

Paid Plastic Shopping Bags Policy: What the Factors Drive the Implementation?

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Abstract: Several regional governments in Indonesia have implemented paid plastic shopping bags policy to reduce micro-plastic waste. However, there is little study to evaluate the implementation of this program. To fill the research gap, we seek the implementation of the regulation by investigating factors determining policy effectiveness. The ultimate purpose of this paper is to illuminate what factors affecting the implementation of the policy. To achieve the objective, we studied the implementation of paid plastic bags in Depok City, West Java, Indonesia, by employing a survey. One hundred and thirty-four respondents had participated in this research and shared their responses on the policy. A partial least square structural equation modeling (PLS-SEM) was applied to analyze the data. The results show that three factors contributed to policy implementation, namely knowledge, awareness, and compliance. The current research extends Grindle's theory by examining individual determinants as predictors of policy implementation. This study also adds our knowledge into how society responds to paid plastic shopping bags policy in the Indonesian context and contributes to the government in designing a suitable strategy to implement the program effectively.

Keyword: Implementation; Policy; Paid plastic bags; PLS-SEM; Depok City.

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INTRODUCTION

Nowadays, Indonesia faces the problem of plastic pollution generally caused by household waste. Plastic has become a prominent waste in Indonesia because it is straightforward to find in everyday life. It is available in coffee cups, grocery bags, packaging snacks, bottled water. Current estimates suggest that around 85,000 tons of trash are generated daily in Indonesia, with an estimated increase of up to 150,000 tons produced per day by 2025, a rise of 76% in just ten years. Around 40 percent of solid waste is produced by households (World Bank, 2018). From the total of daily waste, about 14 percent or 24,500 tons are plastic waste in which plastic bags contribute approximately 84 percent or 20,900 tons (Rosadi, 2019).

One of the sources of plastic waste is plastic shopping bags. Plastic shopping bags are usually available when people shop in the market, both traditional and modern. To reduce plastic shopping bags, various regional governments in Indonesia issued the policy of plastic bag charge. Seventeen cities in Indonesia implemented the policy, namely Ambon, Balikpapan, Banjarmasin,

Bogor, Kendari, Makassar, Malang, Medan, Tangerang, Tangerang Selatan, Banda Aceh, Bandung, Depok, Jayapura, Pekanbaru, Semarang, and Surabaya (Ministry of Environment and Forestry Republic of Indonesia, 2016). The policy regulates that every person who shops in the modern market, such as Alfamart, Indomaret, Alfamidi, Foodmart, Hypermart, etc., will be charged around IDR 200 for a plastic bag if they do not bring their suitcase.

Depok is one of the cities implementing a policy bag charge policy. The city government of Depok issued the policy in 2016. It is continuously implemented until today through Mayor of Depok Regulation No. 12 of 2020 about the use of the environmentally friendly plastic bag in the markets. The law was encouraged by the rise of plastic rubbish in Depok. It was estimated that there were almost 1,400 tons a day of plastic waste produced by the community. On the other side, Depok has a limited capacity to manage the rubbish because Depok can only manage 1,208-ton waste per day (Paramita et al., 2018). Therefore, the government of Depok realizes that the issue of plastic litter is critical to be accomplished. To achieve the policy goals, the Depok City Government collaborated with the owner of all modern markets and called them to implement the current policy. If they were not properly involved in realizing the policy, they obtained a punishment by the local government, including withdrawal of their business operation permit. Thus, all modern markets made no other choice than implement the policy.

Many studies have addressed paid plastic shopping bags. Nonetheless, the majority of the research stream is limited to a subset of the issue of the economic aspect of the policy (Hasson et al., 2007), consumer attitude, and behavior after implementing the law (Dikgang et al., 2012; He, 2012; Martinho et al., 2017), and campaign of the policy (Zen et al., 2013). For example, Hasson et al. (2007) studied the price elasticity of plastic bags legislation in South Africa. They found that the plastic bags market is relatively inelastic in price and price-only instruments may have limited effectiveness. Dikgang & Visser (2012) examined customers' sensitivity to the plastic bag's improvement and associated price charges by measuring the environmental efficacy and efficiency of the legislation of plastic bags in Botswana. They suggested that the adoption of the regulations on plastic bags led to a substantial decrease in the use of plastic bags per 1,000 Botswana shopping *pulas*. The limited achievement of the charges imposed in Botswana was attributed to the consistently high bag prices. Zen et al. (2013) tested the consumer's attitudes toward charged plastic bag policy in Malaysia. They pointed out that there were different attitudes toward consumer's responses. Furthermore, in supermarkets, customers are more tolerant of the plastic bag ban, but not its application to other forms of public markets. The research tracks the behavior patterns mechanism of customers in the three conditions of anti-consumer actions.

The present study attempts to address the gap in the current research of paid plastic bags' policy twofold. First, we focused on the implementation of a paid plastic shopping bags policy in a developing country. Several studies have explained the implementation of the plastic bags policy worldwide (Khoiruman & Haryanto, 2017). However, we still lack understanding about how its practices in the third world. It is important because there are a variety of differences between developed and developing countries, particularly the character of the society. Second, we expand Grindle's (2017) theory by recognizing individual dimensions, individual knowledge and awareness, in leveraging policy implementation. Various scholars have applied Grindle's notion in the study of policy implementation. Many of them have ignored individual features determining policy implementation (Eckhard & Parizek, 2020) although it frequently plays a critical role in achieving policy objectives (Lesnikowski et al., 2021). Eventually, our study quantitatively illuminates the citizen behavioral factors affecting the implementation of the policy. Numerous research stream of policy implementation is dominated by qualitative design (Schofield, 2001). This paper aims at examining the implementation of paid plastic bags in Depok City, West Java, Indonesia. To achieve this study's objective, we formulated the research question: what factors determining the implementation of the policy.

A policy implementation lens was employed in the case. Theoretically, there are three major generations in the policy implementation (DeLeon & DeLeon, 2002). In the development of these generations, there is a serious debate between the top-down and bottom-up lens in the study of policy implementation, even until today. The critical point of the discussion is the key

success factor of policy implementation, structure or target group (Hupe et al., 2014). The proponent of top-down highlights the role of the structural dimension determining the effectiveness of policy implementation. Therefore, much of the scholars of top-down focused on bureaucratic or implementation structure (Edward III, 1980; Sabatier & Mazmanian, 1980), control, communication, and resources (Pressman & Wildavsky, 1984), content and policy environment (Grindle, 2017). However, the bottom uppers notion highlights policy implementation on the lowest layer in the implementation process, implementors or agencies. They seek the factors affecting policy implementation by explaining the attitudes, behavior, and compliance of the actors (Lipsky, 2010), including networks among them (Hjern & Porter, 1997). Instead, look at the structure, bottom-up more interested on the role of agent and institution.

In this study, we utilize Grindle's (2017) assessment of policy implementation to analyze the implementation of paid plastic shopping bags policy. Grindle formulated a model of policy implementation by emphasizing policy content and context (Yudiatmaja, 2016a). According to Grindle, both policy content and implementation context have a significant role in affecting policy implementation. Policy content is related to all features notably regulated in the policy. The context of policy is environmental circumstances affecting the implementation. We include two variables related to how the target groups understand the plastic-bag levy policy's scope, specifically knowledge, and awareness in terms of policy content. In terms of the policy context, we put one variable associated with the obedience of the target groups regarding the policy. These variables are employed to predict the implementation's effectiveness quantitatively. We, therefore, test three hypotheses in this research, namely community's knowledge on the policy affects the implementation of paid plastic bags (hypothesis 1), individual awareness impacts the implementation (hypothesis 2), and compliance of the society positively influences the implementation of charge plastic bags (hypothesis 3). The present work contributes to Grindle's (2017) theory of policy implementation by specifying and adding the context of policy with the individual context implementing the program. In the case of paid plastic bags policy, we introduce individual knowledge and awareness as a predictor of policy implementation

The rest of this paper is organized into three sections. First, we describe the methodological aspect of the research covering the research approach, data collection, instrument, and strategy to analyze the data. The results and discussion of the findings are presented in the next part. In this section, the main findings, hypothesis testing, and the interpretation of the theory are entirely displayed. Finally, the last section of this paper is the conclusion. It summarizes the results and implications of the study.

RESEARCH METHOD

A survey method was applied to reach the objectives of the study. The research instrument was proposed in accordance with the theoretical framework and research variable. The proposed constructs in this study were knowledge, awareness, compliance, and implementation of paid plastic bags law. Knowledge evaluated the stock of information about the emergence and urgency of reducing plastic waste through paid plastic bags policy. The sample question for this variable was, "I know that our environment has been contaminated by plastic waste." Awareness assessed the understanding of the people about the policy impact. The sample question was, "I believe that the policy can reduce plastic waste." Compliance measured the individual willingness to realize the policy. The following sample question for this variable is, "I voluntarily accept the policy." Implementation of paid plastic bags identified the practice of the regulation to be realized by the target group. The sample question for this construct was, "The implementation of paid plastic bags policy is important and useful". The questionnaire contained three sections, including general information about respondents, three items about knowledge, five items about awareness, five items about compliance, and three policy implementation items. It was aimed to obtain the respondent's attitudes toward the policy of paid plastic shopping bags in Depok. All items were assessed using a Likert scale ranging from totally disagree (1) to agree (5) totally. We informed in the questionnaire that all information completed in the questionnaire would be ensured it's secret and used merely for academic purpose

We distributed questionnaires through online forms by using google docs because of the Covid-19 pandemic. It was dispersed through the community of Depok residences in various

social media, such as Facebook, Instagram, and Twitter, from January to March 2020. We requested the online platform group's administrator to announce our online questionnaire to be filled by the group members. To attract an enormous response from the participant, we offered several gifts to the respondent who want to participate in the study, such as the balance of e-wallet (e.g., Ovo, Gopay, and Dana). Finally, 141 persons responded to the survey, and 135 data were valid for further analysis. To fill the ethical conduct and address common method variance, the respondent's name was confidential (Chang et al., 2010).

The data were analyzed using partial least square structural equation modeling (PLS-SEM) using SmartPLS to test the theoretical model and the hypotheses. PLS-SEM was popularly used to predict the nonparametric data and can be run with a small sample (Sarstedt et al., 2014). In this study, we applied PLS-SEM to estimate the structural models and to predict the role of independent variables (knowledge, awareness, and compliance) in predicting the dependent variable (implementation of paid shopping bags policy). To evaluate factor loadings, path coefficients, and their respective significance levels, the PLS algorithm followed by bootstrapping sampling (5000 re-sample) was employed (Prastya et al., 2021). In line with Anderson and Gerbing's (1988) guidelines, the measurement model was evaluated, followed by an analysis of the structural model.

RESULT AND DISCUSSION

Descriptive Statistics

Table 1. showed the demographical background of the respondent. Demographical sketches of the respondent spread in various backgrounds. 57% of the respondent was female, and the rest was male. Because Depok was one of the cities of education in Indonesia, much of the respondent was still young (20-29 years old around 48.1%), student (35.6%), and undergraduates (29.6%).

Table. 1 Demographic Characteristics of the Respondent

	Frequency	Percentage
Sex		
Male	58	43.0
Female	77	57.0
Age (years)		
20-29	65	48.1
30-39	42	31.1
40-49	23	17.0
>50	5	3.7
Education		
Elementary School	5	3.7
Senior High School	52	38.5
Diploma	26	19.3
Undergraduate	40	29.6
Graduates	12	8.9
Occupation		
Full-time Job	18	13.3
Public Servant	15	11.1
House-wife	16	11.9
Retirement	4	3.0
Self-employed	32	23.7
Student	48	35.6
Others	2	1.5
Duration to Shop (a month)		
<10 times	9	6.7
10-20 times	28	20.7
>20 times	98	72.6

The data showed that majority of the respondent was relatively well educated. The data also indicated that the respondents had various jobs, such as self-employed (23.7%), full-time job

(13.3%), house-wife (11.9), and public servant (11.1). Most of the respondents (72.6%) regularly buy to the modern market above 20 times a month. This fact suggested that individual shopping behavior had changed to the modern market as a consequence of capitalism-oriented development in many cities in Indonesia (Yudiatmaja, 2016c, 2016b).

Validity and Reliability

Before analyzing the data, we checked the validity and reliability of the data. Several tests are conducted to ensure the quality of the research data. Firstly, we tested the measurement model of the research by checking convergent validity. It was carried out by employing each item's loadings, composite reliability (CR), and the average of variance extracted (AVE). Table 2. depicts the results of the model evaluation. All items are valid because the loadings are greater than 0.7, CR values more than 0.7, and AVE of all latent variables over 0.5, as recommended by Hair et al. (2017) and McKay & Marshall (2007). Cronbach's alpha ranged from 0.836 to 0.919, revealing that these variables were reliable.

Table. 2 Measurement Model Assessment

Studied Variable and Item	Loadings	AVE	CR	Cronbach's α
Knowledge		0.800	0,923	0.875
KN1	0.892			
KN2	0.905			
KN3	0.887			
Awareness		0.756	0.939	0.919
AW1	0.858			
AW2	0.868			
AW3	0.897			
AW4	0.862			
AW5	0.863			
Compliance		0.723	0.929	0.904
COM1	0.846			
COM2	0.893			
COM3	0.864			
COM4	0.794			
COM5	0.851			
Implementation		0.753	0.902	0.836
PI1	0.883			
PI2	0.858			
PI3	0.863			

Table 3 displayed the mean, standard deviation, and correlation among the constructs. Minimum and maximum theoretical scores proposed in this work ranged from 1 (very disagree) to 5 (very agree). After processing the data, we found that the maximum actual score was five and the minimum actual score was two. The scores were confirmed by the mean of each construct, in which the average of respondent's answers for each item and variable was 3. It pointed out that a larger part of the respondent was enough to agree with the paid plastic bags policy in Depok City. The standard deviations of each latent variable were small (below 1), exhibiting a normal distribution. Correlations among research variables in Table 3. revealed that all relationships had a positive and significant relationship. Knowledge enhanced policy implementation ($r = 0.754$; $p < 0.001$). Awareness correlated with implementation ($r = 0.798$; $p < 0.001$). Compliance associated with implementation ($r = 0.757$; $p < 0.001$).

Table. 3 Mean, Standard Deviation, and Intercorrelations

Construct	Mean	SD	1	2	3	4
Knowledge	3.338	0.840				
Awareness	3.296	0.754	0.767***			
Compliance	3.310	0.675	0.729***	0.776***		
Implementation	3.252	0.699	0.754***	0.798***	0.757***	

*** $p > 0.001$

Following Fornell and Larcker's (1981) procedure, we inspected the discriminant validity of the construct. Discriminant validity refers to how empirical criteria differentiate a construct from other constructs (Hair et al., 2017). In the matrix diagonal, the square root of the AVE of each construct is greater than the associated correlation (off-diagonal) in the respective rows and columns, implying that sufficient discriminant validity is reached. We also applied the current procedure to evaluate discriminant validity by assessing the means of Heterotrait-Monotrait (HTM) comparison of the associations (Henseler et al., 2015). HTMT standards are more restrictive and a more convenient method of determining discriminant validity. As shown in Table 2, all the current model is higher than 0.85 in order to pass the HTMT criterion, accordingly exhibiting that the discriminant value is not a problem in this work.

Table. 4 Discriminant Validity

	1	2	3	4
Fornell and Larcker's Criteria				
Awareness	0.870			
Compliance	0.776			
Implementation	0.798	0.850		
Knowledge	0.767	0.757	0.868	
Heterotrait-Monotrait (HTMT)				
Awareness				
Compliance	0.853	0.729		
Implementation	0.907	0.869	0.754	
Knowledge	0.855	0.821	0.881	0.895

Hypotheses Assessment

A structural equation modeling (SEM) using SmartPLS was used to assess the structural model and research hypotheses. Henseler recommended that the standard root mean square residual (SRMR) should be stated as the appropriate model fit requirement (Henseler et al., 2016). To achieve a proper fit for PLS path analysis, an SRMR score below 0.08 is suggested. The result shows that the SRMR is 0.048; thereby, the data model fits the data. Table 3 summarizes the results of the hypotheses testing. According to the results, it can be understood that all of the hypotheses proposed are accepted. In order words, knowledge ($\beta = 0.260$; $t = 4.147$; $p < .01$), awareness ($\beta = 0.397$; $t = 5.547$; $p < .01$), and compliance ($\beta = 0.259$; $t = 3.971$; $p < .01$) significantly influence implementation of paid plastic bag policy.

Table. 5 Structural Estimates

Hypotheses	β	t-value	p	Decision
H1: Knowledge \rightarrow Implementation	0.260	4.147**	0.000	Accepted
H2: Awareness \rightarrow Implementation	0.397	5.547**	0.000	Accepted
H3: Compliance \rightarrow Implementation	0.259	3.971**	0.000	Accepted

Note: Critical t-value

**2,614 ($p > 0.01$)

Additionally, Figure 1. also displays the R-square and the output of the hypotheses testing. It can be seen that all the predictors incorporating knowledge, awareness, and compliance explain 70.9% of the implementation of the policy of paid plastic shopping bags ($R^2 = 0.709$). In addition, there are 29.1% of other predictors affecting the performance of the law, not yet recognized in this investigation. In order to show that the model is correct, Chin et al. used the

R^2 values as substantial, moderate, or inadequate for their dependent structures. Accordingly, policy implementation can be defined as significant using Chin criteria ($R^2 = 0.709$) (Chin et al., 2008).

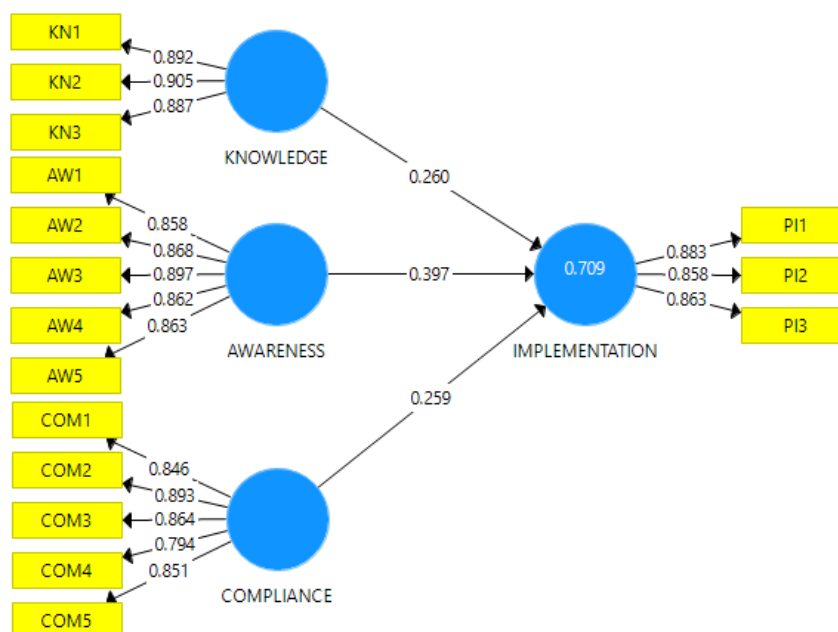


Figure. 1 Path Diagram of the Relationships Variables
 Source: SmartPLS Output

Discussion

As a buffer zone of Jakarta, Depok has rapidly grown as a metropolitan city in Indonesia. In addition, Depok also develops into a more complex city because many universities are located here. Consequently, Depok faces the problem of waste, mainly plastic waste. As clarified in Mayor of Depok Regulation No. 12 of 2020, paid plastic bag charge is one of the policies used by the city government of Depok to address the issue of plastic bag litter. Our findings reveal several predictors influencing the implementation of paid plastic bags in Depok, involving knowledge, awareness, and compliance. Knowledge and awareness include policy content. Compliance is related to policy context. The results suggest that awareness is the most critical factor reinforcing the implementation. In the perspective of policy content, awareness of the beneficiary is a key point to reach policy effectiveness (Bakaki & Bernauer, 2017). If the people are aware of the policy goals and objectives, they will voluntarily comply with the policy (Brown et al., 2016). The awareness of Depok citizens is influenced by the educational setting of Depok society, which is well educated. Because they appreciate the policy of charged plastic bags, educated people can consent more to the policy. In sum, the paid plastic bags policy is more convenient to realize in a well-educated setting than others.

Theoretically, this study confirms Grindle's (2017) policy implementation concept by recognizing policy content and the context of policy implementation. Grindle argued that these two variables tremendously contributed to policy implementation effectiveness (Yudiatmaja, 2016a). These findings are also similar to prior studies of implementation, emphasizing the institutional and socio-cultural context of where the policy is implemented (Samnuzulsari et al., 2021; Yudiatmaja, Samnuzulsari, et al., 2020). Yudiatmaja (2013) sought the environmental context of Sleman's community post-Merapi eruption's rehabilitation and reconstruction policy. He noted that the appropriate policy should consider Merapi's community's socio-cultural context who was a farmer and breeder depending on the forest area around mount Merapi. Yudiatmaja et al. (2020) described the local community's social capital in implementing water resources management in Kepulauan Riau. They found that the communities' numerous social capitals contributed to the success of water resources management, such as trust, norms, and

cooperation. More currently, Yudiatmaja et al. (2021) examined how social policies on rural coastal area fails? Criticizing the case of social assistance for the Fishermen in Bintan, Kepulauan Riau, they indicated that the government ignores the policy content and policy context in the making and implementing the policy. Because the assistances were useless to the target group, the policy was thoroughly failed.

The work presented here makes several main research contributions, not only to the body of literature but also to the practice. Our research is the first step towards a more profound understanding of how policy content and the context of implementation determine the implementation of paid plastic shopping bags levy in Indonesian society. This study completes previous research in the stream of implementation by clarifying Grindle's theory on plastic bags policy. Our work also contributes to the study of policy implementation in terms of methodological aspects because we applied PLS-SEM in measuring policy content and context affecting the implementation. Our results can be considered by the regional government in implementing the paid plastic bags policy. The data indicates that the average score for each research variable was 3, showing that the people were still not satisfied with the policy implementation yet. The government should enhance the community's knowledge, awareness, and compliance with the policy's importance. It can be conducted by continuously socializing both the contents and the objectives of the law. The government can apply the manifold of instruments to communicate the policy, including using social media, such as Facebook, Twitter, and Instagram, to widely reach target groups.

Despite the contributions of our inquiry, the present study has several limitations declared here. It should be noted that, first, our research attempts to understand the individual behavioral intention to follow the implementation of paid plastic bags policy by proposing knowledge, awareness, and compliance as a predictor. Other variables are influencing the implementation in the literature of policy implementation (O'Toole, 2000; Yudiatmaja, 2012; Yudiatmaja, Prastya, et al., 2021). Thereby, future research can add many more variables in predicting the implementation of paid plastic bags, precisely attitude, culture, and perceived support. Second, this research was conducted merely to examine Depok City's case, instead studied several cases. Consequently, the study results may be limited to the research's population and cannot generalize all cases of Indonesia. To address the issue, further researchers should apply a multi-case study by seeking a diversity of cities. Third, the research sample was quietly small because of the use of online forms and time restrictions. Researchers can meet the respondent door to door to achieve an adequate number of samples, despite the Covid-19 pandemic circumstances. Finally, the examination only used a single method, quantitative. The quantitative approach's strength is on the prediction power and generalization on the population, but it is limited to offer an extensive explanation of why it occurs (Morgan, 2018). The next research can utilize mixed methods to address the limitation of our study.

CONCLUSION

In this study, we investigate the factors contributing to implementing the paid plastic shopping bags policy in Indonesia. Our results suggest that implementing a paid plastic shopping bags policy is affected by knowledge, awareness, and society's compliance with the system. In summary, we see these substantial contributions in our research, both theoretical and practical objectives. Theoretically, our study extends implementation studies developed by Grindle by quantitatively analyzing individual knowledge and awareness in predicting the implementation of paid plastic bags policy. The study emphasizes the emergence of intentional behavior of the target group in the policy implementation. In practice, the study's findings can be recommended to the local government's policymaker in implementing paid plastic bag charges by stressing the target groups' behavioral intentions. The government should increase the target group's knowledge, compliance, and awareness to effectively implement paid plastic bags levy.

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