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Economic Analysis of Externalities and Willingness to Accept for Waste Disposal Activities

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Abstract: Economic Analysis of Externalities and Willingness to Accept for Waste Disposal Activities

Bantargebang integrated landfill has been assigned by Jakarta Provincial Government as a landfill for its area. The large amount of waste has a large impact and considered to have more negative impact, thus causing great losses to the local community. Jakarta Provincial Government has provided compensation but there are still complaints from residents that the compensation received has not been able to compensate all losses. This research aims to analyse the amount of compensation funds that should be received by the community and the factors that affect the community's willingness to accept, as well as to examine the impact or externalities felt by residents. The result of analysis show that the community wants a higher compensation fund than before, which is Rp497,540.98 per head of the family per month. Factors that affecting willingness to accept significantly are income, impact-specific expenses, education, type of work and distance of residence. And then there are negative externality caused by Bantargebang integrated landfill that are polluted water, piles of garbage making the air unkind to breathe and health problems. But there are also positive externality that are an increase in regional facilities and infrastructure, the creation of an increase in income and employment. Therefore, it shows the fact that people who are willing to accept compensation are greater than those who are not willing to accept compensation. It means that most people want an increase in the compensation funds they must accept from the existence of the Bantargebang Integrated Landfill. Thus, it should be a good momentum for the government to follow up through supporting actions.

Keywords: Externalities; Willingness to Accept;Waste; Landfill; Contingent Valuation Method

INTRODUCTION

The environment is the most important thing because the availability of natural resources creates dependence for humans to fulfil their needs. Humans have an important role in the environment, namely as environmental actors. Humans have the right to the environment, but also have an obligation to be responsible for the maintenance of the environment so as not to cause environmental problems. Environmental problems arise from the interaction of human activity with the use of natural resources that do not pay attention to the balance of the environment. This causes a decrease in environmental quality and even damage. Natural resources have played an important role in human life because the availability of natural resources creates absolute dependence and human needs. Natural resources need to be paid attention to so as not to cause environmental problems. Rapid economic growth without paying attention to environmental balance will further complicate handling so that it can have a negative impact on human welfare through decreasing environmental quality and even damage (Simarmata et al., 2021).

One of the environmental problems is the waste problem. The rapid population growth every year has an impact on increasing human activities which results in a high volume of waste. Non-optimal and inefficient waste management can have a negative impact on survival and can cause pollution such as water, soil, and air pollution (TEMPO Publishing, 2020). One of the regions in Indonesia that produces large amounts of waste every day is DKI Jakarta Province. In maintaining and improving the image of Jakarta with its position as the Capital of Indonesia, the hygiene factor is one of the elements that must be maintained and gets priority handling (TEMPO Publishing, 2020). The Bantargebang Integrated Landfill with an area of 110.3 hectares is designated as the final location in waste management for DKI Jakarta Province. Bantargebang Integrated Landfil has been managed by the DKI Jakarta Provincial Government since 1989. Technically, Bantargebang Integrated Landfill applies the Sanitary Landfill method, which is a method of hoarding garbage to a concave place and then stacked with soil in layers (DKI Jakarta Provincial Environmental Agency, 2021).

Every day, waste generated from Special Capital District of Jakarta Province is sent to Bantargebang Integrated Landfill. The large amount of waste sent to the Bantargebang Integrated Landfill makes there is a mountain of waste about 40 meters high which has caused heavy losses to the local community. Mountains of waste that are not sorted waste from upstream can cause unpleasant odors to become a source of disease for the community (CNN Indonesia, 2021).

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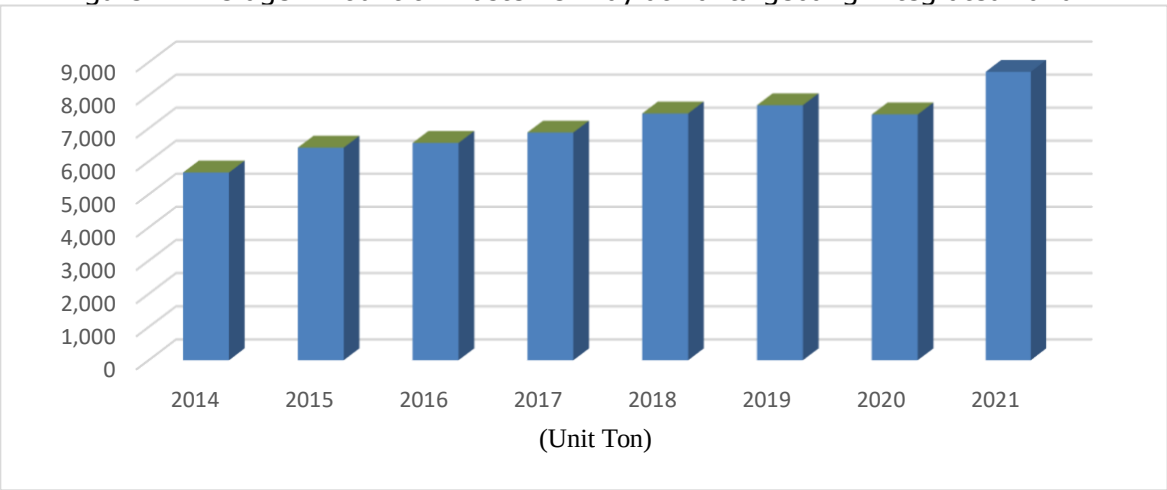
Figure 1. Average Amount of Waste Per Day at Bantargebang Integrated Landfill



Source: Special Capital District of DKI Jakarta Provincial Environmental Agency in 2022

The average amount of waste per day from the five regions of Special Capital District of Jakarta Province for each year has an increasing trend. The average waste in 2014 was 5,665 tons and continued to increase with the largest increase in 2019 of 7,702 tons per day. However, in 2020 the average amount of waste per day decreased by 3.6 percent, which was 7,424 tons and then increased again in 2021, which was 8,713 tons.

The residents who feel the loss due to the existence of the Bantargebang integrated landfill must receive compensation which in this case is in the form of compensation for the impact of the environmental damage they occupy. The DKI Jakarta Provincial Government has allocated a fairly large budget for waste management, but there are still many residents who complain about the amount of compensation that has been received previously because it has not been able to help compensate for the losses they have to spend.

One of the villages that is part of the Bantargebang integrated landfill area is Ciketing Udik Village with a total land surface area of 343.34 hectares and 72 hectares of land used for garbage disposal. This has had an unfavorable impact on the Ciketing Udik village. Bantargebang integrated landfill that has not been managed properly and optimally makes pollution worse and affects environmental conditions (Bantargebang District Bekasi City, 2021).

Moreover, Bantargebang Integrated Landfill had an impact on the community. For public health, waste is a breeding ground for viruses and bacteria so that it can cause various diseases such as respiratory infections (ARI), diarrhea and dengue fever (DHF). For the environment, it can cause air pollution because the air inhaled by the community is not good because it is mixed with the smell of garbage and factory smoke around the community's

residence. In addition, there is also water pollution where the surface of the well water is polluted by leachate water infiltration containing harmful substances caused by the management of landfills that are still left open (open dumping). The number of disease cases by type in Ciketing Udik Village from 2020 to 2021 is described in Table 1 below:

Table 1. Number of Cases Based on The Type of Disease in Ciketing Udik Village

Type of Diseases	Number of Cases Per a Year	
	2020	2021
Dermatitis	201	382
Respiratory Tract Infection/ISPA	198	237
Hypertension	165	255
Cough and Cold	150	221
Acute Pharyngitis	138	219
Fever	129	217
Myalgia	119	105
DM Non Insulin Dependent	111	198
Gastritis	98	151
Diarrhea	82	137

Sources: Ciketing Udik Village Health Center on 2021

The existence of the Bantargebang Integrated Landfill causes health problems for the community in Ciketing Udik Village (see at Table 1). The types of diseases caused by the presence of Bantargebang Integrated Landfill include dermatitis, respiratory infections (ARI) and diarrhea where the number of cases of the three diseases for each year has increased. Bantargebang Integrated Landfill is considered to have more negative impacts, both impacts on health for the community and impacts on reducing environmental quality such as water pollution caused by leachate water, air pollution caused by gases produced from waste decay and soil pollution caused by chemical substances from garbage that interfere with soil fertility (DKI Jakarta Provincial Environment Agency, 2021; Domitila et al., 2016).

This study is in line with previous one which analyzed the amount of compensation value that is willing to be received by the community. However, there are differences from this study with previous one, where in this study analyzed the amount of compensation value for people who had received compensation, but because of the very large externality of the existence of the Bantargebang Integrated Landfill, it was necessary to review the amount of compensation value that should be received by the community with the addition of new variables, namely special impact expenditures. Based on the explanation above, the researcher considers it necessary to have a study to review the amount of compensation funds that local communities want to receive, by also assessing the impacts or externalities felt by residents so that they are used as a basis and are expected to be used as a

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consideration for local governments regarding compensation funds for the existence of the Bantargebang Integrated Landfill.

LITERATURE REVIEW

According to Dwyer et al (2020) that CVM method is used to estimate the unused value in relation to all goods including goods that are not available in the market such as environmental services and the WTA is used to measure the compensation that the public is willing to receive for the losses suffered. This is supported by Burair and Prabowo (2022) who stated that CVM method is appropriately used to measure the value of environmental pollution and the WTA is used to measure the willingness of compensation so that the environmental condition returns to normal.

However, according to Purba et al. (2020) stated that the WTA is appropriate to use for environmental assessment, but it is not appropriate to use it for respondents who think the surrounding environmental resources are irreplaceable, or in other words, the respondent will provide a very high selling price. This is because to avoid losses, a person will tend to give greater value to losses.

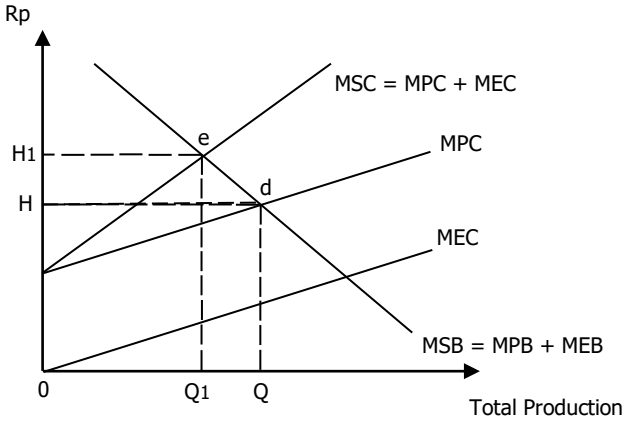
In this case, to assess the environment, so that the above phenomena do not occur, a method of assessment of environmental impacts is needed. One of the methods used is the approach method on the basis of surveys. This approach assesses the environment from the opinions of environmental users regarding the willingness to pay for environmental goods and services and measures the willingness to accept from activities that damage the environment. In its implementation, one of the approaches taken is the auction approach which is carried out with repeated interviews to find out the maximum amount paid and the minimum amount willing to receive. In addition, it can use the converging bid approach method, where the amount of willingness to pay will continue to be raised until the person is not willing to pay. The amount of willingness to receive a fee will be lowered continuously until the amount of the offered fee is found (Dwyer et al., 2020).

According to Yunus and Anas (2021) that externality is an impact arising from the actions of a person or party on the welfare or condition of another person and the person does not pay or receive compensation from the impact of that action. This is supported by Barus and Suparna (2020) who state that externalities occur at a time when one's actions exert an effect on others and costs and profits cannot be reflected in market prices.

However, according to Rossa et al. (2021) that externalities arise due to human activities that do not follow environmentally sound economic principles. Externalities in an activity that are not in the market mechanism will give rise to inefficiency. Inefficiency arises due to the influence of an action and is not reflected in the price system. For example, externalities in the form of air pollution caused by a factory due to the need for combustion in the production process of an item. The air pollution then causes a decrease in the quality of the air inhaled by the community, causing people to experience respiratory health problems. The costs borne by the community to reduce externalities, namely health problems, are not reflected in the market price so that the community suffers heavy losses.

Therefore, the burden borne by the community will certainly be difficult if it is claimed directly to the party who committed the pollution. Kadariah et al. (2022) states that there are two conditions for the occurrence of externalities, namely the effect of an action, and the absence of compensation paid or received. Therefore, it is necessary to internalize externalities where the polluting party includes the cost of social benefits so that the losses felt by third parties can be reflected in market prices. The condition of losses felt by third party should be compensate as well as market price reflection. In addition, the government can issue a policy regulating the tariff burden for those who commit pollution, which in turn is used to improve the quality of health services for the community. Then, Figure 2 describes the condition of inefficiency due to the externalities.

Figure 2. Negative Production Externality Curve



Sources: (Rossa et al., 2021)

Information:
MEC = *Marginal External Costs* MPB = *Marginal Private Benefits*

EcceS:
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Fakultas Ekonomi dan Bisnis Islam, UIN Alauddin Makassar
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MEB = *Marginal External Benefits* MSC = *Marginal Social Costs*

MPC = *Marginal Private Costs* MSB = *Marginal Social Benefits*

As explained by Rossa et al. (2021) that externalities cause inefficiency. This means that there are activities that are not included in the market price mechanism. Efficiency will be achieved if (MSC = MPC + MEC) = (MSB = MPB + MEB). The curve in Figure 2 explains that in the beginning every company in carrying out production never considers the costs as well as the impact of its production externalities. In this case, the company does not consider the MEC and MEB into the calculation of prices and production levels. If production activities cause negative externalities, the MEC > 0 and MEB = 0. This means that MPC < MSC where the company's production costs are smaller than the external costs that must be shouldered by the community so that there is a tendency for companies to produce at too large a level. If MSC > MSB then the company's production really needs to be reduced for economic efficiency to be achieved (Rossa et al., 2021).

METHODS

This research used primary data obtained from the results of the distribution of questionnaires, interviews, observations and data from the Special Capital District of Jakarta Provincial Environmental Agency. The object in this study was the residents of Ciketing Udik Village where purposively selected as a community residing around the Bantargebang Integrated Landfill. The head of the family was selected purposively taking into account the respondent's knowledge of the Bantargebang Integrated Landfill. The total population of this research is 7,732 heads of families and the minimum sample to be taken is 100 heads of families residing in Ciketing Udik Village. The analytical techniques used in this study is willingness to accept analysis.

Descriptive Statistical Analysis

Descriptive statistical analysis was used to analyze the externality of the presence of Bantargebang Integrated Landfill. Descriptive statistics are statistics that are used to analyze data by describing or providing an overview of the data that has been collected without making general conclusions or generalizations (Sugiyono, 2021). In analyzing the data, this method looks at the average (mean), minimum, maximum, and standard deviation values on predetermined variables to describe the data (Ghozali, 2021).

Willingness To Accept Analysis

In the operational stage of applying the contingent valuation method (CVM) approach, there are six stages of activity or process including:

1) Building a Hypothetical Market

The hypothesis market in this study was formed on the basis of the existence of Bantargebang Integrated Landfill which provides positive externalities and negative externalities. Bantargebang Integrated Landfill can provide economic opportunities but can also cause negative impacts felt by the surrounding community such as pollution, bad odors, roads that are prone because they are the main traffic of garbage trucks, prone to landslides and public health problems. These negative externalities cause losses to the communities around Bantargebang Integrated Landfill. With so many losses felt by the community, there needs to be comparable compensation that must be paid by local governments to the community from a decrease in environmental quality.

2) Obtaining WTA's Offer Value

The method used in obtaining WTA scores in this study is the game bidding method where respondents will be offered a certain amount of compensation value until they reach the minimum offer of compensation that the respondent is willing to accept.

The game bidding method in this study started at a maximum bid of IDR 550,000 / KK / month which was chosen assuming that the value could compensate the community to meet their needs such as the cost of replacing clean water, the cost of purchasing air fresheners and the cost of treatment. And with the consideration that if later the government will increase the compensation value for the community around the Bantargebang Integrated Landfill, then the compensation value will not be much increased from the previous compensation value of RP350,000 / KK / month.

The minimum offer of IDR 350,000/KK/month is chosen assuming that the value is the compensation value that has been given by the previous government. In other words, if the respondent chooses the minimum value of compensation, this means that the respondent is not willing to accept the new compensation on the grounds that the compensation that has been given has been sufficient for his living needs and is reluctant to trouble himself by thinking about government compensation.

EcceS:
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Fakultas Ekonomi dan Bisnis Islam, UIN Alauddin Makassar
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3) Estimating the Average Value of the WTA

The average value of the WTA can be calculated by the following formula:

$$EWTA = \frac{\sum_{t=0}^{n} WTAxi}{n}$$

Information:

EWTA = Alleged average value of WTA

WTAxi = I-th WTA value

n = Number of respondents

i = i-th respondent who is willing to receive compensation funds (i=1.2,...,k)

4) Determining the total of WTA

Data summation is the process by which the average value of the offer is converted against the population in question. After suspecting the middle value of the WTA, it can be suspected that the WTA value from the community with the following formula:

$$TWTA = \sum_{i=1}^{n} EWTAi \ \ ni$$

Information:

TWTA = Total WTA

EWTAi = Average WTA value

i = i-th respondent willing to accept compensation funds

ni = Number of i-th samples willing to accept WTA

5) Implementation Evaluation

This evaluation of implementation relates to the extent of the success rate in the use of CVM. The implementation of the CVM model can be evaluated by looking at the reliability level (reliability) of the WTA function by looking at the R-Square value of the WTA multiple regression model. The minimum value of parameters relating to environmental objects at least the adjusted value of R^2 is 15 percent.

Logistic Regression Analysis

Logistics Model Analysis is used to test whether the probability of occurrence of a bound variable can be predicted with its free variable. The form of the Logit model in this study is as follows:

$$\gamma = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + \beta_7 X_7 + + \mu_1 \quad (1)$$

Where, y is the value of the willingness to accept society, β_0 is the Intercept or constant number, then, β_1, β_2, β_3, β_4, β_5, β_6, β_7 is the value of the regression coefficient, X_1 is Income (rupiah); X_2 is Impact-Specific Expenditure (rupiah); X_3 is Education (years); X_4 is Occupation; X_5 is Age (years); X_6 is the Distance of Residence (kilometers); while X_7 is the Number of Family Dependents (persons), μ is residual.

Significance testing on logistic regression can be carried out in two stages, namely simultaneous testing using the overall fit model feasibility test (overall fit model) and partial testing using the wald test. The tests used in logistic regression include the Likelihood L Test, Omnibus Test, Cox and Snell's R-Square test and Nagelkerke's R-Square, Hosmer test and Lemeshow's Goodness of fit test, and Wald Test (Ghozali, 2021).

RESULT AND DISCUSSION

Descriptive Statistical Analysis

The results of the ten questionnaire statements indicate that the mean value of each statement is greater than the standard deviation value so that it can be known that the distribution of the sample value is evenly distributed, and the mean value can be used as a representation of the entire data. The following is Table 2 which illustrates those results.

Table 2. Questionnaire Descriptive Statistics Output Results

No	Statement	Mean	Std. Deviation	Criteria
1	There is a positive impact from the Bantargebang TPST	2.97	0.979	sufficient
2	There is an increase in income from TPST Bantargebang	2.94	1.031	sufficient
3	Open job opportunities for the community	2.89	1.225	sufficient
4	There is a negative impact from the Bantargebang TPST	3.64	1.021	high
5	Increased spending to reduce negative impacts	3.33	1.079	sufficient
6	TPST Bantargebang pollutes water	3.26	1.119	sufficient
7	Spending money to get clean water	3.45	1.267	high
8	Bantargebang TPST causes air pollution	4.00	0.953	high
9	Spending money to reduce bad odors	3.49	1.030	high
10	Having health problems at least once a month	3.19	1.188	sufficient

Source: Primary data output after processing, 2022; (Agus, 2022).

Externalities Analysis

Positive externalities that can be felt by the community from the existence of the Bantargebang Integrated Landfill include the increase in regional facilities and infrastructure as

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a form of responsibility of the Special Capital District of Jakarta Provincial Government for land use. One of them is the Ciketing Udik Rainfall Post Folder which is shaped like an artificial reservoir that is used to absorb rainwater so that it does not stagnate on the road and reduce the risk of flooding. In addition, there is the construction of an Artesian Well where this development is an assistance provided by the Special Capital District of Jakarta Provincial Government for communities around the Bantargebang Integrated Landfill who are experiencing polluted water. Of course, those new facilities are very useful and provide more benefits for the community (Wang et al., 2019; Shishany et al., 2020).

In addition, increased income for people who make a living as scavengers as well as collectors where the piles of waste are their source of income. In addition, there are jobs for the local community. In operating the Bantargebang Integrated Landfill for each day, several stages are needed that need to be passed. Therefore, many workers are needed for the operation of the Bantargebang Integrated Landfill every day so that this causes the opening of jobs for the local community. Based on the interview results, the types of jobs that are most needed for the operation of Bantargebang Integrated Landfill include employees /workers of compost recycling plants, garbage truck washing employees, security guards, and broomstickers (Al-Assaf et al., 2021; Scheiter et al., 2019; Arowolo et al., 2018).

Meanwhile, the negative externalities that can be felt by the community from the existence of the Bantargebang Integrated Landfill include a decrease in the quality of the air they breathe. This is caused by the unpleasant smell caused by the pile of garbage and the location of Ciketing Udik Village, which is several parts of the area adjacent to the Bantargebang Integrated Landfill. Mixed waste undergoes a decomposition process and produces gases such as Hydrogen Sulfide (H2S), Methane (CH4), and Ammonia (NH3) gases, which if left unchecked will add damage to air quality (Woldeyohannes et al., 2020; Scheiter et al., 2019; Boone et al., 2018; Arowolo et al., 2018). The danger of evaporating garbage gas is flammable, so it is prone to fire.

In addition, polluted water. This is because there are areas where residents live that have good well water but there are also areas that have poor or polluted well water. A closer residential distance of about 0 to 3 kilometers from the Bantargebang Integrated Landfill tends to cause residents' well water to be polluted. This is caused by the garbage that is landfilled and left will decay so that it produces leachate water or garbage water, which in the end the leachate water absorbs into the soil and has an impact on reducing the oxygen level in the water so that the quality of the water is no longer suitable and dangerous for use by

humans. As well as health problems caused by piles of garbage that become a breeding ground for bacteria and viruses and the air mixed with gas from the evaporation of garbage is the cause of disease (Cornwall et al., 2020; Wilson & Wiysonge, 2020; Scheiter et al., 2019; Boone et al., 2018; Arowolo et al., 2018).

Willingness To Accept Analysis

1) Building a Hypothetical Market

Each respondent was given information assuming that the Bantargebang Integrated Landfill had a great impact on the surrounding community, both positive and negative impacts. The provision of existing compensation is a form of accountability of the Special Capital District of Jakarta Provincial Government for the use of land as a waste shelter for its territory and is a payment for the value of losses caused by a decrease in environmental quality. There is a plan to increase the compensation value from the government, but it has not been implemented and is still under consideration for the government. In this regard, the community is expected to provide the compensation value that is expected. The compensation with the market price approach is a better consideration because the value of the loss can be relatively easily covered by the expected market price (Li et al., 2021; Leviston et al., 2018; Haines-Young & Potschin-Young, 2018)

2) Obtaining WTA's Offer Value

Table 3. WTA Distribution of Respondents

No	WTA's Value (Head of Family/a month)	Number of Respondents	Percentage (%)
1	Rp350,000	1	0.82
2	Rp400,000	30	24.59
3	Rp450,000	3	2.46
4	Rp500,000	28	22.95
5	Rp550,000	60	49.18
Total		122	100.00

Source: Primary data output after processing, 2022; (Agus, 2022).

Most respondents, namely 91 respondents, wanted an increase in the compensation fund received and as many as 31 respondents were willing to accept the value of the compensation offer that had been given previously or it could be interpreted that the respondent was satisfied with the compensation that had been given by the government. This finding supports previous researches that people agree with the compensation by the government (Al-Assaf et al., 2021; Woldeyohannes et al., 2020; Scheiter et al., 2019; Wang & Wolf, 2019; Wang et al., 2019).

EcceS:
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3) Estimating the Average Value of the WTA

Table 4. Respondent's WTA Average Value

No	WTA's Value (Head of Family/ a month) = a	Number of Respondents (people) = b	Relative Frequency = c	Total of WTA (a Month) d = a*b
1.	Rp350,000	1	0.008	Rp350,000
2.	Rp400,000	30	0.246	Rp12,000,000
3.	Rp450,000	3	0.025	Rp1,350,000
4.	Rp500,000	28	0.229	Rp14,000,000
5.	Rp550,000	60	0.492	Rp33,000,000
	Total	122 (e)	1	Rp60,700,000 (f)
		Average of WTA = f/e		Rp497,540.98

Source: Primary data output after processing, 2022; (Agus, 2022).

The average WTA value of respondents was Rp497,540.98/Head of Family/a month or Rp1,492,622.95/Head of Family/Quarterly.

4) Determining the Total Value of the WTA

The total value of the WTA can be calculated by converting between the average WTA value and the total population. Based on the data that has been obtained, the calculation of the total value of the WTA is detailed as follows:

$$TWTA = \sum_{i=1}^{n} EWTAi \ ni$$

$$TWTA = \sum_{i=1}^{122} 497.540{,}98 \ x \ 91 \ x \ i$$

$$TWTA = (497.540{,}98 \ x \ 91 \ x \ 1) + (497.540{,}98 \ x \ 91 \ x \ 2)$$

$$+ \ \ldots\ldots + (487.540{,}98 \ x \ 91 \ x \ 122)$$

$$TWTA = \ \text{Rp}339.707.547.537{,}54$$

Information:

TWTA = Total WTA

EWTAi = Average WTA value

i = i-th respondent willing to accept compensation funds

ni = Number of i-th samples willing to accept WTA

Based on the calculation results, the total WTA value or compensation value that needs to be given by the Special Capital District of Jakarta Provincial Government is IDR 339,707,547,537.54 per year. The total value of the WTA illustrates that people want an increase in the compensation fund because they feel disadvantaged by the decline in the

quality of the environment around their residences. This finding supports previous researches there needs to be an increase in compensation for better maintenances and comfortable environment (Al-Assaf et al., 2021; Li et al., 2021; Woldeyohannes et al., 2020).

5) Implementation Evaluation

Table 5. WTA Multiple Linear Regression Results

Model	R	R-*Square*	*Adjusted* R-*Square*
1	0,28	0,530	0,501

Source: Primary data output after processing, 2022; (Agus, 2022).

Based on Table 5 it can be known that the adjusted value of R-Square is 0.501 or 50.1 percent so that it can be concluded that the results of the implementation of the CVM method can be believed to be correct and have reliable measurements.

Logistic Regression Analysis

In conducting the analysis using logistic regression, a test is needed to find out whether the model used in the study has qualified as a good model/suitable model for further analysis. The overall feasibility test of the model obtained the following results:

Table 6. Model Overall Feasibility Test

Statistic Test	Value	Conclusion
Likelihood L Test	-2 Log Likelihood = 77.674 Chi-Square Table = 139.92	Model fit with data
Omnibus Test	Sig. 0.00 (Sig. < 0.05)	Model fit with data
Nagelkerke's R-Square Test	0.902 = 90.2%	Model fit with data
Hosmer Test dan Lemeshow's Goodness of fit test	Sig. 0.999 (Sig > 0.05)	Model fit with data

Source: Primary data output after processing, 2022; (Agus, 2022).

The value of -2 log likelihood which is 77.674 is smaller than the table chi-square value of 139.920774 so it can be said that the logistic equation by including independent variables is worth using. Meanwhile, the significance of the omnibus test is 0.000 and the value is smaller than alpha by 0.05 so it can be interpreted that the model used in this study is feasible to use and is appropriate for the next analysis.

The value of the Nagelkerke R-Square is 0.902 or 90.2 percent and it can be interpreted that the independent variable is able to explain the information to predict the dependent variable by 90.2 percent. Meanwhile, the significance of the regression output is 0.999 where the value is greater than alpha by 0.05 so it can be interpreted that the model is able to predict its observation value, or it can be said that the model is acceptable because it

EcceS:
Economics, Social, and Development Studies
Fakultas Ekonomi dan Bisnis Islam, UIN Alauddin Makassar
Volume 9 Number 2 Ed. December 2022: page:171-192
p-ISSN: 2407-6635 e-ISSN : 2580-5570

matches its observation data.

After the model used has qualified as a fit model, a wald test is carried out to determine the influence of independent variables on dependent variables partially. The results of the wald test are as follows:

Table 7. Wald Test Analysis Results

Variables	Wald	Sig.	Exp(B)	Conclusion
Income	9,383	*0,002	1,000	Significant
Impact-Specific Expenditure	5,158	*0,023	1,000	Significant
Education	3,940	*0,047	1,699	Significant
Occupation	10,033	*0,002	0,000	Significant
Age	3,238	0,072	0,813	Not Significant
Distance of Residence	10,314	*0,001	0,000	Significant
Number of Family Dependents	0,058	0,810	0,879	Not Significant

Information: *5 Percent of Significance

Source: Primary data output after processing, 2022; (Agus, 2022).

Based on the results of the wald test analysis, it is known that variables that have a significant influence on respondent's willingness to receive compensation (WTA) include income variables, special expenditures, education, employment, and distance of residence. Meanwhile, the other two variables, namely the age variable and the number of family dependents, did not have a significant influence on the respondent's willingness to receive compensation (WTA).

The income variable has a positive and significant influence on the amount of WTA value that respondents want and means that the higher the income of the community, the higher the amount of WTA value desired. This is in line with The General Theory of Keynes which states that psychologically the higher a person's income, the higher the consumption in the household even though it is not as large as the increase in income so that it also causes income to have a positive effect on the amount of WTA value of society. This research supports previous research which states that income has a positive and significant effect on the compensation value (WTA) desired by the community (Erfrissadona et al., 2020).

The special expenditure variable of impact has a positive and significant influence on the amount of WTA value desired by respondents and means that the higher the expenditure that must be spent to reduce the negative impact of the existence of the Bantargebang Integrated Landfill, the higher the amount of compensation value desired by the community. The negative impact that must be felt by the community is already very detrimental and added that most people need to spend costs that should be saved but used to reduce the negative impact of the existence of the Bantargebang Integrated Landfill so that this causes

the community to want a higher compensation value. Therefore, this study is in line with the previous research that respondents' expenses have a positive and significant effect on the amount of compensation value desired by respondents (Li et al., 2021; Shishany et al., 2020; Hasbiah et al., 2020).

Education variables have a positive and significant influence on the amount of WTA value desired by respondents and gives the meaning that the higher the respondent's education, the respondent will understand and be aware of the importance of environmental pollution efforts so that the lower the desired compensation or WTA value. The negative impact caused by the existence of the Bantargebang Integrated Landfill is very large so that the community is increasingly critical of the quality of the surrounding environment. The negative impacts caused by the Bantargebang Integrated Landfill and felt by the community need to be paid with appropriate compensation because the decline in environmental quality that occurs has a long-term impact. This research is in line with other researches which states that the higher a person's level of education, the higher the desired compensation or WTA value (Burair & Prabowo et al., 2022; Wang et al., 2019; Leviston et al., 2018).

The job variable has a negative and significant influence on the amount of WTA value that the respondent wants and gives the meaning that the higher the positive impact that a person feels that affects his work, the person is likely to want a low level of compensation. According to the survey results, respondents with jobs dependent on Bantargebang Integrated Landfill such as scavengers, collectors, UPST employees tend to be satisfied with the existence of Bantargebang Integrated Landfill because it is considered profitable, so respondents tend not to want large compensation. Meanwhile, respondents with jobs do not depend on Bantargebang Integrated Landfill such as self-employed, traders, company employees tend to be dissatisfied with the existence of Bantargebang Integrated Landfill because it is considered detrimental and unfavorable for them so that respondents want higher compensation. This research is in line with other researches which state that the type of work has a negative and significant effect on the amount of compensation desired by respondents (McDougall et al., 2020; Hasbiah et al., 2020; Audureau et al., 2019; Haines-Young & Potschin-Young, 2018).

The age variable did not have a significant effect on the amount of WTA value that respondents wanted. This is because age is not a benchmark for measuring a person's needs because it could be that the older the more a person's needs increase. The results supports previous research which shows that age does not have a significant influence on the amount

EcceS:
Economics, Social, and Development Studies
Fakultas Ekonomi dan Bisnis Islam, UIN Alauddin Makassar
Volume 9 Number 2 Ed. December 2022: page:171-192
p-ISSN: 2407-6635 e-ISSN : 2580-5570

of compensation value (WTA) that people want (Burair & Prabowo et al., 2022; McDougall et al., 2020; Wolff et al., 2020; Audureau et al., 2019).

The variable distance of residence has a negative and significant influence on the amount of WTA value that respondents want and gives the meaning that the smaller the distance between the respondent's residence and the Bantargebang Integrated Landfill, the greater the compensation value that the respondent wants. According to the survey results, respondents whose residential distance is close to the Bantargebang Integrated Landfill tend to want a higher compensation value. This is because there are more negative impacts and losses that must be felt such as polluted water, stronger unpleasant odors and prone to floods and landslides. Therefore, the distance of residence has a significant effect on the amount of compensation value desired by the community. The previous researches also stated that the distance of residence has a negative and significant effect on the amount of WTA value of the community (Burair & Prabowo et al., 2022; Li et al. 2021; Wolff et al., 2020; Audureau et al., 2019).

The variable number of family dependents had no significant effect on the amount of WTA value that respondents wanted, which can be indicated that the lower the number of dependents a household's family is not necessarily willing to receive less compensation. This is because the small number of dependents in a household is unable to identify that the household expenditure is small. Some respondents felt that the losses that needed to be borne due to the negative impact of the Bantargebang Integrated Landfill were high, so they still wanted an increase in the compensation fund even though the number of dependents of their families was small. Therefore, this study is in line with previous researches which state that the number of family dependents does not have a significant influence on the amount of compensation value that society wanted (Li et al. 2021; Shishany et al., 2020; Erfrissadona et al., 2020; Wang et al., 2019).

CONCLUSION

Positive externalities arising from the existence of the Bantargebang Integrated Landfill include an increase in regional facilities and infrastructure such as the construction of flood-prone post folders, the construction of artesian wells, and road repairs every quarter. In addition, there are opportunities for increasing income and creating jobs. Then the results of the study stated that there were also negative externalities where the existence of the Bantargebang Integrated Landfill caused polluted water, the air was not good to breathe,

health problems, slippery roads because it was an access to garbage trucks so that it was prone to accidents, prone to flooding, and prone to landslides.

Based on the results of the study, it was found that as many as 91 respondents chose to be willing to receive compensation or it can be said that these respondents wanted an increase in the amount of compensation funds and as many as 31 respondents were satisfied with the amount of the existing compensation fund. The results of the research stated that the average WTA value of respondents was IDR 497,540.98/Head of Family/ a month, with the total WTA value for the people of Ciketing Udik Village of IDR 339,707,547.54 per year.

Based on the results of the analysis and discussion of the research, the implications that can be stated are as follows: 1). The government can socialize the importance of sorting and utilizing waste from upstream or from the source of origin of waste. The government needs to appeal to the public to sort the waste first before the waste is disposed of and transported. This is done to make it easier to group waste to be planned to be reused or destroyed so that it can help in waste management at the Bantargebang Integrated Landfill. 2). Based on the results of data analysis, the percentage of people who choose to be willing to receive compensation is greater than the people who are not willing to receive compensation. This means that most people want an increase in the compensation fund that they must receive from the existence of the Bantargebang Integrated Landfill. In setting and implementing policies, the government needs to adjust to the wishes of the community, such as related to the value of compensation or WTA that is actually desired by the community. The value of the compensation fund that should be given to the community is IDR 497,540.98/Head of Family/a month or IDR 1,492,622.95/Head of Family/Qaurterly. 3). Because this study only analyzes the externalities of the Bantargebang Integrated Landfill descriptively, other research on the Bantargebang Integrated Landfill is needed, especially examining the externalities and economic benefits of the existence of the Bantargebang Integrated Landfill which assesses in real terms using the calculation of environmental economic valuations.

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Economics, Social, and Development Studies
Fakultas Ekonomi dan Bisnis Islam, UIN Alauddin Makassar
Volume 9 Number 2 Ed. December 2022: page:171-192
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