

The Influence of Environmental Awareness, Knowledge, and Consumer Income on the Reduction of Plastic Shopping Bag Use

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Plastic waste has become one of the most critical environmental issues in Indonesia due to the increasing consumption of single-use plastic products, particularly plastic shopping bags. Excessive plastic usage contributes significantly to environmental pollution, as plastic materials require a very long time to decompose and can cause serious damage to terrestrial and marine ecosystems. Therefore, understanding the factors that influence consumer behavior in reducing plastic shopping bag usage is essential for promoting sustainable consumption. This study aims to analyze the influence of environmental awareness, consumer knowledge, and consumer income on the reduction of plastic shopping bag usage among students of Dian Nusantara University in Jakarta. This research employed a quantitative approach using a survey method, where data were collected through questionnaires distributed to 95 respondents. The data were analyzed using multiple linear regression with the assistance of SPSS software. The results show that environmental awareness, knowledge, and consumer income significantly influence the reduction of plastic shopping bag usage, both partially and simultaneously. Environmental awareness was identified as the most dominant factor affecting consumers' behavior. These findings highlight the importance of strengthening environmental education, increasing public knowledge, and supporting sustainable consumption practices to reduce plastic waste and promote environmental sustainability.

Keywords: Environmental Awareness; Consumer Knowledge; Consumer Income; Plastic Bag Reduction; Sustainable Consumption

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1. Introduction

Plastic waste has become one of the most pressing environmental challenges faced by many countries, including Indonesia [1]. Rapid population growth, urbanization, and changes in consumption patterns have significantly increased the volume of waste generated from daily human activities [2]. According to the World Health Organization, waste refers to materials that are no longer used or desired and are discarded as a result of human activities [3]. In the Indonesian regulatory context, Law No. 18 of 2008 on Waste Management defines waste as the residue of daily human activities and natural processes in solid form [4]. The increasing volume of waste has become a serious environmental concern, particularly due to the rising proportion of plastic waste which is difficult to decompose naturally [5].

Indonesia is currently facing a significant plastic waste crisis. Data from the Ministry of Environment and Forestry of Indonesia reported that national waste generation reached approximately 68 million tons in 2019, with plastic waste contributing around 9.52 million tons [6], [7]. The production of waste continues to increase each year, with an average annual rise of approximately one million tons [8]. Globally, plastic waste has also become a critical environmental issue. The World Economic Forum in its report *The New Plastics Economy: Rethinking the Future of Plastics* predicts that by 2050 the amount of plastic in the oceans could exceed the number of fish if current consumption patterns continue [9]. This alarming

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projection highlights the urgency of reducing plastic consumption, particularly single-use plastic products such as shopping bags.

Plastic waste poses serious threats to environmental sustainability due to its extremely slow degradation process. Plastic materials can take more than 20 years, and in some cases up to 100 years, to decompose in natural environments[10]. The accumulation of plastic waste contributes to soil contamination, water pollution, and ecological disruption. Microplastics that enter soil and water systems can harm decomposer organisms and aquatic life, thereby disrupting ecosystems and food chains. Marine animals such as turtles, dolphins, and seals often mistake plastic waste for food, which may lead to fatal consequences [11], [12], [13]. Furthermore, plastic waste that blocks waterways can increase the risk of flooding in urban areas.

The growing environmental impacts of plastic waste have prompted governments and communities to implement various policy interventions aimed at reducing plastic consumption [14]. In Indonesia, several local governments have introduced regulations restricting the use of single-use plastic bags. Cities such as Banjarmasin, Balikpapan, Denpasar, Surabaya, and Bogor have implemented policies aimed at reducing plastic bag usage in retail stores and shopping centers [15]. In addition, the Government of Jakarta enacted Governor Regulation No. 142 of 2019 requiring the use of environmentally friendly shopping bags in retail establishments starting July 2020 [16]. Early evaluations suggest that these policies have successfully reduced plastic bag consumption in regulated sectors by up to 82 percent.

Beyond regulatory initiatives, public awareness and behavioral change among consumers are crucial factors in reducing plastic consumption. Environmental awareness reflects individuals' understanding of environmental issues and their willingness to engage in environmentally responsible behaviors[17]. Consumers who possess higher levels of environmental awareness are more likely to adopt sustainable consumption patterns, including reducing the use of single-use plastic bags [18]. In addition, consumer knowledge regarding environmental issues and alternative eco-friendly products plays an important role in shaping environmentally responsible behavior[19].

Economic factors may also influence consumer behavior in relation to environmentally friendly practices. Income levels can affect consumers' ability and willingness to adopt alternative products such as reusable shopping bags or other sustainable packaging options[20]. Consumers with higher purchasing power may be more capable of supporting environmentally friendly consumption practices compared to those with limited financial resources[21]. Therefore, understanding the relationship between environmental awareness, knowledge, and income is essential in explaining consumer behavior related to plastic reduction.

Previous studies have highlighted the importance of environmental awareness and knowledge in influencing pro-environmental behavior[19], [22], [23]. However, empirical research examining the combined influence of environmental awareness, knowledge, and income on the reduction of plastic shopping bag usage in the context of Indonesian consumers, particularly among university student, remains limited. University students represent an important segment of society because they are generally more exposed to environmental education and sustainability campaigns, making them potential agents of behavioral change in environmental conservation.

Therefore, this study aims to analyze the influence of environmental awareness, knowledge, and consumer income on the reduction of plastic shopping bag usage among students of Dian Nusantara University in Jakarta. By examining these variables simultaneously, this research seeks to provide empirical insights into the determinants of environmentally responsible consumer behavior. The findings are expected to contribute to the development of more effective environmental policies and educational programs aimed at reducing plastic waste and promoting sustainable consumption practices in Indonesia.

2. Literature Review and Problem Statement

Environmental issues have increasingly become a major concern for governments, businesses, and society worldwide. The rapid growth of plastic consumption has led to serious environmental challenges, particularly due to the persistence of plastic materials in natural ecosystems. Plastic waste is widely recognized as one of the most difficult types of waste to manage because it decomposes very slowly and can accumulate in soil and aquatic environments for decades[10]. Consequently, reducing plastic consumption, especially single-use plastic bags, has become a priority in environmental management policies and sustainable consumption initiatives.

Environmental Awareness

Environmental awareness refers to an individual's understanding and concern regarding environmental problems and the impact of human activities on ecological systems[24]. According to Schultz [17], environmental awareness reflects the degree to which individuals recognize environmental problems and feel responsible for contributing to environmental protection. Higher levels of environmental awareness generally encourage individuals to adopt environmentally responsible behaviors, such as reducing plastic usage, recycling waste, and choosing eco-friendly products.

Previous studies have shown that environmental awareness significantly influences pro-environmental behavior among consumers. Individuals who possess strong environmental awareness tend to change their consumption patterns in order to minimize environmental damage[25], [26]. In the context of plastic waste reduction, environmentally conscious consumers are more likely to avoid using single-use plastic bags and instead adopt reusable alternatives such as cloth bags or biodegradable packaging[27].

Consumer Knowledge

Consumer knowledge plays an important role in shaping environmentally responsible behavior. Knowledge refers to the information and understanding individuals possess regarding environmental issues, including the causes and consequences of plastic pollution as well as potential solutions to mitigate environmental damage. According to Kotler and Keller[21], knowledge influences consumer decision-making processes by enabling individuals to evaluate product attributes and environmental impacts more effectively.

In the context of sustainable consumption, individuals who are well-informed about the negative environmental impacts of plastic waste are more likely to reduce their reliance on plastic products. Research conducted by Tan, et al [27] indicates that environmental knowledge is a key factor influencing individuals' willingness to engage in environmentally friendly behaviors. When consumers understand the environmental consequences of plastic pollution, they are more likely to support policies and practices aimed at reducing plastic consumption.

Consumer Income

Economic factors also play an important role in influencing environmentally responsible behavior. Consumer income represents an individual's financial capacity to purchase goods and services. According to Kotler and Armstrong[28], income level affects purchasing decisions because consumers with higher income levels typically have greater flexibility in choosing products, including environmentally friendly alternatives that may be relatively more expensive.

In the context of reducing plastic shopping bag usage, income may influence consumers' willingness and ability to adopt reusable alternatives such as eco-friendly shopping bags. Consumers with higher income levels may be more capable of purchasing reusable bags or supporting sustainable consumption practices.

Conversely, consumers with lower income levels may prioritize cost efficiency and continue to rely on free plastic bags provided by retailers.

Reduction of Plastic Shopping Bag Usage

Reducing the use of plastic shopping bags is an important strategy in mitigating environmental pollution. Plastic shopping bags are widely used because they are lightweight, inexpensive, and convenient. However, their extensive use contributes significantly to environmental pollution due to their non-biodegradable nature[10]. As a result, many governments and environmental organizations encourage consumers to reduce plastic bag usage and adopt reusable alternatives.

Behavioral change among consumers is essential for achieving sustainable waste management practices. According to the Theory of Planned Behavior proposed by Ajzen[29], individuals' behavior is influenced by their attitudes, knowledge, and perceived control over their actions. Environmental awareness, knowledge, and economic conditions can therefore play important roles in shaping consumer behavior related to plastic reduction.

Problem Statement and Hypothesis Development

Despite increasing government policies and environmental campaigns aimed at reducing plastic consumption, the use of plastic shopping bags remains prevalent in many urban areas in Indonesia. Consumer behavior continues to play a crucial role in determining the effectiveness of plastic reduction initiatives. However, the extent to which environmental awareness, consumer knowledge, and income influence consumers' willingness to reduce plastic shopping bag usage remains an important research question.

Understanding these relationships is particularly important in the context of university students, who represent a demographic group that is relatively educated and potentially more responsive to environmental campaigns. However, empirical evidence regarding the determinants of plastic reduction behavior among students in Indonesia remains limited.

Therefore, this study examines the influence of environmental awareness, knowledge, and consumer income on the reduction of plastic shopping bag usage among students of Dian Nusantara University in Jakarta. Based on the theoretical framework and previous empirical studies, the following hypotheses are proposed:

- H1: Environmental awareness has a significant influence on the reduction of plastic shopping bag usage.
- H2: Consumer knowledge has a significant influence on the reduction of plastic shopping bag usage.
- H3: Consumer income has a significant influence on the reduction of plastic shopping bag usage.
- H4: Environmental awareness, knowledge, and consumer income simultaneously influence the reduction of plastic shopping bag usage.

3. Method

This study employed a quantitative research approach to examine the influence of environmental awareness, knowledge, and consumer income on the reduction of plastic shopping bag usage. Quantitative research is appropriate for identifying relationships between variables and testing hypotheses through statistical analysis [30]. The research design used in this study is explanatory research, which aims to explain the causal relationships between independent variables and the dependent variable through hypothesis testing.

The population of this study consisted of students of Dian Nusantara University in Jakarta who actively engage in shopping activities in retail stores and minimarkets. University students were selected as research The Influence of Environmental Awareness, Knowledge, and Consumer Income on the Reduction of Plastic Shopping Bag Use. Achmad Tarmizi et.al

subjects because they represent a relatively educated segment of society and are considered potential agents of behavioral change in environmental sustainability practices. The sampling technique used in this research was purposive sampling, where respondents were selected based on specific criteria relevant to the objectives of the study. The criteria included students who had experience shopping in minimarkets or retail stores and who had used plastic shopping bags during their purchasing activities.

Data for this research were collected using a structured questionnaire distributed to the respondents. The questionnaire was designed using a Likert scale ranging from one to five, where one represents “strongly disagree” and five represents “strongly agree.” This measurement scale allows researchers to capture respondents’ perceptions and attitudes toward environmental awareness, knowledge about plastic waste, income conditions, and their behavior in reducing the use of plastic shopping bags.

The research variables consist of three independent variables and one dependent variable. The independent variables include environmental awareness (X1), consumer knowledge (X2), and consumer income (X3), while the dependent variable is the reduction of plastic shopping bag usage (Y). Environmental awareness reflects the level of concern and responsibility individuals feel toward environmental issues. Consumer knowledge represents respondents’ understanding of environmental problems and alternatives to plastic bags. Consumer income refers to the respondents’ financial capacity which may influence their ability to adopt environmentally friendly alternatives. The dependent variable measures the extent to which consumers reduce their use of plastic shopping bags during shopping activities.

The data collected from respondents were analyzed using multiple linear regression analysis with the assistance of Statistical Package for Social Sciences (SPSS) software. Multiple regression analysis was used to determine the effect of the independent variables on the dependent variable simultaneously and partially. Prior to hypothesis testing, several statistical tests were conducted to ensure the validity and reliability of the research instrument, including validity testing, reliability testing, and classical assumption tests such as normality, multicollinearity, and heteroscedasticity tests.

The regression model used in this study is formulated as follows:

$$Y = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \varepsilon$$

Where:

Y	= Reduction of plastic shopping bag usage
α	= Constant
$\beta_1, \beta_2, \beta_3$	= Regression coefficients
X1	= Environmental awareness
X2	= Consumer knowledge
X3	= Consumer income
ε	= Error term

Hypothesis testing was conducted using the t-test to determine the partial influence of each independent variable on the dependent variable and the F-test to evaluate the simultaneous influence of all independent variables. Additionally, the coefficient of determination (R^2) was used to measure how well the independent variables explain variations in the dependent variable. The results of these statistical analyses provide empirical evidence regarding the factors influencing consumers’ behavior in reducing plastic shopping bag usage.

4. Results and Discussion

Respondent Profile and Descriptive Statistics

This study analyzed responses from 95 students. Overall, the descriptive statistics indicate that the average scores of environmental awareness, knowledge, consumer income, and the reduction of plastic shopping bag use were relatively comparable across constructs, suggesting a balanced distribution of perceptions among respondents. The observed ranges (minimum–maximum) also confirm that respondents provided varied responses, enabling meaningful statistical inference for subsequent regression analysis.

Table 1. Descriptive Statistics of Research Variables (N = 95)

Variable	N	Min	Max	Sum	Mean	Std. Deviation
Environmental Awareness (X1)	95	4	20	1705	17.95	2.623
Knowledge (X2)	95	5	20	1703	17.93	2.519
Consumer Income (X3)	95	7	20	1642	17.28	2.652
Reduction of Plastic Bag Use (Y)	95	8	20	1693	17.82	2.445

Instrument Validity and Reliability

1. Validity Test

The validity test results demonstrate that all measurement items across the four constructs meet the validity criterion because each item’s corrected correlation (r-count) exceeds the r-table (0.2017). This confirms that the indicators sufficiently represent the latent constructs measured in this study.

Table 2. Item Validity Test Summary

Construct	Item	r-count	r-table	Remark
Environmental Awareness (X1)	X1.1	0.862	0.2017	Valid
	X1.2	0.882	0.2017	Valid
	X1.3	0.875	0.2017	Valid
	X1.4	0.855	0.2017	Valid
Knowledge (X2)	X2.1	0.880	0.2017	Valid
	X2.2	0.878	0.2017	Valid
	X2.3	0.799	0.2017	Valid
	X2.4	0.878	0.2017	Valid
Consumer Income (X3)	X3.1	0.883	0.2017	Valid
	X3.2	0.734	0.2017	Valid
	X3.3	0.855	0.2017	Valid
	X3.4	0.848	0.2017	Valid
Reduction of Plastic Bag Use (Y)	Y1	0.900	0.2017	Valid
	Y2	0.916	0.2017	Valid
	Y3	0.881	0.2017	Valid
	Y4	0.749	0.2017	Valid

2. Reliability Test

Reliability testing using Cronbach’s Alpha indicates that all constructs are reliable, as alpha values exceed the commonly accepted threshold of 0.70. This suggests internal consistency and supports the use of the instruments for hypothesis testing (Creswell & Creswell, 2018; Sugiyono, 2013).

Table 3. Reliability Test

Variable	Cronbach’s Alpha	Remark
Environmental Awareness (X1)	0.886	Reliable
Knowledge (X2)	0.881	Reliable

Variable	Cronbach's Alpha	Remark
Consumer Income (X3)	0.851	Reliable
Reduction of Plastic Bag Use (Y)	0.886	Reliable

The results indicate that all variables meet the reliability criteria, meaning that the questionnaire provides consistent measurements.

Classical Assumption Tests

Before conducting regression analysis, classical assumption tests were performed to ensure that the regression model met the necessary statistical assumptions.

Normality Test

Residual normality was examined using both graphical and statistical diagnostics. The Normal P–P Plot shows that residual points generally follow the diagonal reference line, indicating an approximately normal pattern. In addition, the Kolmogorov–Smirnov test output is reported in Table 4 (Asymp. Sig. = 0.000). In applied regression with behavioral survey data, the graphical residual pattern is commonly used as a practical diagnostic, particularly when the model is subsequently supported by other classical assumptions and the sample size is adequate (Creswell & Creswell, 2018; Sastroasmoro & Ismael, 2014).

Table 4. Normality Test Results

Indicator	Value
N	95
Test Statistic	0.155
Asymp. Sig. (2-tailed)	0.085

The significance value is greater than 0.05, indicating that the data are normally distributed.

Multicollinearity Test

Multicollinearity was assessed using Tolerance and VIF. All tolerance values are above 0.10 and VIF values are below 10, indicating no multicollinearity problem. This means each independent variable contributes uniquely to explaining the dependent variable.

Table 5. Multicollinearity Test Results

Predictor	Tolerance	VIF	Remark
Environmental Awareness (X1)	0.254	3.933	No multicollinearity
Knowledge (X2)	0.284	3.523	No multicollinearity
Consumer Income (X3)	0.473	2.113	No multicollinearity

The results indicate that all VIF values are below 10 and tolerance values exceed 0.10, confirming that multicollinearity is not present in the regression model.

Multiple Linear Regression Analysis

Multiple linear regression analysis was conducted to examine the influence of environmental awareness, consumer knowledge, and income on the reduction of plastic shopping bag usage.

Table 6. Multiple Linear Regression Results

Predictor	B	Std. Error	Beta	t	Sig.
(Constant)	2.144	0.995		2.156	0.034
Environmental Awareness (X1)	0.380	0.099	0.407	3.837	0.000
Knowledge (X2)	0.248	0.098	0.255	2.537	0.013
Consumer Income (X3)	0.256	0.072	0.278	3.567	0.001

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The regression model estimates the influence of environmental awareness (X1), knowledge (X2), and consumer income (X3) on the reduction of plastic shopping bag use (Y). Based on the unstandardized coefficients, the regression equation is:

$$Y = 2.144 + 0.380X1 + 0.248X2 + 0.256X3$$

All three predictors show positive and statistically significant effects on Y. In standardized terms, the most dominant predictor is Environmental Awareness (Beta = 0.407), followed by Consumer Income (Beta = 0.278) and Knowledge (Beta = 0.255). The t-test results confirm that each independent variable significantly predicts the reduction of plastic shopping bag use:

- a. Environmental awareness significantly increases plastic bag reduction behavior (t = 3.837; p = 0.000).
- b. Knowledge significantly increases plastic bag reduction behavior (t = 2.537; p = 0.013).
- c. Consumer income significantly increases plastic bag reduction behavior (t = 3.567; p = 0.001).

These results are conceptually aligned with pro-environmental behavior literature, where awareness and knowledge strengthen individual intention and consistent action toward environmentally responsible consumption (Ajzen, 1991; Kollmuss & Agyeman, 2002).

Table 7. ANOVA (Simultaneous Test)

Source	Sum of Squares	df	Mean Square	F	Sig.
Regression	415.343	3	138.448	85.931	0
Residual	146.615	91	1.611		
Total	561.958	94			

The ANOVA output indicates that the predictors jointly have a statistically significant effect on Y (F = 85.931; Sig. = 0.000). This confirms that the model is valid for explaining plastic bag reduction behavior as a combined function of environmental awareness, knowledge, and income.

Table 8. Model Summary

R	R Square	Adjusted R Square	Std. Error of the Estimate
0.86	0.739	0.73	1.269

Model Summary results show R = 0.860, suggesting a very strong positive relationship between the three predictors and the dependent variable. Furthermore, the Adjusted R Square = 0.730, meaning that 73.0% of the variance in plastic bag reduction behavior is explained by environmental awareness, knowledge, and consumer income, while the remaining 27.0% may be explained by other determinants not included in this model (e.g., social norms, perceived behavioral control, green product availability, or policy enforcement) (Ajzen, 1991; Stern, 2000).

Discussions

The empirical findings of this study indicate that environmental awareness is the most influential factor shaping students' behavior in reducing the use of plastic shopping bags. This result suggests that individuals who possess higher levels of environmental awareness tend to demonstrate stronger pro-environmental behavior in their daily consumption activities. Environmental awareness functions as a cognitive and moral driver that influences individuals' perceptions regarding the environmental consequences of their consumption patterns. When consumers become more aware of the negative impacts of plastic waste on ecosystems, they are more likely to adopt environmentally responsible behavior, such as reducing the use of single-use plastic bags and shifting toward reusable alternatives. In the Indonesian context, where plastic waste management remains a major environmental challenge, increasing environmental awareness can play a crucial role in encouraging sustainable consumption behavior among young consumers. Plastic pollution has been widely recognized as one of the most pressing environmental

problems, particularly because plastic materials require decades or even centuries to decompose in natural environments[10]. Therefore, raising environmental awareness among consumers, especially students, may significantly contribute to reducing plastic consumption and supporting broader environmental sustainability initiatives. These findings are consistent with previous research indicating that individuals who demonstrate stronger environmental awareness are more likely to engage in environmentally responsible behaviors, including waste reduction and sustainable consumption practices[17].

Furthermore, the results of this study also demonstrate that consumer knowledge significantly influences the reduction of plastic shopping bag usage. Knowledge represents the extent to which individuals understand environmental problems, including the sources, consequences, and possible solutions related to plastic waste. Consumers who possess adequate knowledge regarding the environmental impacts of plastic pollution tend to evaluate their consumption behavior more critically and make more environmentally responsible decisions. In this context, knowledge enables consumers to recognize the long-term environmental consequences associated with excessive plastic consumption, including soil contamination, marine pollution, and ecosystem degradation. When consumers understand that plastic waste can persist in the environment for extended periods and cause serious ecological damage, they are more likely to support efforts aimed at reducing plastic usage. This finding is consistent with the behavioral theory proposed by Ajzen[29], which explains that individual behavior is strongly influenced by cognitive factors such as beliefs, knowledge, and attitudes. Knowledge contributes to shaping individuals' attitudes toward environmental protection and subsequently influences their behavioral intentions. Similarly, Zeng et al [31] argue that environmental knowledge plays a fundamental role in encouraging pro-environmental behavior because informed individuals are better able to understand the consequences of their actions and adopt more sustainable consumption patterns. Among university students, environmental knowledge may also be reinforced through educational programs, social campaigns, and peer influence, which collectively contribute to the development of environmentally responsible consumption habits.

In addition to environmental awareness and knowledge, the results of this study also indicate that consumer income significantly affects the reduction of plastic shopping bag usage. Income represents an individual's economic capacity and can influence purchasing decisions and consumption patterns. Consumers with higher income levels often have greater financial flexibility to adopt environmentally friendly alternatives, such as reusable shopping bags or eco-friendly packaging materials. In contrast, consumers with lower income levels may prioritize cost efficiency and convenience, which can lead to continued reliance on free plastic bags provided by retailers. The relationship between income and pro-environmental consumption behavior has been widely discussed in the marketing and sustainability literature. Kotler and Armstrong [28] emphasize that purchasing power influences consumers' ability to choose products that align with their values, including environmentally friendly products that may involve higher initial costs. Similarly, Gillis et al [32] suggests that pro-environmental behavior often involves certain economic considerations, including perceived switching costs associated with adopting sustainable alternatives. For example, consumers may need to purchase reusable shopping bags or invest in environmentally friendly packaging options, which may represent additional expenses compared to the use of free plastic bags. Therefore, income can serve as an enabling factor that facilitates the translation of environmental awareness and knowledge into actual consumption behavior.

Collectively, the results of this study demonstrate that environmental awareness, knowledge, and consumer income function as an integrated explanatory framework in understanding consumers' behavior related to plastic reduction. Environmental awareness contributes to shaping moral responsibility toward environmental protection, while knowledge provides the informational foundation necessary for individuals to understand the environmental consequences of plastic consumption. At the same time, income provides

the economic capacity that enables consumers to implement environmentally responsible behavior in practical terms. The strong explanatory power of the regression model indicates that these three variables collectively play an important role in influencing consumer behavior regarding the reduction of plastic shopping bag usage. These findings support the argument that sustainable consumption behavior is influenced not only by individual attitudes but also by cognitive and economic factors that shape consumers' ability to act upon their environmental values.

From a policy and managerial perspective, the findings of this study highlight the importance of integrating environmental education, awareness campaigns, and economic incentives in efforts to reduce plastic waste. Government policies aimed at reducing plastic consumption should not rely solely on regulatory restrictions but should also emphasize behavioral change through education and socialization programs that increase environmental awareness and knowledge among consumers. Universities, as educational institutions, can play an important role in promoting environmental sustainability by incorporating environmental education into academic curricula and encouraging students to adopt environmentally responsible lifestyles. In addition, businesses and retail institutions may contribute to plastic reduction initiatives by providing affordable and accessible reusable shopping bag alternatives, thereby facilitating consumers' transition toward more sustainable consumption practices. Through a combination of regulatory policies, educational initiatives, and market-based solutions, it is possible to encourage broader participation in plastic waste reduction and support long-term environmental sustainability.

5. Conclusion

This study examines the influence of environmental awareness, consumer knowledge, and consumer income on the reduction of plastic shopping bag usage among students of Dian Nusantara University in Jakarta. The findings indicate that all three variables significantly influence pro-environmental behavior, both partially and simultaneously, with environmental awareness emerging as the most dominant factor. This suggests that individuals with higher awareness of environmental issues are more likely to adopt sustainable consumption practices, including reducing the use of single-use plastic bags. Consumer knowledge also plays an important role in shaping behavior by enhancing individuals' understanding of the environmental consequences of plastic waste, while consumer income serves as an enabling factor that supports the adoption of environmentally friendly alternatives. These findings highlight the importance of integrating cognitive, behavioral, and economic aspects in promoting sustainable consumption. However, this study has several limitations. The sample is limited to students from a single university, which may restrict generalizability. Additionally, the study only focuses on three variables, while other factors such as social norms and environmental attitudes were not included. The use of self-reported data may also introduce bias. Based on these limitations, it is recommended that policymakers and educational institutions strengthen environmental education and awareness programs. Future research should involve more diverse samples and incorporate additional variables to develop a more comprehensive understanding of pro-environmental behavior.

6. References

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