



DOI: [https://doi.org/10.14505/jemt.13.5\(61\).17](https://doi.org/10.14505/jemt.13.5(61).17)

## Analysis of Village Community Recycle Participation Behavior to Maintain Environmental Quality. Empirical Evidence in Waste Banks in Indonesia

Hadi SASANA  
Tidar University, Indonesia  
[Hadisasana@untidar.ac.id](mailto:Hadisasana@untidar.ac.id)

Diah Lutfi WIJAYANTI  
Yogyakarta Veterans National Development University, Indonesia  
[lutfiwijaya72@gmail.com](mailto:lutfiwijaya72@gmail.com)

Herbasuki NURCAHYANTO  
Diponegoro University, Indonesia  
[herbasukinurcahyanto@lecturer.undip.ac.id](mailto:herbasukinurcahyanto@lecturer.undip.ac.id)

Ivo NOVITANINGTYAS  
Tidar University, Indonesia  
[ivo.novitaningtyas@untidar.ac.id](mailto:ivo.novitaningtyas@untidar.ac.id)

### Suggested Citation:

Sasana, H., Wijayanti, DL., Nurcahyanto, H., Novitaningtyas, I. (2022). Analysis of Village Community Recycle Participation Behavior to Maintain Environmental Quality (Empirical Evidence in Waste Banks in Indonesia). *Journal of Environmental Management and Tourism*, (Volume XIII, Fall), 5(61): 1414 - 1423. DOI:[10.14505/jemt.v13.5\(61\).17](https://doi.org/10.14505/jemt.v13.5(61).17)

### Article's History:

Received 3<sup>rd</sup> of June 2022; Received in revised form 7<sup>th</sup> of July 2022. Accepted 3<sup>rd</sup> of August 2022; Published 2<sup>nd</sup> of September 2022. Copyright © 2022 by ASERS® Publishing. All rights reserved.

### Abstract:

Community participation in maintaining environmental quality through waste management is very necessary. This study aims to analyze the behavior of recycling participation in the Theory of Planned Behavior (TPB) framework. The object of the research is the village community members of the Resik Apik Waste Bank, Pati Regency, Central Java Province, Indonesia. Data were analyzed using Structural Equation Modeling - Partial Least Square (SEM-PLS). The results of the analysis show that the recycling participation behavior of rural communities with relatively low levels of education is more driven by personal norms, satisfaction with the service provided, and intention to act. Therefore, it is important to encourage the understanding and knowledge of the villagers about recycling to increase their intention and behavior in recycling waste. Indirectly, social norms are significant for recycling participants through personal norms and intentions to act.

**Keywords:** recycle participation behavior; environmental quality; theory of planned behavior; environmental management.

**JEL Classification:** Q50, Q56.

### Introduction

High population growth followed by an increase in consumption of final goods, has the consequence of increasing the amount of organic and inorganic waste. Based on a study by Jambeck *et al.* (2015) it was stated that in 2010 there were 275 million tons of plastic waste produced worldwide. Around 4.8 - 12.7 million tons of them are wasted and pollute the sea. This is very worrying, so efforts are needed to reduce the amount of waste through the use of waste that can be recycled so that environmental pollution can be prevented. Communities can maintain a sustainable life by implementing the principle of Reduce, Reuse, Recycle (3R).

The Indonesian Plastic Industry Association and the Central Statistics Agency (BPS) stated that plastic waste in Indonesia reached 64 million tons/year, of which 3.2 million tons were plastic waste thrown into the sea (Kompas 2018). The mainstay of a city in solving the waste problem is destruction by landfilling at a Final

Disposal Site (TPA). However, the city government tends to pay less serious attention to the TPA, resulting in cases of failure of waste management at the TPA. Damanhuri & Padmi (2011), stated that the paradigms of waste management that are often used are: collect, transport, and dispose of.

Law Number 18 of 2008 concerning Waste Management mandates the need for a fundamental paradigm shift in waste management, namely from the collect-transport-dispose paradigm to a processing that relies on waste reduction and waste management. Suryani (2014) explains the importance of the role of waste banks for producers to carry out Reduce, Reuse, Recycle (3R) activities by producing products that use packaging that is easily decomposed by natural processes; using production raw materials that can be recycled and reused. Through the waste bank, producers can work together to process waste into useful products.

Ramayah & Lim (2012) study of 200 students in Malaysia using the Theory of Planned Behavior (TPB) perspectiveshows that environmental awareness is significantly related to attitudes towards recycling, while social attitudes and norms have a significant impact on recycling behavior. Meanwhile, the ease and cost of recycling are not significant reasons for recycling. Ho's (2002) study on household recycling behavior in Singapore, shows that the perceived social pressure associated with recycling domestic waste is increasing in Singapore, and as a result recycling intentions are increasing. Knussen *et al.* (2004) used TPB to test the attitude and intention of recycling domestic solid waste in Glasgow by adding the variables of past recycling behavior and recycling habits. The results showed that Past recycling and perceived habits make significant independent contributions. In addition, there was a stronger past behavior-intention relationship for those who did not have the habit of recycling, and a stronger attitude-intention relationship for those who had recycled more in the past.

Based on the phenomena and various variations on the findings of previous studies, this study aims to analyze the factors that influence the recycle participation behavior of rural communities in order to maintain environmental quality. This study took the object of the village community members of the Apik Resik Waste Bank in the village of Kajen, Margoyoso District, Pati Regency, Central Java Province.

## 1. Literature Review

### Theory of Plan Behavior (TPB)

Theory of Reasoned Action (TRA) hypothesizes that the direct determinant of behavior is the individual's intention to perform or not perform the behavior (Ajzen and Fishbein 1980). Intentions are influenced by two factors (Tonglet *et al.* 2004) such as (1) attitudes, favorable or unfavorable individual evaluations in carrying out the behavior, and (2) subjective norms, individual perceptions of social pressure to perform or not to perform a behavior. In fact, individual behavior is based not only on their will but also on other factors, such as perceived behavioral control. Liska (1984) argues that the implementation of many behaviors will be limited by appropriate opportunities, abilities, and resources. Thus, the Theory of Reasoned Action (TRA) has been expanded to include perceived behavioral control variables, a measure of individuals' perceptions of their ability to perform these behaviors, known as the Theory of Planned Behavior (TPB).

TPB states that three factors influence behavior; attitudes toward behavior (personal attitudes and individual behavior), subjective norms (significant influence of others; perceived social pressure), and perceived behavioral control (Ajzen 1991). TPB allows additional variables to be integrated in the model (Ajzen 1991). Various studies have shown that perceived behavioral control has no significant effect on the prediction of recycling behavior, and it is suggested that other variables believed to influence recycling may be included in the TPB (Davies *et al.* 2002).

### Recycling Participants

Recycling Participant is the goal to be achieved, the model that is often used is TPB. However, it is possible for variables outside of TPB to be included because they are believed to have a significant influence on recycling behavior. White and Hyde (2012) studied 200 Australian households to predict recycling intentions and behavior by applying the Structural Equation Model (SEM). The findings show that subjective norms, perceived behavioral control, self-identity and awareness have an effect on recycling behavior. Ari and Yilmaz (2016) used TPB by applying the Structural Equation Model (SEM), stating that the positive ideas of housewives whose opinions are valued, have a positive impact on their recycling behavior. Attitude towards recycling, does not affect recycling intentions, subjective norms on recycling have a positive effect on recycling intentions. Perceived behavioral control (PBC) about recycling, positively affects recycling intentions and recycling behavior. Recycling intention positively affects recycling behavior with path coefficient 0.18

Ho (2002), Shaw (2008), and Mahmud & Osman (2010) revealed that subjective norms are important determinants of recycling behavior. Kirakozyan (2016) identified social norms as having a negative effect on

recycling behavior. Conflicting results were found in the study of Oskamp *et al.* (1991), who pointed out that social pressure is an effective way to ensure community participation in recycling activities. Ghani *et al.* (2013) explained that respondents' positive attitudes were the best predictor of their intention to segregate food waste at home. Meanwhile, situational factors have no significant effect on the intention to separate waste. Wertz's (1976) analysis shows that the amount of waste generated decreases as waste disposal costs increase, and waste generation increases with income. According to Becker (1965) and Pollack Wachter (1975) the amount of waste increases when the cost of collecting waste increases. A study by Van&Houtven and Morris (1999) in Georgia regarding the bag program, found a greater reduction in waste generation compared to the can program.

Sidique *et al.* (2010) analyzes the effect of various policy variables on recycling and waste management on the rate of recycling by utilizing panel data at the district level from Minnesota covering the period 1996-2004. The policy variables examined include variable pricing for waste disposal, spending on recycling education, provision of roadside recycling services and delivery centers, and enforcement of recycling regulations; effect of income and demographic characteristics on recycling rates. After considering random effects and endogenous variables, the results show that the price of the waste disposal variable increases the recycling rate. Hage *et al.* (2009) investigated the determinants of packaging waste recycling efforts in Swedish households, using data from a random sample of 827 households in four different Swedish cities. Using the Probit Regression analysis tool; shows that both economic concerns and moral obligations affect recycling outcomes at the household level. The study also found that convenience plays an important role in influencing recycling outcomes

Callan and Thomas (2006) examined the demand for disposal and recycling services using cross-sectional data from 351 cities in Massachusetts. The results show that communities with grant allocations for recycling education or equipment recycle significantly more than communities without any allocations. Ramayah *et al.* (2012) examined 200 students from the perspective of TPB, the findings show that environmental awareness is significantly related to recycling attitudes, as well as social attitudes and norms have a significant impact on recycling behavior. However, the ease and cost of recycling are not significant reasons for recycling. This study has included additional variables, knowledge and environmental awareness. Recycling costs and the convenience of available recycling infrastructure are treated as perceived behavioral control variables which are then tested against recycling behavior. In addition, the role of attitudes and social norms is also examined. Social norms were found to have the greatest impact on recycling behavior,

Mahmud & Osman (2010) research results showed that perceived behavioral control was the strongest predictor of behavioral intention (= 0.687). Furthermore, subjective norms are also an important factor in intentional behavior (= 0.593). Meanwhile, specific attitudes have an indirect influence on behavioral intentions, through the mediation of subjective norms and behavioral control. Abbott *et al.* (2011) examined 434 local authorities in the UK, finding that the waste collection method chosen by policymakers is an important factor influencing recycling rates. They also found an inverse relationship between the frequency of residual waste collection and the recycling rate.

## 2. Methodology

The object of research is the village community of the customers of the Resik Apik Waste Bank in Kajen Village, Margoyoso District, Pati Regency, Central Java. The sample of respondents is 100 waste bank customers. Data analysis used Structural Equation Modeling - Partial Least Square (SEM-PLS). SEM is used to test the validity of the theoretical framework proposed in this study, as well as to test the research hypothesis. The variables used in this study are as follows:

Table 1. Research Variables

Variables	Reference Sources
Knowledge of issues	Hornik <i>et al.</i> (1995); Bezzina & Dimech (2011)
Awareness of consequences (personal)	Sidique <i>et al.</i> (2010); Ramayah <i>et al.</i> (2012); Bezzina & Dimech (2011)
Personal recycling attitudes and norms	Mosler <i>et al.</i> (2008); Schwab <i>et al.</i> (2014); White and Hyde (2012); Ramayah <i>et al.</i> (2012); Thøgersen (2006); Tonglet <i>et al.</i> (2004); Bezzina & Dimech (2011)
Social recycling attitudes and norms	Chan & Bishop (2013); Ho (2002); Hornik <i>et al.</i> (1995); Oskamp <i>et al.</i> (1991); Shaw (2008); Tucker (1999); Ramayah <i>et al.</i> (2012); Tonglet <i>et al.</i> (2004); Bezzina & Dimech (2011)
Inconveniences (situational factors)	Ghani <i>et al.</i> (2013); Tonglet <i>et al.</i> (2004); Bezzina & Dimech (2011)

Variables	Reference Sources
Motivating factors	Chan & Bishop (2013); Hornik <i>et al.</i> (1995); Bezzina & Dimech (2011)
Intentions to act	Mosler <i>et al.</i> (2008); Chan & Bishop (2013); White and Hyde (2012); Bezzina & Dimech (2011)
Knowledge of strategies and action skills	Grodzinska-Jurczak <i>et al.</i> (2006); Bezzina & Dimech (2011)
Satisfaction with service provided	Tonglet <i>et al.</i> (2004); Wan <i>et al.</i> (2014); Wan and Shen (2013); Bezzina & Dimech (2011)
Scheme preferences	Kirakozian (2016); Bezzina & Dimech (2011)
Recycling participation	Chan & Bishop (2013); Bezzina & Dimech (2011)

SEM-PLS can accommodate research models with formative constructs, namely the relationship between the second order construct and the first order construct as an indicator. SEM-PLS does not require a large number of samples, the data does not have to be normally distributed multivariate (Ghozali & Latan 2014). Based on the research objectives, the research model is shown in Figure 1.

Figure 1. Research Model



### 3. Results and Discussion

#### Respondent Characteristic

Respondents in this study were the village community of Kajen, customers of the Resik Apik Waste Bank as many as 100 people. They have different backgrounds in terms of age, occupation, income, total expenditure, education, and length of time as a Waste Bank customer.

Respondents were given structured questions according to the research objectives. The assessment includes knowledge, problems, awareness of consequences, attitudes and social recycling norms, individual recycling attitudes and norms, hassles, motivational factors, intention to act, knowledge of action strategies and skills, satisfaction with services provided, schema preferences, and recycling participation related to the Resik Apik Waste Bank. Age of maturity is one of the things that affect a person's level of maturity in determining attitudes and making decisions. A person's level of education will determine his attitude and mindset, because in general, the higher a person's level of education, the wider his knowledge. The level of education listed in this

study is the last education taken by the respondent. A brief description of the research respondents is presented in Table 2.

Table 2. Respondent Characteristic

Age	Frequency	Percentage
20-28	4	4%
28-36	24	24%
36-44	28	28%
44-52	27	27%
52-60	10	10%
60-68	5	5%
68-76	2	2%
20-28	4	4%
Level of Education	Frequency	Percentage
Elementary school	25	25%
Junior high school	27	27%
Senior high school	38	38%
Diploma/Bachelor	10	10%
Lenght of Time as A Customer (months)		
0-6	26	26%
6-12	57	57%
12-18	1	1%
18-24	9	9%
24-30	0	0%
30-36	5	5%
36-42	2	2%

Source: processed data, 2022

Based on the age category, respondents in the 36-44 year category were 28 people (28%), 27 people (27%), and 28-36 years old 24 people (24%). From this data, it can be seen that most of the customers of the Resik Apik Waste Bank are of adult and productive age. Based on the education category, 10% of the respondents have higher education/diploma; as many as 38% of respondents have a high school education; by 27% junior high school education, and 25% elementary education. The education of the respondents is relatively low, the average length of education is around 10.04 years. Based on the old category as bank customers, respondents who became customers for 6-12 months were 57 people (57%), category 36-42 months 2 people (2%), category 0-6 months were 26 people (26%).

### Composite Reliability (CR) and Average Variance Extracted (AVE)

Variance extracted shows the amount of variance of the indicators extracted by the developed variable formation. Table 4 shows that the overall value of the loading factor on each indicator item has met the criteria, which is above 0.50. Table 5 shows the composite reliability value for each variable is > 0.5. The results of the variance extracted all constructs have a good AVE value, because they have met the cut-off value requirements, which are equal to or above 0.50.

Table 3. CR and AVE

Variables	CR	AVE
Awareness of Consequences	0.828	0.706
Inconveniences	0.905	0.761
Intentions to Act	0.710	0.574
Knowledge of Issues	0.776	0.651
Knowledge for Strategies and Action Skills	0.776	0.636
Motivating Factors	0.878	0.784
Personal Norms	0.856	0.665
Recycling Participants	0.863	0.616
Scheme Preferences	0.751	0.502
Social Norms	0.825	0.614
Satisfaction with Service Provided	0.759	0.463

Source: processed data, 2022

## Hypothesis Testing Results

Table 4. Path Coefficients

Path	Original Sample	Sample Mean	Standard Deviation	T-Statistics	P-Values	Results
Personal Norms→Awareness of Consequences	0.626	0.636	0.055	11.452	0.000*	Supported
Social Norms→Personal Norms	0.602	0.616	0.058	10,298	0.000*	Supported
Personal Norm→Recycling Participants	0.479	0.481	0.099	4.823	0.000*	Supported
Social Norms→Intentions to Act	0.292	0.300	0.099	2,949	0.003*	Supported
Knowledge of Strategies and Action Skill→Intentions to Act	0.292	0.298	0.085	3.412	0.001*	Supported
Satisfaction with Service Provided→Recycling Participants	0.213	0.228	0.086	2.469	0.014*	Supported
Intentions to Act→Recycling Participants	0.207	0.202	0.077	2,675	0.008*	Supported
Knowledge of Issues→Intentions to Act	0.192	0.199	0.079	2.429	0.015*	Supported
Awareness of Consequence→Recycling Participants	0.014	0.010	0.081	0.179	0.858	Not Supported
Scheme Preferences→Recycling Participants	-0.071	-0.065	0.088	0.808	0.420	Not Supported
Inconveniences→Recycling Participants	-0.107	-0.102	0.083	1,281	0.201	Not Supported
Motivating Factors→Recycling Participants	-0.120	-0.109	0.075	1,605	0.109	Not Supported
Personal Norms→Inconveniences	-0.292	-0.306	0.108	2,689	0.007*	Supported
Personal Norms→Awareness of Consequences	0.626	0.636	0.055	11.452	0.000*	Supported

Source: processed data, 2022

Based on data analysis (Table 4) shows personal norms have a significant positive effect on recycling participants. The people of Kajen village are attached to a religious environment (many Islamic boarding schools) and have good individual values. This is in line with the finding that individual norms have a positive effect on recycling participants. This finding is in line with the research of Ho (2002), Valle *et al.* (2005), Shaw (2008), and Mahmud and Osman (2010) which explain that subjective norms are the determining factors for recycling behavior. Thøgersen (2006) also shows that personal norms are strong predictors that are relevant to behaviors such as the separation of organic and non-organic waste.

Satisfaction with the service provided has a significant positive effect on recycling participants in rural communities. This condition is suspected because the services of the Resik Apik Waste Bank have been very good by forming agents at each level of the Neighborhood Association (RT) and picking up balls of collected household waste. Moreover, every customer of the Resik Apik Waste Bank is given a plastic bag as a place to separate waste.

The next finding shows that intention to act has a significant positive effect on recycling participants, this is in line with the research of Ari and Yilmaz (2016) that recycling intentions positively affect recycling behavior with a path coefficient of 0.18. The study of Wan *et al.* (2014) in Hong Kong, showed that recycling intentions influence recycling behavior and support for administrative action. Research by Nigbur *et al.* (2010) conducted in the UK observed that attitudes affect recycling intentions, and recycling intentions affect recycling behavior.

Awareness of Consequences does not have a significant effect on recycling participants. In contrast to the research of Ramayah *et al.* (2012) studied the determinants of recycling behavior using TPB among 200 students at a university in Malaysia and concluded that environmental awareness about recycling affects recycling attitudes, and will have a positive impact on recycling behavior,

Scheme preferences have no effect on recycling participants. These results differ from the opinion of Boldero (1995) that recycling behavior is likely to be influenced by situational factors such as access to recycling schemes. Klöckner & Oppedal (2011) argue that perceived behavioral control mediates the effect of the type of recycling scheme, the distance to the recycling bin, and the mode of transportation used to reach the recycling site. González-Torre and Adenso Díaz (2005) confirmed that too large a distance between regular and recycling bins was the main (subjective) barrier to participation in recycling schemes. Meanwhile, Dahlén and Lagerkvist

(2010) describe a roadside scheme resulting in approximately twice as much recycling collected as a drop-off system.

Inconveniences (situational factors) are not significant for recycling participants, in line with research by Ghani *et al.* (2013). The analysis of the findings shows that situational factors have no significant effect on waste separation intentions. This shows that positive situations and comfort are not the main issue. Thus, to ensure a high level of participation, local governments should design waste segregation programs that suit the needs of the targeted population. In contrast to the study of Boldero (1995) that recycling behavior is likely to be influenced by situational factors such as the amount of effort involved, inconvenience, storage space, and access to recycling schemes.

Motivating factors are not significant to the recycling participant. In the study of recycling theory, it takes time and expensive effort because individuals have to sort, store, and transport their recycled goods (Smallbone, 2005). So, what is considered relevant are moral norms in encouraging recycling behavior. Thøgersen's (1996) study explains that recycling behavior is best conceptualized as moral behavior rather than economic behavior; because motivation must come from intrinsic sources.

Table 5. Total Indirect Effect

Path	Original Sample	Sample Mean	Standard Deviation	T-Statistics	P-Values	Results
Personal Norm→Recycling Participants	0.040	0.038	0.066	0.612	0.541	Not Supported
Social Norms→Awareness of Consequence	0.377	0.392	0.053	7.056	0.000*	Supported
Social Norms→Recycling Participants	0.373	0.378	0.058	6.476	0.000*	Supported
Social Norms→Inconveniences	-0.176	-0.189	0.070	2.497	0.013*	Supported
Knowledge for strategies and action skills→Recycling Participants	0.060	0.062	0.033	1,812	0.071	Not Supported
Knowledge of issues→Recycling Participants	0.040	0.0041	0.025	1.617	0.106	Not Supported

Source: processed data, 2022

The indirect relationship is shown in Table 5. Indirectly, social norms are significant for recycling participants through personal norms and intentions to act. This result is in line with the findings of Schwartz (1977) which states that social norms influence personal norms and as a result, this can have an indirect influence on recycling behavior. This is normal in Southeast Asian countries such as Indonesia because mutual cooperation activities dominate many aspects of daily life (Hofstede and Bond 1988), so social pressure plays an important role in influencing people's behavior (Ramayah *et al.* 2012)

Knowledge for Strategies and Action Skills is not significant to the recycling of participants through intentions to act. This is different from the findings of several previous researchers. Callan and Thomas (2006) examined the demand for disposal and recycling services using cross-sectional data from 351 cities in Massachusetts. The results show that communities with grant allocations for recycling education or equipment recycle significantly more than communities without any allocations. Sidique *et al.* (2010) found that communication and education efforts aimed at increasing awareness of recycling can influence individuals to engage more in recycling behavior.

## Conclusion

The recycling behavior of the community in Kajen Village is significantly influenced by personal norms, satisfaction with service provided, and intention to act. Intentions to act themselves are influenced by social norms, knowledge of strategies and action skills, knowledge of issues. This is supported by the excellent service of the Resik Apik Waste Bank by providing plastic bags to separate waste and picking up balls every week for customers who save waste through agents in each Neighborhood Association (RT). The waste bank picks up the ball every day to the houses that subscribe to the disposal of waste that has not been able to be recycled by the waste bank such as organic waste and non-organic waste that has no economic value (such as food or beverage packaging). Furthermore, it is necessary to increase public knowledge about recycling to increase intentions so as to increase behavior in recycling.

While the variables Awareness of Consequences, Scheme preferences, Inconveniences (Situational Factors), Motivating Factors, does not significantly affect recycling participant. Recycling is a complicated job that has to be sorted out and time consuming, the economic value is very small for the size of the household. But the

people in Kajen Village are still enthusiastic as customers of the Waste Bank because they are driven by social norms in the community, where mutual cooperation activities are still high. Moreover, encouragement from personal norms and community satisfaction toward excellent service from Resik Apik Waste Bank.

## References

- [1] Abbott, A., Nandeibam, S., and O'Shea, L. 2011. Explaining the variation in household recycling rates across the UK. *Ecological Economics*, 70(11): 2214-2223.
- [2] Ajzen, I. 1991. The theory of planned behavior. *Organ. Behav. Hum. Decis. Process.*, 50(2): 179–211
- [3] Ajzen, I., and Fishbein, M. 1980. Understanding attitudes and predicting social behavior. Prentice-Hall, Englewood-Cliffs, NJ.
- [4] Ari, E., and Yilmaz, V. 2016. A proposed structural model for housewives' recycling behavior: A case study from Turkey. *Ecological Economics*, 129: 132-142.
- [5] Becker, G. S. 1965. A theory of the allocation of time. *The Economic Journal*, 75 (299): 493–517.
- [6] Bezzina, FH, and Dimech, S. 2011. Investigating the determinants of recycling behavior in Malta. *Management of Environmental Quality: An International Journal*, 22(4): 463-485.
- [7] Boldero, J. 1995. The Prediction of Household Recycling of Newspapers: The Role of Attitudes, Intentions, and Situational Factors 1. *Journal of Applied Social Psychology*, 25(5): 440-462.
- [8] Callan, SJ, and Thomas, JM. 2006. Analyzing demand for disposal and recycling services: a systems approach. *Eastern Economic Journal*, 32(2): 221-240.
- [9] Dahlén, L., and Lagerkvist, A. 2010. Evaluation of recycling programs in household waste collection systems. *Waste Management & Research*, 28(7), 577-586.
- [10] Damanhuri, E., and Padmi, T. 2010. *Diklat Lecture TL-3104 Waste Management*. Bandung Institute of Technology. Bandung.
- [11] Davies, J., Foxall, GR, and Pallister, J. 2002. Beyond the intention–behavior mythology: an integrated model of recycling. *Marketing theory*, 2(1): 29-113.
- [12] Ghani, Wawak, Rusli, IF, Biak, DRA, and Idris, A. 2013. An application of the theory of planned behavior to study the influencing factors of participation in source separation of food waste. *Waste management*, 33(5): 1276-1281.
- [13] Ghozali, I., and Latan, H. 2014. *Structural Equation Models: Alternative Methods to Partial Least Square (PLS)*. Semarang: Diponegoro Publisher Agency.
- [14] González-Torre, P.L., and Adenso-Díaz, B. 2005. Influence of distance on the motivation and frequency of household recycling. *Waste management*, 25(1): 15-23.
- [15] Grodzińska-Jurczak, M. et al. 2006. Effects of an educational campaign on public environmental attitudes and behavior in Poland. *Resources, Conservation and Recycling*, 46(2): 182-197.
- [16] Hage, O., Söderholm, P., and Berglund, C. 2009. Norms and economic motivation in household recycling: empirical evidence from Sweden. *Resources, Conservation and Recycling*, 53(3): 155-165.
- [17] Ho, Y.Y. 2002. *Recycling as a sustainable waste management strategy for Singapore: an investigation to find ways to promote Singaporean's household waste recycling behaviour*. Lund University.
- [18] Hofstede, G., and Bond, M.H. 1988. The Confucius connection: From cultural roots to economic growth. *Organizational dynamics*, 16(4): 5-21.
- [19] Hornik, J., Cherian, J., Madansky, M., and Narayana, C. 1995. Determinants of recycling behavior: A synthesis of research results. *The Journal of Socio-Economics*, 24(1): 105-127.
- [20] Jambeck, JR, et al. 2015. Plastic waste inputs from land into the ocean. *Science*, 347(6223): 768-771.
- [21] Kirakozian, A. 2016. The determinants of household recycling: social influence, public policies and environmental preferences. *Applied Economics*, 48(16): 1481-1503.
- [22] Klöckner, C.A., and Oppedal, I.O. 2011. General vs. domain specific recycling behavior—Applying a multilevel comprehensive action determination model to recycle in Norwegian student homes. *Resources, Conservation and Recycling*, 55(4): 463-471.



- [23] Knussen, C., Yule, F., MacKenzie, J., and Wells, M. 2004. An analysis of intentions to recycle household waste: The roles of past behaviour, perceived habit, and perceived lack of facilities. *Journal of environmental psychology*, 24(2): 237-246.
- [24] Liska, A.E. 1984. A critical examination of the causal structure of the Fishbein/Ajzen attitude-behavior model. *Social psychology quarterly*, 61-74.
- [25] Mahmud, SND, and Osman, K. 2010. The determinants of recycling intention behavior among the Malaysian school students: an application of theory of planned behavior. *Procedia-Social and Behavioral Sciences*, 9: 119-124.
- [26] Mosler, H.J., et al. 2008. Deriving interventions on the basis of factors influencing behavioral intentions for waste recycling, composting, and reuse in Cuba. *Environment and Behavior*, 40(4): 522-544.
- [27] Nigbur, D., Lyons, E., and Uzzell, D. 2010. Attitudes, norms, identity and environmental behaviour: Using an expanded theory of planned behavior to predict participation in a curbside recycling programme. *British Journal of Social Psychology*, 49(2): 259-284.
- [28] Oskamp, S., et al. 1991. Factors influencing household recycling behavior. *Environment and behavior*, 23(4): 494-519.
- [29] Ramayah, T., Lee, JWC, and Lim, S. 2012. Sustaining the environment through recycling: An empirical study. *Journal of environmental management*, 102: 141-147.
- [30] Schwab, N., Harton, HC, and Cullum, JG. 2014. The effects of emergent norms and attitudes on recycling behavior. *Environment and Behavior*, 46(4): 403-422.
- [31] Schwartz, S.H. 1977. Normative influences on altruism. In *Advances in experimental social psychology* (Vol. 10, pp. 221-279). Academic Press.
- [32] Shaw, P.J. 2008. Nearest neighbor effects in curbside household waste recycling. *Resources, Conservation and Recycling*, 52(5): 775-784.
- [33] Sidique, S.F., Joshi, S.V., and Lupi, F. 2010. Factors influencing the rate of recycling: An analysis of Minnesota counties. *Resources, Conservation and Recycling*, 54(4): 242-249.
- [34] Smallbone, T. 2005. How can domestic households become part of the solution to England's recycling problems? *Business Strategy and the Environment*, 14(2): 110-122.
- [35] Suryani, A.S. 2014. The role of the waste bank in the effectiveness of waste management (case study of the Malang waste bank). *Journal of Aspirations*, 5(1): 71-84.
- [36] Thøgersen, J. 2006. Norms for environmentally responsible behavior: An extended taxonomy. *Journal of environmental Psychology*, 26(4): 247-261.
- [37] Thøgersen, J. 1996. Recycling and morality: A critical review of the literature. *Environment and behavior*, 28(4): 536-558.
- [38] Tonglet, M., Phillips, P.S., and Read, AD. 2004. Using the Theory of Planned Behavior to investigate the determinants of recycling behaviour: a case study from Brixworth, UK. *Resources, conservation and recycling*, 41(3): 191-214.
- [39] Tucker, P. 1999. Normative influences in household waste recycling. *Journal of Environmental Planning and Management*, 42(1): 63.
- [40] Valle, POD, Rebelo, E., Reis, E., and Menezes, J. 2005. Combining behavioral theories to predict recycling involvement. *Environment and behavior*, 37(3): 364-396.
- [41] Wan, C., Shen, GQ, and Yu, A. 2014. The role of perceived effectiveness of policy measures in predicting recycling behavior in Hong Kong. *Resources, Conservation and Recycling*, 83: 141-151.
- [42] Wertz, K.L. 1976. Economic factors influencing households' production of refuse. *Journal of environmental economics and management*, 2(4): 263-272.
- [43] White, K.M., and Hyde, MK. 2012. The role of self-perceptions in the prediction of household recycling behavior in Australia. *Environment and Behavior*, 44(6): 785-799.
- [44] Kompas. 2018. Indonesia is the Second Largest Plastic Waste Contributor in the World. Retrieved September 29, 2019. Available at: <https://megapolitan.kompas.com/read/2018/08/19/21151811/indonesia-penyumbang-sampah-plastik-terbesar-kedua-di-dunia>