AN ANALYSIS OF THE EFFECT OF EDUCATION LEVEL, AGE, AND WASTE PRICE ON THE PARTICIPATION OF WASTE BANK MEMBERS IN KESIMAN KERTALANGU VILLAGE

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Abstract

This study analyzes the influence of education level, age, and waste prices on the participation of waste bank members in Kesiman Kertalangu Village. The main focus of this research is to address the increasing volume of waste in Denpasar and the low level of participation in local waste bank initiatives. This research employs an associative quantitative approach, with education level, age, and waste prices as the independent variables, and community participation as the dependent variable. Data were collected from 73 respondents, who are part of the 268 registered customers of the waste bank in Kesiman Kertalangu Village, determined using an accidental sampling method. The results of the study conclude that education level, age, and waste prices simultaneously have a significant influence on community participation in the waste bank program in Kesiman Kertalangu Village. Partially, the variables of education level, age, and waste prices also show a positive and significant influence on community participation. Higher education levels increase awareness and understanding; older age groups tend to participate more actively; and higher waste prices serve as an economic incentive.

Keywords: Community Participation, Waste Bank, Education Level, Age, Price, Denpasar, Kesiman Kertalangu.

INTRODUCTION

Rapid economic growth has been a significant global phenomenon over the past two centuries. This growth has brought about profound changes in the world during this period compared to earlier times (Kembar, 2013). Today, the world is experiencing a substantial increase in population, which contributes to various social, economic, and environmental issues. The continuously growing population leads to increased economic activities, both in terms of production and consumption, which in turn escalates pollution and environmental degradation. Waste is one of the primary contributors to environmental problems. The accumulation and improper disposal of waste can create numerous issues, particularly for the environment.

According to MKU UNNES (2010:18), as cited in Anisatul (2016), several key factors contributing to environmental problems include high population growth, increasing quantity and quality of waste, and transboundary pollution. Azwar (1990)

explains in his book that waste refers to anything that is no longer used, usable, or desirable, and therefore needs to be discarded.

Data from the National Waste Management Information System (SIPSN) of the Ministry of Environment and Forestry (KLHK) in 2022, based on input from 202 cities/regencies across Indonesia, shows that the total national waste generation reached 21.1 million tons. Of this amount, 65.71% (13.9 million tons) was managed properly, while the remaining 34.29% (7.2 million tons) was not adequately managed. This significant proportion of unmanaged waste requires urgent attention and collaborative efforts from all stakeholders.

Denpasar City, one of the most densely populated areas in Bali Province and the administrative capital of Bali, continues to experience significant annual population growth. In 2017, Denpasar had a population of 914,300, which steadily increased to 962,900 by 2020.

Source: Denpasar City Central Statistics Agency

Figure 1. Population Growth of Denpasar City from 2017 to 2020

Figure 1 shows that the population of Denpasar City has consistently increased every year. As the population continues to grow annually, Denpasar City inevitably faces waste-related issues, leading to an increasing volume of waste in each sub-district throughout the city.

Denpasar City generates approximately 957.59 tons of waste per day, equivalent to 349.52 thousand tons per year. Furthermore, according to the Bali Provincial Environmental Agency (2023), the waste generated in the province—particularly in Denpasar City—has not been fully managed. Of the total waste volume of 349.52 thousand tons, only 93.23% (325.86 thousand tons) is properly managed, while 6.77% (23.66 thousand tons) remains unmanaged. This unmanaged waste poses serious environmental risks.

The impacts of household activities include the release of foul odors from the degradation of organic solid waste by microorganisms. This unpleasant smell results from the breakdown of waste materials, accompanied by the release of gases. Organic waste that contains protein tends to produce stronger foul odors due to the presence of amine groups, which decompose into ammonia gas (Kristanto, Philip, 2002). In terms

of health, improperly managed waste can cause or contribute to diseases. Health hazards may include illnesses such as diarrhea, caused by viruses originating from unmanaged waste (Mulia, R.M., 2005).

The persistent challenges in waste management faced by both the government and society highlight the urgent need for effective solutions to ensure that waste-related problems can be addressed and controlled. According to Law of the Republic of Indonesia No. 18 of 2008 on Waste Management, waste is defined as the residue of daily human activities and/or natural processes in solid form. Specific waste refers to waste that, due to its characteristics, concentration, and/or volume, requires special handling. Waste management is defined as a systematic, comprehensive, and sustainable activity covering waste reduction and handling.

Society often considers waste to be disposable materials that have no further use. However, this discarded waste may still have economic value. Therefore, the government and environmentally conscious communities have established a system to collect waste and turn it into reusable and economically valuable items through waste banks. A waste bank is a facility where the community can deposit sorted waste based on its type, making it economically valuable (Novyanti, 2013).

According to the Regulation of the Minister of Environment of the Republic of Indonesia No. 13 of 2012 on the management of 3R waste (Reduce, Reuse, and Recycle), a waste bank is a place for sorting and collecting waste that can be processed or recycled to generate economic value.

The mechanism of a waste bank operates similarly to that of a conventional bank; the key difference lies in the currency. In a waste bank, savings are made in the form of waste and returned as money, whereas in conventional banks, both savings and returns are in monetary form. According to Law No. 13 of 2012, the working mechanism of a waste bank includes: sorting waste according to designated categories, depositing sorted waste into the waste bank, registering individuals who wish to participate in the program, weighing and recording the amount of waste deposited, issuing a waste savings book for each customer, transforming waste into handicrafts by community members, and selling these crafts through the waste bank.

The benefits of waste bank programs include environmental health and socioeconomic improvements. Environmentally, waste banks contribute to cleaner surroundings, reduce the need for burning waste (which pollutes the air), and minimize land waste accumulation. Socially and economically, waste banks can generate additional household income from savings and the sale of recycled crafts, foster closer relationships among family and community members, and reduce transportation costs related to waste collection and disposal (Ratiabriani, 2016).

Table 1.1 Comparison of Community Participation Levels

Kesiman Kertalangu			Dangin Puri Kangin		
No	Name of Waste Bank	Number of Participants	No	Name of Waste Bank	Number of Participants
1	Kertajiwa	77	1	Kreneng	56
2	Biaung	111	2	Lotus Healthy Nadhi	31
3	Kesambi	80	3	Lestari Andesthi Bhuana	55
			4	Kertih	65
			5	Bhuwana Lestari	19
			6	Trijata Asri	25
			7	Wiku Lestari	98
Total Participation		**268**	**Total Participation**		**349**

Source: Waste Bank Report (2024)

In the context of community-based waste management, a comparison of community participation in waste bank programs between Kesiman Kertalangu and Dangin Puri Kangin reflects the dynamics of waste management in these two regions. In Kesiman Kertalangu, community participation is recorded at 268 individuals. However, this contrasts with the initial conditions of the program, where 11 waste banks were established, and now only 3 remain active. This decline highlights the challenges faced in maintaining community engagement and ensuring the sustainability of the program. Conversely, Dangin Puri Kangin exhibits higher participation, with 349 active participants, indicating a more consistent community involvement in waste management efforts. This comparison is essential for understanding the factors influencing community participation and for formulating more effective strategies to raise awareness and engagement in waste bank programs in both areas. It demonstrates that the number of operational waste banks and the level of community participation are interrelated and can serve as indicators of the success of waste management programs in each village.

To address the negative externalities resulting from plastic use in society—caused by the economic activities of producers and consumers—government intervention is required. Externalities arise when the actions of one party impact others without compensation, leading to inefficiencies in the allocation of production factors (Mangkoesoebroto, 2016). Plastic waste externalities are particularly concerning due to the extensive use of plastic in society. Dependence on single-use plastic has severe environmental and human health impacts, as it pollutes ecosystems and poses significant health threats.

Through waste bank initiatives, communities actively participate in managing their own waste. This community-based approach to waste management has also been

adopted by the Denpasar City Government. The Denpasar waste bank aims to foster environmental awareness and supplement community income. Sustainable development (Emil Salim, 1990) seeks to improve community welfare by fulfilling human needs and aspirations. Essentially, sustainable development strives to achieve equitable development across generations, both in the present and in the future.

Kesiman Kertalangu Village, located approximately 15 kilometers east of Denpasar City, is situated in the East Denpasar District. The village borders the sea to the south, with its coastline serving as a local/domestic tourist destination. The total area of Kesiman Kertalangu Village is 405 hectares, most of which consists of residential zones, tourism areas, and trade centers that support the tourism industry, all within the jurisdiction of East Denpasar District, Denpasar City. As the population has grown, the village has experienced administrative changes, increasing its number of hamlets (Dusun or Banjar) from four to eleven. These hamlets include: Tohpati, Kertajiwa, Kesambi, Biaung, Tangguntiti, Tangtu, Kertalangu, Kertapura, Kertagraha, Biaung Asri, and Batur Sari.

Table 2. Population of Kesiman Kertalangu Village in 2023

No	hamlet	Number of families	Total population		
			Man	Woman	Total Population
1	Tohpati	1,040	2,019	1,856	3,875
2	Kertajiwa	357	680	641	1,321
3	Tangguntiti	154	300	299	599
4	Biaung	519	969	1,006	1,975
5	Kesambi	395	743	729	1,472
6	Tangtu	169	333	349	682
7	Kertalangu	1,032	1,957	1,920	3,877
8	Kertapura	355	622	644	1,266
9	Kertagraha	631	1,252	1,203	2,455
10	Batursari	188	358	329	687
11	Biaung Asri	154	298	277	575
Amount		4,994	9,531	9,253	18,784

Source: Kesimankertalangu.desa.id

In Kesiman Kertalangu Village, there are 4,994 households with a total population of 18,784 people. With such a large population, the potential for waste generation is also high. Therefore, further action is necessary to address this issue. One of the measures taken has been the establishment of waste banks in three hamlets: Kesambi, Biaung, and Kertajiwa. This initiative is expected to help manage waste more effectively and maintain a clean and healthy environment.

The waste bank program in Kesiman Kertalangu operates on a monthly collection system, whereby each resident collects household waste and deposits it at the waste bank once a month. Upon deposit, waste bank facilitators weigh the waste. The results of the weighing are recorded in the waste bank savings book belonging to each customer. Each customer has a savings book that logs the amount of waste deposited and its corresponding economic value.

Following the recording process, the waste bank facilitators sort the deposited waste by type—such as plastics, paper, metal, and others. This sorting is crucial to ensure the waste can be processed or recycled appropriately. Once sorted, the waste is sold to third parties, such as recycling companies or the central waste bank. The revenue from the sale is used to pay customers for their deposited waste (based on the recorded value in their savings book), while the remaining balance serves as the margin for the waste bank facilitators. This mechanism provides mutual economic benefits for both customers and facilitators, reinforcing the economic viability of the waste bank program.

One key indicator of a successful waste bank program is community participation. Participation is defined as the community's ability to support programs that have been designed and established by the government and are supported by the community (Soetrisno, 1995:89). Community participation in waste management can be observed through the level of involvement or activeness of waste bank customers in depositing waste (Emalia, 2016). In Kesiman Kertalangu, the waste bank operates nearly every month. However, field data indicates that the participation rate is less than 50% of the total number of registered customers. This presents a significant challenge for the sustainability and effectiveness of the waste bank program in the village.

Previous studies have confirmed that community participation is a critical indicator of a waste bank program's success. Participation is influenced by various factors such as education level, age, and the price of waste. Education level, in particular, has been shown to significantly affect community involvement in such programs. Ratiabriani and Purbadharmaja (2016) found that education level positively influences the likelihood of community participation in waste bank programs in Denpasar City. Similarly, Puspita et al. (2024) showed that education level, health, and the number of dependents positively and significantly influence the labor force participation of the elderly population in Denpasar City. In addition, Ahmad Darba (2018) theoretically argued that price affects community interest.

METHOD

This study employs a quantitative approach with an associative design to examine the relationship between the independent variables—Education Level (X1), Age (X2), and Waste Price (X3)—and community participation (Y) in the Waste Bank program in Kesiman Kertalangu Village, Denpasar. The associative design was chosen to

explore both the influence and interaction among the variables under investigation. The research site was selected due to its high potential for waste generation and the limited number of prior studies conducted in the area. The specific focus on community members involved in the Waste Bank program allows for an in-depth understanding of participation dynamics. (Husen Umar, 2005; Creswell, 2018)

The identification of variables and their operational definitions is a crucial component of this study. The dependent variable is community participation, measured by the frequency and volume of waste deposits. The independent variables include education level, age, and waste price. Each variable is operationally defined to ensure accurate measurement; for example, education level is assessed based on the number of years of formal education completed, while age is measured by the respondent's latest year of birth. This approach ensures that the collected data are relevant and systematically support the analysis of variable relationships. (Creswell, 2018; Husen Umar, 2005)

Sampling and data collection methods were conducted systematically to obtain an accurate representation of the population. A sample of 73 participants was determined using accidental sampling, calculated with Slovin's formula to ensure proportional representation of Waste Bank customers. Data were collected through observation, interviews, and questionnaires, and analyzed using multiple linear regression with the assistance of SPSS software. Additionally, classical assumption tests, F-tests for simultaneous regression coefficient analysis, and t-tests for individual variable analysis were conducted to ensure the scientific reliability and validity of the findings. (Gravetter & Wallnau, 2016; Arikunto, 2012; Suyana, 2016; Wirawan, 2016)

RESULTS AND DISCUSSION
Data analysis
Multiple Linear Regression Analysis Results

Multiple linear regression analysis is a statistical method used to examine the extent to which one or more independent variables influence a dependent variable. This technique allows researchers to identify and measure the simultaneous effects of several independent factors on a single outcome variable, as well as to observe the strength and direction of the relationship of each variable. In the context of this study, multiple linear regression is used to determine the extent to which the variables of education level, age, and waste price contribute to community participation in the waste bank program.

Table 1. Multiple Linear Regression Results

Coefficientsa

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	-3,446	.556		-6,193	.000
	X1	.182	.049	.197	3,715	.000
	X2	.073	.016	.256	4,481	.000
	X3	3.968E-5	.000	.608	11,165	.000

a. Dependent Variable: Y
Source: Processed primary data, 2025

Based on the results of the multiple linear regression analysis presented in the table above, the following regression equation was obtained:

$$Y = -3{,}446 + 0.182X_1 + 0.073X_2 + 3.9685 \times 10^{-5}X_3 \quad \text{...............…..................………} (4.1)$$

Where:

Y = Community participation (kg)

X_1 = Level of education (years)

X_2 = Age (years)

X_3 = Waste price (Indonesian Rupiah)

The constant (α) value of –3.446 indicates that when the level of education, age, and waste price are all equal to zero, the predicted level of community participation is –3.446 kilograms. Although this result is not meaningful from a practical standpoint—since negative participation is not feasible—it serves a mathematical function within the model as a point of intercept.

The regression coefficient for education level (X_1), valued at 0.182, suggests that an additional year of education is associated with an increase of 0.182 kilograms in community participation in the waste bank program, holding other variables constant. This finding implies that individuals with higher educational attainment are more likely to engage actively in such environmental initiatives.

The regression coefficient for age (X_2) is 0.073, indicating that each additional year of age is associated with an increase of 0.073 kilograms in waste contribution, assuming other factors remain unchanged. This reflects a trend in which older individuals are more involved in waste bank participation.

The regression coefficient for waste price (X_3), at 3.9685×10^{-5}, demonstrates that a one-Rupiah increase in waste price leads to a rise of approximately 0.0000397 kilograms (or 39.7 grams) in community participation. Although the marginal impact per unit is relatively small, this result confirms that price incentives exert a positive influence on waste contribution behavior.

Results of Classical Assumption Testing

1) Normality Test

The normality test is conducted to determine whether the residuals in the constructed regression model follow a normal distribution. In this study, the normality test was performed using SPSS software. The method employed is the Kolmogorov-Smirnov (K-S) test. Residuals are considered to be normally distributed if the significance value (sig.) is greater than the significance level of 0.05.

Table 2. Normality Test Results

	Unstandardized Residual
N	73
Test Statistics	0.099
Asymp.Sig. (2-tailed)	0.072

Source: Processed primary data, 2025

Based on Table 4.8, it is shown that the significance value is 0.072. The significance value of the Kolmogorov-Smirnov test (0.072) is greater than the significance level (0.05), thus it can be concluded that the residuals of the regression model are normally distributed. Therefore, the normality assumption in the regression analysis has been fulfilled, indicating that the regression model used is valid to describe the relationship between the independent variables and the dependent variable.

2) Multicollinearity Test

The multicollinearity test is conducted to determine whether there is any relationship or correlation among the independent variables in the regression model. An ideal regression model should not exhibit any correlation among the independent variables. To detect the presence of multicollinearity, tolerance values and the variance inflation factor (VIF) are used. If the tolerance value exceeds 0.10 or the VIF value is below 10, it can be concluded that there is no multicollinearity in the model.

Table 3. Multicollinearity Test Results

Variables	Tolerance	VIP	Information
Education Level (X1)	0.235	1,941	Free from multicollinearity
Age (X2)	0.247	2,244	Free from multicollinearity
Garbage Price (X3)	0.794	2,044	Free from multicollinearity

Source: Processed primary data, 2025

Based on Table 3, the results of the multicollinearity test show that all independent variables have tolerance values greater than 0.1 and variance inflation factor (VIF) values below 10. The variable Education Level (X_1) has a tolerance value of 0.235 and a VIF of 1.941; the Age variable (X_2) has a tolerance value of 0.247 and a

VIF of 2.244; and the Waste Price variable (X_3) has a tolerance value of 0.794 and a VIF of 2.044. Since all tolerance values are above 0.1 and all VIF values are below 10, this indicates that multicollinearity is not present in the regression model used.

1) **Heteroscedasticity Test**

The heteroskedasticity test aims to determine whether there is a variance difference in residuals across observations in the regression model. In this study, the heteroskedasticity test was conducted using the Glejser method, which involves regressing the absolute values of the residuals against the independent variables. A regression model is considered free from heteroskedasticity problems if none of the independent variables' coefficients are statistically significant at the 5 percent significance level.

Table 4. Heteroscedasticity Test Results

Variables	Prob.	Information
Education Level (X_1)	0.633	Free of heteroscedasticity
Age (X_2)	0.102	Free of heteroscedasticity
Garbage Price (X_3)	0.131	Free of heteroscedasticity

Source: Processed primary data, 2025

Based on Table 4, the results of the heteroskedasticity test show that all independent variables have probability (Prob.) values greater than the significance level of 0.05. The Education Level variable (X_1) has a probability value of 0.633, the Age variable (X_2) has a value of 0.102, and the Waste Price variable (X_3) has a value of 0.131. Since all probability values are greater than 0.05, this indicates that the regression model does not suffer from heteroskedasticity problems.

Simultaneous Regression Coefficient Test Results (F Test)

The F-test is conducted to determine whether the independent variables in the research model simultaneously have a significant effect on the dependent variable. In this study, the F-test was used to examine the simultaneous influence of X_1 (Education Level), X_2 (Age), and X_3 (Waste Price) on Community Participation (Y).

Table 5. Simultaneous Significance Test Results (F Test)

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	422,984	3	140,995	206,441	.000b
	Residual	47,126	69	.683		
	Total	470,110	72			

a. Dependent Variable: Y
b. Predictors: (Constant), X3, X1, X2
Source: Processed primary data, 2025

The results of the simultaneous regression coefficient test show that the calculated F-value (Fcount) is 206.441. Meanwhile, the critical F-value (Ftable) at the 5 percent significance level ($\alpha = 0.05$) can be determined using the formula Ftable = F(k–1, n–k–1) = F(3, 69). With degrees of freedom df1 = 3 and df2 = 69, and $\alpha = 0.05$, the Ftable value is 3.13. These results indicate that Fcount = 206.441 > Ftable = 3.13 and significance = 0.000 < $\alpha = 0.05$. Therefore, H_0 is rejected. Thus, it can be concluded that the variables Education Level (X_1), Age (X_2), and Waste Price (X_3) simultaneously have a significant effect on Community Participation (Y). This means that the regression model used is capable of adequately explaining the relationship between the independent and dependent variables.

Table 6. Coefficient of Determination (R^2) Test Results

Model Summary

Model	R	R Square	Adjusted R Square	Standard Error of the Estimate
1	.949a	.900	.895	.82643

a. Predictors: (Constant), X3, X1, X2
b. Dependent Variable: Y
Source: Processed primary data, 2025

Based on the coefficient of determination (R^2) value of 0.900, it can be interpreted that 90% of the variation in income can be explained by the variation in the three variables: Education Level (X_1), Age (X_2), and Waste Price (X_3). The remaining 10% is explained by other variables outside the model, which may include external factors or unmeasured variables in this study.

Partial Regression Coefficient Test Results (t-Test)

The t-test is used to assess the extent to which each independent variable individually affects the dependent variable. The test is performed by comparing the t-statistic obtained from the analysis with the critical t-value based on the t-distribution. If the t-statistic is greater than the critical t-value, the independent variable is considered to have a significant effect on the dependent variable. Conversely, if the t-statistic is smaller than the critical t-value, there is no significant effect. This t-test is useful for identifying the individual contribution of each variable within the model, allowing the determination of which variable has the most substantial influence on the research outcome.

Table 7. Partial Significance Test Results (t-Test)

Coefficientsa

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		

1						
	(Constant)	-3,446	.556		-6,193	.000
	X1	.182	.049	.197	3,715	.000
	X2	.073	.016	.256	4,481	.000
	X3	3.968E-5	.000	.608	11,165	.000

a. Dependent Variable: Y

Source: Processed primary data, 2025

1) **The Effect of Education Level on Community Participation**

Based on the education level variable (X_1), the t-value obtained is 3.715. With a sample size of n = 73 and the number of independent variables k = 3, the degrees of freedom are df = n − k − 1 = 69. The critical t-value for a one-tailed test at a significance level of α = 0.05 is 1.667. Since t-value = 3.715 > t-table = 1.667 and Sig = 0.000 < 0.05, H_0 is rejected. This result indicates that education level has a positive and significant partial effect on community participation. A regression coefficient of 0.182 indicates that each additional year of education increases community participation in the waste bank program by 0.182 kilograms, assuming other variables remain constant.

2) **The Effect of Age on Community Participation**

The age variable (X_2) yields a t-value of 4.481. With the same degrees of freedom (df = 69) and a t-table value of 1.667, since t-value = 4.481 > t-table = 1.667 and Sig = 0.000 < 0.05, H_0 is rejected. Therefore, age (X_2) has a positive and significant partial effect on community participation. The regression coefficient of 0.073 means that for every one-year increase in age, the volume of community participation increases by 0.073 kilograms, assuming other variables remain constant.

3) **The Effect of Waste Price on Community Participation**

The waste price variable (X_3) produces a t-value of 11.165. Compared to the t-table value of 1.667, since t-value = 11.165 > t-table = 1.667 and Sig = 0.000 < 0.05, H_0 is rejected. This implies that waste price (X_3) has a positive and significant partial effect on community participation. A regression coefficient of 3.9685×10^{-5} indicates that for every IDR 1 increase in price, participation increases by 0.0000397 kilograms or approximately 39.7 grams, assuming other variables remain constant.

Although the study results indicate that waste price has a positive and significant effect on community participation, the relatively small regression coefficient suggests that the prevailing waste prices are still low. This low price is due to several factors. First, the selling price of inorganic waste in the recycling market tends to be volatile and is influenced by unstable demand from the waste processing industry. Second, the lack of local recycling infrastructure leads to high logistical costs, which reduce the net selling value of waste for customers. Third, there is a lack of incentive pricing policies from the government or relevant institutions to significantly increase the economic value of

community waste. As a result, even though people are motivated to participate, the price incentives they receive are still insufficient to substantially boost the volume of participation. Therefore, there is a need to improve pricing through subsidy policies, strengthening the recycling supply chain, or diversifying recycled products so that waste prices become more competitive and have a greater impact on community participation.

Discussion of Research Findings

The results of this study indicate that the variables of education level, age, and waste price have a positive and significant effect on community participation in the waste bank program in Kesiman Kertalangu Village. Through multiple linear regression analysis, all independent variables had significance values below 0.05 and t-values greater than the t-table, indicating statistically significant relationships. Among the three variables, education level had the most dominant effect on the increase in the volume of waste deposited. These findings suggest that the higher a person's level of education, the more likely they are to have awareness and concern for environmental management, including participation in the waste bank program. This is in line with the findings of Ratiabriani and Purbadharmaja (2016), who stated that education level positively influences community participation opportunities in the waste bank program in Denpasar City. The study by Puspita et al. (2024) also supports these findings, stating that education level significantly influences labor force participation among the elderly population in Denpasar City.

In-depth interviews conducted on April 5, 2025, with one of the waste bank customers in Kesiman Kertalangu Village, Mrs. Ni Putu Sariasih, aged 57, provide a concrete picture of how education level affects community participation. The following is a quote obtained:

> "So, my education helped me understand the importance of protecting the environment. Through learning, I realized that waste can be managed properly and be useful. That's why I'm more enthusiastic about joining the waste bank program. It's also easier for me to talk to and encourage my friends to sort waste. In essence, education has made me more aware and active in keeping the environment clean."

In addition to education, the age variable was also found to have a significant effect on community participation. The results of this study show that the older the respondents are, the higher their level of participation in waste bank activities. This can be interpreted as adults tending to have greater awareness of the importance of waste management and social responsibility for the environment. This view is supported by participation theory, which states that internal factors such as age and experience influence individual involvement in social activities.

In-depth interviews conducted on April 5, 2025, with one of the waste bank customers in Kesiman Kertalangu Village, Mrs. Ni Nyoman Rusmini, aged 31, provide a

concrete picture of how age influences community participation. The following is a quote obtained:

"I feel that my age has a positive impact on my participation. As I get older, I become more aware of the importance of protecting the environment, and I have more time to get involved in the waste bank program. In addition, life experience makes me more concerned and active in this activity."

The waste price variable also has a significant effect on community participation. Although the coefficient is relatively small, an increase in waste price appears to encourage community participation by increasing the volume of waste deposits. These findings indicate that economic incentives are an important factor in encouraging community involvement. This study is grounded in the theoretical framework of Ahmad Darba (2018), who stated that price positively and significantly affects public interest in an activity, including in the context of economics and public services. Furthermore, a study by Lulu Indriaty (2023) concluded that income and price variables have a positive and significant effect on people's purchasing power in the Wamanggu Market, Merauke Regency.

In-depth interviews conducted on April 5, 2025, with one of the waste bank customers in Kesiman Kertalangu Village, Mrs. Ni Nyoman Widiantari, aged 28, provide a concrete picture of how price influences community participation. The following is a quote obtained:

"In my opinion, the price offered for the waste really influences my decision to participate in the waste bank program. When the waste price increases, I feel more motivated to collect and deposit waste because the reward is more attractive. However, if the price drops, I feel less enthusiastic to participate, as the outcome doesn't feel worthwhile. So, it's really important to keep the price stable so that people remain willing to join the program."

CONCLUSION

Based on the results of data analysis and discussion, the following conclusions can be drawn:

1) The variables of education level, age, and waste price have a significant simultaneous effect on community participation in the waste bank program in Kesiman Kertalangu Village, Denpasar City.

2) The variables of education level, age, and waste price also have a positive and significant partial effect on community participation in the waste bank program in Kesiman Kertalangu Village, Denpasar City.

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