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Society's Perspective on the Waste Bank impact toward Economic, Social, and health

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ABSTRACT

This study aims to investigate the community's perspective on the existence of a waste bank on the economy, social and health. The research method used was a quantitative approach with Structural Equation Modeling (SEM) Partial Least Square (PLS). Respondents who participated were 120 waste bank customers in Bogor district (Bojonggede, Cimandala and Nanggewer) with exogenous variables saving waste, training in waste management and waste utilization and recycle, while the endogenous variables were income level (economic), job opportunity (social) and health with waste literacy as mediating variable. The results show that 6 variables, namely waste literacy had a significant positive effect on health and job opportunity, waste savings had a significant positive effect on income levels and waste literacy, waste utilization and recycle had a positive effect on health and ends with waste utilization and recycle effect positive significant on waste literacy at all levels alpha 0.05.

ABSTRAK

Penelitian bertujuan untuk menginvestigasi perpektif masyarakat akan keberadaan bank sampah terhadap ekonomi, sosial dan kesehatan. Metode penelitian yang digunakan adalah pendekatan kuantitatif dengan Structural Equation Modelling (SEM) Partial Least Square (PLS). responden yang berpartisipasi sebesar 120 nasabah bank sampah di kabupaten Bogor (Bojonggede, Cimandala dan Nanggewer) dengan variable eksogen menabung sampah, pelatihan managemen sampah dan Pendayaguanan dan daur ulang sampah, sementara variable endogen adalah tingkat pendapatan (ekonomi), kesempatan kerja (sosial) dan kesehatan dengan variabel mediasi literasi sampah. Hasil menunjukkan bahwa 6 variable yaitu literasi sampah perpengaruh positif signifikan tehadap kesehatan dan lapangan pekerjaan, menabung sampah perpengaruh positif signifikan tehadap tingkat pendapatandan literasi sampah, pendayagunaan dan daur ulang sampah perpengaruh positif signifikan tehadap kesehatan dan diakhiri dengan pendayagunaan dan daur ulang sampah perpengaruh positif signifikan tehadap literasi sampah pada semua level alpha 0.05.

1. Introduction

In this decade, it is frequently found that marine ecosystem animals, such as fish, whales, turtles, seals, seabirds, and others die in alarming circumstances. The stomachs of these animals were found to be full of plastic. Recent findings explain hundreds of marine species eat plastic in considerable quantities, because plastic waste smells like food to them. Microplastics that are broken down by sunlight resemble the shape of plankton that feeds fish. Then the algae break down naturally in the ocean and emits a sulfuric odor known as dimethyl sulfide (DMS) which feeds on krill (crustaceans) which are the main food source for most seabirds. Plastic waste floating in the ocean is the perfect medium for algae to thrive (Darnila, 2016).

Indonesia, when the rainy season arrives, almost all areas in Indonesia have the potential for flooding, especially the island of Java. Floods also have the potential to cause aftershocks such as landslides, depending on the slope, density of soil constituent particles, and the speed of soil cracks (Suprapto, 2011). For example, the capital city of Jakarta experiences floods every year. Some of the factors that cause flood include; 40% of Jakarta's plains are located in lowlands, excessive use of groundwater, narrowing of green land for water absorption, high rainfall, narrow drainage, silting of rivers and accumulation of waste. The lack of public awareness of disposing of waste in its place and inadequate facilities make flood disasters and their derivatives frequent. In densely populated

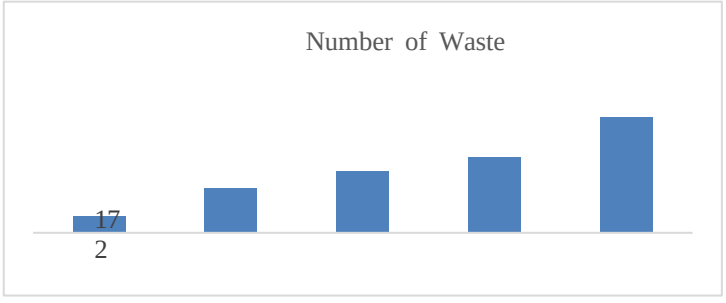
areas and especially along riverbanks, local residents throw their household waste directly into the river. The reason is that there are no garbage collectors, causing the river to be filled with garbage so that the quality of the environment decreases and when it rains, overflows occur because the river is unable to contain the water (Adhi, 2010).

God created the universe and everything in it for the benefit of mankind. Humans as caliphs on this earth have been mandated to be able to care for and preserve nature properly. The preservation and importance of the natural environment is mentioned in many verses of the Koran. However, humans are sometimes less grateful for what God has given. Some humans are greedy and greedy by exploiting natural resources endlessly to satisfy themselves and forget about their surroundings and the impact it causes. Islam requires humans to take good care of the natural environment. Damage made directly or indirectly is strictly prohibited. Allah SWT says in Quran Chapter Ar-Rum: 41-42:

"Corruption has appeared throughout the land and sea by [reason of] what the hands of people have earned so He [i.e., Allah] may let them taste part of [the consequence of] what they have done that perhaps they will return [to righteousness]. Say, [O Muhammad], "Travel through the land and observe how was the end of those before. Most of them were associators [of others with Allah]". (Ar-Rum 41- 42)

The impact caused by the waste was so pronounced, the accumulation of waste without any countermeasures will certainly have a negative impact. Any garbage was not decomposed in a long time can contaminate soil and groundwater. Gelbert M and Prihanto (1996) stated that there were three negative impacts of waste on humans. a) health impacts, inadequate or uncontrolled waste location and management was a suitable place for several organisms such as flies, maggots, rats, and other animals that can be a source of disease. b) environmental impacts, seepage liquid waste that enters the drainage or river can pollute the water so that the organisms that live in it will die and cause changes in the biological aquatic ecosystem. c) social and economic impact, if the waste collection facilities are lacking or inefficient, people will tend to throw their garbage on the street. As a result, roads need to be cleaned and repaired more often.

Based on Jambeck et al, (2015), Indonesia was ranked second in the world for producing plastic waste to the sea which reached 187.2 million tons after China which reached 262.9 million tons. This is related to data from the Ministry of Environment and Forestry (KLHK), which states that the plastic produced from 100 shops in one year reached 10.95 million pieces of plastic waste bags. This amount is equivalent to an area of 65.7 hectares of plastic bags or about 60 times the size of a football field. That's just plastic waste, not including garbage or other solid waste, there is also liquid waste, and gas waste. If you pay attention, the amount of waste in several provinces in Indonesia continues to increase from year to year. For example, in 2000 the amount of waste in West Java was around 10 million tons and in 2016 the transportation of waste reached 300 tons per day (KLHK, 2016).



Graph 1. Number of Waste Banks in Indonesia (2018)
Source: tekno.tempo.co

Graph 1 shows a significant increase in the last 5 years 2014-2018 up to 800%. In 2018, the waste bank contributed to the new employment absorption sector, namely there were 163,128 households that became workers with 49% being housewives. Furthermore, the recorded population of Bogor Regency is 5.84 million people based on BPS District Bogor (BPS, 2018) and every year its growth continues to increase. According to Djuwendah (1998) that the increase in the volume of waste is in line with the population growth. In Bogor, the volume of waste has increased by 2 percent per year. In 2014 the volume of waste from 1901 m3 per day increased to 1940 m3 per day in 2015.

Meanwhile for Bogor Regency in 2016, the Department of Hygiene and Parks was able to transport 450-tonnes of waste per day (Noor, 2016)

Serious waste processing and handling is needed to overcome the mounting problem of waste production. Waste management in Indonesia is still carried out conventionally, namely collection, transportation, and disposal in Final Disposal Sites (FDS). Limited land is a problem, the difficulty of opening a new FDS has resulted in the condition of the existing FDS experiencing excessive capacity. Approximately only 65% of waste can be transported to the TPA. Law No. 18 of 2008 concerning Waste Management and Government Regulation no. 81 of 2012 mandates the need for a fundamental paradigm shift in waste management (collection, transportation, disposal) to become waste management that relies on waste reduction and waste management. Waste reduction activities are aimed at all elements of society to be able to carry out waste heaping, recycling, and reuse of waste or called 3R Reduce, Recycle, and Reuse through smart, efficient, and programmed efforts. And this can be done with a waste bank system.

In urban areas, almost all solid waste can be recycled (recycle, reuse). Of course, this is an opportunity for the government and the community to synergize and move from the conventional way to a better way where the community participates in it. However, the lack of public awareness in sorting waste is still an obstacle. Community- based waste management is an alternative solution in an effort to overcome the waste problem. Through the development of a Waste Bank, which is a social engineering activity that teaches people to sort waste and raises public awareness in managing waste wisely, this will reduce the amount of waste transported to the landfill.

Wulandari (2014) stated waste management through waste banks has sustainability prospects because from the economic aspect it can provide additional income and reduce operational costs for city waste management, from the ecological aspect the existence of a waste bank is able to reduce waste that will be disposed of in the TPA and the environment is cleaner and more comfortable. socially acceptable to society. Asteria & Heruman (2016) the benefits provided by waste banks are reduced waste generation, a more beautiful environment, and increased economic independence of citizens. Based on the above background, this study focuses on the public's view on the impact of waste banks on the economy, social and health.

2. Literature Review

1.1 Theoretical Framework

1.1.1. Waste Bank

The waste bank is a collective dry waste management system that encourages the community to play an active role in it. This system will accommodate, sort, and distribute waste with economic value to the market so that the community gets economic benefits from saving waste (Utami, 2013). Regulation of the State Minister of the Environment Number 13 of 2012 states, A waste bank is a place for sorting and collecting waste that can be recycled and/or reused that has economic value.

The Waste Bank Movement was first launched in 2008 in Bantul, Yogyakarta under the name 'Gemah Ripah Garbage Bank' which was initiated by a health polytechnic lecturer, Bambang Suwerda. This creative idea started with Bambang's anxiety because of the dengue hemorrhagic fever (DHF) outbreak that attacked his village and wanted the people around his house to live healthy lives. Having the motto "save trash, live a cleaner life and a better tomorrow" Gemah Ripah Waste Bank has successfully become an inspiration for other regions. The concept of a waste bank, which was initiated by Bambang Suwerda, is inspired by the concept of a conventional bank, how to manage waste like managing money (Tokoh Indonesia, 2010).

1.1.2. Waste Bank Mechanism

Bank-based waste management provides many benefits for the community. Benefits in the form of environmental cleanliness, health to the economy are also obtained. The following is the working mechanism of a waste bank (Utami, 2013): 1) Segregation of household waste 2) Depositing waste to the bank, 3) weighing, 4) recording and 5) transportation.

Figure 2.1. simple waste management system (reduce, reuse and recycle)

One of the goals of the waste bank being established is to build public awareness so that they can be 'friends' with waste to get direct economic benefits from waste. So, a waste bank cannot stand alone but must be integrated with the 3R (Reduce, Reuse, Recycle) movement such as utilizing waste that can still be reused, making handicrafts as well as minimizing waste so that the direct benefits felt are not only economic, but the development of a clean environment, green and healthy (menlh.go.id). This is in line with the Minister of Public Works Regulation 21/PRT/M/2006 concerning the National Policy and Strategy for the Development of the National Solid Waste Management System.

1.2 Previous Research

Novianty (2013) analyzed the impact of the waste bank program on the socio-economic community in Binjai Village, Medan Denai District, Medan City using a descriptive method with quantitative analysis, namely correlation analysis with Product Moment. With variable X: Waste Bank Program, variable Y: Socio-Economic Life with indicators: income, education, health, social interaction, environmental conditions. Based on the results of data analysis, it was concluded that there was a positive impact on the socio-economic life of the community in Binjai Village after the construction of the Waste Bank. This is indicated by the increase in people's income in meeting household needs and increasing pocket money for children from the results of saving waste. The amount of income received is still small due to the minimal amount of waste generated so that the economic benefits obtained have not been so influential in meeting daily needs.

Ruski (2014) analyzed the effect of the waste bank program on the family income level of Lavender Waste Bank customers in Mlajah Bangkalan village, using Statistical Analysis: Simple Linear Regression. The existence of the influence of the waste bank program variable on the family income level variable of Lavender Waste Bank (BSL) customers in Mlajah Village Bangkalan. This is known from the results of the T test, namely the value of t-count (1.993) > t-table (1.677). The hypothesis (Ha) which reads that there is an effect of the Waste Bank Program on the family income level of Lavender Waste Bank (BSL) customers in Mlajah Bangkalan Village can be accepted and Ho is rejected.

Akil *et. al.,* (2015) examines the effects of socio-economic factors that may influence recycling practices in Malaysia using descriptive analysis methods. Socio-economic variables consist of age, home ownership, and income. This research was conducted in the Iskandar region of Malaysia with a population of 1.35 million (2010). Surveys and interviews were conducted on 600 households in the Iskandar region of Malaysia. The results showed that socio-economic variables had a positive relationship in recycling activities. Older people are more active in recycling than younger people. Homeownership can predict the preferred recycling method by households, and the majority of high-income households are willing to pay a premium for improved waste management programs.

Wijayanti and Suryani (2015) investigated waste banks as a community-based government environment using a descriptive analysis method. This study discusses the application of waste banks as community-based environmental management. In Surabaya, waste banks are growing rapidly and have supported people's livelihoods in environmental management. Waste bank as a business is owned by people who consider waste as a valuable economic commodity and savings, have instruments (economic, social, educational, technological) that involve the community in waste management.

Eko *et. al.,* (2015) did a study on community-based waste management through waste banks, using the Qualitative and Quantitative Descriptive Analysis method. The economic impact of the waste Bank of the Serasi Environmental Care group, Sidomulyo Village, there are economic benefits in the form of additional income received by the community members of the waste bank. 48.9% of respondents stated that the existence of a waste bank provides economic benefits in the form of additional income. 51.1% of respondents stated that the existence of a waste bank is sufficient to provide economic benefits. The income obtained, as much as 33.33% is used to buy daily necessities, 6.67% to pay arisan contributions, and 44.4% is still saved in the waste bank.

Sofiana and Aji (2015) examined the relationship between waste bank management and the level of education and income of the Muria Indah housing community in Gondangmanis Village, Bae District, Kudus Regency, using the descriptive percentage analysis method and multiple linear regression with the help of the SPSS version 21 program. The results showed that the average The average percentage of waste bank management level is 71.5% that the level of waste bank management is included in the high criteria. Public interest in the waste bank 80.08% is included in the high criteria. The results of the calculation show that the value of Tcount is 0.482 which is greater than Ttable 0.245, indicating a relationship between education level and income with waste bank management, and respondents who have savings results of less than Rp. 50.00, - that is 69.35%.

Emannulisa (2015) discovered on the socio-economic influence on household waste management

behavior in Sawangan District, Depok City, uses the method of Logistic Regression Analysis and descriptive analysis. The socio-economy referred to in this study is a household condition based on age, education level, income and location of residence. Socio-economic community in this study focused on the four elements above. The production of residential real estate waste is dominated by inorganic waste by 55.19%. High levels of education and income do not affect household behavior in managing waste properly.

Barokah (2016) revealed on waste banks as a means of community empowerment and its relation to efforts to protect the environment, Yusuf Qardhawi's perspective, the Depok City case study, uses the ANP-BOCR (Benefits, Opportunities, Costs, Risks) approach. The results of the study show that the greatest benefit of the cluster benefit is an increase in the community's economy, followed by an increase in community skills. The main priority of the opportunity cluster is the opening of job opportunities, followed by increasing cleaning services. In cluster cost, infrastructure investment is the main priority, followed by assistance costs. The main priority of cluster risk is management who is not proactive, followed by fluctuations in waste prices. Furthermore, the results of the study show that the concept of the Waste Bank is in line with efforts to protect the environment from Yusuf Qardhawy's perspective.

Perdana (2017) found that in his research, community empowerment through waste recycling provided benefits including minimizing the volume of waste, increasing income and socializing more actively on waste and minimizing flooding. The approach taken is descriptive quantitative. The respondents who were addressed were the management of the waste bank as many as 6 people and surveys to customers in Lenteng Agung area.

1.3 Research Framework

Based on previous research, a research framework was developed to analyze the factors that influence societies' perception of waste banks impact on economic, social and health aspects, as follows:

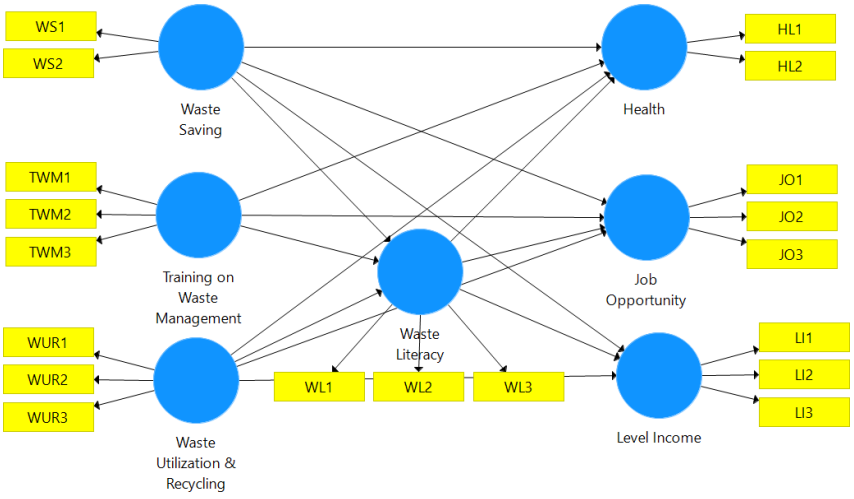


Figure 2.2. Research Framework

This research framework describes the public's perception of the waste bank which is represented by 3 exogenous variables saving waste, training in waste management and waste utilization and recycling, moderated by waste literacy and as an endogenous economic variable proxied by income level, social as proxied by job opportunities and aspects health.

3. Methodology

1.1 Research Method

This study uses the Structural Equation Model–Partial Least Square (SEM-PLS) which is a method based on variance. According to Henseler *et. al.*, (2016), PLS is suitable to be used to explain (explanative) or predict research. PLS based on Vinzi *et. al.*, (2010) is part of the regression method used to analyze high dimensional data in a low structure environment. Ghozali (2006) states that PLS is an alternative approach to SEM which is variant-based from previously covariant-based.

SEM was classified into two, 1) SEM covariance-based (CB-SEM) and 2) SEM partial least squares (PLS-SEM; called also path modeling). CB-SEM was used mainly to confirm (or refuse) a theory proposed

(a set of systematic relationships between several variables that can be tested empirically). This is done by determining how well the proposed theoretical model can estimate the covariance matrix for the sample data set. On the other hand, PLS-SEM was used mainly to develop theory in exploratory research. This is done by focusing on explaining the variance in the dependent variable when examining the model (Hair, et. al, 2017)

According to Henseler *et. al*, (2016) PLS agreed with abnormal data, small sample size and measurement model (outer model) which determines the relationship between the observed constructs and indicators and the structural model (inner model) which determines the relationship between constructs. Ghozali (2006) also defined PLS as a powerful analytical method because it does not require many assumptions such as a large sample and the data must be normally distributed.

1.2 Data Collection

This study uses a survey method with a purposive sampling. Questionnaires were given to the respondents or waste bank customers in 3 villages in Bogor district, namely Bojonggede, Cimandala and Nanggewer. The distribution was carried out in September 2018. This questionnaire consists of several parts: a) identity/profile of respondents, b) exogenous variables (saving waste, training in waste management and waste utilization and recycling, c) mediating variables (waste literacy) d) endogenous variables (health, job opportunity and income level). The questions in this questionnaire use a Likert scale where respondents are given a choice of answers which on positive questions 1 (strongly disagree), 2 (disagree), 3 (disagree), 4 (agree) and 5 (strongly agree) while on negative questions assessed otherwise.

1.3 Population and Sample

The unit of analysis of this research was the individual, namely the waste bank customers spread over 3 villages, namely Bojonggede, Cimandala and Nanggewer. The sampling technique used was probability sampling. Sampling in this study used a purposive sampling method, namely the method of selecting samples based on certain criteria based on research needs. The sample criteria used in this study were as follows: a) People living in Bojonggede, Cimandala, and Nanggewer. b) The community was an active customer of the waste bank.

1.4 Operational Variable

The questions on the questionnaire formed in this study were adopted from several previous research. There are 3 exogenous variables, namely saving waste, training in waste management and utilizing and recycling waste. The mediating variable was waste literacy and the endogenous variables were income level, job opportunity and health.

Table 3.1. Operational Variable

Variable	Code	Indicator	References
Waste Saving	WS1	I became a customer of a waste bank because I care about the environment	Novianty (2013) Perdana (2017)
	WS2	I do the sorting of household waste before depositing it in the waste bank	Novianty (2013) Perdana (2017)
Training on Waste Management	TWM1	The waste recycling training materials provided are easy and complete	Perdana (2017)
	TWM2	I can carry out the training materials delivered on waste recycling	Perdana (2017)
	TWM3	The training in waste management and recycling gave me new ideas or ideas in managing waste	Perdana (2017)
Waste Utilization and Recycle	WUR1	I process organic waste (wet waste) into compost	Perdana (2017)
	WUR2	I process inorganic waste (dry waste) into handicrafts that have a selling value	Perdana (2017)
	WUR3	With the waste bank, I can reduce the production of household waste	Perdana (2017)
Waste literacy	WL1	The existence of a waste bank increases my knowledge about waste and its handling	Wijayanti & Suryani (2015)
	WL2	At the waste bank I received life skills education in the form of recycling/waste processing procedures	Wijayanti & Suryani (2015)
	WL3	The children who live near the waste bank understand the negative impact of waste and are more concerned about the environment	Sofiana & Aji (2015)
Level of Income	LI1	Becoming a customer of a waste bank can increase my income	Akil Et. Al (2015),
	LI2	The income obtained from the waste bank can help meet household needs	Ruski (2015) Emmannulisa (2015)
	Li3	By participating in the waste bank program, I can increase my income from saving and selling waste recycling crafts	Ruski (2015) Emmannulisa (2015)

Job Opportunity	JO1	The waste bank program can be a job opportunity for the surrounding community	Novianty (2013)
	JO2	With the waste bank, I get additional jobs	Eko et. al, (2015)
	JO3	The waste bank activity program reduces the unemployment rate in the neighborhood where I live	Eko et. al, (2015)
Health	HL1	Waste bank management provides many benefits for health and the environment	Novianty (2013)
	HL2	Garbage bank can make me more active in paying attention to health and the environment	Novianty (2013)

4. Discussion

4.1. Descriptive Statistic

After distributing the questionnaires to 3 target areas, 120 respondents were found who could participate and answered the questions. Female respondents dominated as much as 97% compared to men who only get 3 people or 2.5% only. Regarding age, 70.83% of them are in the age range of 35-54 years. Followed by productive age, namely 21.6%. Only 5.83% of those aged 55 years and over and 1.67% at the age of 18-24 years. Further information, as previously found, housewives dominate up to 91.67%. In regional distribution, Bojonggede found more than half, namely 55.83% of the total respondents. The latest information is the time of deposit in a week, peaked once a week at 49.17% and continued to wait until it was full, which was 27.50%. Additional information was the names of the waste banks at these 3 observations, those are May Darling (MayDi) & Cilung, located in Bojonggede. The Mawar Asri waste bank located in Cimandala and the Sumber Rezeki was located in Nanggewer.

Table 4.1. Respondent Demographics

Description	F	P	Description	F	P
Gender			**Occupation**		
Male	3	2.50%	Civil Service	2	1.67%
Female	117	97.50%	Entrepreneur	3	2.50%
Total	**120**	**100%**	Employee	4	3.33%
Age			Housewife	110	91.67%
<18-24 years	2	1.67%	Student	1	0.83%
25 - 34 years	26	21.67%	**Total**	**120**	**100%**
35 - 54 years	85	70.83%	**Deposit time (within 1 week)**		
> 55 years	7	5.83%	1 time	59	49.17%
Total	**120**	**100%**	2 times	24	20.00%
District Origin			3 times	4	3.33%
Bojong Gede	67	55.83%	Until full	33	27.50%
Cimandala	7	5.83%	**Total**	**120**	**100%**
Nanggewer	46	38.33%			
Total	**120**	**100%**			

Source: author (processed)

4.2. Data Analysis

A. Evaluation of Measurement Model (Outer Model)

In the first stage of modeling, what is measured is the direction of the arrow from each variable to the indicator that constructs it. This test can be seen in the outer loading table below. Each variable leading to the indicator is declared valid if the T-Statistics value is > 1.96 then this means that the indicator is valid for measuring the variable.

Table 4.2. Outer Loading

Indicators of variables	Mean	STDEV	T Statistics	P Values
WS1 <- Waste Saving	0.85	0.039	22.043	0.000
WS2 <- Waste Saving	0.843	0.035	24.341	0.000

TWM1 <- Training on Waste Management	0.875	0.033	26.525	0.000
TWM2 <- Training on Waste Management	0.881	0.034	25.685	0.000
TWM3 <- Training on Waste Management	0.825	0.045	18.334	0.000
WUR1 <- Waste Utilization & Recycling	0.76	0.057	13.383	0.000
WUR 2 <- Waste Utilization & Recycling	0.729	0.079	9.357	0.000
WUR 3 <- Waste Utilization & Recycling	0.833	0.029	28.337	0.000
WL1 <- Waste Literacy	0.708	0.072	9.835	0.000
WL2 <- Waste Literacy	0.736	0.09	8.371	0.000
WL3 <- Waste Literacy	0.715	0.086	8.421	0.000
HL1 <- Health	0.799	0.056	14.317	0.000
HL2 <- Health	0.837	0.051	16.567	0.000
JO1 <- Job Opportunity	0.9	0.018	49.18	0.000
JO2 <- Job Opportunity	0.889	0.032	27.512	0.000
JO3 <- Job Opportunity	0.859	0.04	21.312	0.000
LI1 <- Level Income	0.883	0.073	12.382	0.000
LI2 <- Level Income	0.697	0.139	5.078	0.000
LI3 <- Level Income	0.923	0.068	13.773	0.000

Based on this table, whole indicators constructed the variable, it is declared as valid. None of the T-statistical values were below 1.96. The lowest score was achieved by Income Level 2, which was 5,078 and the other highest score was WUR 3, which was 28,337. Beside it, the p value aslo show the significant level that is alpha with 0.000. Then, the futher analysis can be done afterward.

Tabel 4.3. Composite Reliability (CR) and Average Variance Extracted (AVE)

Variables	Cronbach's Alpha	Composite Reliability	Average Variance Extracted (AVE)
HL	0.519	0.806	0.675
JO	0.863	0.915	0.782
LI	0.836	0.888	0.727
TWM	0.831	0.899	0.748
WL	0.56	0.771	0.529
WS	0.609	0.837	0.719
WUR	0.688	0.822	0.607

According to measurement theory of outer model, the silent value of composite reliability was between 0.6 and 0.9. and AVE result was above 0.5. Based on the values found that there is a model, all indicators are declared valid for convergent measurements, namely the CR value does not come out between values 0.6 to 0.9 while the AVE value is also above 0.5. only the WL value is close to 0.5, which is 0.529.

Table 4.4. Cross Loading

Indicator	HL	JO	LI	TWM	WL	WS	WU
WS1						0.852	
WS2						0.843	
TWM1				0.878			
TWM2				0.886			
TWM3				0.830			
WUR1							0.765
WUR2							0.738
WUR3							0.832
WL1					0.709		
WL2					0.749		
WL3					0.724		
HL1	0.803						
HL2	0.839						
JO1		0.901					
JO2		0.89					

JO3	0.862
LI1	0.898
LI2	0.708
LI3	0.935

In table 4.4. dan 4.5. shows that the cross loading value of each indicator that measures the construct variable has a higher correlation than the other construct variables. Thus it can be said that each indicator has good discriminatory validity.

Table 4.5. Discriminant Validity – Cross Loading

Indicator	HL	JO	LI	TWM	WL	WS	WUR
WS1	0.365	0.199	0.361	0.307	0.459	**0.852**	0.364
WS2	0.37	0.323	0.193	0.357	0.458	**0.843**	0.42
TWM1	0.208	0.13	0.171	**0.878**	0.386	0.288	0.418
TWM2	0.186	0.228	0.184	**0.886**	0.384	0.322	0.429
TWM3	0.229	0.172	0.253	**0.830**	0.335	0.409	0.425
WUR1	0.317	0.315	0.186	0.353	0.324	0.265	**0.765**
WUR2	0.25	0.237	0.196	0.605	0.37	0.24	**0.738**
WUR3	0.574	0.305	0.261	0.271	0.501	0.507	**0.832**
WL1	0.473	0.323	0.293	0.26	**0.709**	0.532	0.34
WL2	0.4	0.214	0.149	0.364	**0.749**	0.227	0.439
WL3	0.362	0.408	0.091	0.318	**0.724**	0.378	0.377
HL1	**0.803**	0.276	0.185	0.26	0.407	0.376	0.476
HL2	**0.839**	0.2	0.258	0.139	0.529	0.338	0.387
JO1	0.324	**0.901**	0.429	0.205	0.488	0.311	0.355
JO2	0.241	**0.89**	0.378	0.174	0.287	0.264	0.343
JO3	0.175	**0.862**	0.321	0.158	0.355	0.227	0.27
LI1	0.191	0.468	**0.898**	0.246	0.221	0.306	0.207
LI2	0.123	0.18	**0.708**	0.056	-0.05	0.043	0.128
LI3	0.311	0.36	**0.935**	0.208	0.288	0.333	0.313

The final step in measuring the outer model is the Fornel-Larcker criterion. The value that must be obtained is the largest compared to the other values. seen in table 4.6. where HL 0.821, JO 0.885, LI 0.853 and so on, all get the highest value. This also shows the good discriminant validity.

Table 4.6. Fornell-Larcker Criterion

I/I	HL	JO	LI	TWM	WL	WS	WUR
HL	**0.821**						
JO	0.288	**0.885**					
LI	0.272	0.431	**0.853**				
TWM	0.239	0.205	0.233	**0.865**			
WL	0.573	0.44	0.255	0.426	**0.728**		
WS	0.433	0.307	0.328	0.391	0.541	**0.848**	
WUR	0.522	0.368	0.281	0.49	0.525	0.462	**0.779**

B. *Evaluation of Structural Model (Inner Model)*

The second stage is for the measurement of the inner model, which is a measurement that aims to see the influence between the variables that are constructed in the research framework. The first step is to test the Inner VIF model. This test was conducted to see the multicollinearity between variables. The VIF value declared free from multicollinearity is below 5. When the result of each variable exceeds 5, it is affected by the multicollinearity effect.

Table 4.7 Inner VIF Model

I/I	HL	JO	LI	TWM	WL	WS	WUR
HL							
JO							
LI							
TWM	1.415	1.415			1.38		

WL	1.68	1.68	1.637	
WS	1.536	1.536	1.507	1.33
WUR	1.628	1.628	1.472	1.49

Based on table 4.7, it can be explained that all the values of the variables, none of them have multicollinearity. All have been freed, namely at values below 5. The highest scores were achieved in WL to HL and WL to JO, namely 1.68 and the rest were at normal values.

Table 4.8 R Square

Indicator	R Square	R Square Adjusted
HL	0.416	0.396
JO	0.223	0.196
LI	0.131	0.108
WL	0.405	0.389

Table 4.8 shows the value of R Square on the model constructed from the four models. The first model, namely the target variable is health, getting a value of 0.416 or 41.6% to estimate from the variable saving waste, waste management training, and waste literacy. As consequence, there was 58.4 % from other variables which not included in the estimation model. Followed by the target variable 0.223 or 22.3% for job opportunity, 0.131 or 13.1% for the level of income and 0.405 or 40.5% for waste literacy. This means that there are 77.7%, 86.9% and 59.6% of other variables that influence outside the variables that affect the target or exogenous variables of each model. Hair, et al (2016) stated that the value that is considered to be within the limits of a good model is 0.25 but he also emphasized that not all models can be generated with a small R -square. This means that the model formed with a limited number of observations can also affect this R-Square value.

Table 4.9 Construct Cross-validated Redundancy

Indicator	SSO	SSE	Q^2 (=1-SSE/SSO)
HL	240	179.246	0.253
JO	360	306.856	0.148
LI	360	338.368	0.06
TWM	360	360	
WL	360	291.132	0.191
WS	240	240	
WUR	360	360	

The table construct cross validated redundancy is in principle the same as R-square, namely to measure predictive relevance. Hair *et al,* (2017) stated that the weak value of Q2 was 0.02. it can be seen in the table that all values are above 0.02 and the smallest value is Q2 for the predictive variable Level of Income, which is 0.06. Meanwhile, the scores for health, waste literacy and job opportunity were 0.253, 0.191 and 0.148, respectively.

Table 4.10 Path Coefficient

Indicator	Sample Mean	Standard Deviation	T Statistics (|O/STDEV|)	P Values
TWM -> HL	-0.133	0.098	1.390	0.165
TWM -> JO	-0.052	0.078	0.685	0.494
TWM -> WL	0.142	0.082	*1.800*	0.072
WL -> HL	0.403	0.112	**3.524**	0.000
WL -> JO	0.329	0.102	**3.220**	0.001
WL -> LI	0.048	0.124	0.420	0.675
WS -> HL	0.122	0.086	1.432	0.152
WS -> JO	0.058	0.105	0.581	0.561
WS -> LI	0.238	0.093	**2.487**	0.013
WS -> WL	0.36	0.092	**3.772**	0.000

WUR -> HL	0.322	0.121	**2.702**	0.007
WUR -> JO	0.198	0.105	*1.842*	0.065
WUR -> LI	0.149	0.115	1.270	0.204
WUR -> WL	0.294	0.093	**3.138**	0.002

The final stage is measurement by doing Bootstrapping to find path coefficients. Path coefficients show the path of influence between variables that these variables affect the target variable. When using the 2-tailed test, the t-statistic value is >1.96 with an alpha below 0.05. whereas in the 1-tailed test if the t-statistic value is > 1.645 then it has a positive effect and the significance at alpha 0.05 this happens the other way around, namely if the t-statistic value <1.164 then the value has a negative effect with an alpha significance value of 0.05 as well.

By testing the hypothesis, table 4.10 shows the results of each detail. Starting with the variables that have a significant positive effect, namely WL -> HL (3,524 with an alpha of 0.000), WL -> JO (3,220 with an alpha of 0.001), WS -> LI (2,487 with an alpha of 0.013), WS -> WL (3,772 with an alpha of 0.000), WUR -> HL (2,702 with alpha 0.007) and ends with WUR -> WL (3.138 with alpha 0.002). This means that there are 6 variables that are able to have a significant effect on the target variable, namely 1) waste literacy has a significant positive effect on the health variable, 2) Waste literacy has a significant positive effect on job opportunity, 3) Waste saving has a significant positive effect on the level of income, 4) Waste saving has a significant positive effect on waste literacy, 5) waste utilization and recycle has a significant positive effect on health and closes with 6) Waste utilization and recycle has a significant positive effect on waste literacy.

While in the 1-tailed test there are only two models, namely TWM -> WL with a value of 1.800 with an alpha of 0.072 and WUR -> JO with a value of 1.842 with an alpha of 0.065. This means that these two models have a significant positive effect at the alpha level of 0.10 and the t-statistic value above 1.645. The final model has no significant value.

4.3. Result and Discussion

From the measurements carried out, namely the fit test in the first stage of the outer model and the construct test in the second stage of the inner model, it was found that 6 measurement models were influential and significant at the 0.05 alpha level and 2 measurement models at the 0.10 level. Let have discussion on it one by one:

Starting with variable Waste Literacy has a positive effect on Health (3.524 with an alpha of 0.000). This is meant by the higher public literacy of waste, such as knowledge of waste management, both dry and wet waste, as well as knowledge of processes and procedures in waste processing and knowing the negative impacts of waste, all of these things have a real and significant impact. on their health. The community views that the existence of a waste bank in the waste literacy improvement program can contribute to the level of health they experience in their lives. The higher the community's waste literacy, the healthier their condition and environment. If this health appears it will make them productive. There is an expression in another language "*mensana in core pore sano*" which means that in a healthy body there is a healthy soul. This finding is also supported by Perdana (2017), Wijayanti & Suryani (2015), Sofiana & Aji (2015) and Novianty (2013).

Furthermore, Waste Literacy has a positive effect on job opportunity (3,220 with an alpha of 0.001). Still on the same indicators as discussed above, the variable waste literacy in the model with 120 waste bank customers feels a real contribution to job creation. As in the background and theoretical basis described above, that the waste bank is able to make a social contribution in the form of reducing unemployment. Nationally, waste banks in 2018 were able to provide 163,128 household jobs. And this contributes to the reduction of waste in the environment by 1.7 of the waste that is not accommodated. In the three observation villages, namely Bojonggede, Cimandala and Nanggewer, the people who participated as customers of the waste bank felt that the waste bank was one of the solutions in the form of opening new jobs. This finding is also supported by Eko et al, (2015) Novianty (2013) and Perdana (2017).

Furthermore, Waste Saving has a positive effect on the Level of Income (2,487 with an alpha of 0.013). The perceptions of waste bank customers in this research feel positively that the activity of saving waste, whether carried out once a week or waiting in full, is able to provide an economic contribution to the addition of their income level. The system required in the 3 observed villages is for customers to collect their household waste weekly and sort it into wet, dry, plastic, disposal and so on, then weigh it and give it a certain value in rupiah. The income from this waste saving business is usually recorded in the note recorder and can be withdrawn in cash at the end of the month or at a certain period by the customer. Waste banks have thus far been able to contribute to the family's economic aspects, especially waste bank customers. This finding was also found by Perdana (2017) Ruski (2015) Emmannulisa (2015) and Novianty (2013).

In the same way, Waste Saving has a positive effect on Waste Literacy (3.772 with an alpha of 0.000). The more routine customers save waste, the higher the waste literacy they have. Garbage banks are located in 3 areas in this study when customers come to collect waste, they are also provided with literacy waste so that they know more about handling and managing waste properly. The more often the frequency of saving from customers, the higher their waste literacy. This finding is also supported by Novianty (2013), Wijayanti & Suryani (2015) Sofiana & Aji (2015) Perdana (2017).

Not to forget, Waste Utilization and Recycle has a positive effect on Health (2.702 with alpha 0.007). The Waste Utilization and Recycle variable from the observations of 120 waste bank customers in the form of using waste into goods of economic value such as making handicrafts (artificial flowers, doormats, ashtrays, merchandise, etc.), making equipment from used materials or processing waste into organic fertilizer, is felt by customers as contributing on their health. The more waste that is put to good use, the more their responses and perceptions increase the level of health. The waste use and recycle program carried out by the waste bank is considered capable of having a positive impact on their health level. Several studies such as Perdana (2017) Novianty (2013). It ends with Waste Utilization and Recycle having a positive effect on Waste Literacy (3,138 with alpha 0.002). this is a common finding where when the customers of this waste bank receive training and direction for the utilization and recycling program of waste, they feel that it has a good impact on the literacy rate of their waste. Segregation of waste between usable and exploitable, reprocessed, recycled and composted increases their knowledge of waste. Garbage banks are assessed from the perspective of customers who are able to contribute to their knowledge in waste utilization and recycling programs. Some supporting findings such as Sofiana & Aji (2015) Wijayanti & Suryani (2015) Perdana (2017)..

5. Conclusion

From this study, it was found that the existence of waste banks from the perspective of their customers in three village namely Bojonggede, Cimandala and Nanggewer had a good impact on their economy, social and health. The economic aspect represented by the increase in income levels is felt by the community with the waste bank program in the form of saving waste which is carried out on a weekly basis. Waste literacy variables are able to increase their income by being more diligent in saving waste in the waste bank. The social aspect represented by the job opportunity is also felt to be affected by the existence of this waste bank. Specifically, waste literacy has a felt impact in the form of absorption of labor and opening up job opportunities for the community. Ending with the health aspect, the waste bank is also considered to have a positive impact on their health level. Garbage bank customers get the benefits of a waste bank from reducing the volume of waste and also making their environment cleaner.

Future recommendations, research is expected to be able to expand the scope of research. Furthermore, the model that is formed is more gradual than the theoretical stage described by the test sequence. It ends with the establishment of an ideal SOP for the waste bank mechanism so that it can become a national model for waste banking.

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