

Implementation of Environmental Cleanliness Program through the Role of the Community in Pematang Siantar City

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Abstract

Pematang Siantar, as a transit city to Parapat Tourist Destination, plays a crucial role in waste management efforts. The city government has successfully implemented cleanliness programs, as evidenced by the Adipura award received by Pematang Siantar. This research was conducted in the city, with purposive sampling selecting three neighborhoods: Suka Maju, Dwikora, and Suka Dame. Descriptive analysis was used with a sample size of approximately 10-35% of the population, and the Spearman rank correlation test was employed to determine the relationship between the community's role in the Environmental Cleanliness program. The aim is to compare the implementation of environmental cleanliness programs through community participation in these three locations. Factors such as Idealized policy, Target groups, Implementing organization, and Environmental factors, as well as community characteristics such as age, income, number of family members, and length of residence, will be evaluated in relation to the level of community involvement. The research results are expected to provide insights for local governments and communities to actively participate in the Environmental Cleanliness program in Pematang Siantar. With a focus on three out of six districts, namely Siantar Barat, Siantar Utara, and Siantar Marihat, this study highlights the importance of community education, income, and trust levels in the context of community roles. Suka Maju, with higher education and income levels, demonstrates a greater role compared to Suka Dame and Dwikora. An effective waste disposal system, involving monitored waste collection, is considered crucial for maintaining environmental quality and extending landfill usage.

Keywords: Implementation, Community Role, Government Policy

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Introduction

Production and consumption contribute to waste, leading to environmental pollution. Law Number 23 of 1997 emphasizes individual responsibility in preserving the environment (Law Number 23 of 1997). Although awareness of cleanliness is generally high, the issue of waste persists due to insufficient disposal facilities, cultural awareness, and poor management. Economic and technological advancements bring negative impacts, including waste problems. Despite the potential assistance of modern technology, financial constraints pose a hurdle. The City Government of Pematang Siantar faces challenges in waste management, particularly due to a lack of public awareness. An integrated system and waste management laws are necessary to enhance efficiency (Pematang Siantar City Regulation Number 8, 2000) & (Pematang Siantar City Regulation Number 4, 2005).

Cleanliness programs in Pematang Siantar have been successful, but there is still a need to improve public awareness and communal waste management. Environmental cleanliness is crucial for health and prevention, reflecting a healthy and beautiful life. The fundamental right of every individual is to live in a clean environment. Human self-awareness is required to preserve the environment as it affects the lives and well-being of all living beings. The environment is the natural condition that allows living beings to reproduce harmoniously (Artiningsih, 2008) and (Hadi, 2006). Other research states that environmental cleanliness is a state free from dirt, including dust, waste, and odors (Aprivia & Yulianti, 2021). Humans strive to create and preserve a healthy and comfortable life by keeping themselves and their surroundings clean and pure. Cleanliness is a prerequisite for health that contributes to happiness. Dirt not only damages beauty but can also cause diseases and suffering. Environmental cleanliness encompasses homes, workplaces, and public facilities. Cleaning the house involves various activities such as cleaning windows, sweeping and mopping floors, washing cookware, cleaning bathrooms, and disposing of waste. Environmental cleanliness begins with cleaning litter from the streets in front of homes, yards, and drains (Edmunds & Latey, 1973), (Hadiwiyoto, 1983) & (Hadi, 2006).

Theoretical Study

Community role is a social interaction analyzed in sociology and other disciplines. Definitions of roles vary but are generally considered as the active involvement of the community in activities, especially in the context of development. The role is deemed crucial for the success of development according to (Djarwanto, 1982). Some experts connect roles with support for government programs and initiatives originating from the government. (Azwar, 1990; Abdiyanto, 2016) divides roles into three stages: determining direction and strategic policies, responsibilities in implementing activities, and identifying development benefits. Community participation can also make a significant contribution to the design of the environmental layout of their residential areas (Nuraini et al, 2023; Nuraini & Suprayitno, 2021). Roles are also viewed in terms of quality, encompassing contributions to policies, strategies, communication, public problem-solving, and social therapy. Three main factors influencing community roles are social conditions, development programs, and environmental conditions (Adhyzal, 2003), (Artiningsih, 2008), & (Buntojo, 2019). Policy implementation, according to Van Meter and Van Horn, involves actions by individuals or groups from government or private sectors to achieve goals set in previous policy decisions. This implementation process depends on identifying goals and suggestions set in prior policies.

According to the principles of state policy formulation described by Smith (in Islamy, 2001; Abdiyanto and Warokka A (2015), policy implementation is influenced by four variables. First, Idealized policy involves interaction patterns initiated by policy makers to encourage, influence, and stimulate target groups to implement it. Policies should be based on legally binding foundations as guidelines in the nation's life. Second, Target groups are part of policy stakeholders expected to adopt interaction patterns as desired by policy makers. Optimal supervision is needed to ensure that the community as the main policy target remains in line with the established concept. Third, implementing organization is the implementing body responsible for policy implementation. The government, as a policy implementer, must be proactive in achieving the goals of formulated policies to prevent regulations from becoming obstacles in the future. The fourth is Environmental factors, which involve elements in the environment such as cultural, socio-economic, and political aspects that influence policy implementation. The influence of this environment significantly determines the direction of policy, and policies supported by a favorable environment will create optimal policy results or products (Abdiyanto, 2015; Sugiarto & Ramadania, 2023a)

Roles in development can be either vertical or horizontal, depending on whether the community is involved in programs or in each other's activities (Edmunds & Latey, 1973). Community involvement in planning is considered essential to understand final decisions and eliminate negative impacts. Two-way communication and various information delivery methods are necessary for effective roles (Ddjarwanto, 1982), (Hadiwiyoto, 1983), & (Handoyo, 2019). Active community involvement is considered more independent, and roles help improve program success, provide training to planners, and build community skills and solidarity. Factors determining the level of roles include information flow, consultation, decision-making, initiative, and evaluation. Community roles in development can be divided into preparation, implementation, and utilization stages. Overall, roles encompass the entire process of planning to the utilization of development results (Hariyani & Soemarno, 2013) & (Mawaddah, 2016).

Waste is unused or discarded material by humans, originating from human activities or industries, and undergoes treatment or processing (Karo, 2009) & (Muhyidin, 2009; Sugiarto & Ramadania, 2023b). In socio-economic context, waste loses value, while environmentally, it can cause pollution or disrupt sustainability. Urbanization and high consumption increase the production and complexity of municipal waste in Indonesia (Rizal, 2011). Waste accumulates in the environment and requires resource processing technology, such as a balanced material cycle model, as an alternative solution to manage the relationship between humans and their environment. Some waste can undergo a cycle back to raw materials, but not all waste can do so, leading to accumulating waste and resource damage (Yunizar, 2001). Consequently, resources are depleting, waste is piling up, and the situation becomes highly concerning.

Many people are unaware of environmental pollution, according to (Azwar, 1990). Environmental pollution, according to Law No. 4 of 1992, occurs through living organisms, substances, energy, or human activities that alter the environment, resulting in a decrease in its quality. Waste management is considered good if it does not, because bacterial growth or disease spread, complies with requirements such as not polluting air, water, or soil, does not produce odors, and does not cause disturbances (Adhyzal, 2003).

Scavengers play a crucial role in reducing the amount of discarded material, supporting recycling, and contributing to entropy reduction (Hadi, 2005). Waste management should consider waste sources, distribution, and interactions during the waste circulation in a region or city. Therefore, the main goal of waste processing is to categorize waste, develop methods to measure waste intensity, and reuse waste as a secondary resource (Yunizar, 2001) & (Hadi, 2005). Environmental pollution primarily originates from household waste, making its handling a priority. Local regulations state that waste must be continuously handled to improve cleanliness management and Regional Original Income. Factors affecting the amount of waste involve lifestyle, weather, quality of life standards, community types, and waste reduction methods (Pematang Siantar City Regulation Number 4, 2005), (Thomson, 2013), & (Buntojo, 2019).

Waste management involves storage, collection, and disposal, with options to dispose of waste directly to the Final Disposal Site (TPA) or indirectly to the Temporary Disposal Site (TPS) (Dani, 2018). Collecting waste with bags has advantages in identification, transportation, and more efficient disposal processes, as well as preventing scattered waste. Solid waste utilization requires technology suitable for waste characteristics. In developed countries, waste can be transformed into valuable materials, generating additional income. Biogas, originating from organic waste, can be used as fuel. However, challenges related to technology ownership, resource control, and funding need to be overcome.

Methods

This research employs a survey method to gather facts about symptoms and social, economic, and political information in three neighborhoods in the city of Pematang Siantar (Black & Champion, 2009). Data collection is conducted through direct observation, interviews, and the distribution of questionnaires. Research variables include the level of community involvement in waste management, individual characteristics such as age, number of family members, education, length of residence, and income, as well as government policies on Idealized policy, Target groups, Implementing organization, and Environmental factors (Abdiyanto, 2020). The study subjects are residents of the Dwikora, Suka Dame, and Suka Maju neighborhoods in Pematang Siantar. Descriptive analysis is used with a sample size of approximately 10-35% of the population, and the Spearman rank correlation test is employed to determine the relationship between the community's role in the Environmental Cleanliness program (Artha, 2021).

Results and Discussion

The city of Pematang Siantar functions as a regional development center in various sectors, including industry, trade, education, tourism, and more. Its community structure is heterogeneous, presenting potential issues of social discipline. Like other cities in Indonesia, Pematang Siantar faces serious problems related to waste management due to population growth and urbanization that are not balanced with government efforts. Efforts to make Pematang Siantar clean require broad community involvement. The community's awareness of the meaning of development, including the legal aspects and legal certainty in waste management, influences the level of community involvement. The government has formulated waste management policies, but the level of community involvement is influenced by factors such as location, building type, market value, and regulatory provisions.

Regional Regulation No. 387 of 2001 supports Regional Regulation No. 8 of 2000, regulating the duties and functions of the environmental agency in this city. Although these rules are detailed, community involvement can be hindered without adequate facilities and a broad understanding of proper waste management. Financial limitations can make adequate facilities only accessible to urban residents, while most facilities are provided by citizens and neighborhoods. Therefore, providing adequate facilities and increasing community awareness of proper waste management are key to enhancing community involvement.

Regional Regulation No. 8 of 2000 also obliges the community to maintain the cleanliness of residences and the environment, with the support of supporting facilities from the government. Violations can be punished, but the sanctions are considered lenient, especially regarding the payment of fees, while violations that harm the environment receive inadequate sanctions. This weakness can affect the level of community involvement in maintaining environmental cleanliness. Various forms of legal sanctions have been established for violations of Regional Regulations (Perda) regarding waste management, including verbal and written warnings, fines, and permit revocation. Meanwhile, proper cleanliness practices will receive recognition and rewards (Pematang Siantar City Regulation Number 8, 2000) & (Pematang Siantar City Regulation Number 4, 2005).

Overview of Respondents

This research focuses on the population of residents in three research villages, namely Dwikora Village, Suka Dame Village, and Suka Maju Village. The location of Dwikora serves as the center for shops and the Horas Market, Suka Dame functions as a terminal, and Suka Maju is a residential area. The research sample includes 210 households selected randomly through the

random sampling method, with a breakdown of 100 from Dwikora, 70 from Suka Maju, and 40 from Suka Dame. Respondent profiles involve individual characteristics based on age, number of family members, length of residence, education, income, occupation, and religion to provide a more comprehensive overview.

The age characteristics of respondents in each research village differ. It was found that the most common age characteristic of respondents overall is in the age range above 30 years, with the highest percentage in Suka Maju Village at 55.65%, in Suka Dame at 25.18%, and in Dwikora Village at 15.09%. Meanwhile, the lowest age group, 17-29 years, has a total percentage of 4.08%.

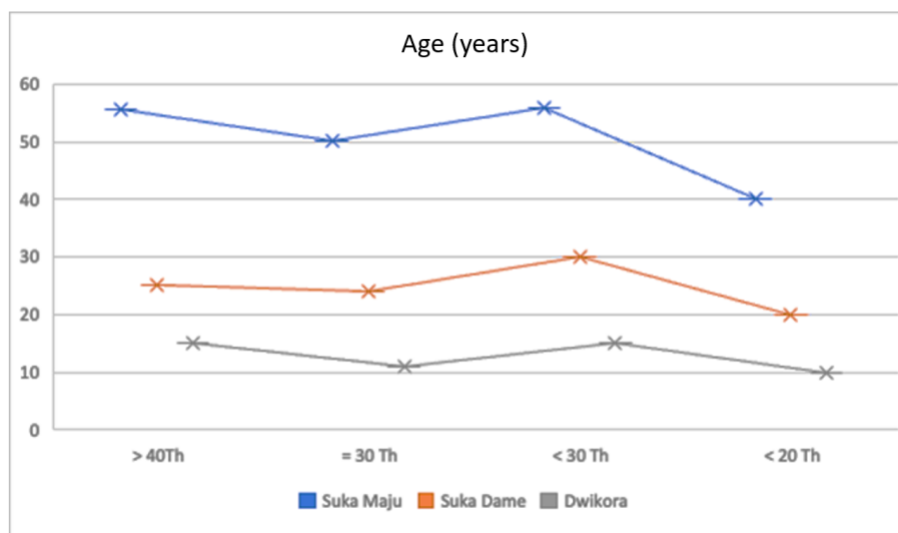


Figure 1. Characteristics of respondent ages, sample Year 2022

The composition of the number of family members in each village is similar, with the majority of families having 3-4 members (45.50%). The detailed percentages are 60.30% in Suka Maju Village, 21.55% in Dwikora Village, and 18.15% in Suka Dame Village. Families with the most members generally have more than 6 individuals, with percentages of 3.05% in Dwikora Village, 8.26% in Suka Dame Village, and 8.69% in Suka Maju Village. Respondent data indicates that the majority have been living in their respective villages for 5-15 years (70.03%), predominantly in Dwikora Village (51.82%), followed by Suka Maju (45.02%), and Suka Dame (43.90%). Overall, the majority of respondents have incomes above 1.5 million (50%), with details of 80% in Suka Maju Village, 15% in Suka Dame Village, and 5% in Dwikora Village.

In terms of education, the majority of respondents graduated from high school (70.94%), with the highest percentage in Suka Maju Village (82.55%), in Dwikora Village (69.25%), and in Suka Dame Village (48.08%). However, there is a small number of respondents with very low education (did not complete elementary school), namely 2 individuals (2.08%) in Suka Dame Village and 3 individuals (4.41%) in Dwikora Village. Community involvement in planning, implementation, and supervision is generally high. High involvement in planning reaches 47.29%, especially in Suka Dame Village (49.23%), Dwikora Village (47.06%), and Suka Maju Village (45.71%). High involvement in implementation reaches 65.72%, with the highest percentage in Suka Maju Village (50.77%), Suka Dame Village (41.18%), and Dwikora Village (41.18%). High involvement in supervision reaches 35.47%, especially in Suka Dame Village (38.46%), Dwikora Village (35.28%), and Suka Maju Village (32.86%).

Spearman Rank Correlation Statistical Analysis

Spearman rank correlation analysis was conducted to evaluate the relationship between individual characteristics and Government policies regarding the community's role in the Environmental Cleanliness program. Observed variables include age, number of family members, length of residence, income, and education. For further clarification, refer to the following table:

Table 1. Individual Characteristics

Age Correlation			Role	Age
Spearman's rho	Role	CorrelationCoefficient	1.000	0.197**
		Sig (2-Tailed)	.	0.006
		N	203	203
	Age	CorrelationCoefficient	0.197**	1.000
		Sig (2-Tailed)	0.006	.
		N	203	203
Family Size Corelation			Role	Family Size
Spearman's rho	Role	CorrelationCoefficient	1.000	0.105
		Sig (2-Tailed)	.	0.153
		N	203	203
	Number of Family Members	CorrelationCoefficient	0.105	1.000
		Sig (2-Tailed)	0.153	.
		N	203	203
Residency Duration Correlation			Role	Length of Residence
Spearman's rho	Role	CorrelationCoefficient	1.000	0.030
		Sig (2-Tailed)	.	0.480
		N	203	203
	Length of Residence	CorrelationCoefficient	0.030	1.000
		Sig (2-Tailed)	0.480	.
		N	203	203
Income Correlation			Role	Income
Spearman's rho	Role	CorrelationCoefficient	1.000	0.308
		Sig (2-Tailed)	.	0.000
		N	203	203
	Income	CorrelationCoefficient	0.308	1.000
		Sig (2-Tailed)	0.000	.
		N	203	203
Education Correlation			Role	Education
Spearman's rho	Role	CorrelationCoefficient	1.000	0.315
		Sig (2-Tailed)	.	0.000
		N	203	203
	Education	CorrelationCoefficient	0.315	1.000
		Sig (2-Tailed)	0.000	.
		N	203	203
**Correlation is significant at the 0,01 level (2 – Tailed)				

From the correlation analysis results, it was found that the correlation coefficient is 0.193, significant at a confidence level of 99%, indicating a significant positive relationship between age and the level of Community Role in the Environmental Cleanliness program in Pematang

Siantar. This is supported by the t-value (2.75), which exceeds the t-table value (2.35). The conclusion indicates that as the age of the community increases, the level of role also increases.

On the contrary, for the variable number of family members, the correlation analysis shows a weak relationship (correlation coefficient of 0.105) and is not significant at a 95% confidence level. This is reinforced by the t-value (0.52), which is smaller than the t-table value (1.96), confirming that there is no relationship between the number of family members and the level of role.

Next, the correlation analysis for the length of residence variable shows a weak relationship (correlation coefficient of 0.03) and is not significant at a 95% confidence level. Although the direction of the relationship is positive, the length of someone's residence does not significantly affect the level of Community Role, as stated by the t-table value (0.71), which is smaller than the t-table value (1.96).

For the income level variable, correlation analysis produces a coefficient of 0.308, highly significant at a 99% confidence level. This indicates a strong positive relationship between income level and Community Role in the Environmental Cleanliness program. The t-value (4.59), exceeding the t-table value (2.35), reinforces this finding.

Finally, the variable of education level also shows a significant relationship (correlation coefficient of 0.315) at a 99% confidence level. This indicates that a higher level of education contributes positively to the level of Community Role in the Environmental Cleanliness program. This finding is supported by the t-value (4.75), which exceeds the t-table value (2.35).

The analysis results indicate that, besides age, income level, and education level, have a significant influence on the Implementation of the Environmental Cleanliness Program Through the Community Role in Pematang Siantar. Conversely, there is no significant relationship between the number of family members and length of residence in terms of community role in the implementation of environmental cleanliness programs.

In terms of government policy, there are four variables according to Smith in the principles of state policy formation, as explained by (Islamy, 2001), namely Idealized policy, Target groups, Implementing organization, and Environmental factors. For more clarity, refer to the following table:

Tabel 2. Government Policies

		Idealized policy	Role	Idealized policy
Spearman's rho	Role	CorrelationCoefficient	1.000	0.148
		Sig (2-TaiIed)	.	0.035
		N	203	203
	Idealized policy	CorrelationCoefficient	0.148	1.000
		Sig (2-TaiIed)	0.035	.
		N	203	203
Target Groups			Role	Target Groups
Spearman's rho	Role	CorrelationCoefficient	1.000	0.156
		Sig (2-TaiIed)	.	0.026
		N	203	203
	Target groups	CorrelationCoefficient	0.156	1.000
		Sig (2-TaiIed)	0.026	.
		N	203	203

Implementing Organization			Role	Implementing Organization
Spearman's rho	Role	CorrelationCoefficient	1.000	0.148
		Sig (2-TaiIed)	.	0.035
		N	203	203
	Implementing organization	CorrelationCoefficient	0.148	1.000
		Sig (2-TaiIed)	0.035	.
		N	203	203
Environmental Factors			Role	Environmental Factors
Spearman's rho	Role	CorrelationCoefficient	1.000	0.161
		Sig (2-TaiIed)	.	0.029
		N	203	203
	Environmental factors	CorrelationCoefficient	0.161	1.000
		Sig (2-TaiIed)	0.029	.
		N	203	203
**Correlation is significant at the 0,01 level (2 – Tailed)				

Source: Data Processing Results, 2022

From the correlation analysis results, it was found that the correlation coefficient value was 0.148, significant at a confidence level of 95%, indicating a significant positive relationship between Community Role and Idealized policy. However, at a confidence level of 99%, this relationship is not significant, indicating that Idealized policy does not have a significant impact on Community Role.

A similar pattern is observed for the Target groups variable, where the correlation coefficient value is 0.156, significant at a confidence level of 95%, but not significant at the 99% level. This means there is a significant positive relationship between Community Role and Target groups at a confidence level of 95%, but not at the 99% level.

Meanwhile, for the Implementing organization variable, the correlation coefficient value is 0.148, significant at a confidence level of 95%, indicating a significant positive relationship between Community Role and Implementing organization. However, at a confidence level of 99%, this relationship is not significant.

Finally, for the Environmental factors variable, the correlation coefficient value is 0.161, significant at a confidence level of 95%, indicating a significant positive relationship between Community Role and Environmental factors. However, at a confidence level of 99%, this relationship is not significant. Overall, the analysis results indicate that the relationship between Community Role and Idealized policy, Target groups, Implementing organization, and Environmental factors is significant at a confidence level of 95%, but not at a confidence level of 99%.

Conclusion

Based on the calculations and analysis of the questionnaires and interviews, it can be concluded that the factors influencing the Community Role in the implementation of waste cleanliness programs in Pematang Siantar involve education, income, and age. Suka Maju Subdistrict shows a higher level of Community Role compared to Suka Dame and Dwikora Subdistricts because the education and income levels of the respondents in that subdistrict are higher. On

the contrary, the number of family members and length of stay do not have an impact on the Community Role in waste cleanliness programs in Pematang Siantar.

Regarding government policies such as Idealized policy, Target groups, Implementing organization, and Environmental factors, they do not have a significant impact on the level of Community Role at a confidence level of 99%, but there is a significant relationship at a confidence level of 95%. An effective waste disposal system involving collection at specific locations with the assistance of Implementing organizations can maintain environmental quality and extend the use of landfill areas.

For the future, it is recommended that waste management become more professional by establishing a public company responsible for cleanliness, not just the responsibility of sanitation agencies alone. There is a need for improvement in waste management practices in Pematang Siantar through policies that actively involve relevant agencies, from collection and transportation to proper waste disposal. Waste management facilities and infrastructure also need to be improved both quantitatively and qualitatively to ensure efficient management of generated waste.

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