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Bantar Gebang Integrated Waste Disposal Study with Income, Public Health

Sitio Raston*, Simbolon Sabam, Rr. Dian Anggraeni and
Etty Herijawati

Abstract--- *The importance of this research is to find out why the Village community Ciketingudik, Cikiwul and Sumurbatu, Bantar Gebang Subdistricts, refused company Bantar Gebang waste disposal and processing site. It often happens disputes on the grounds that the company / institution only caused loss to society such as pollution and environmental pollution and spreading disease. Existence Bantar Gebang landfills and waste processing areas are like two sides of a coin cause things that are not good, its existence also affects income local community. The income to be studied is the income received by the community local companies / agencies in the form of health compensation, wages become employees and income from opening businesses around waste treatment plants. The research was conducted at the Bantargebang integrated landfill with three kelurahan namely Kelurahan Ciketingudik, Cikiwul and Sumurbatu by taking samples as many as 156 respondents. Stages of research are Identifying problems, Conducting studies literature, Conducting a preliminary survey, Creating a questionnaire design, Collecting data consisting of primary data and secondary data, primary data obtained by sharing questionnaire to the public and secondary data obtained from companies / agencies related, Conduct analysis and discussion, The last to make a report on the results research. The method used in this study is descriptive to determine the effect landfills integrated towards income and public health that have been collected will be tested and analyzed using the SPSS version 23 Corruption program canonical (Canonical Correlation). The results of the study are that the Tempat Pembuangan Sampah Bantar Gebang (TPST) with respect to income and community sickness is the canonical loading figure for income Y1 community is 0.298 or 29.8% less significant while on the distribution Y2 disease in society obtained canonical loading rate of 0.977 or 97.7% meaning very significant influence of Bantar Gebang TPST on the spread of disease in the TPST location.*

Keywords--- *Waste, Revenue, Health, BantarGebang,*

I. INTRODUCTION

1.1 Background

Garbage causes various problems, but waste can also be useful if it is carried out properly. The integrated waste disposal and processing (TPST) located in the Bantar Gebang District, Bekasi, Bekasi City is in direct contact with three Kelurahan namely Sumur Batu Village, Ciketing Udik and Cikiwul often get protests from residents of three Kelurahans for allegedly causing various diseases such as ISPA, diarrhea and malaria and others. The existence of the TPST also had a positive impact on community income in the form of income from wages as employees, opening businesses and so on. Types of income to be investigated are 1. Receipts from salaries recruited as

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employees in the company, 2. Average business sector income such as food stalls, grocery, 3. Income from health incentives provided by Bantar Gebang TPST. Health expenditure costs to be investigated are for medical treatment costs ARI, Diarrhea and Malaria. Secondary data er will be collected from relevant agencies is a period of 12 months during 2017. Based on existing data, companies / agencies claim to have done well the entire process, ranging from transportation, storage to processing waste into biogas or compost fertilizer. The company claims to provide health compensation in the amount of Rp. 300 thousand three-month for each KK until 2016 and the amount will be increased for 2017. The company also recruits local people to become employees and is beneficial for opening up community businesses around the TPST site.

According to Sitio (2017), the results of his study concluded that Bantar Gebang landfill had no significant effect on public health expenditure. In 2014 and 2015 the average sufferer of ARI was 310 and 234 people every month. For diarrhea sufferers in the year 2014-2015, an average of 463 and 470 patients per month. For malaria sufferers in 2014-2015, an average of 30 and 31.4 patients per month. Based on the above phenomena, namely the claims of companies / agencies and public unrest, we felt it was necessary to do This research is to find the real answers to what are the main problems so that people protest. That's why we took the title of the research 'Study on integrated Bantar Gebang landfills with income, public health'.

This research was conducted in Ciketing Udik, Cikiwul and Sumur Batu sub-districts of Bantar Gebang Sub-District, Bekasi City. This study uses primary and secondary data, primary data obtained by distributing randomly distributed questionnaires to the three communities in terms of disease, benefits and contributions they receive. and secondary data obtained from relevant agencies / companies. Waste data from the Sanitation Office of Jakarta (Bantar Gebang TPST), data on the number of patients with ARI, diarrhea and malaria from the Bekasi City Health Office (UPDT Bantar Gebang Puskesmas), data on the number and distribution of population from the Department of Population of Bekasi City. Data collected in 2017. The population in this study is the total population scattered in the three villages, amounting to about 80,000 people, α of 8% with the Slovin technique obtained a sample of 156 respondents. The scale of this research technique is the Likert scale, the population is chosen randomly.

$$n = \frac{N}{1+Ne^2} = \frac{80.000}{1+80.000 (0.08)^2} = 156$$

1.2 Problem Formulation

The formulation of the problem in this study are:

- a. The existence of Bantar Gebang TPST has an effect on public health
- b. The existence of Bantar Gebang TPST has an effect on people's income

II. LITERATURE REVIEW

1. Literature Review

The review of science / State of The Art of this study is the result of previous studies that have topics and linkages with this study conducted by, 1.Raston Sitio (2017). entitled The Effect of the Amount of Waste Entering Bantargebang on the Health Costs of the Ciketingudik and Sumurbatu Public Communities. October, concluded that the influence of the amount of waste does not significantly influence the increase in the medical costs of the

Bantargebang community. Further research was conducted by Sanjoyo (2013) Cipayung Depok's final processing of waste concluded that waste affected environmental quality degradation and further research was conducted by Febriana Adiya Rangkuti (2014) "Factors affecting environmental quality measured by health costs concluded the same as the research conducted by Sanjoyo.

2. Theoretical Basis

The origin and existence of rubbish comes from settlements produced by families. Waste from public places and trade in public places that allows many people to gather and carry out activities. Places like this have a large enough potential to produce waste including here is a shop, a market. The types of waste produced are generally in the form of food scraps, rotten vegetables, dry waste, ash, plastic, paper and cans and other types of garbage. Types of waste include household, industrial waste, market waste, House waste Sick, agricultural waste, plantation waste, livestock waste, institutional / office / school waste Waste is classified as organic waste and inorganic waste. Organic waste is waste generated from biological materials that can be degraded by microbes or are biodegradable. This waste is easily broken down through natural processes. Inorganic waste is waste generated from non-biological materials, either in the form of synthetic products or the results of processing technology processes Inorganic waste can be further divided into: metal waste and its processing products, plastic waste, paper waste, glass and ceramic waste, detergent waste. Most inorganic rubbish cannot be decomposed naturally / microorganisms as a whole (unbiodegradable). While some others can only be described in a long time such as plastic bottles, cups, plastic bags and cans, (Gelbert et al., 1996). Waste is also divided by its form into three types namely liquid waste in the form of washing water, soapy water, residual cooking oil, waste rubbish solid ie snack packs, old tires, drinking water bottles and waste gas waste namely carbon dioxide (CO₂), carbon monoxide (CO), hydrochloric acid (HCL), NO₂, SO₂.

3. Impact of Waste

a. The impact of waste on humans

According to Gelbert et al (1996) there are three, namely in terms of location health and inadequate waste management (uncontrolled waste disposal) is a suitable place for several mechanisms and interesting for various animals such as flies and other animals that can transmit various diseases such as;

- 1) Diarrhea, cholera, typhus spread quickly because viruses originating from waste with improper management can mix with drinking water as well as dengue fever caused by standing water that fosters the proliferation of dengue mosquitoes.
- 2) Fungal disease of the skin
- 3) Diseases that spread through the food chain such as diseases that are raised by tapeworms. These worms previously entered the digestibility of livestock through food in the form of leftovers.

b. Impact on the environment

Waste seepage liquid that enters the drainage or river will pollute the water. Various organisms including fish can die so that some species will be lost, this causes the biological ecosystem of the water to change. can explode at any time

c. Impact on Social Economy

Inadequate waste management causes low levels of public health, which in turn increases health costs incurred by everyone. Likewise with other infrastructure such as increased costs of water treatment due to being polluted by waste waste.

d. Income

Income in the big Indonesian dictionary is the result of work, while income in the management dictionary means money received by individuals, companies and other organizations in the form of wages, salaries, interest, commissions, fees and profits. Individual Income is the amount of revenue that is valued in units money that can be generated by a person in a certain period, as a remuneration or factors of production donated, Reksoprayitno, Economic System and Economic Democracy (Jakarta: Bina Grafika, 2014) page 79. From these two explanations, the writer concludes that the income of the Ciketing village community Udik and Sumur Batu sub-district who want to be investigated are in the form of income they receive in the form of salaries as employees at the final disposal site and integrated Bantar Gebang waste management or in the form of other businesses such as opening businesses that intersect directly with the flow of income from the waste processing company.

4. Health

Understanding public health According to Professor Winslow from Yale University (Leavel and Clark, 1958) Health is the science and art of preventing disease, extending life, improving physical and mental health and efficiency through organized community efforts to improve environmental sanitation, control infection in the community, individual education about personal hygiene. Organizing medical services and treatments for disease prevention and the development of social aspects, which support that everyone in the community has a strong standard of living to maintain their health. The American Medical Association (AMA, 1948) defines public health as the science and art of maintaining, protecting and improving public health through community organizing efforts. The scope of public health is Epidemiology, biostatistics, environmental health, health and behavior education, public health administration, public nutrition, health.

III. RESEARCH METHODS

1. Research Design

The design and method of this research is 'Descriptive' defining and / or describing the variables to be studied, and being able to know the difference between one variable and the other variables studied (Ghozali, 2016). The type of research used is 'Case Study Type' to describe the nature of ongoing nature by examining the causes of certain symptoms.

2. Data Collection Techniques

Primary data were obtained directly from the community by distributing questionnaires to 156 respondents. Secondary data were obtained from relevant relevant agencies to support the implementation of the study.

3. *Editing, Coding and Data Tabulation*

a. Editing is an inspection of incoming data to see if there are errors in filling / incomplete, incompatible and so on. This process is carried out so that the data obtained is completely normal, valid and reliable, and can be justified.

b. Coding is the process of giving a sign, symbol for every incoming data.

c. Tabulation is the process of entering data in a table that matches the characteristics of the data to be added together. Presentation of the data in this study is carried out in the form of tables, pictures and graphs, for secondary data can be directly analyzed because it has been processed from its main source. In conducting data analysis to get the output the optimal processing with canonical correlation (SPSS Version 23).

4. *Population*

The population in this study is the community of three villages namely

Ciketing Udik Sub-District, Cikiwul Sub-District and Sumur Batu Sub-District, Bantar Gebang Sub-District, Bekasi City

5. *Place and Time of Research.*

The place and time of the study was carried out at the Bantar Gebang integrated landfill, Bekasi City Health Office and Ciketing Udik, Cikiwul and Sumur Batu Sub-districts, Bantar District from January 2019 to October 2019.

6. *Hypothesis*

The research hypothesis is:

HO: All canonical correlations are zero

H1: At least one canonical correlation is not zero

Conclusion drawing criteria: The null hypothesis is rejected at the significance level α (0.08) if the test statistic is $>sig. 0.08$

The equation model used for correlation is: $X1 + X2 = Y1$

Landfill + Revenue = Health.

7. *Conceptual Framework*

Independent Variable Set (Y1) Dependent Variable Set (X1)

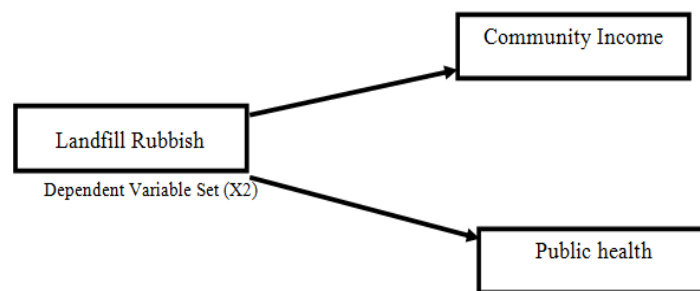


Figure 3.1: Research Concept Framework

8. Canonical Test Requirements

Before processing data with canonical correlation begins, testing the requirements that must be met first, namely normality, and multicollinearity

- a. Normality Test is to find out whether the dependent and independent variables or both are normally distributed, calculations are carried out by Kolmogorov Smirnov which are either normally distributed or close to normal
- b. Multicollinearity Test is to test whether there is a correlation between groups of dependent variables and groups of independent variables.

9. Definition of Operational and Data Processing

- a. Determine the Purpose of Canonical Correlation Analysis
- b. Designing Canonical Correlation Analysis
- c. Canonical Correlation Assumptions
- d. Get Canonical Functions and Assess Overall Fit
- e. Canonical Variate Interpretation

10. Sampling Methods

The sampling method used was random sampling, with Slovin technique, and an error rate of 0.8% (df = 92%).

$$n = \frac{N}{1 + Ne^2} = \frac{80.000}{1 + 80.000 (0.08)^2} = 156$$

IV. ANALYSIS AND DISCUSSION

4.1 Data Normality Test Results

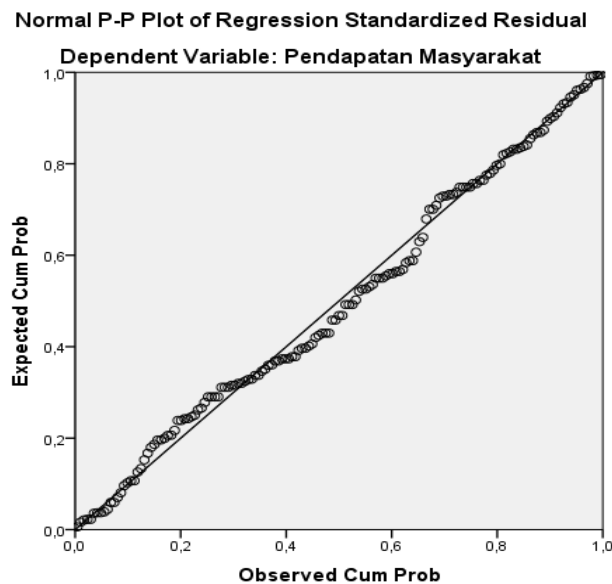


Figure 4.1: Normality Test Data for Community Income Variables

Figure 4.1 test results for normality of data on the variable income community points spread around the diagonal line which means the assumption of normality.

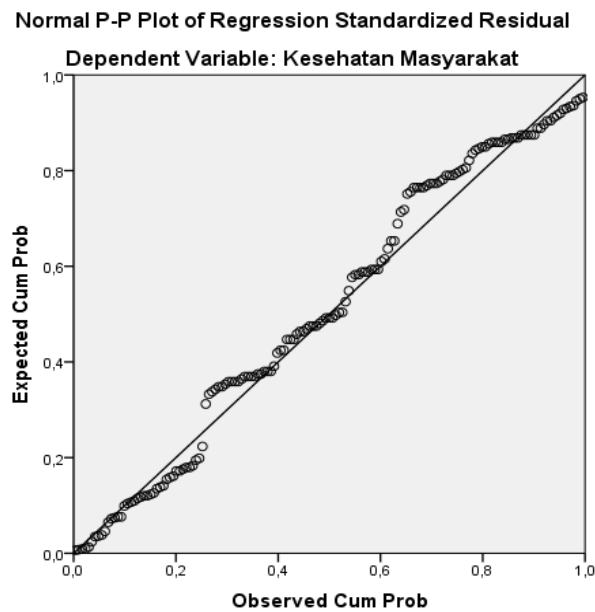


Figure 4.2 Normality Test Data on Public Health Variables

Figure 4.1 test results for normality of data on public income variables spread points around the diagonal line which means meeting the normality assumption.

4.2 Multicollinearity Test

Collinearity Diagnostics^a

				Variance Proportions	
Model	Dimension	Eigenvalue	Condition Index	(Constant)	TPST Bantargebang
1	1	1.985	1.000	0.01	0.01
	2	0.015	11.350	0.99	0.99

a. Dependent Variable: Community Income

Figure 4.2a Collinearity Diagnostics

Collinearity Diagnostics^a

				Variance Proportions	
Model	Dimension	Eigenvalue	Condition Index	(Constant)	TPST Bantargebang
1	1	1.985	1.000	0.01	0.01
	2	0.015	11.350	0.99	0.99

a. Dependent Variable: Public Health

Figure 4.2b Collinearity Diagnostics

Collinearity Diagnostics test results in figures 4.2a, 4.2b, seen Eigenvalue values more than 0.01 dsan Condition Index values less than 30 then it can be concluded that there is no multicollinearity in the regression model used.

4.3 Canonical Correlation Test Results.

Multivariate Tests of Significance (S = 1, M = 0, N = 156)

Test Name Value Exact F Hypoth. DF Error DF Sig. of F

Pillais 0.18288 17,23361 2,00 154,00 ,000

Hotellings 0.22381 17,23361 2,00 154,00 ,000

Wilks 0.81712 17,23361 2,00 154,00 ,000

Roys 0.18288

4.3.1 Eigenvalues and Canonical Correlations

Root No.	Eigenvalue	Pct.	Cum. Pct.	Canon Cor.	Sq. Cor
1	0.22381	100,00000	100,00000	0.42765	0,18288

Canonical Correlation 0.427 or 42.7% Bantar Gebang landfills are able to explain 42.7% of community income and community disease in three kelurahan, namely Ciketingudik, Sumur Batu and Cikiwul.

4.3.2 Canonical Loading

Correlations between DEPENDENT and canonical variables
 Function No.

Variable	1
Y1	0.29856
Y2	0.97730

Correlations between COVARIATES and canonical variables
 CAN. VAR.

Covariate	1
X	1,00000

For the function of one dependent variable Y1 (community income) gives a canonical loading rate of 0.29856 or 29.8% and the function of two terika variables Y2 (public health) gives a canonical loading number of 0.97730 or 97.7%. From the canonical loading results above it can be concluded that the dump Bantar Gebang Integrated Waste (TPST) has a significant influence on the spread of the disease in communities especially malaria, ARI and Diarrhea, while for community income, Bantar Gebang waste disposal site (TPST) has no significant effect.

V. CONCLUSIONS AND SUGGESTIONS

1. Conclusions

Bantar Gebang Waste Disposal Site (TPST) is not very useful for the life of the local community because the results of the study prove that the effect is very significant on the spread of the disease in the community but not significantly on the increase in the income of the local community.

2. Suggestions

May the government pay more attention to the condition of the community around the Bantar Gebang Integrated Waste Disposal Site (TPST) so that people's unrest does not increase.

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