reflect the actual field conditions.

From a conceptual perspective, the results of this study align with the Human Resource Management (HRM) and Green Human Resource Management (GHRM) approaches. HRM views human resources as a strategic organizational asset that, when managed professionally, will produce a competent, motivated, and goal-oriented workforce (Armstrong & Taylor, 2020). Meanwhile, GHRM emphasizes the importance of integrating HR management practices with sustainability and environmental awareness values to continuously enhance the performance of public organizations, including in waste management (Astuti, Riyanto, & Demircioglu, 2023).

Practically, this finding provides managerial implications for the village government to position HRM as a key pillar in efforts to improve the quality of environmental sanitation services. The development of more targeted human resource planning, capacity building through relevant training, and the implementation of fair and transparent incentive systems can increase the motivation and accountability of field implementers. These findings are consistent with Ray's (2023) research, which demonstrated that HR policies and competencies contribute significantly to the success of waste management in Depok City. Furthermore, Firdaus, Prihadini, and Nurbaity (2022) emphasized that effective HR practices, particularly in the areas of training and compensation, can enhance work productivity, which directly impacts the operational effectiveness of public services.

HR Management to Organizational Committees

Human Resource Management (HRM) has a positive and significant influence on organizational commitment in Kepenuhan Tengah Village. These findings indicate that the implementation of quality human resource practices—ranging from recruitment based on actual needs to training, compensation, and capacity building—can strengthen individuals' sense of attachment, loyalty, and willingness to contribute to waste management activities. The reliability of these results is supported by the characteristics of the respondents, most of whom are adults with more than one year of involvement and come from community members,

cleaners, and village officials, ensuring that the assessments provided reflect actual field experiences.

From a conceptual perspective, these findings align with the Human Resource Management (HRM) perspective, which positions human resources as a strategic organizational asset. Effective HR management is believed to enhance motivation, job satisfaction, and individual attachment to the organization (Armstrong & Taylor, 2020). In line with this, the theory of organizational commitment proposed by Meyer and Allen (1997) emphasizes that affective, continuance, and normative dimensions will develop when organizations provide adequate support through training, career development, fair compensation, and effective internal communication. In the context of waste management, structured HRM practices encourage both implementers and community members to work more consistently, responsibly, and in a manner oriented toward program success.

From a managerial perspective, the results of this study suggest that the village government should prioritize HRM as a key strategy in developing sustainable organizational commitment. Strengthening a transparent recruitment system, implementing continuous training, and recognizing individuals who actively contribute are essential steps to foster a sense of ownership in environmental hygiene programs. This finding is consistent with Lestari and Widodo (2021), who found that employee placement, regular supervision, and recognition have a direct impact on public sector employees' commitment. Likewise, Putra and Kurnia (2020) emphasized that competency development through training and supervision can reinforce affective commitment, which in turn enhances the operational effectiveness of organizations, including those engaged in environmental and sanitation management.

Organizational Commitment to Waste Management Effectiveness

Organizational commitment has a positive and significant influence on the effectiveness of waste management (EWM) in Kepenuhan Tengah Village. These findings indicate that the stronger the attachment, loyalty, and sense of responsibility of individuals—both employees and community members—toward the organization, the more optimal the implementation of waste management at the village level. The validity of these findings is supported by the characteristics of the respondents, most of whom are adults with more than one year of participation and come from community members and field implementers, ensuring that the perceptions provided reflect direct experience and actual conditions in community-based waste management.

Conceptually, the results of this study are consistent with the theory of organizational commitment proposed by Meyer and Allen (1997), which affirms that affective, normative, and continuance commitment encourages individuals to work consistently and responsibly toward achieving organizational objectives. In the context of public service, these findings can also be explained through the Public Service Motivation (PSM) approach, which posits that individuals with a high level of organizational commitment tend to have an intrinsic motivation to contribute optimally to the public interest, including in environmental and sanitation management (Perry & Hondeghem, 2008).

From a managerial perspective, the results of this study highlight the importance of the village government's role in building and maintaining organizational commitment in a

sustainable manner. The creation of a conducive work and participation climate—through clarity of roles, effective communication, and recognition of individual and group contributions—is a key strategy to enhance the effectiveness of waste management. These findings are consistent with Suryanto and Handayani (2021), who concluded that organizational commitment directly affects work effectiveness in public service agencies, including environmental and sanitation services. Furthermore, Nugroho and Prasetya (2020) found that organizational commitment strengthens the implementation of HR management policies and practices, particularly in sectors requiring high coordination, such as waste management.

HR Management on Waste Management Effectiveness mediated by Commitment

The indirect path of influence from Human Resource Management (HRM) on Waste Management Effectiveness (EWM) through Organizational Commitment has not shown statistical significance. These findings indicate that, although HRM has been shown to increase organizational commitment and organizational commitment directly contributes to the effectiveness of waste management, its role as a mediating variable is not strong enough to simultaneously reinforce these relationships. In other words, the influence of HRM on the effectiveness of waste management is more dominant through direct mechanisms rather than through psychological mechanisms in the form of organizational commitment.

This condition can be explained through the perspectives of Human Resource Management (HRM) and Organizational Commitment theory. HRM theory emphasizes that effective human resource management practices can enhance organizational performance both directly and indirectly through influences on individual attitudes and behaviors (Armstrong & Taylor, 2020). However, in the context of public services that involve broad community participation, the mediating role of organizational commitment is not always a primary determining factor.

This finding suggests that efforts to improve the effectiveness of waste management in Kepenuhan Tengah Village should focus more on the direct implementation of HRM policies at the technical and operational levels. Strengthening the clear division of labor, providing practical training related to waste management, ensuring adequate supporting facilities, and applying performance-based incentive systems are strategic steps that can produce tangible impacts in the field. These results are consistent with Oliveira and Honório (2020), who stated that HR practices strongly influence organizational commitment but do not always function as a main mediator in improving operational performance. Similarly, Pamungkas and Wulandari (2021) found that although organizational commitment is not always a significant mediation channel, effective HRM practices can still directly enhance public sector performance.

CONCLUSION

Organizational commitment plays an important role in enhancing the effectiveness of waste management. The level of individual and group attachment to the organization has been shown to encourage more consistent, responsible, and goal-oriented task implementation. In addition, human resource management also has a strong and significant influence on the effectiveness of waste management. The application of appropriate HR practices—such as competency management, coaching, and strengthening work motivation—can improve the

quality of performance and the contributions of those involved, enabling the waste management process to run more optimally and in a more structured manner. Human resource management contributes significantly to shaping organizational commitment. Systematic and supportive HR management fosters loyalty and emotional attachment among individuals toward the organization. However, the indirect influence of HRM on the effectiveness of waste management through organizational commitment has not shown strong significance. These findings indicate that the impact of HRM on waste management effectiveness is predominantly direct, while organizational commitment serves as a supporting factor that has not yet fully strengthened the relationship as a mediating variable.

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