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The Influence of Policy Implementation on the Effectiveness of the Waste Free Zone Program in Sukamiskin Village, Bandung City

Emi Rachmawati[1], Farid Arifin[2], Fauzan Rasyadi Ramadhan[3]
Universitas Langlangbuana

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Abstract
One of the common issues faced by large cities is waste management, which can lead to a decline in environmental quality. This waste problem can escalate to health concerns and even socioeconomic issues. In response, the Waste-Free Area (Kawasan Bebas Sampah, KBS) policy was established. This policy defines an area where waste management is carried out independently by the community, based on five main principles: citizen involvement, independence, efficiency, environmental sustainability, and integration. At its core, policy implementation is a critical factor influencing the successful realization of the Waste-Free Area program. This study employs a quantitative descriptive method, using simple linear regression analysis to evaluate data collected from a sample in Sukamiskin Subdistrict. Primary data were obtained through questionnaires distributed by the researchers. The regression analysis is supported by validity and reliability tests, determination coefficient analysis, correlational analysis, and both partial and joint significance tests.The Waste-Free Area (KBS) program in Sukamiskin Subdistrict, Bandung City, aims to reduce household waste through 3R-based waste management (Reduce, Reuse, Recycle). While the program has potential, it has yet to achieve optimal outcomes due to low community participation, inadequate facility management, and limited coordination among stakeholders. The analysis reveals that policy implementation has a significant impact on the program's effectiveness, contributing 47.2% to its success.

Corresponding Author
Farid Arifin
Universitas Langlangbuana
Email : farid.arifin@unla.ac.id

1. INTRODUCTION

Waste in the environment often becomes a complex problem, and becomes a big opportunity for environmental pollution accompanied by a decline in environmental quality. Waste is one of the various problems currently being faced by society in general. The waste problem not only affects the aesthetics and comfort of cities, but also affects the health of residents due to pollution from toxic materials from waste and has become an issue of sustainable development at regional and national levels due to production and consumption patterns of various materials and products which have an impact on the continued increase in resource exploitation. natural resources and increasing carbon emissions (Nurhasanah & Akbar, 2022).

Waste management is a mandatory matter for the Regional Government involving various parties widely and massively, so it needs to be carried out in an integrated and efficient manner from upstream to downstream, and adapted to the characteristics of urban

communities, level of mobility and individualism the higher the culture consumptive which continues to increase (Sarihati et al., 2019). Waste management regulations need to support strengthening the sustainability of the city's economy in anticipation of the increasing scarcity of natural resources, so a system is needed that is oriented towards recycling waste into resources.

Based on Badung City Regional Regulation No. 9 of 2018 concerning waste management Article 13 paragraph 1 Waste management in areas includes managed areas and non-managed areas Managing. Apart from that, managed areas can be divided into several criteria including residential areas, commercial areas, special areas, social facilities, public facilities and other facilities. Meanwhile, Article 14 paragraph 1 explains that the management referred to in Article 13 is for the Area Managing In carrying out waste management, it is mandatory to be guided by the Municipal Waste Management Master Plan. Paragraph 2 explains that Managed Area Managers will be subject to administrative sanctions in the form of a written warning if they do not carry out waste management based on the City Regional Waste Management Master Plan.

Bandung City in supporting the reduction target based on the 2014-2018 RPJMD, it is known that the target is to reduce household waste and similar waste. House level, namely 30% by 2025, the Bandung City Government is collaborating with the Bandung Free Waste Champion forum, namely developing the Waste Free Zone (KBS) program, as a pilot model for increasing community participation through decentralized waste management. The Waste Free Zone Program has 5 (five) main principles, namely citizen involvement, independence, efficient waste reduction, environmental preservation and regional integration.

The realization of a Waste Free Zone in one area was assisted by the Bandung City Environment and Cleanliness Service. Activities to make the area waste free are focused on waste sorting activities, waste processing in the area, and only other types of waste or residues are transported to temporary storage sites (TPS). In 2018 there were 8 (eight) sub-districts in Bandung City *role model* or a model for other sub-districts in implementing Waste Free Zones (KBS). The eight sub-districts include Sukamiskin, Sukaluyu, Gempolsari, Cihaurgeulis, Kujangsari, Neglasari, Babakansari, and Kebon Pisang. In this research, Sukamiskin Subdistrict is considered to be the most likely to implement KBS, but there are still several shortcomings in the realization of the plan as follows:

Table 1. Plans and Realization of the Waste Free Zone Program in Sukamiskin Village, Arcamanik District, Bandung City

Year	Waste Free Area Program	Plan (unit)	Realization (units)	Percentage
2023-2024	Takakura basket every house	316	199	63%
	Biodigesters	17	10	59%
	Loseda	200	120	60%
	Composter	30	21	70%
	Garbage cart	25	16	64%
	Waste Bank	17	5	29%
	Magotisasi	15	8	53%
	Overlay brick	30	24	80%

Source: Sukamiskin Village (2024)

Based on the data in table 1.1 above, it shows that the Waste Free Area Program in Sukamiskin Village, Arcamanik District, Bandung City in 2023-2024 has been quite effective. However, there are still activities for the KBS program that have not been realized

according to plan, the average activity that has been implemented in its realization has reached approximately 60%, even the Waste Bank activities in its implementation have only reached 29%. So, turning Sukamiskin Village into a Waste Free Zone has not been fully achieved. According to Arifin & Kurniadi (2024), it is explained that the plans made are necessary to achieve the realization of targets in sustainable development.

Waste Free Zones which are still ineffective can be influenced by various factors, but in general this ineffectiveness can be narrowed down by implementation. policy about what happens in the field. According to Mulyadi (2015), it is said that policy implementation is a change or transformation multi-organization, then the Waste Free Zone program can be optimized for application from the core in policy implementation which includes communication, resources, disposition and bureaucratic structure.

So based on the presentation on as well as problems-problem what happened, researchers are interested in studying and analyzing further the influence of policy implementation on the effectiveness of the waste-free area program in Sukamiskin Village, Bandung City. By formulating how big the influence of implementation is on the effectiveness of the Waste Free Zone Program in Sukamiskin Village, Arcamanik District, Bandung City.

2. RESEARCH METHOD

In this research, the research methodology used is Methodology Quantitative with a descriptive explanation, apart from that this research model uses a simple linear regression approach on policy implementation variables on their effectiveness. According to Sugiyono (2018) Quantitative research methods can be interpreted as research methods that are based on the philosophy of positivism, used to research certain populations or samples, sampling techniques sample generally carried out randomly, data collection uses research instruments, data analysis is quantitative/statistical with the aim of testing predetermined hypotheses.

The data source is an important component for testing and researching the causal relationship of the dependent variable and independent variables used in this research. Apart from that, what is meant by data source in research is the subject from which the data can be obtained and has clear information about how to collect the data and how the data is processed. Apart from that, according to Arikunto (2013), the data source is the subject from which the data can be obtained. In Nasution (2014) it is explained that primary data sources are data that can be obtained directly from the field through collecting data directly from the respondents studied. Secondary data is a source of reading material called secondary sources. With descriptions related to the data sources, researchers can easily conduct research regarding the influence of policy implementation on Effectiveness Policy. So it is necessary to use several data collection techniques used in this research, both for collecting Primary Data and Secondary Data, so the data collection techniques are observation, interviews and literature study.

Based on the variables used in the research, a parametric model was created, where this model is a description of the results of statistical calculations between independent variables Implementation The policy regarding the Dependent Variable, namely Effectiveness, is as follows:

$$\mathbf{Evs = a + b\ Imp + e \ldots\ldots (1)}$$

Where:

Evs : Value of the Effectiveness of the Waste Free Zone Policy
a : Constant
b Imp : Value of the Influence of Implementation on Effectiveness
and : *Error term*

According to Sugiyono (2018) it is stated that population is a generalization area consisting above: objects/subjects that have certain qualities and characteristics determined by the researcher to be studied and then drawn conclusions. The population elements in this study include 5,161 consisting of Sukamiskin Village officials and also Public Local. Meanwhile, according to Indrawati (2015), samples are members of the population selected to be involved in research, either to be observed, given treatment, or asked for opinions about what is being studied. In determining the sample size in this study, researchers used the Slovin formula proposed by Husein Umar (2013) that the use of withdrawal samples in large numbers of withdrawal methods samples in large enough quantities, it is enough to use the Slovin formula. then by using the sampling method with the Slovin formula with tolerance 10% size sample in this study there were 138 people

Ghozali (2016) explains that validity tests are used to measure whether a questionnaire is valid or not. A questionnaire is said to be valid if the questions in the questionnaire are able to reveal something that the questionnaire will measure. In this research, researchers carried out validity tests using *pearson correlation*. Meanwhile, the reliability test is used to measure a questionnaire which is an indicator of a variable or construct. So, it is necessary to test the reliability of the questionnaire used, because of something that can be said to be reliable if someone's answer to a question is consistent or stable over time.

The coefficient of determination is a measure that shows the magnitude of the contribution of the independent variable to the dependent variable. In other words, the coefficient of determination shows the variations in the rise and fall of the dependent variable which is explained by the varying values of the independent variable.

Apart from that, this research also used a single significance test. Significance testing done using the calculated t value, which is used to test the influence partially or of each independent variable on the dependent variable.

3. DISCUSSION

Sukamiskin Village, located in Arcamanik District, Bandung City, is one of the areas chosen as a pilot project in implementing the Waste Free Zone Program (KBS). This program is part of the Bandung City Government's efforts to support the target of reducing household and similar waste by 30% by 2025, as stated in the Bandung City Regional Medium Term Development Plan (RPJMD). Sukamiskin sub-district was chosen because it was considered to have the potential to implement 3R-based waste management (Reduce, Reuse, Recycle) independently by the community.

As one of the pilot projects, the Waste Free Zone program in Sukamiskin Subdistrict aims to increase community participation in waste management, preserve the environment, and reduce the amount of waste sent to Final Disposal Sites (TPA). Various methods are applied in this area, such as providing Takakura Baskets, biodigesters, biopores, composters and waste banks. This method is designed to maximize organic waste management at the household level and reduce residual waste disposed of at TPS. Apart from that, this program also involves assistance from the Bandung City Environment and Cleanliness Service to ensure the sustainability of its implementation.

However, data shows that the implementation of this program has not been completely effective. Based on the 2020-2021 evaluation, the average realization of the Waste Free Zone program in Sukamiskin Village only reached 60% of the set target. Some program elements show very low achievements, such as the waste bank which only achieved 29% realization. This indicates that community participation in this program is still far from optimal. Even though various outreach and assistance efforts have been carried out, many people do not understand the importance of independent waste management. In fact, some

residents tend to hand over all waste management to cleaning staff because they feel they have paid cleaning fees through the RW.

One of the main factors that influence low community participation is a misperception about this program. Many people consider the Waste Free Zone program not to be a government initiative, but rather as a self-help program held by non-government organizations. This results in a lack of sense of responsibility from the community to support the program. Apart from that, society's less adaptive attitude towards change is also a challenge. Getting used to sort waste from home and not littering is a behavior change that requires time and intensive support.

Simple Linear Regression Analysis

Based on the variables used in the research, a parametric model was created, where this model is a description of the results of statistical calculations between independent variables Implementation The policy regarding the Dependent Variable is Effectiveness, so the results obtained based on the research model are as follows:

Evs = 13,611 + 0,745 X

Based on models parametric on regression A simple linear interpretation can be made from the regression equation above as follows:

1) The constant coefficient value Evs is 13.611, which is when there is no influence from other variables (*For other equals*) means that the Effectiveness variable will grow by 13,611 units.
2) The Imp coefficient value is 0.745, so this shows that for every 1 unit increase in Policy Implementation, the Effectiveness will increase by 0.745 units.

Validity Test and Reliability

The validity test is used to measure whether a questionnaire is valid or not. A questionnaire is said to be valid if the questions in the questionnaire are able to reveal something that the questionnaire will measure. In this research, researchers carried out validity tests using *Pearson correlation* with the help of *software* SPSS program. Measurement is carried out by correlating the question item scores with the total scores of the independent and dependent variables. The following are the results of the validity test for the Policy Implementation variable:

Table 2. Validity Test of Policy Implementation Variables

Statement	Critical r Value	Table r values	Information
1	0,645	0,165	VALID
2	0,577	0,165	VALID
3	0,612	0,165	VALID
4	0,646	0,165	VALID
5	0,549	0,165	VALID
6	0,671	0,165	VALID
7	0,619	0,165	VALID
8	0,487	0,165	VALID
9	0,604	0,165	VALID
10	0,64	0,165	VALID
11	0,555	0,165	VALID

Source : ***data processed IBM SPSS 25 (2024)***

The table above shows that all statements in the policy implementation variable questionnaire have a critical value that is greater than the r value in the table, namely 0.165. This shows that all statements in the Policy Implementation Variable are valid. Next for variables effectiveness the validity values obtained are as follows:

Table 3. Validity Test of Effectiveness Variables

Statement	Critical r Value	Table r values	Conclusion
1	0,696	0,165	VALID
2	0,728	0,165	VALID
3	0,662	0,165	VALID
4	0,663	0,165	VALID
5	0,527	0,165	VALID
6	0,689	0,165	VALID
7	0,511	0,165	VALID
8	0,604	0,165	VALID
9	0,459	0,165	VALID
10	0,545	0,165	VALID
11	0,502	0,165	VALID
12	0,691	0,165	VALID

Source : ***data processed IBM SPSS 25 (2024)***

Then the results from the table above show that all the statements in the questionnaire are variable effectiveness and have a critical value that is greater than the r table value, namely 0.165. So on variables effectiveness indicates that all statements are declared valid.

Reliability measurements in this study were carried out using a one-time measurement technique (*one shot*). Next, the results of the measurements are compared with other questions using statistical tests *cronbach's alpha* (α), with the results of calculations using IBM SPSS as follows:

Table 4. Test Reliability Data

Variable	R Critical	*cronbach's alpha*	Conclusion
Implementation	0,819	0,600	Reliable
Effectiveness	0,841	0,600	Reliable

Source : ***data processed IBM SPSS 25 (2024)***

The table above shows that the two r values are critical at variable implementation and the effectiveness variable both exceed the value of cronbach's *alpha, namely* 0.600. So, this shows the conclusion that all statements on the two variables are reliable.

Coefficient of Determination Test

The coefficient of determination is a measure that shows the magnitude of the contribution of the independent variable to the dependent variable. In other words, the coefficient of determination shows the variations in the rise and fall of the dependent variable which is explained by the varying values of the independent variable. The results of the test show that the R value^2 are as follows:

Table 5. Coefficient of Determination

Model Summary[b]				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.687[a]	.472	.468	4.98191
a. Predictors: (Constant), Policy Implementation				
b. Dependent Variable: Effectiveness				

Source : ***data processed IBM SPSS 25 (2024)***

Based on the information in the table above, it can be seen that the value coefficient R determination^2 of 0.472. So, you can interpret that the influence of Policy Implementation on Effectiveness is 47.2%. Meanwhile, the remaining 52.8% is the influence of variable others that were not included in the research model.

Research Model Significance Test

Basically, significance tests are usually divided into joint significance tests or partial significance tests, but because in this study only a single significance test was used. The joint significance test is used to simultaneously test the influence of the independent variable on the dependent variable. If the independent variable has a simultaneous influence on the dependent variable, then the regression equation model is included in the appropriate criteria. Meanwhile, the partial significance test is used to test the influence partially or of each independent variable on the dependent variable using the calculated t value. The following are the results of the significance test obtained using the IBM SPSS 25 application, namely:

Table 6. Simple Linear Regression Coefficients and Significance

Coefficients[a]						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Say.
		B	Std. Error	Beta		
1	(Constant)	13.611	2.075		6.558	.000
	Policy Implementation	.745	.067	.687	11.137	.000
a. Dependent Variable: Effectiveness						

Source : ***data processed IBM SPSS 25 (2024)***

Based on the table above the values coefficient The calculated t is 11.137 where this value will be tested with using t table. In significance testing, it is often used to test a hypothesis, with degrees of freedom (df) = (n-k) and a confidence level of 95% (α=5%). The calculated t value of 11.137 is in the H rejection area$_0$, based on the data also states that the calculated t value is greater than the t table which makes Ha acceptable. The significance value also shows 0.000, which is smaller than the significance level of 0.05. Based on from the results of the tests that have been carried out, it can be concluded that there is a significant influence between Policy Implementation on the Effectiveness of the waste-free area program in the Sukamiskin sub-district.

Discussion

Implementation of the Waste Free Area Program (KBS) in Sukamiskin Village, Bandung City, as one of the pilot project areas. This program aims to support the target of reducing household waste by 30% by 2025 in accordance with the Bandung City RPJMD. The KBS program is designed to manage waste based on 3R (Reduce, Reuse, Recycle) independently, involving the community, and reducing the amount of waste sent to landfill. Various methods are applied, such as the use of Takakura Baskets, biodigesters, biopores, composters, and waste bank management.

Based on the evaluation results, the implementation of this program has not reached the optimal target. Data shows that the average program achievement is only around 60%, with elements such as waste banks only being realized at 29%. This reflects the low level of community participation, which is influenced by various factors, including the perception that this program is not a government initiative, but rather community self-help. Apart from that, the community's non adaptive attitude towards the habit of sorting waste is a big challenge in implementing this program.

Another obstacle is the lack of management of the facilities and infrastructure that have been provided. Many facilities such as biodigesters and composters are not used optimally due to a lack of responsible management. Coordination between the sub-district, RW and Environmental Services is also not going well. This condition is further complicated by differences in social characteristics in ordinary residential areas and residential areas, where residential communities tend to find it more difficult to be involved in waste management activities.

Through quantitative analysis using simple linear regression, it was found that policy implementation had a significant influence on the effectiveness of the KBS program. The regression equation shows that every 1 unit increase in policy implementation will increase program effectiveness by 0.745 units. The coefficient of determination (R^2) of 47.2% shows that almost half of the program's effectiveness is influenced by policy implementation, while the rest is influenced by other variables not analyzed in this research.

The results of the validity test show that all statements in the questionnaire for the policy implementation and effectiveness variables are declared valid with a correlation value greater than the r table value. Apart from that, the results of the reliability test using Cronbach's Alpha show that these two variables have a high level of reliability, each with a value of 0.819 for policy implementation and 0.841 for effectiveness.

Based on the results of the significance test, the calculated t value of 11.137 is greater than the t table, with a significance value of 0.000, which is smaller than 0.05. This proves that there is a significant influence between policy implementation and the effectiveness of the KBS program. Thus, it can be concluded that improving the quality of policy implementation will increase the effectiveness of this program in Sukamiskin District.

To increase the success of the program, it is recommended that there be intensive education for the community, improved coordination between related parties, and optimal use of waste management facilities. An approach that is appropriate to the social characteristics of the community is also needed to encourage greater participation, so that the goals of the KBS program can be achieved more effectively.

4. CONCLUSION

The Waste Free Zone (KBS) Program in Sukamiskin Subdistrict, Bandung City, is designed to support a 30% reduction in household waste by 2025 through 3R (Reduce,

Reuse, Recycle) based management. As a pilot project, this program has great potential to create a cleaner and more sustainable environment.

The research results show that program implementation has not achieved the expected targets. The level of community participation is still low, with some program elements, such as the waste bank, only 29% realized. Contributing factors include a lack of public awareness, wrong perceptions of the program, and a lack of coordination between the sub-district, RW and Environmental Services. Quantitative analysis through simple linear regression proves that policy implementation has a significant effect on program effectiveness, with a coefficient value of 0.745. The coefficient of determination (R^2) shows that 47.2% of program effectiveness is influenced by policy implementation, while the remainder is influenced by other variables outside the research. Validity and reliability tests show that the data used is valid and consistent, strengthening the conclusion that policy implementation is an important factor in program success.

To increase the effectiveness of the program, strategic steps are needed, including more intensive education to the public about the importance of waste management and its impact on the environment. Improving coordination between related parties is also key to ensuring program implementation runs optimally. Apart from that, the use of waste management facilities, such as Takakura Baskets, biodigesters and waste banks, must be optimized through professional management support. A more personalized approach and in accordance with the characteristics of the community in ordinary residential areas and residential areas also needs to be implemented to encourage greater participation.

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