

CONSUMER BEHAVIOUR | RESEARCH ARTICLE

# Understanding Zillennials Consumer Green Behavior of Reducing Plastic Bag Use through the Theory of Planned and Interpersonal Behavior

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**Abstract:** Adopting cloth bags over single-use plastic bags is a significant consumer behavior. Employing the theory of planned and interpersonal behavior, this study aimed to understand the relationship between customers' intentions to use cloth bags and their awareness of the environmental impact of plastic bags. Through purposive sampling, 277 individuals born after 1980 and making at least one to three in-person retail and Internet purchases each month were selected as participants. The data were processed using descriptive and SEM (Structural Equation Model). The findings reveal that creating the next generation of habit bags can significantly enhance social awareness of plastic bag usage and the environment. However, no evidence suggests that the environmental awareness of plastic bags increases the intention to use cloth bags. The more the social pressure and support for banning plastic bags intervene, the more the intention to use cloth bags contributes to changing consumer behavior to use fewer plastic bags. Therefore, habit bag use can positively influence pro-environmental behavior, as this study combined the theory of interpersonal behavior and the theory of planned behavior. These results contribute to the theoretical framework for understanding how the millennial generation's interpersonal conduct, reflected in their bag-using behaviors, influences their behavior in minimizing plastic bag usage. These findings imply that adopting single-use or non-plastic bag habits can motivate people to reduce their usage of plastic bags. This behavior is further encouraged by laws prohibiting the use of plastic bags.

**Keywords:** consumer behavior of reducing plastic bag use, environmental awareness of plastic bags, habit of bag use, intention to use cloth bags, social pressure, support for the banning plastic bags

JEL Classification: D12, D91, L67

Article history:  
Received  
February 21, 2024

Revision submit  
March 01, 2024  
March 11, 2024  
May 27, 2024  
June 24, 2024

Accepted  
June 29, 2024

Available online  
June 30, 2024

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## PUBLIC INTEREST STATEMENT

The public's awareness of plastic bag pollution is growing these days. This increase is consistent with the government's 3R (reduce, reuse, and recycle) policy, which aims to manage plastic waste. Educating consumers to purchase using cloth bags is one way to help minimize the amount of plastic used and to influence consumer behaviour, particularly that of the millennial age, so that they become accustomed to carrying cloth bags when they buy and become more environmentally conscious. Regulations banning the use of plastic bags, raising environmental consciousness, and social pressure from members of the z generation's friends and family can become important factors in this research.



## 1. Introduction

Plastic consumption is increasing globally, resulting in large amount of pollution and threatening the environment. In the industrialization era, products with eco-friendly features have emerged, but synthetic waste still poses a challenge to society (Huysman et al., 2017). Plastic consumption has increased because of its convenient use (Alam et al., 2018). Most everyday items, such as bags, bottles, lids for coffee or juice cups, straws, cutlery, and food packaging, comprise single-use synthetic materials (Johnston, 2017).

In 2015, the MDGs movement was continued with the Sustainable Development Goals. According to Septika and Pazli (2022), the government's target in 2025 is to reduce plastic waste in the sea by 15% to 70%, create awareness, and seek instruments to overcome pollutants. In addition, the government uses 3R, including reduce, reuse, and recycling methods for environmental conservation, because waste is a renewable resource in the industrial sector. The preliminary and self-report study's findings demonstrate that COVID-19 and the following lockdowns changed consumer behavior regarding purchasing habits and waste production. The study aimed to examine the production of single-use items, such as disposable masks and gloves, and waste plastic generated in homes. Indeed, over 50% of the consumers who answered the survey believed that its use had increased, citing the rise in single-use plastic bags and food packaging as examples (Filho et al., 2021).

While certain sustainable behaviors necessitate a single action, numerous other sustainable behaviors, such as using eco-friendly cloth bags when shopping, involve recurring activities that call for developing new habits (White et al., 2019). A critical factor in predicting customers' pro-environmental behavior is their awareness of the environment (Yadav & Pathak, 2016). Yusran et al. (2020) found that environmentally aware individuals reduce the environmental impact of their behavior. In contrast to Zainudin et al. (2021), there was no statistically significant correlation between consumer environmental awareness and alternatives to single-use plastic bags.

Several previous studies have shown that social pressure influences the intention to use cloth bags (Ari & Yilmaz, 2016; Ashwini & Aithal, 2024; Ohtomo & Ohnuma, 2014; Yusran et al., 2020). However, this result is different from that reported by Chan et al. (2008), that the basis for shaping individual behavior is not intervention to promote personal awareness, but the idea that an individual will be more likely to engage in a particular action if they believe what other people find necessary. On the other hand, Ari and Yilmaz (2017) demonstrated that consumers who care about the environment and are influenced by society tend to use cloth bags rather than plastic bags. Further, Ohtomo and Ohnuma (2014) evaluated the effects of environmental approaches on actual individual behavior regarding the use of plastic bags, influenced by individual efforts. Support for banning plastic bags has been linked to a decrease in the use of polythene sacks, according to earlier research (Cote, 2019; Yusran et al., 2020).

Polythene sacks are freely available to consumers unfamiliar with recycling. Currently, the main challenge is how to reduce the use of plastic bags, which pose a threat to the environment and human health (Ohtomo & Ohnuma, 2014). Using shopping bags is an environmentally friendly behavior recommended by various parties, commonly as pro-environmental behavior (Volva & Djamaludin, 2018). The use of shopping bags is aimed to reduce the amount of plastic waste produced. Reducing plastic trash can help manage and handle the issue of maintaining environmental sustainability (Solekah et al., 2022).

The relationship between various psychosocial factors that are thought to influence intentions to use plastic bags and cloth bags, such as environmental awareness of plastic bags (Purwanto et al. 2023; Yusran et al., 2020), social pressure (Ashwini & Aithal, 2024; Khalifa, 2023), and support for banning plastic bags (Khalifa, 2023; Li & Wang, 2022) has been shown by a research model based on behavioral TPB, which serves as the theoretical basis of this study. Recent research highlights that measuring consumer behavior by combining TPB with other theories of TIB will provide more significant results and suggests integrating different theoretical lenses to comprehensively measure consumer green behavior by reducing plastic bag use. According to the theory of interpersonal behavior, an individual's level of consciousness decreases alongside the habits they engage in (Mumtaz et al., 2022). Therefore, this study provides new insights by examining the habits of individuals who use bags and whether these habits will enhance their environmental awareness. Furthermore, the study explores whether the habit of using bags influences social pressure and can affect support from stakeholders, such as the government, in prohibiting the use of plastic bags. Increasing individual environmental awareness, along with the various factors compelling individuals to adopt environmentally friendly behaviors and prohibiting the use of plastic bags, will enhance the intention to reduce plastic bag usage, subsequently leading to a decrease in overall plastic bag consumption.

This study aimed to enhance the Theory of Planned Behavior by incorporating environmental awareness regarding plastic bags, social pressure, and support for banning plastic bags to analyze the significant relationship between consumer intentions to use cloth bags and environmental awareness of plastic bags. It also integrated the Theory of Interpersonal Behavior by considering habitual bag use. The new generation, known as Gen Z, contributes to consumers having the highest societal awareness. Furthermore, Gen Z represents an era of industrialization characterized by the ubiquitous presence of online connectivity in people's lives, altering the way they interact, given that this generation came of age after the mid-1990s. These individuals are more inclined to seek information, making them "more self-aware and independent." Gen Z is well-versed in advanced technology but also exhibits a heightened awareness of privacy due to the influence of millennials (Vargas-Sanchez, 2019). As the largest consumer group in Indonesia, Generation Z may prompt shifts in consumption patterns owing to their values and objectives (Tessy & Setiasih, 2024).

This study contributes to the existing literature by shaping changes in individual behavior towards behaving in a pro-environmental manner. In this context, the reduction in plastic bag usage begins with habits that may initially be enforced through government regulations, costs imposed on consumers for plastic bag usage during shopping, and various pressures from family and friends. These factors, combined with increased environmental awareness, are instrumental in molding pro-environmental behavior, starting from intentions and manifesting in actual behavior, eventually becoming habitual. The practical implication of this research is expected to support Indonesian government policies aligned with the Sustainable Development Goals (SDGs) program; by 2030, these efforts are anticipated to influence consumer behavior, leading to reduced plastic bag usage in favor of more environmentally friendly alternatives like cloth bags.

## **2. Literature Review**

### **2.1 Theory of Planned Behavior**

The planned behavior hypothesis introduced by Ajzen in 1985 has attracted global attention and has been widely used. A total of 531 journal articles published between 1995 and March 2019 were gathered from the Scopus database through bibliometric (Si et al., 2019). Numerous studies have aimed to enhance interpretative capacity by introducing new variables or integrating different concepts into the TPB model. However, various limitations have been demonstrated to some extent by expanding the concept of planned behavior. The TPB explains individual willingness and habits by predicting the underlying psychological factors. Many studies have explored the factors influencing behaviors by extending the concept of planned behavior (Si et al., 2019; Teguh & Djuwita, 2020; Wang et al., 2018; Zhang et al., 2019).

### **2.2 Theory of Interpersonal Behaviour**

The theory of interpersonal behavior proposed by Triandis in 1980 is similar to the TPB because both theories encompass value expectancy and normative beliefs, as well as the performance and prediction of specific behaviors. In contrast, the TPB indicates that social behavior is influenced by individuals' awareness and control, whereas the TIB suggests that an increase in habitual behavior may lead to a decrease in people's awareness levels. The primary distinction between the TPB and TIB lies in the role of awareness in explaining and predicting social behaviors. For example, theoretical advancements in analyzing customers' intentions regarding the framework for reducing consumer food waste have been made through the application of TIB and psychological factors (Mumtaz et al., 2022).

Habit is a sequence of existing situations and behaviors that arise automatically without the need for learning (Triandis, 1980). TPB and TIB are similar because they both encompass theories of social behavior and the formulation of values, expectations, and normative beliefs (Bamberg et al., 2003). According to TPB, subjective perception directly influences behavioral performance, controls behavior, and indirectly impacts intention formation. On the other hand, the Triandis concept does not address enabling factors but rather their objective existence. The study demonstrated that goals must moderate the degree to which intention and habit influence behavior (Bamberg et al., 2003). Russell et al. (2017) suggested that this represents an individual's opportunity to engage in behavior associated with their habits, under conditions that facilitate both behavior and intentions.

### **2.3 Relationship Habit Bag Use and Environmental Awareness of Plastic Bag**

Dabas and Mahavidlayala (2017) found that children's environmental awareness is influenced by their habits. It is crucial for individuals to understand the importance of cleanliness. One approach to instilling the value of cleanliness is by challenging people's preconceived notions and ideas through continuous engagement. Being tidy is a habit that begins to form in our lives from a very young age. Children's awareness of the environment has been increasing. Most students frequently or always engage in environmentally friendly behaviors, such as properly disposing of used batteries in designated locations without prior sorting, or using reusable bags (Annisa et al., 2022). These findings indicate that students have a solid understanding of environmental issues. Ardhiyansyah and Iskandar (2023) found that habits influence environmental awareness regarding the purchase of paper bags. Thus, it can be formulated:

H1: Habit bag use negatively affects environmental awareness of plastic bag

#### **2.4 Relationship Habit Bag Use and Social Pressure**

Mumtaz et al. (2022) found that consumer behavior related to the reduction, reuse, and recycling of food waste in restaurants is significantly influenced by habits, waste reduction goals, and enabling situations. Personal habits can magnify the impact of social pressure. According to Zainuddin et al. (2021), social pressure (SP), a component of subjective norms, entails the perceived behavioral expectations from parents, friends, society, and the surrounding environment that prompt individuals to adjust their behavior, such as transitioning from single-use plastic bags to reusable ones. Zen (2020) noted that the prevailing "status quo" has been challenged by numerous programs aimed at fostering a sustainable shopping lifestyle, driven by global environmental concerns regarding plastic pollution that have led to the discontinuation of free single-use plastic bags for consumer convenience. Based on these findings, a formulation can be derived:

H2: Habit bag use negatively affects social pressure

#### **2.5 Relationship Habit Bag Use and Support for the Banning Plastic Bag**

Habits can motivate lawmakers to support bans on plastic use by consumers and retailers. Bartolotta and Hardy (2021) observed that most individuals own reusable bags and frequent establishments that either charge for plastic bags or no longer provide them. Therefore, store regulations and legislation are crucial for reducing plastic bag usage, as relying solely on voluntary reductions by customers is ineffective. In this study, the habit of bag use was specifically focused on plastic bags. Consequently, the formulated hypothesis indicated an inverse relationship, suggesting that the habit of carrying plastic bags undermines environmental awareness, social pressure, and advocacy for plastic bag bans. The habitual influences identified can encourage sustainable practices, including the prohibition of plastic bag use (Ardhiyansyah & Iskandar, 2023; Mumtaz et al., 2022). The next step involves formulating the hypothesis.

H3: Habit bag use negatively affects support for the banning plastic bag

#### **2.6 Relationship Environmental Awareness of Plastic Bag and Intention to Use Cloth Bags**

Environmental awareness reflects individuals' interest and concern about societal issues, ranging from local to global scales. Research indicates that those with high awareness are more likely to minimize their environmental impact (Khalifa, 2023; Yusran et al., 2020). Environmental awareness regarding plastic bags refers to an individual's comprehension of environmental issues, inclining them towards sustainable daily practices such as reducing the use of polythene bags in favor of eco-friendly alternatives (Yusran et al., 2020). Manoj (2019) highlighted a significant link between awareness levels and attitudes towards plastic bag bans within families. Additionally, another study illustrated how environmental awareness affects intentions to reduce plastic bag usage (Yusran et al., 2020). Purwanto et al. (2023) demonstrated a positive and substantial association between environmental awareness and the goal of reducing food waste.



H4: Environmental awareness of plastic bags positively affects the intention to use cloth bags

### **2.7 Relationship Social Pressure and Intention to Use Cloth Bags**

Social pressure (SP) is the capacity of social groups to influence members' behavior without formal authority or power, as outlined by White et al. (2019). Rather than persuading individuals directly, SP aims to induce behavioral change by increasing awareness of the necessity to act. Pastor et al. (2024) showed that subjective norms are tied to personal beliefs regarding specific behaviors.

Yusran et al. (2020) emphasized that the inclination to use non-plastic shopping bags is driven by social pressure. Ashwini and Aithal (2024) highlighted the significant impact of social pressure and potential reference groups on consumers' willingness to purchase eco-friendly bags. Ohtomo and Ohnuma (2014) underscored the importance of SP in individual behavioral modifications. Khalifa (2023) revealed that social pressure influences the intention to utilize cloth bags, while Ohtomo and Ohnuma (2014) illustrated how societal pressure and environmental concerns lead to reduced plastic bag usage.

H5: Social pressure positively affects the intention to use cloth bags

### **2.8 Relationship Support for the Banning Plastic Bags and Intention to Use Cloth Bags**

The National Consumer Protection Agency, Indonesian Consumers Foundation, and All-Indonesian Retail Entrepreneurs Association (APRINDO) collectively endorsed the polythene bag policy, leading retailers to discontinue free plastic bag distribution and offer them for sale at a price of IDR 200. Additionally, all modern retail establishments are mandated to provide reusable shopping bags. Previous research indicates that supporting the ban on plastic bags influences the reduction of polythene bag usage (Li & Wang, 2022; Mugisha, 2015; Yusran et al., 2020).

Khalifa (2023) found that government endorsement of plastic bag bans impacts the intention to adopt cloth bags. Insights from Household Responses to the Government Ban on Plastic Bags in Uganda revealed respondents expressing a willingness to discontinue use and transition to alternative materials (Mugisha, 2015). Government sponsorship of polythene bag bans strongly influences the inclination towards non-plastic shopping bags (Yusran et al., 2020), although this contrasts with the findings by Van et al. (2021).

H6: Support for banning plastic bags positively affects the intention to use cloth bags

### **2.9 Relationship Intention to Use Cloth Bags and Consumer Behavior of Reducing Plastic Bag Use**

"Behavioral intention" refers to a person's inclination to engage in specific actions driven by their interests or desires. This urge toward action is encapsulated by intention or desire in the realm of behavioral science concepts (Setiawan et al., 2022). Prior research indicates that intentions to engage in e-waste practices are linked to behavior, influenced by factors such as environmental awareness, convenience, and attitudes toward recycling (Ohtomo & Ohnuma, 2014; Taufique & Vaithianathan, 2018; Wang et al., 2016). Furthermore, the intention to decrease plastic bag usage

significantly and positively impacts individuals' behavior (Vina et al., 2020).

H7: The intention to use cloth bags positively affects consumer behavior in reducing plastic bag use

### 3. Conceptual Framework

The aforementioned empirical studies support the hypothesis that habit bag use influences environmental awareness of plastic bags, social pressure, and support for the banning plastic bag, while the intention to use cloth bags is influenced by environmental awareness of plastic bags, social pressure, and support for the banning plastic bag. Additionally, it is hypothesized that consumer behavior in reducing plastic bag use is affected by the intention to use cloth bags. The conceptual framework is illustrated in Figure 1.

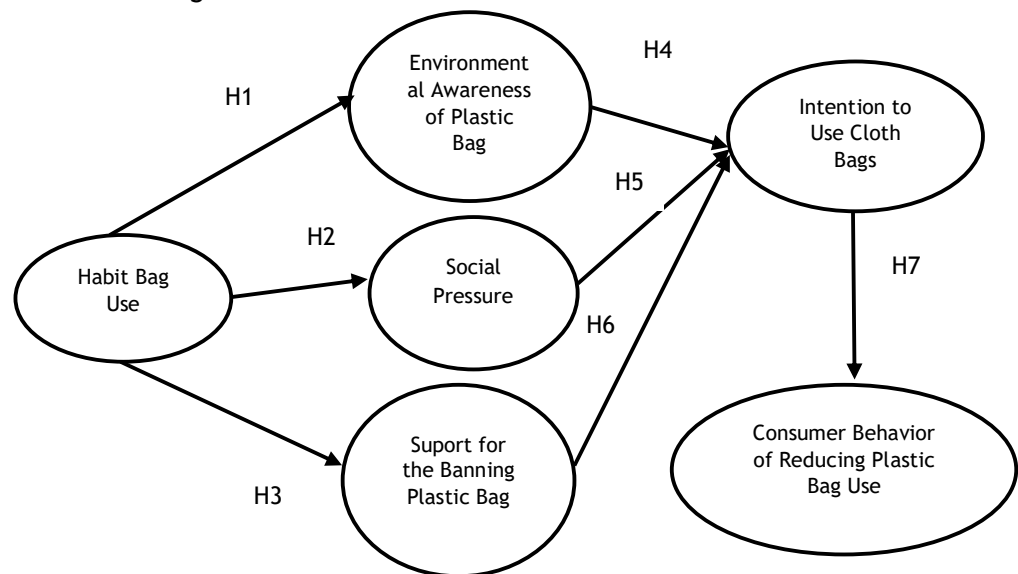


Figure 1. Conceptual framework of intention to use cloth bags, consumer behavior of reducing plastic bag use impacted by environmental awareness, social pressure, support for banning plastic bags supported by habit bag use

The hypotheses of this study are as follows:

H1: Habit bag use negatively affects environmental awareness of plastic bag

H2: Habit bag use negatively affects social pressure

H3: Habit bag use negatively affects support for the banning plastic bag

H4: Environmental awareness of plastic bags positively affects the intention to use cloth bags

H5: Social pressure positively affects the intention to use cloth bags

H6: Support for banning plastic bags positively affects the intention to use cloth bags.

H7: The intention to use cloth bags positively affects consumer behavior in reducing plastic bag use.

### 4. Methods

#### 4.1 Research Design

This research employed a quantitative explanatory approach to examine the cause-and-effect relationships between independent and dependent variables. An explanatory study helps identify and classify factors as influences or causes, establishing links between projected effects and causal variables (Hair et al., 2019). The study specifically targets the millennial population in universities across East

Java, West Java, Central Java, and Yogyakarta.

#### 4.2 Sampling

The sampling approach in this study involved non-probability sampling, specifically utilizing purposive sampling. Purposive sampling entails a meticulous selection process where researchers determine the sample based on specific predetermined criteria. In this research, the criteria focused on respondents born after 1980 who engage in monthly retail and online shopping habits. Based on Hair et al. (2019), a minimum sample size of five to ten observations per estimated parameter is recommended. With twenty estimated parameters, the sample size should ideally range between 100 and 200. Although 300 respondents were surveyed, only 277 met the defined criteria for further analysis.

#### 4.3 Measurement

Cronbach's alpha was used to assess construct reliability, with a standardized loading factor of  $\geq 0.70$  being considered. The significance and importance of each item's factor loading are notable when the standard factor load exceeds 0.50, as suggested by Hair et al. (2019). Table 1 depicts the validity and reliability of the observational variables.

Table 1. Operational definitions of variables and measurement of constructs of determinants of consumer behavior of reducing plastic bag use

Variables	Operational definition	Items	Loading Factor	Scale
Habit Bag Use (Triandis, 1980)	A habit or sequence of situations and behavior that automatically exists. appears in using pockets or bags	The use of plastic bags based on the following properties 1. Uncomfortable/ Comfortable 2. Useless/Useful 3. Not Good/Good 4. Harmful/Useful	0.819 0.730 0.910 0.848	1-7 scale adapted from Chan <i>et al.</i> (2008); Bamberg <i>et al.</i> (2003)
Environmental Awareness of Plastic Bag (Yusran et al., 2020)	A person's ability to understand the nature, processes, and environmental problems resulting from the level of use of plastic bags, his concern for environmental quality, and the extent to which he is committed to environmental behavior in everyday life in reducing the use of plastic bags and switching to using those made from environmentally friendly materials	1. "Plastic bags damage the environment" 2. "Plastic bags harm living creatures (animals) on land" 3. "Plastic bag waste emits toxic gases into the air" 4. "Plastic bags increase the risk of cancer"	0.755 0.885 0.845 0.874	1-7 scale adapted Ari and Yilmaz (2017)
Social Pressure (White et al., 2019)	The ability of a reference group or individual, such as friends, family, service providers, or product manufacturers, to endorse or disapprove engagement in particular activities.	1. If my friend uses a cloth bag instead of a plastic bag, I would prefer to use a cloth bag 2. If other people use cloth bags instead of plastic bags, I will be more likely to use cloth bags 3. If supermarket recommends using cloth bags rather than plastic bags, then I will be more likely to use cloth bag	0.895 0.918 0.853	1-7 scale derived from Ari and Yilmaz (2017)



Table 1. Operational definitions of variables and measurement of constructs of determinants of consumer behavior of reducing plastic bag use (Continue)

Variables	Operational definition	Items	Loading Factor	Scale
Social Pressure (White et al., 2019)	The ability of a reference group or individual, such as friends, family, service providers, or product manufacturers, to endorse or disapprove engagement in particular activities.	4. If the government or supermarkets charged plastic bags when shopping, then I would be more likely to use cloth bags	0.746	1-7 scale derived from Ari and Yilmaz (2017)
Support for the Banning Plastic Bags (Ari & Yilmaz, 2017)	Support from stakeholders such as the government, retail business owners, or product or service providers to prohibit the use of plastic bags in the form of regulations or imposing fees for the use of plastic bags.	1. "Wholesalers are prohibited from selling fruit and vegetables packaged in plastic bags to their customers."	0.779	1-7 scale adapted from Ari and Yilmaz (2017)
		2. "The government must ban the use of plastic bags."	0.859	
		3. "The government should issue regulations regarding the use of plastic bags in super/ minimarkets."	0.733	
		4. "Supermarkets provide more cloth bags that customers can buy when shopping"	0.592	
Intention to Use Cloth Bags (Ari & Yilmaz, 2017)	Individual determination about how hard people are willing to try and how much effort they are willing to show in their behavior to use cloth bags	1. I will be using less plastic bags shortly	0.894	1-7 scale Adapted from Ohtomo and Ohnuma (2014); Ari and Yilmaz (2017)
		2. If a cashier hands me a free cloth bag on impulse, I tend to accept it without thinking too much	0.894	
Consumer Behavior of Reducing Plastic Bag Use (Ari & Yilmaz, 2017)	CBRPBU is behavior shown by consumers both mentally, emotionally, and physically to reduce the use of plastic bags, which begins with awareness and ends with the adoption of certain behaviors	1. If the plastic bags given at the checkout were not free, I would use fewer plastic bags	0.882	1-7 scale Adapted from Ohtomo and Ohnuma (2014); Ari and Yilmaz (2017)
		2. If supermarkets offered discounts to shoppers who brought their cloth bags, I would use fewer plastic bags	0.913	

#### 4.4 Data Collection

The survey method was employed, utilizing questionnaires distributed to respondents based on predetermined criteria over 3 to 4 month. Data was collected from July 3 to October 30, 2023 using Google Forms. Online sampling methods were selected for their advantages, such as wider audience reach, geographical flexibility, rapid data collection, cost-effectiveness, improved questionnaire presentation, and enhanced population access. The questionnaire in this study focused on respondents' shopping habits in supermarkets or online stores, ensuring unbiased responses from those shopping at least 1 to 3 times per month.

#### 4.5 Data Analysis

Two types of analysis were conducted: descriptive and inferential. Descriptive analysis was employed to outline participant attributes, while Structural Equation Modeling (SEM) coupled with Smart PLS was utilized for inferential analysis. The measurement model (outer model) assessed the accuracy of observed variables in representing latent variables, while the structural model (inner model) evaluated the latent variables' estimating capabilities. Following data collection, PLS-SEM with Smart PLS evaluated data to fulfill research objectives and the conceptual model framework. Inner and outer measurements were conducted based on Hair et al. (2019). Finally, the proposed model was employed for hypothesis testing.

### 5. Findings

#### 5.1 Respondent Characteristics

In this study, the majority of respondents are female, comprising 67.9% of the sample, with 77.6% identifying as students. A significant proportion come from regions in Malang (55.96%). On average, most respondents shop at supermarkets or online 1-3 times per month, with percentages of 63.5% and 83.8%, respectively. Table 2 details these characteristics (Table 2).

Table 2. Socio-demographic characteristics of respondents

Variables	Frequency	%
Gender		
Male	89	32.1
Female	188	67.9
Age		
15-25 years	222	80.1
26-35 years	24	8.7
36-45 years	17	6.1
>45 years	14	5.1
Occupations		
Civil servant	30	10.8
Private employee	18	6.5
Entrepreneur	14	5.1
Student	215	77.6
Universities by region East Jawa		
Malang	155	55.9
Surabaya	13	4.7
Kediri	28	10.1
Jember	11	3.9
Ponorogo	11	3.9
Universities by region West Jawa		
Bandung	11	3.9
Universities by region Central Java and Yogyakarta		
Semarang	10	3.6
Yogyakarta	38	13.7

Table 2. Socio-demographic characteristics of respondents (Continue)

Variables	Frequency	%
Average shopping in supermarkets in one month		
1-3 times	176	63.5
3-5 times	55	19.9
>5 times	46	16.6
Average shopping at the online shop in 1 month		
1-3 times	232	83.8
3-5 times	27	9.7
>5 times	18	6.5

### 5.2 Convergent Validity

As Table 3 indicates, the study initially assessed convergent validity, showing a strong link between valid convergent validity and the items analyzed. According to Hair et al. (2019), a variable displays strong construct validity if its Average Variance Extracted (AVE) exceeds 0.50. In Partial Least Squares (PLS) analysis, a Composite Reliability (CR) above 0.70 signifies good reliability of the measurement model. The highest weight significance value unveils crucial elements. The study demonstrated that all variables had AVE values surpassing 0.5 and composite reliability exceeding 0.7, indicating their sound validity for the construct or latent variable.

Table 3. The average variance extracted and composite reliability

Variables	Items	AVE	CR
Habit bag use	HBU1, HBU2, HBU3, HBU4	0.688	0.897
Environmental awareness of plastic bag	EAPB1, EAPB2, EAPB3, EAPB4,	0.708	0.906
Social pressure	SP1, SP2, SP3, SP4	0.732	0.916
Support for banning plastic bag	SBPB1, SBPB2, SBPB3, SBPB4	0.558	0.832
Intention to use cloth bags	IUCB1, IUCB2	0.798	0.888
Consumer behavior in reducing plastic bag use	CBRPBU1, CBRPBU2	0.806	0.893

Notes: HBU: Habit bag use; EAPB: Environmental awareness of plastic bags; SP: social pressure; SBPB: support for the ban plastic bags; IUCB: intention to use Cloth bags; CBRPBU: Consumer Behavior of Reducing Plastic Bag Use

### 5.3 Discriminant Validity

Discriminant validity was assessed to ensure that variables are not strongly correlated. The study revealed that the heterotrait-monotrait (HTMT) ratios for variables HBU, EAPB, SP, SBPB, IUCB, and CBRPBU were below 0.90, as recommended by Hair et al. (2019). Table 4 confirms that there is no significant correlation between variables, affirming the validity of discriminant validity.

Table 4. Discriminant validity of variables based on Heterotrait monotrait ratio

Variables	CBRPBU	EAPB	HBU	IUCB	SBPB	SP
CBRPBU						
EAPB	0.169					
HBU	0.128	0.206				
IUCB	0.564	0.494	0.288			
SBPB	0.406	0.614	0.345	0.769		
SP	0.326	0.425	0.126	0.805	0.617	

Notes: HBU: Habit bag use, EAPB: Environmental awareness of plastic bags, SP: Social pressure, SBPB: Support for banning plastic bags, IUCB: Intention to Use Cloth Bags CBRPBU: Consumer behavior of reducing plastic bag use.

#### 5.4 Predictive Relevance of the Model

Assessing the quality of the inner model requires the ability to predict the endogenous construct. Cross-validated redundancy (Q<sup>2</sup>) and the coefficient of determination (R<sup>2</sup>) were key metrics utilized for this assessment. The R<sup>2</sup> value, indicative of model fit, is presented in Table 5. Q<sup>2</sup>, evaluated through the blindfolding method, should exceed zero, as recommended by Hair et al. (2019). The values for all variables in Table 5 were above zero, confirming the adequacy of the fit model based on the Q<sup>2</sup> metric.

Table 5. The predictive power of construct based on R Square and Q Square

Variables	R Square	Q Square
Consumer behavior of reducing Plastic bag use	0.183	0.143
Environmental awareness of plastic bag	0.039	0.026
Intention to use cloth bags	0.513	0.396
Support for banning plastic bags	0.088	0.046
Social pressure	0.013	0.009

#### 5.5 Hypothesis Testing

The results of Structural Equation Modeling confirmed the hypotheses H1, H2, H3, H5, H6, and H7, with t-values exceeding 1.96 as recommended by Hair et al. (2019). This suggests a direct effect of endogenous variables on exogenous variables. However, hypothesis H4, with a t-value below 1.96, indicates no influence of the endogenous variables on the exogenous variables. All hypotheses (H1 to H7) were supported based on the statistical significance detailed in Table 6. Specifically, Habit bag use negatively affects environmental awareness of plastic bags (t-statistic = 3.391 > 1.96), habit bag use negatively affects social pressure (t-statistic = 2.843 > 1.96), habit bag use negatively affects support for banning plastic bags (t-statistic = 5.271 > 1.96), social pressure positively affects intention to use cloth bags (t-statistic = 8.364 > 1.96), support for banning plastic bags positively affects the intention to use cloth bags (t-statistic = 4.968 > 1.96), and the intention to use cloth bags positively influences consumer behavior in reducing plastic bag use (t-statistic = 9.003 > 1.96). The only hypothesis not supported was H4, where environmental awareness of plastic bags positively affects intention to use cloth bags (t-statistic = 1.457 < 1.96).

Table 6. Result of path analysis to test hypothesis effect

Hypothesis	Beta	SD	t-statistics	p-value	Decision
H1 Habit bag use → Environmental awareness of plastic bag	-0.198*	0.058	3.394	0.001	Supported
H2 Habit bag use → Social pressure	-0.116*	0.063	2.843	0.033	Supported
H3 Habit bag use → Support for banning plastic bag	-0.297*	0.056	5.271	0.000	Supported

Table 6. Result of path analysis to test hypothesis effect (Continue)

Hypothesis	Beta	SD	t-statistics	p-value	Decision
H4 Environmental awareness of plastic bags → Intention to use cloth bags	0.080	0.055	1.457	0.073	Not Supported
H5 Social Pressure → Intention to use cloth bags	0.475*	0.057	8.364	0.000	Supported
H6 Support for banning plastic bags → Intention to use cloth bags	0.300*	0.060	4.968	0.000	Supported
H7 Intention to use cloth bags → Consumer behavior of reducing plastic bag use	0.427*	0.047	9.003	0.000	Supported

Note: \*The Coefficient is statistically significant at  $p < 0.05$ ; \*\* the coefficient is statistically significant at  $p < 0.01$ ; \*\*\* the coefficient is statistically significant at  $p < 0.001$ .

## 6. Discussion

### 6.1 The Impact of Habit Bag Use on Plastic Bag Environmental Awareness

Given the significantly positive impact of regular bag use on environmental awareness regarding plastic bag usage, first hypothesis is accepted. Habitual Bag Use (HBU) represents a series of established behaviors and situations that automatically emerge with plastic bag use (Triandis, 1980). The habit of using plastic bags, driven by factors like comfort and utility, influences respondents' comprehension of environmental issues and motivates behavior change towards alternative materials (Yusran et al., 2020). The study highlights that bag use habits are shaped by consumers' sentiments towards plastic bags in daily settings, focusing on wrapping goods or food, rather than merely carrying shopping bags. This contrasts with how often individuals carry bags, emphasizing the cognitive dimension of consumer behavior towards plastic bag usage.

While not fully aligning with the theory of interpersonal behavior, which suggests awareness diminishes as habits strengthen, HBU cultivates awareness regarding the environmental impacts of plastic bag usage. The study's findings echo those of Dabas and Mahavidlayala (2017), and align with prior research indicating that habits play a pivotal role in influencing environmental awareness (Annisa et al., 2022; Ardhiyansyah & Iskandar, 2023).

### 6.2 The Impact of Habit Bag Use on Social Pressure

The habit of using bags influences social pressure exerted by peers, family, and service providers regarding approval or disapproval of certain behaviors. This generation displays a tendency to embrace pro-environmental practices, like using cloth bags, by endorsing plastic bag fees at retail outlets. However, establishing new habits proves challenging without contextual cues that facilitate repetition, behavior adjustments, and reinforcement through prompts, rewards, and feedback. According to White et al. (2019), habits are revisited only when significant situational changes.

The study's outcomes are consistent with previous research showing that personal habits amplify the impact of societal pressure (Mumtaz et al., 2020). Similarly,



findings align with other studies indicating that habits contribute to increased feelings of guilt regarding failure to engage in Household Waste Separation (HWS) practices (Issock Issock et al., 2020).

### **6.3 The Impact of Habit Bag Use on Support for the Prohibition of Plastic Bags**

This study highlights that habit bag use, driven by comfort, utility, and positive attributes, influences support for the ban on plastic bags, with government, retailers, and service providers contributing to the prohibition of plastic bag usage (Ari & Yilmaz, 2017). Modern approaches involve implementing fees, incentivizing cloth bag usage, applying special taxes, integrating educational programs at schools and communities, and disseminating information through media platforms about the consequences of plastic bag use.

Habits are pivotal in fostering sustainable practices and responsible consumer behavior, like utilizing reusable bags, due to their significant impact on consistent environmentally-friendly choices. These study results align with earlier research findings (Ardhiyansyah & Iskandar, 2023; Mumtaz et al., 2022).

### **6.4 The Impact of Plastic Bag Environmental Awareness on Cloth Bag Intention**

This study did not confirm the fourth hypothesis stating that environmental awareness of plastic bags influences the intention to use cloth bags, as an increase in environmental awareness does not translate into a boost in cloth bag usage intention. Environmental awareness of plastic bags, characterized by understanding environmental quality concerns and the shift towards alternative materials, does not directly impact consumers' willingness to transition to cloth bags. This aligns with prior research indicating that environmental awareness does not directly drive the intention to reduce plastic waste (Solekah et al., 2022). Environmental consciousness alone may not drive the desire to reduce plastic waste, requiring external factors like governmental regulations or the availability of eco-friendly cloth bags to complement individual awareness.

Contrary to Wang et al. (2016), this study diverges by indicating that environmental awareness does not influence the behavioral intention towards waste recycling. Additionally, the findings do not support the claims of Khalifa (2023), Yusran et al. (2020), Manoj (2019), or Ohtomo and Ohnuma (2014) that environmental awareness affects the intention to curb plastic bag usage.

### **6.5 The Impact of Social Pressure on Cloth Bag Intention**

The fifth hypothesis is accepted, as social pressure influences the intention to use cloth bags, shaping behaviors, attitudes, and daily choices significantly. The study underscores the pervasive impact of social pressure in steering Generation Z's behaviors, especially in embracing environmentally conscious actions, highlighting the critical role of immediate social circles. Social pressure from friends, individuals, and supermarkets, advocating the use of cloth bags over plastic, plays a pivotal role in fostering Gen Z's adoption of eco-friendly practices. Furthermore, the government and supermarkets' practice of levying charges on plastic bag usage proves instrumental in predicting Gen Z's inclination towards environmentally sustainable cloth bags. This study aligns with previous research by Yusran et al. (2020), Ohtomo and Ohnuma (2014), and Khalifa (2023), emphasizing the strong influence of social pressure on opting for non-plastic bags. Additionally, it supports Ashwini and Aithal (2024), who

emphasize the impactful role of social pressure in consumer choices towards eco-friendly bag options.

### **6.6 The Impact of Plastic Bag Ban Support on the Propensity of Use of Cloth Bags**

The sixth hypothesis is accepted as support for banning plastic bags influences the intention to use cloth bags. The study reveals that restrictions like wholesalers not offering fruits and vegetables in plastic packaging (SBPB1) or government regulations on plastic bag bans (SBPB2) significantly impact Generation Z's preference for environmentally friendly cloth bags during shopping. Government actions to limit plastic bag usage have been shown to shape Gen Z's intentions to opt for cloth bags.

Additionally, governmental, retail, and service providers' efforts to curb plastic bag use through measures like imposing fees have spurred a shift towards cloth bag usage. This shift in preference towards cloth bags aligns with the desire to lower plastic bag consumption. These findings are consistent with previous studies indicating that supporting bans on plastic bags leads to a reduction in plastic usage behavior (Khalifa, 2023; Mugisha, 2015; Wan et al., 2014; Yusran et al., 2020).

### **6.7 The Impact of Consumers' Intentions to Use Cloth Bags on their Behaviour to Reduce the Use of Plastic Bags**

This study supports the seventh hypothesis, where the intention to use cloth bags impacts consumer behavior in reducing plastic bag usage. Generation Z's inclination to reduce plastic bag usage (IUCB1) naturally leads to the adoption of eco-friendly cloth bags. Moreover, this behavior shift is evident when supermarkets offer cloth bags free of charge (IUCB2), fostering a mental, emotional, and physical commitment to decrease the reliance on plastic bags. Consumer rejection of free plastic bags and their active use of cloth alternatives further support this shift.

Furthermore, the study aligns with Vina et al. (2020) in highlighting the positive and significant impact of the intention to cut down on plastic bag usage on actual behavior. Correspondingly, it echoes Wang et al.'s (2016) assertion that individual intentions shape environmentally responsible behaviors. Additionally, the findings resonate with Taufique and Vaithianathan (2018), indicating that intentions directly predict environmentally conscious consumer actions.

### **6.8 Managerial Implication**

The study's findings on H1, H2, and H3 suggest that increased habit bag use enhances environmental awareness about plastic bag usage and amplifies social pressure, encouraging public awareness initiatives rather than material substitution. Additionally, heightened habit bag use fosters support for governmental and retail bans on plastic bags through fee enforcement. These results imply that millennials, accustomed to bringing their bags while shopping, exhibit heightened awareness of the long-term environmental hazards of plastic bag decomposition.

Regarding H5, increased social pressure, emanating from interventions by friends, family, and stakeholders, boosts the intention to adopt alternative materials. This highlights the critical role of education by family, friends, and government in raising awareness about the perils of plastic bag use, especially for digitally savvy millennials. Conversely, Generation Z underscores the importance of familial, peer, and environmental influences in nurturing eco-friendly behaviors.

In relation to H6, support from the government and businesses to restrict plastic bag use through fees offers managerial insights for policymakers and retailers concerning plastic bag policies. This highlights the effectiveness of government regulations in driving sustainable practices across various industries, especially supermarkets. The investigation's H7 findings reveal a direct link between intention to use cloth bags and consumer behavior in reducing plastic bag usage, underscoring the practical impacts on shifting millennial behaviors towards environmental consciousness. This shift aligns with the Sustainable Development Goals' zero-waste plastic initiative by 2030, suggesting millennials' pivotal role in bolstering governmental environmental endeavors.

### **6.9 Theoretical Contribution**

The findings provide theoretical insights into reducing plastic bag usage among the Zillennial generation, emphasizing the role of interpersonal behavior intertwined with bag usage habits. This study enhances the understanding of Gen Z's eco-friendly actions, particularly shaped by their shopping habits transitioning from plastic to cloth bags. Their behavior is reinforced by self-motivation, environmental consciousness, and governmental policies implementing plastic bag bans. This multifaceted approach effectively influences the Zillennials to reduce plastic bag usage during shopping.

### **6.10 Limitation**

The limitations of this study are related to the lack of open-ended questions to probe into factors influencing consumer habits regarding plastic bag usage. Amid COVID-19, individuals shifted to using wallets and other items, recognizing plastic waste's environmental impact. As a precaution against virus transmission, polythene sacks are disposed of promptly, often being burned. Future research should employ a mixed-methods, combining quantitative and qualitative approaches to address these considerations.

## **7. Conclusions**

Based on the results, only one out of the seven proposed hypotheses—EAPB on IUCB—was rejected. The other six hypotheses were accepted: HBU impacts SP, IUCB, and EAPB, while CBRPBU is influenced by SP and SBPB, which in turn affects IUCB. Interestingly, heightened awareness of plastic bag hazards does not guarantee cloth bag adoption among the Zillennial generation. Their bag choices prioritize both function and style, including options like paper and tote bags with creative designs.

These findings validate the theory of planned behavior and the theory of interpersonal behavior in predicting environmentally conscious actions, specifically reducing plastic bag usage in Gen Z. The study reveals that Gen Z's bag habits play a crucial role in shaping intentions and behaviors aimed at decreasing plastic bag consumption, influenced significantly by external factors like governmental policies and social pressure from peers and the environment.

## **8. Recommendation**

In light of the research limitations, future studies should incorporate both closed-ended and open-ended questions to examine consumer behaviors concerning plastic and cloth bag usage. Feedback from the respondents indicates a preference for single-

use plastic bags during the recent COVID-19 pandemic to prevent virus transmission despite recognizing their environmental drawbacks.

Only one of the seven hypotheses tested in this research was rejected: the assumption that awareness of plastic bag pollution does not influence the intention to use cloth bags. Generation Z's awareness of plastic bag hazards does not consistently translate into a preference for environmentally friendly cloth bags. Future studies could benefit from exploring factors that either enhance or diminish interest in cloth bag adoption, such as restricting plastic bag availability in supermarkets, to promote voluntary or enforced transitions to cloth bags.

#### Citation information

**Cite this article as:** Solekah, N. A., Handriana, T., & Usman, I. (2024). Understanding zillennials consumer green behavior of reducing plastic bag use through the theory of planned and interpersonal behavior. *Journal of Consumer Sciences*, 9(2), 206-225. <https://doi.org/10.29244/jcs.9.2.206-225>

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