Consumer Behavior with Single-Use Plastic Bags in a Government Campaign

¹Dr. Nak Gulid, ²Dr. Supinya Yansomboon

¹Associate Professor Faculty of Business Administration for Society, Srinakharinwirot University ²Lecturer Faculty of Business Administration for Society, Srinakharinwirot University

Abstract

The aims of this research are to a) study the impact of attitude, subjective norm, and perceived behavioral control on consumer intention to reduce the use of plastic bags, and b) examine the moderating effect of gender on the formulated relationships. We conducted a survey of four hundred Bangkok residents. The structural equation model (SEM) is employed to test the hypotheses in this study. The result showed that perceived behavioral control had the highest impact on consumer intention and behavior, followed by consumer attitude and subjective norm. Gender had a moderating effect on the hypothesized relationships. Attitude and perceived behavioral control had a stronger impact on intention to reduce the plastic bags for female than male groups. Moreover, intention had a stronger impact on consumer behavior concerning single-use plastic bags for female than male groups.

Keywords: Attitude, Subjective norm, Perceived behavioral control, Intention, Behavior, Single-use plastic bags, Government campaign.

Introduction

Single-use plastic bags are very popular for shopping and carrying purchased products all over the world since the 1980s (Thomas et al., 2019). In Asia, especially in China, the government issued a ban to prohibit stores from giving free plastic bags since June 1, 2008. As a result, the consumption of plastic bags declined from over 40 billion and preserved about 1.6 million tons of petroleum (Worldwatch Institute, 2013). Moreover, in Malaysia, the Ministry of Domestic Trade, Cooperative and Consumerism (MDTCC) launched "the No Plastic Bag Campaign Day" in January 2011 with the aim to reduce plastic bag consumption and enhance proenvironmental behavior (Zen et al., 2013). This campaign applied only to supermarkets, retail stores, and shopping malls at the end-user level. In Thailand, a research institute estimated that plastic products will reach 2.44 million tons in 2022 (Chokdamrongsuk, 2018). Furthermore, the Pollution Control Department, Ministry of Natural Resources and Environment, Thailand reported that the consumption of plastic bags reached 45 billion per year. There are 3 main sources of plastic bags: a) local municipal markets (40% or 18 billion plastic bags), followed by b) grocery stores (30% or 13.5 billion plastic bags), and c) department stores, shopping centers, supermarkets (30%) (Damrongthai, 2019). If the Thai consumers are not aware and continue to use plastic bags, it would lead to plastic waste and a significant environmental problem. Hence, the Thai Retailers Association launched a campaign concerning toxic elements from plastic waste and environmental hazards. It created the "discount, reduce, get it" campaign starting from December 4, 2018 to August 31, 2019 and several large retail chains such as Tesco Lotus (Lotus's) and Lawson began to initiate marketing campaigns asking consumers to reduce single-use plastic bags (Thai Retailers Association, 2019).

Under this project, supermarkets and convenience stores were the leaders in opposing single-use plastic bags. The Thai government and the private sector cooperated to encourage consumer participation in reducing plastic bags to support positive environmental behavior and reduce the waste problem. In Bangkok, after the campaign, plastic waste decreased from 10,500 tons per year to 9,370 tons per year or 11 percent reduction of plastic waste (Simachaya, 2021). However, the COVID-19 pandemic became widespread all over the world including Thailand. The campaign was slowed a little by this disease. Thai people stayed at home and avoided shopping in supermarkets or used cloth bags to carry groceries. Food delivery service grew along with online shopping in Thailand, especially in Bangkok due to the advances of technology and travel difficulties. Food delivery produced at least 5 pieces of plastic food order (packaging waste per and equipment). Plastic waste comprises approximately 20 percent of total waste in Bangkok. Hence, the amount of such waste in Bangkok increased from 2,120 tons per day in 2019 to 3,440 tons per day in 2020, an increase of more than 60 percent (Simachaya, 2021). The reason is that the ban did not effect on the reduction of plastic bags at restaurants for takeaway or single-use boxes same as China (Upton, 2013; Ertz et al., 2017). This became a big challenge for Thai government.

The previous studies such as Holdershaw and Gendall (2011), David and Thiele (2017), Haj-Salem and Al-Hawari (2021), and Tano el al. (2021) identified the psychological factors as the key motivation to influence consumer behavior in choosing or using green products or products which have environmental concerns. This study employed the theory of planned behavior by Ajzen (1985) to examine the impacts of attitude, subjective norms, perceived behavior control on consumer intention and behavior to reduce the use of plastic bags. Figure 1 shows the conceptual model of the current study. In theory of planned behavior, attitudes, subjective norms, and perceived behavioral control have a strong positive impact on intention to refrain from using single-use plastic bags (Ajzen, 1991; Ajzen and Fishbein, 2000; Han et al., 2010). Several scholars such as Arslan et al., 2012; Wu and Mweemba, 2010; Sudarmadi et al., 2001; and Ari and Yilmaz, 2017 identified the effect that attitude of people's behavior impacts their intention which, in turn, influences actual behavior. Attitudes refer to favorable or unfavorable individual perception or evaluation of behavior (Ajzen, 1985, 2011). Subjective norms depend on the expectation of others (such as friends, relatives, and neighbors) and the motivation to comply with their norms and values concerning individual behavior, along with the willingness of each person to fulfill others' expectations (Ajzen and Fishbein, 1970; Fishbein and Ajzen, 1975). Perceived behavioral control is a person's perception of the ease or difficulty to perform such the particular behavior of interest that impacts behavioral intention and actual behavior (Ohtomo and Ohnuma, 2014; Muralidharan and Sheehan, 2016).

The existing studies tended to focus on only consumer intention instead of the actual behavior (Ari and Yilmaz, 2017; Ertz et al., 2017). Some studies (e.g., Armitage and Conner, 2001; Muralidharan and Sheehan, 2016; Ertz et al., 2017) looked into the relationships between consumer intention and the actual behavior but the results are contradictory. For example, the psychological factors may influence consumer intention to use green products but they are not necessary lead to actual behaviors (Ertz et al., 2017). Hence, this study fills up this gap by focusing on the intention as well as the actual behavior.

Male and Female consumers think differently and may also have different pro-environmental behaviors. Only few examined the impact of pro-environmental gender on behavior (Thomas et al., 2019). Gender is related to selfconstrual. It can explain one's self as either independent (male) and interdependent (female) from others (Cross and Madson, 1997; Peake et al., 2017). In the previous studies, it concluded that gender is different in motivations for contributing the community (DeHart-Davis et al., 2006; Mesch et al., 2011). Homonoff (2013) also found that young men are less likely to support the reusable bags campaign. Therefore, the current study employed theory of planned behavior to examine the influence of consumers' attitude, subjective norms, and perceived behavioral control on the intention to reduce the plastic bag usage which consequently influence

consumers' actual behavior. The moderating role of gender will also be examined.

LITERATURE REVIEW

Theory of reasoned action (TRA)

Several scholars in marketing areas have employed the theory of reasoned action (TRA) to analyze consumer behavior in various especially environmental contexts, on sensitivity, sustainability, recycling behavior, or pro-environmental behavior (Tonglet et al. 2004 a,b; Knussen et al. 2004, Ohtoma and Ohnuma 2014; Huang et al. 2014; Ari and Yilmaz, 2017; Paul et al., 2016; Liu et al., 2017; Paswan et al., 2017; Asnawi, et al., 2020). TRA is relevant to explain psychological/cognitive processes to understand consumers' contextual decisionmaking (Han and Kim, 2010; Asnawi, et al., 2020). To change consumer behavior, it is important to educate people by employing a government campaign to enhance awareness of the impact of plastic bags. Moreover, the campaign is supported by supermarkets and retail outlets (Zen et al., 2013). The launch of "Everyday Say No to Plastic Bags" by the Department Environmental of Quality Promotion in Thailand was started mainly in supermarkets and convenience stores; however, it was rarely seen in local municipal markets or grocery stores, which produce about 70 percent of plastic waste. Hence, a measure of consumer attitudes and behavior is important in this study. Several studies on plastic bag projects were not only related to declining use of plastic bags (Dikgang and Visser, 2012), but also concerned with anti-consumption and attitudes (Sharp et al., 2010). A behavior change process requires specific attitudes (learning and suggested behavior as positive) along with knowledge of the subject matter (Wright and Klyn, 1987; Hines et al., 2010, Zen et al., 2013). Attitude is related to positive or negative assessment of specified behavior and affects behavioral intention (Ajzen and Fishbein, 1980; Muralidharan and Sheehan, 2016). Tonglet et al. (2004) states that attitudes toward recycling along with related behavior showed the strong impact on intention. Attitude and subjective norms rely on normative beliefs and motivation to comply which enhances behavioral intention and subsequently behavior. Normative beliefs

are individual perceptions of social normative pressures. Subjective norms are an individual's perception of specified behavior which is affected by others (such as friends, peers, spouse, relatives, etc.). Norms led to behavior intention and people's desire to act as others do (Amjad and Wood, 2009; Muralidharan and Sheehan, 2016).

Theory of planned behavior (TPB)

The theory of planned behavior (TPB) states that intention is influenced by three (instead of two) factors: attitude, subjective norms, and perceived behavioral control. TPB extends from the theory of reasoned behavior to include non-volitional behavior to predict behavioral intention and actual behavior. Perceived behavioral control is defined as "a person's beliefs on the difficulty of performing the behavior of interest that predicts behavioral intention and actual behavior" (Muralidharan and Sheehan, 2016, p.204). This relationship was confirmed in several studies on green products and services (Zen et al. 2013; Muralidharan and Sheehan, 2016). For example, Armitage and Conner (2001)conclude that perceived behavioral control shows a strong impact on intention and actual behavior, whereas subjective norms show the weakest impact on these variables. Han et al. (2010) state that attitudes, subjective norms, and perceived behavioral control positively influence intentions to choose green hotels. For the actual behavior, Bandura (1980) states that human behavior is strongly affected by confidence in the ability to perform a behavior, which implies that perceived behavioral control is strongly influenced by actual behavior. This statement is confirmed by Armitage and Conner (2001). Furthermore, intention and perceived behavioral control are two variables to measure actual behavior (Cheung et al., 1999; Abraham and Sheeran, 2003; Ohtomo and Ohnuma, 2014; Muralidharan and Sheehan, 2016; Ari and Yilmaz, 2017). Therefore, we hypothesized that:

H1A: Attitudes have a direct impact on intention to reduce single-use plastic bags.

H1B: Subjective norms have a direct impact on intention to reduce single-use plastic bags.

H1C: Perceived behavioral control has a direct impact on intention to reduce single-use plastic bags.

H2A: Perceived behavioral control has a direct influence on behavior to reduce single-use plastic bags.

H2B: Intention to reduce single-use plastic bags have a direct influence on behavior to reduce single-use plastic bags.

The moderating role of gender

Cross and Madson (1997) stated that selfconstrual is a good proxy for gender difference in motivation and behavior. Based on selfconstrual concept (Langford and MacKinon, 2000; Beardsworth et al., 2002; Ares and Gambaro, 2007; Chen et al., 2014; Shin et al., 2020; and Aftab et al., 2021), men tend to be more independent whereas women tend to be more interdependent. Women, comparing to men, are more likely to put more value on closed relationships with friends and family. On the other hand, male consumers are more independent, which led to unique and individual traits (Madson and Trafimow, 2001; Peake et al., 2017). Several studies concluded that interdependent self-construals are related to a strong determinant to pursue their goals by themselves rather than relying on relationships. Moreover, independent self-construals pursue

their goals based on personal reasons such as their own interests (Gore and Cross, 2006; Gore et al., 2009; van Horen et al., 2008; Peake et al., 2017). Eagly and Crowley (1986) concluded that women are more sympathy and compassion, especially on charity or public service participation, whereas men are more money-oriented than women (Gore et al., 2009). Each self-construal has different respond on environmental perception and behavior. Based on these reasons, gender or their self-construal may have an impact on the relationship of attitude, subjective norm, perceived behavioral control and the intention along with behavior concerning single-use plastic bags. Hence, we hypothesize:

H3A: Gender moderates the impact of attitudes on intention to reduce single-use plastic bags.

H3B: Gender moderates the impact of subjective norms on intention to reduce single-use plastic bags.

H3C: Gender moderates the impact of perceived behavioral control on intention to reduce single-use plastic bags.

H3D: Gender moderates the impact of perceived behavioral control on behavior to reduce single-use plastic bags.

H3E: Gender moderates the impact of intention on behavior to reduce single-use plastic bags.



Figure 1: Conceptual Framework of the Study

RESEARCH METHODOLOGY

Sample and data collection

We employed a survey method to investigate intention and behavior to reduce consumer use of single-use plastic bags in Bangkok. The data was collected during the third quarter of 2020, which coincides with two important events in Thailand. The first was the government campaign to reduce single-use plastic bags (beginning January 1, 2020). This was followed by the Covid-19 pandemic after the first round (March through May, 2020). Data collection was conducted in Bangkok. To valid the survey results, we conducted an interview with shoppers department at stores. super/hypermarkets and convenience stores. A total of 400 questionnaires was collected. The respondents were females (78.5%), 15-24 years old (33.5%), single (74.2%), with Bachelor's degrees ((67.5%), employed in the private sector (40.3%), with monthly incomes lower than THB10,000 (less than USD330, 21.8%), and refusing to accept plastic bags when shopping (30.8%) are the dominant respondents in this study.

Measurements

The TPB model was employed in this study to measure the direct effect of attitude, subjective norms, and perceived behavioral control on intention. Furthermore, we measured the impact of perceived behavioral control and intention on behavior to reduce single-use plastic bags. The questionnaire was derived from several researchers (including Jayaraman et al., 2011; Ohtomo and Ohnuma, 2014; Sidharth and Kim, 2016; Ari and Yilmaz, 2017). All constructs were measured by using the five-point Likert scale ranging from "Strongly Agree = 5" to "Strongly Disagree = 1" (Likert, 1932). Cronbach's alpha of attitude, subjective norms, perceived behavioral control, intention, and behavior to reduce single-use plastic bags were equal to .933, .770, .750, .870, .761, respectively. All measures were greater than 0.70, which was beyond the cut-off value (Hair et al., 2006). A binary question was employed to measure the moderator: male/female. This question requested respondents to select gender either male or female.

Table 1 identifies the result of reliability and validity of the constructs as follows:

Construct	Std. loading	Cronbach 's alpha	Composite reliability (CR)	Average variance extracted (AVE)
Attitude towards single-use plastic bags (AT)		.933	.903	.65
AT ₁ : Single-use plastic bags leads to environmental problem	.81			
AT ₂ : Single-use plastic bags harm to living animal in the planet	.72			
AT ₃ : Single-use plastic bags create toxic waste	.82			
AT ₄ : Single-use plastic bags enhance cancer	.86			
AT ₅ : Single-use plastic bags create global warming	.82			
Subjective norms on single-use plastic bags (SN)		.770	.834	.56
SN ₁ : If my neighbors reduce to use single-use plastic bags, I am willing to reduce the use of single-use plastic bags	.77			
SN ₂ : If my role model reduces to use single-use plastic bags, I am willing to reduce the use of single-use plastic bags	.81			
SN ₃ : My family is the important motive for me to reduce the use of single-use plastic bags	.67			
SN ₄ : When the majority of people refuse to use single- use plastic bags, I am willing to follow	.73			
Perceived behavioral control (PBC)		.750	.787	.65
PBC ₁ : Government should enforce the policy to reduce single-use plastic bags	.76			
PBC ₂ : Department stores, supermarkets, and	.85			

Table 1: Measurement Model

Construct	Std. loading	Cronbach 's alpha	Composite reliability (CR)	Average variance extracted (AVE)
convenient stores should issue the rule in opposing single-use plastic bags				
Intention to reduce the use of single-use plastic bags (I)		.870	.869	.63
I ₁ : I intend to reduce the use of single-use plastic bags	.82			
I ₂ : I plan to use cloth bags instead of plastic bags	.81			
I ₃ : I totally support the reduction of single-use plastic bags	.74			
I ₄ : I reduce the use of single-use plastic bags due to government policy	.79			
Behavior concerning single-use plastic bags (B)		.761	.819	.60
B ₁ : According to government campaign, I reduce the use of plastic bags	.86			
B ₂ : I prefer to buy cloth bags if I forget my own cloth bags	.60			
B ₃ : I promptly reply to the government campaign on reduction of single-use plastic bags	.85			

rable r. measurement mouel

Table 1 shows that all factor loadings were above the acceptable values of 0.4 (ranging from 0.60 to 0.86, Anderson and Gerbing, 1988). The composite reliability and average variance extracted of all constructs exceeds the threshold of 0.7 and 0.5, which identifies the strong internal reliability and convergent validity (Fornell and Larcker, 1981).

Findings

Structural equation modeling (SEM) was employed in this study to examine the conceptual model. Several scholars suggested that the sample size of 200 is recommended to be the critical sample size to test a model (Hair et al., 2006). In this study, the sample size is 400 respondents, which exceeds the critical level. It is also acceptable for the analysis of SEM.

The rule of thumb for acceptable model fit was assessed with the comparative fit index (CFI), the Tucker-Lewis index (TLI), the root mean squared error of approximation (RMSEA), and the goodness-of-fit index (GFI). The GFI, CFI, TLI values exceeded .90 and .95 (Hu & Bentler, 1995; Hair et al., 2006). In addition, the RMSEA value range (from .05 to .08) is acceptable (Hair et al., 2006). The theoretical model consisting of five variables is illustrated in Figure 2. The summary of two hypotheses test results is shown in Table 2.

Figure 2: Structural Equation Model on Behavior to Reduce Single-Use Plastic Bag



Н	From	То	Standardized estimate	t-values	Sig.
H1 _A	Attitude (AT)	Intention to Reduce Plastic Bags (IR)	.227	3.669	***
H1 _B	Subjective norm (SB)	Intention to Reduce Plastic Bags (IR)	.150	2.035	*
H1 _C	Perceived Behavioral Control (PBC)	Intention to Reduce Plastic Bags (IR)	.469	6.020	***
H2 _A	Perceived Behavioral Control (PBC)	Behavior to Reduce Plastic Bags (BR)	.603	7.109	***
H2 _B	Intention to Reduce Plastic Bags (IR)	Behavior to Reduce Plastic Bags (BR)	.137	1.796	*

Table 2:	Summary	: Results	of Hyp	ootheses	Testing

Squared Multiple Correlations SMC Values

Intention to Reduce Plastic Bags 0.517

Behavior to Reduce Plastic Bags 0.493

Model Goodness-of-fit Statistics

Chi-Square = $280.576 \text{ X}^2/\text{df} = 2.281 \text{ RMR} = 0.044$, SRMR = 0.0474

- Degree of Freedom = 123 GFI = 0.929 RMSEA = 0.057
- p-values = .000 AGFI = 0.902 CFI = 0.961, TLI = 0.955

Note: Significance for t-values at one-tailed for .05 level (*) = 1.65; for .01 level (**) = 2.33; for .001 level (***) = 3.09 (Malhotra, 2004).

The results of hypotheses testing are performed in terms of the standardized parameter estimates and the t-values. All of the hypotheses are statistically significant in the hypothesized direction as expected.

On the first hypothesis (H1A, H1B, H1C), the results indicate that attitude, perceived behavior control, and subjective norm have a direct positive impact on intention to reduce singleuse plastic bags, where the standardized estimates are equal to .227, .469, and .150 with statistical significance at the .001 and .05 levels, respectively. The results are consistent with Ajzen, 1991; Ajzen and Fishbein, 2000; Han et al., 2010; Muraliddharan and Sheehan, 2016; Ertz et al., 2017. Hence, hypotheses H1A, H1B, and H1C are supported by the data. In this study, perceived behavioral control has the strongest positive direct impact on intention to reduce single-use plastic bags, followed by attitude and subjective norms, which support the findings of Bandura (1980), Armitage and Conner (2001), Holdershaw and Gendall (2011), Ullah et al. (2021) that perceived behavioral control is strongly influenced by actual behavior.

On testing the second hypothesis (H2A, H2B), the result showed that perceived behavioral control and intention to reduce single-use plastic bags have a direct positive influence on actual behavior to reduce single-use plastic bags, where the standardized estimates are equal to .603 and .137 with statistical significance at the .001 and .05 levels, respectively. This finding supports the notion that perceived control behavior has the strongest direct impact on actual behavior, which is consistent with findings from (2001)Armitage and Conner and Muraliddharan and Sheehan (2016). However, in several previous studies such as Holdershaw and Gendall (2011), Muraliddharan and Sheehan, 2016, Ari and Yilmaz (2017) indicated that intention was the main predictor of actual behavior on the reduction to use plastic bags along with blood donation, which is contradict with this finding. The reason is that the data in this study is collected during COVID-19 pandemic and respondents in Bangkok increased the amount of using facemask and food delivery service, which enhanced the amount of plastic waste by 60% (Simachaya, 2021). Respondents have the high awareness and intention on refraining singleuse plastic bags; however, the situation of COVID-19 pandemic is inconsistent with the government campaign. Hence, perceived behavioral control has a stronger impact on behavior because respondents' perception to perform the actual behavior on the reduction of single-use plastic bags is inconsistent with the real situation, especially on pandemic.

In conclusion, the results support the theory of planned behavior and are consistent with several previous studies on green products and services and environmental concern (Zen et al. 2013; Muralitharan and Sheehan, 2016; Ertz et al., 2017).

In addition, this study investigated the predictor variables (attitude, subjective norm, and Table 3: Indirect and Direct Effects

perceived behavior control) to explain a mediating variable (intention) and a dependent variable (behavior to reduce the single-use plastic bags). The results are shown in Table 3.

Tuble 5. mandet and Direct Enteets							
Predictor	IR			BR			
Variables	Total	Direct	Indirect	Total	Direct	Indirect	
AT	.227	.227	-	.031	-	.031	
SN	.150	.150	-	.021	-	.021	
PBC	.469	.469	-	.667	.603	.064	
IR				.253	.137	.110	

The results in Table 3 are explained as follows:

Intention to reduce single-use plastic bags: the model shows 52% of the variance in intention to reduce single-use plastic bags. Its most important predictor variable is perceived behavior control (β = .469), which has a significant positive direct impact on intention to reduce single-use plastic bags, followed by attitude (β = .227) and subjective norm (β = .150), respectively.

Behavior to reduce single-use plastic bags: the model presents 49% of the variance in behavior to reduce single-use plastic bags. Its most important predictor variable is perceived behavior control ($\beta = .603$) and intention to reduce single-use plastic bags ($\beta = .137$). The variables have a significant positive direct and indirect impact on behavior to reduce single-use plastic bags. Attitude and subjective norms have only an indirect impact on behavior to reduce single-use plastic bags: $\beta = .031$ and .021, respectively.

Moderating Tests

Gender is a moderating variable in this study. To examine the moderating, a multi-group path analysis is suggested (Bagozzi and Yi, 1989). This analysis increases the simultaneous estimation of all hypothesized relationship across groups. In addition, the differences between groups in terms of male and female are determined. Split-group analysis method is employed to evaluate these differences (Osterhus, 1997; Gulid, 2007). 400 Bangkokians is divided into two groups. The number of male respondents is equal to 86 (21.5%), whereas the number of female respondents is equal to 314 (78.5%).

The five relationships of male and female are treated to be constrained across samples. For

male/female groups, the chi-square on the unconstrained model is equal to 464.822 and the degree of freedom is 240 (p < .000), whereas the chi-square value of the constrained model with the five relationships is equal to 480.624 and the degree of freedom is equal to 245 (p < .000). The difference of the chi-square value on these two models is $15.802 (\Delta \chi 2.5 =$ 15.802). The critical value of chi-square table with alpha at 0.05 and 0.01 level at the degree of freedom of 5 is 11.070, 15.086, respectively. Therefore, the difference of chi-square value of the tested models is higher than the chi-square value from the table, which implies that the difference is statistically significant at 0.01 level. The results support that gender has a moderating effect on the hypothesized relationships. The result of moderating effects of gender is shown in Table 4.

Table 4: Moderating Tests of Male/Female Group

Male/Female Group	
Constrained Model	$\chi^2_{240} = 464.802$
Unconstrained Model	$\chi^2_{245} = 480.624$
The Difference	$\Delta \chi^2_{5} = 15.802 **$

Note: * The critical value of chi-square table at the degree of freedom of 5 is equal to 11.070, 15.086 at .05 and 0.01 levels, respectively.

The unstandardized parameter estimates of male/female groups is shown in Table 5.

			Male		Female	
From			Unstand. Est.	t-value	Unstand.Est.	t-value
H _{3A}	Attitude (AT)	Intention to Reduce Plastic Bags (IR)	.113	1.629	.167	3.519***
H _{3B}	Subjective norm (SB)	Intention to Reduce Plastic Bags (IR)	.929	4.261***	.242	5.181***
H _{3C}	Perceived Behavioral Control (PCB)	Intention to Reduce Plastic Bags (IR)	298	-1.718*	.118	2.118*
H _{3D}	Perceived Behavioral Control (PCB)	Behavior to Reduce Plastic Bags (BR)	3.240	2.482**	.670	7.347***
H _{3E}	Intention to Reduce Plastic Bags (IR)	Behavior to Reduce Plastic Bags (BR)	-3.170	-1.952*	.305	2.160*

Table 5: The Hypotheses Testing on the Moderating Effects of Male/Female

Model Goodness-of-fit Statistics

Chi-Square = 464.822 X²/df = 1.937 RMR = 0.080 Degree of Freedom = 240 GFI = 0.892 RMSEA = 0.049 p-values = .000 AGFI = 0.845 CFI = 0.946

Note: Significance for t-values at one-tailed for .05 level (*) = 1.65; for .01 level (**) = 2.33; for .001 level (***) = 3.09 (Malhotra, 2004).

By comparing across groups, unstandardized parameter estimates of male/female construct is recommended. The reason is that indicators may have different variances, measurement error terms, and disturbance terms (Ping, 1995). The result shows that all five posited relationships of five hypothesized relationships have the positive relationship at statistically significant levels of 0.05 and .001, respectively.

The moderating effect of male/female on the relationship between attitude and intention to reduce plastic bags for female groups is statistically significant at 0.001 level, whereas the moderating effect of the male group is statistically insignificant at any level. Therefore, the result from Table 4 supported H3A, which implies that attitude has a stronger impact to intention to reduce plastic bags for female than male group.

For hypothesis H3B, the parameter estimates in the male group (b = .929, t-value = 4.261) is statistically significant compared to the female group (b = .242, t-value = 5.181). Both groups have the positive relationship between subjective norm and intention to reduce plastic bags at the statistically significant at 0.001 level; however, the magnitude of the positive relationship on the male group is higher than on the female group. Hence, this hypothesis is partially supported.

The relationship between perceived behavioral control and intention to reduce plastic bags on the female group is positive at statistically significant of 0.05 level; however, the relationship between perceived behavioral control and intention to reduce plastic bags on the male group is negative at statistically significant of 0.05 level. Men are more independent and achievement oriented, which led to unique and individual traits. During the COVID-19 pandemic, government campaign on refraining single-use plastic bags is quite difficult to perform such as cloth bags on shopping, facemask, and food delivery service. Hence, male perception to perform on the reduction of single-use plastic bags impact behavioral intention was the opposite direction. This finding is consistent with Homonoff (2013) that men are less likely to support the reusable bags campaign. The result is supported hypothesis H3C.

The finding on Table 5 indicates that there is a positive relationship between perceived behavioral control and behavior to reduce plastic bags in the male and female groups at statistically significant of 0.01 and 0.001 levels, respectively. However, the magnitude of parameter estimates in the male is higher than in the female group. Hence, hypothesis 3D is partially supported.

The relationship between intention and behavior to reduce plastic bags on the female group is positive at statistically significant of 0.05 level; however, the relationship between intention and behavior to reduce plastic bags on the male group is negative at statistically significant of 0.05 level. The moderating effect of the female group increases the strength of the relationship between intention and behavior to reduce plastic bags (b = .305, t-value = 2.160), whereas the male group is weakened the relationship between intention and behavior to reduce the plastic bags (b = -31.70, t-value = -1.952), which the result supported H3E.

Summary and Discussion

The structural equation model of actual behavior to reduce single-use plastic bags is consistent with the criteria of empirical data. It also confirms the theory of planned behavior (Ajzen, 1985) and is suitable for representing consumer behavior or environmental concerns and green products along with reducing singleuse plastic bags in Thailand. The findings also support the notion that perceived behavior control is the most predictor variable on intention, followed by attitude and subjective norms, which is consistent with the previous studies. Subjective norms have the least direct impact on intention. The reason seems to be that many Thai people are aware of plastic waste problems and public and private sectors have started to launch several campaigns to reduce the use of plastic bags. Hence, they have become aware of this problem by themselves and did not depend on explanations from others. In addition, the majority of the respondents are teenagers, which is GEN Z. They are a generation that is heavily involved with social media and online search. Hence, they can provide and exchange information with each other to enhance awareness of environmental concerns.

The findings confirm the moderating effects of gender on TPB relationships. Attitudes and perceived behavioral control have more impact to intention along with intention have stronger impact to behavior to reduce plastic bags on the female group. This result is consistent with several studies that women are more aware and willing to participate on ethical values and behavior (Beardsworth et al., 2002; Shin et al., 2020). Surprisingly, this study finds that subjective norms have a stronger impact to intention to reduce plastic bags on the male group, which implies that their motivation and values relied on others'expectations. This finding is different from various studies (such as Langford and Mackinon, 2000; Allen and Rush, 2001; Farrell and Finkelstein, 2007) that female are more emotional needs of others and relationship-oriented. Male are more selforiented, unique and individual traits. The reason of this finding is that the government campaign to reduce single-use plastic bags was consistent with Covid-19 pandemic situation in Thailand. People were adjusted themselves to the new normal situation. Food delivery became popular in the new normal situation. The majority of male do not prepare their own food during the work from home period and they order the food delivery, which is more convenient for them. Food delivery produced at least 5 pieces of plastic waste per food order (packaging and equipment). Male also do not carry cloth bags during their visiting convenient stores or the department stores. If they buy the product, they will request or buy the plastic bags, especially on the COVID-19 pandemic situation. Hence, the impacts of perceived behavioral control to intention along with intention to behavior to reduce plastic bags are weaken among the male group.

Perceived behavior control is defined as "people intend to formulate certain behaviors if they believe that they can achieve them (Ajzen, 1985)." Bangkok, the capital city of Thailand, provides at least 80 million plastic bags per day only from convenience stores (Damrongthai, 2019). Because of this problem, the Ministry of Natural Resources and Environment called a meeting to discuss with the private sector (department stores, shopping centers, and supermarkets) launching a campaign on reducing the production of plastic bags by January 1, 2020. This campaign aims to change the attitude, norms, and increase perceived behavioral control or building a greater believe among consumers that they can change their behavior. The campaigns have quite successful.

The COVID-19 situation, however, has affected behavior to reduce the use of plastic bags and led the intention to perform to a lower direct impact on actual behavior compared to perceived behavior control. Such findings are different from Muralidharan and Sheehan (2016), Ari and Yilmaz (2017), and Ertz et al. (2017). The reason is that the majority of previous studies considered only intention to actual behavior. However, these findings support TPB in that actual behavior does not only depend on intention but also perceived behavior control (Ajzen, 1985; Norberg et al., 2007).

Theoretical Implications

This study employed TPB (Ajzen, 1985) to measure the intention and behavior to reduce single-use plastic bags in the Bangkok Metropolitan area after the government campaign to ban their use from January 1, 2020. Moreover, this is the first study to employ TPB to examine behavior to reduce the plastic bags in Thailand during a government campaign, though it was employed in several other countries (Muralidharan and Sheehan, 2016; Ari and Yilmaz, 2017; Thomas et al., 2019). TPB has also been recommended for many research efforts in various fields, especially for green products, environmental concerns, and sustainability (Basha et al., 2015, Ertz et al., 2017; Asnawi et al., 2020; Fedi et al., 2021). The findings strongly support TPB; however, the most important variable to determine intention and behavior is perceived behavior control. In addition, this study indicates that intention has a less direct impact on behavior compared to perceived behavior control. a result which is different from previous studies (Muralidharan and Sheehan, 2016; Ari and Yilmaz, 2017; and Ertz et al., 2017). In this finding, female has a stronger impact on intention and behavior to reduce single-use plastic bags, which is consistent with Eagly and Crowley (1986) that women are more likely to participate on charity or public service. In contrast, men have a stronger impact on subjective norms to intention on refraining single-use plastic bags than female, which implied that others' expectation (such as friends, relatives, neighbors, colleagues) is more important on men. The data was collected for this research during the COVID19 pandemic in Thailand, and suggests that TPB remains valid under such difficult circumstances.

Managerial Implications

The results of this study indicate that under the government campaign to ban plastic bags, it is very important to emphasize on attitude, norms, and perceived control. The campaign may have a different focus on these psychological factors depending on the target gender. Perceived behavioral control has the strongest impact on intention and actual behavior on the reduction of single-use plastic bags. Hence, the government sector should cooperate with Thai retailers' association to provide free cloth bags to shoppers who bought the products at the shop in the certain amount to enhance the campaign or borrow cloth bags at the shop before shopping, especially for men. The reason is that men are more money-oriented and less likely to participate on charity, public service, or environmental concern. In addition, the majority of respondents understood only the impact of global warming and environmental concerns, but were less aware of hazards like cancer risk. The Ministry of Natural Resources and Environment should cooperate with the Ministry of Education to provide information on refraining from the use of single-use plastic bags to schools and universities. They can begin advertising campaigns by using young men to persuade Thai citizens to ban plastic bags via social media such as Facebook, Twitter, Instagram and local broadcast channels such as TV3, TV7, etc. Finally, the government sector should provide information about the hazards of plastic waste from food delivery services and face masks, items which caused tremendous plastic waste during the COVID-19 pandemic period.

Limitations of This Study

This research employs cross-sectional data by distributing questionnaires. To gain more information on government campaigns, a longitudinal approach is suggested. To validate TPB, future research is important as the data on this study was compiled during the COVID-19 situation. The validity of this research should be tested during a normal situation and the results and impact factors compared in these two different situations.

References

- [1] _____. (1980). Understanding Attitudes and Predicting Social Behavior. Englewood Cliffs, N.J.: Prentice-Hall.
- [2] _____. (1991). The theory of planned behavior. Organizational Behavior and Human Decision Processes, 50(2): 179-211.
- [3] _____. (2000). Attitudes and the attitude-behavior relation: Reasoned and automatic processes. European Review of Social Psychology, 11(1): 1-33.
- [4] _____. (2011). The theory of planned behavior: Reactions and reflections. Psychology and Health, 26(9): 1113-1127.
- [5] Abraham, C., & Sheeran, P. (2003). Acting on intentions: The role of anticipated regret. British Journal of Social Psychology, 42(4): 495–511.
- [6] Aftab, N., Shah, S. A. A., Khan, Z. (2021). The moderating effect of gender on the relationship between organizational commitment and organizational citizenship behavior in Pakistani University teachers. Cogent Psychology, 7:1860480, 1-13.
- [7] Ajzen, I. (1985). From intentions to actions: A theory of planned behavior. In J. Kuhl & J. Beckmann (Eds.), Actioncontrol: From cognition to behavior (pp. 11-39). Heidelberg, Germany: Springer.
- [8] Ajzen, I. and Fishbein, M. (1970). The prediction of behavior from attitudinal and normative varibles. Journal of Experimental Social Psychology, 6(4): 466-487.
- [9] Allen, T. D. and Rush M. C. (2001). The influence of rate gender on ratings of organizational citizenship behavior. Journal of Applied Social Psychology, 31(12), 2561-2587.
- [10] Amjad, N. and Wood, A. M. (2009). Identifying and changing the normative beliefs about aggression which lead young Muslim adults to join extremist antisemitic groups in Pakistan. Preventing Joining Extremist Groups, 35: 514-519.
- [11] Anderson, J. C., and Gerbing, D. W. (1988). Structural equation modeling in practice: A review and recommend twostep approach. Psychology Bullentin, 103(3): 411-423.
- [12] Ares, G. and Gambaro, A. (2007). Influence of gender, age and motives

underlying food choice on perceived healthiness and willingness to try functional foods. Appetite, 49(1), 148-158.

- [13] Ari, E. and Yilmaz, V. (2017). Consumer attitudes on the use of plastic and cloth bags. Environment, Development and Sustainability, 19(4): 1219-1234.
- [14] Armitage, C. J. and Conner, M. T. (2001). Efficacy of the theory of planned behaviour: A meta-analytic review. British Journal of Social Psychology, 40(4): 471-499.
- [15] Arslan, H. O., Cigdemoglu, C, and Moseley, C. (2012). A three-tier diagnostic test to assess pre-service teachers' misconceptions about global warming, greenhouse effect, ozone layer depletion, and acid rain. International Journal of Science Education, 34(11): 1-20.
- [16] Asnawi, A., Awang, Z., Afthanorhan, A., Mohamad, M., and Karim, F. (2020). The Influence of hospital image and service quality on patients' satisfaction and loyalty. Management Science Letters, 9(6): 911–920.
- [17] Bagozzi, R. P. and Yi. Y. (1989). The degree of intention formation as a moderator of the attitude-behavioral relationship. Social Psychology Quarterly, 52.
- [18] Bandura, A. (1980). Gauging the relationship between self-efficacy judgment and action. Cognitive Therapy and Research, 4: 263-268.
- [19] Basha, M. B., Mason, C., Shamsudin, M. F., and Iqbal-Hussain, H. (2015). Consumers attitude towards organic food. Procedia Economics and Finance, 31: 444-452.
- [20] Beardsworth, A., Bryman, A., Keil, T., Goode, J., Haslam, C., and Lancashire, E. (2002). Women, men, and food: The significance of gender for nutritional attitudes and choices. British Food Journal, 104(7), 470-491.
- [21] Chen, J., Lobo, A. and Rajendran, N. (2014). Drivers of organic food purchase intentions in mainland China-evaluating potential customers' attitudes, demographics, and segmentation. International Journal of Consumer Studies, 38(4), 346-356.
- [22] Cheung, S. F., Chan, D. K.-S., and Wong, Z. S.-Y. (1999). Reexamining the theory

of planned behavior in understanding wastepaper recycling. Environment and Behavior, 31: 587.

- [23] Chokdamrongsuk, J. cited in Juthrakul, P. (2018). Ministry of Public health Campaigns to Reduce the Use of "Plastic". Retrieved November 15, 2021, from https://www.thaihealth.or.th
- [24] Cross, S.E. and Madson, L. (1997). Models of the self: Self-construals and gender. Psychological Bulletin, 122(1): 5-37.
- [25] Damrongthai, P. (2019). Pollution Control Department, Ministry of Natural Resources and Environment. Retrieved November 15, 2021, from https://www.marketingoops.com
- [26] David, P., and Thiele, S. R. (2017). Social marketing theory measurement precision: A theory of planned behavior illustration. Journal of Social Marketing, 8(2): 182-201.
- [27] DeHart-Davis, L., Marlowe. J., and Pandey, S. K. (2006). Gender dimensions of public service motivation. Public Administration Review, 66(6), 873-887.
- [28] Dikgang, J. and Visser, M. (2012) Behavioral response to plastic bag legislation in Botswana. South African Journal of Economics, Economic Society of South Africa, 80(1): 123-133.
- [29] Eagly, A. and Crowley, M. (1986). Gender and helping behavior: A meta-analytical review of the social psychological literature. Psychological Bulletin, 100, 282-308.
- [30] Ertz, M., Lecompte, A., and Durif, F. (2017). Dual roles of consumers: Towards an insight into collaborative consumption motives. International Journal of Market Research, 59(6): 725-748.
- [31] Farrell, S. K. and Finkelstein, L. M. (2007). Organizational citizenship behavior and gender: Expectations and attributions for performance. North American Journal of Psychology, 9(1), 81-96.
- [32] Fedi, A., Barbera, F. La, Jong, A. De, and Rollero, C. (2021). Intention to adopt proenvironmental behaviors among university students of hard and soft sciences: The case of drinking by reusable bottles. International Journal of Sustainability in Higher Education, 22(4): 766-779.

- [33] Fishbein, M. A. and Ajzen, I. (1975). Belief, attitude, intention and behavior: An introduction to theory and research. Reading, MA: Addison-Wesley.
- [34] Fornell. C., and Larcker, D. F. (1981). Evaluating structural equation models with unobservable variables and measurement error. Journal of Marketing Research, 18: 39-50.
- [35] Gore, J. S. and Cross, S. E. (2006). Pursuing goals for us: Relationally autonomous reasons in long-term goal pursuit. Journal of Personality and Social Psychology, 90(5), 848-861.
- [36] Gore, J. S., Cross, S. E., and Kanagawa, C. (2009). Acting in our interests: Relational self-construal and goal motivation across cultures. Motivation and Emotion, 33(1), 75-87.
- [37] Gulid, N. (2007). Customer Loyalty in the Luxury Hotel Industry: A Cross Cultural Perspective. Thammasat University, Bangkok.
- [38] Hair, J., Black, W., Babin, B., Anderson, R., and Tatham, R. (2006). Multivariate Data Analysis. 6th Edition, Pearson Prentice Hall, Upper Saddle River.
- [39] Haj-Salem, N., and Al-Hawari, M. A. (2021). Predictors of recycling behavior: The role of self-conscious emotion. Journal of Social Marketing, 11(3): 204-223.
- [40] Han, H. and Kim, Y. (2010). An investigation of green hotel customers' decision formation: Developing an extended model of the theory of planned behavior. International Journal of Hospitality Management, 29(4): 659-668.
- [41] Han, H., Hsu, L.-T., and Sheu, C. (2010). Application of the theory of planned behavior to green hotel choice: Testing the effect of environmentally friendly activities. Tourism Management, 31(3): 325–334.
- [42] Hines, J. M., Hungerford, H. R., and Tomera, A. N. (2010). Analysis and synthesis of research on responsible environmental behavior: A Meta-Analysis. The Journal of Environmental Education, 18(2): 1-8.
- [43] Holdershaw, J., and Gendall, P. (2011). Predicting blood donation behavior: Further application of the theory of planned behavior. Journal of Social Marketing, 1(2): 120-132.

- [44] Homonoff, T. A. (2013). Can small incentives have large effects? The Impact of Taxes Versus Bonuses on Disposable Bag Use. Available at: http://dataspace.princeton.edu/jspui/88435 /dsp014q77fr47j
- [45] Hu, L.-T. and Bentler, P. M. (1995). Evaluating model fit. In R. H. Hoyle (Ed.), Structural equation modeling: Concepts, issues, and applications. (pp. 76–99). Sage Publications, Inc.
- [46] Huang, C. F., Shih, Y. F., and Wang, C. C.
 (2014). Associations among environmental beliefs, Environmental norms, environmental passions and proenvironmental behaviors in constructions industry. Journal of Environmental Protection and Ecology, 15(3): 1337– 1346.
- [47] Jayaraman, J., Norrie, J., and Punja, Z. (2011). Commercial extract from the brown seaweed Ascophyllum nodosum reduces fungal diseases in greenhouse cucumber. Journal of Applied Phycology, 23(3): 353-361.
- [48] Knussen, C., Yule, F., MacKenzie, J., and Wells, M. (2004). An analysis of intentions to recycle household waste: The roles of past behavior, perceived habit, and perceived lack of facilities. Journal of Environmental Psychology, 24: 237–246.
- [49] Langford, T. and MacKinnon, N. J. (2000). The affective bases for the gendering of traits: Comparing the United States and Canada. Social Psychology Quarterly, 1(63), 34-48.
- [50] Likert, R. (1932). A technique for the measurement of attitudes. Archives of Psychology, 22(140): 55.
- [51] Liu, J., C. D. Kummerow, and G. S. Elsaesser, (2017). Identifying and analyzing uncertainty structures in the TRMM Microwave Imager precipitation product. Int. J. Remote Sens., 38(1): 23-42.
- [52] Madson, L., and Trafimow, D. (2001). Gender comparisons in the private, collective, and allocentric selves. Journal of Social Psychology, 141(4): 551-559.
- [53] Malhotra, N. K. (2004). Marketing Research. Prentice Hall: New Jersey.
- [54] Mesch, D. J., Brown, M. S., Moore, Z. I., and Hayat, A. D. (2011). Gender differences in charitable giving. International Journal of Nonprofit and

Voluntary Sector Marketing, 16(4), 342-355.

- [55] Muralidharan, S. and Sheehan, K. (2016). "Tax" and "Fee" message frames as inhibitors of plastic bag usage among shoppers: A social marketing application of the theory of planned behavior. Social Marketing Quarterly, 22(3): 200-217.
- [56] Norberg, P. A., Horne, D., and Horne, D. (2007). The privacy paradox: Personal information disclosure intentions versus behaviors. Journal of Consumer Affairs, 41(1): 100-126.
- [57] Ohtomo, S. and Ohnuma, S. (2014). Psychological interventional approach for reduce resource consumption: Reducing plastic bag usage at supermarkets. Resources, Conservation and Recycling, 84: 57–65.
- [58] Osterhus, L. T. (1997). Pro-social consumer influence strategies: When and how do they work? Journal of Marketing, 59(January), 17-28.
- [59] Paswan, A., Guzman, F., and Lewin, J. (2017). Attitudinal determinants of environmentally sustainable behavior. Journal of Consumer Marketing, 34(5): 414-426.
- [60] Paul, J., Modi, A., and Patel, J. (2016). Predicting green product consumption using theory of planned behavior and reasoned action. Journal of Retailing and Consumer Services, 29: 123–134.
- [61] Peake, W. O., Cooper, D., Fitzgerald, M. A., and Muske G. (2017). Family business participation in Community social responsibility: The moderating effect of gender. Journal of Business Ethics, 142: 325-343.
- [62] Ping, R. A. (1995). A parsimonious estimating technique for interaction and quadratic latent variables. Journal of Marketing Research, 32, 336-347.
- [63] Sharp, K. H., Ritchie, K. B., Schupp, P. J., Ritson-Williams, R., and Paul, V. J. (2010). Bacterial acquisition in juveniles of several broadcast spawning coral species. PLOS ONE, 5(5): 1-6.
- [64] Shin, Y. H., Jung, S. E., Im, J., and Severt, K. (2020). Applying an extended theory of planned behavior to examine state-branded food product purchase behavior: The moderating effect of gender. Journal of Foodservice Business Research, 23(4), 358-375.

- [65] Sidharth, M. and Kim, S. (2016). The role of guilt in influencing sustainable proenvironmental behaviors among shoppers. Journal of Advertising Research, 58(3): 349-362.
- [66] Simachaya, W. (2021). Thailand Environment Institute. Retrieved November 15, 2021, from http://www.tei.or.th
- [67] Sudarmadi, S., Suzuki, S., Kawada, T., and Herawati, N. (2001). A survey of perception, knowledge, awareness, and attitude in regard to environmental problems in a sample of two different social groups in Jakarta, Indonesia. Environment Development and Sustainability, 3(2): 169-183.
- [68] Tano, G. T., Mendez, J. H., and Armas R. D. (2021). An extended theory of planned behavior model to predict intention to use bioplastic. Journal of Social Marketing, 12(1): 5-28.
- [69] Thai Retailers Association. (2019). Did you know? D-Day will not give away plastic bags from "retail" from Janauary 1, 2020 onwards, how will it help save the world? Retrieved December 15, 2021, from https://www.marketingoops.com
- [70] Thomas, O. G.; Sautkina, E.; Poortinga, W.; Wolstenholme, E., and Whitmarsh, L. (2019). The English plastic bag charge changed behavior and increased support for other charges to reduce plastic waste. Frontiers in Psychology, 10(266): 1-12.
- [71] Tonglet, M., Phillips, P. S., and Bates, M. P. (2004a). Determining the drivers for householder pro-environmental behaviour: Waste minimization compared to recycling. Resource Conservation and Recycling, 42: 27–48.
- [72] Tonglet, M., Phillips, P. S., and Read, A. D. (2004). Using the theory of planned behaviour to investigate the determinants of recycling behaviour: A case study from Brixworth, UK. Resource, Conservation and Recycling, 41, 191-204.
- [73] Tonglet, M., Phillips, P. S., and Read, A. D. (2004b). Using the theory of planned behaviour to investigate the determinants of recycling behaviour: A case study from Brixworth, UK. Resource Conservation and Recycling, 41: 191–214.
- [74] Ullah, I., Lin, C. Y., Malik, N. I., Wu, T. Y., Araban, M., Griffiths, M. D., and Pakpour, A. H. (2021). Factors affecting

Paksitani young adults' intentions to uptake COVID-19 vaccination: An extension of the theory of planned behavior. Brain and Behavior by Wiley Periodicals LLC. Creative Commons Attribution License.

- [75] Upton, J. (2013). China's Plastic-bag Ban Turns Five Years old. Retrieved April 4, 2016, from http://grist.org./article/chinasplastic-bag-ban-turns-five-years-old
- [76] van Horen, F., Pohlmann, C., Koeppen, K., and Hannover, B. (2008). Importance of personal goals in people with independent versus interdependent selves. Social Psychology, 39, 213-221.
- [77] Worldwatch Institute. (2013). China Reports 66-Percent Drop in Plastic Bag Use. Retrieved April 11, 2016 from http://www.worldwatch.org/node/6167
- [78] Wright, M. J. and Klyn, B. (1987). Environmental attitude - behaviour correlations in 21 countries. Journal of Empirical Generalisations in Marketing Science, 3: 42-60.
- [79] Wu, H. and Mweemba, L. (2010). Environmental self-efficacy, attitude and behavior among small scale farmers in Zambia. Environment, Development and Sustainability, 12: 727-744.
- [80] Zen, S. I.; Ahamad, R., and Omar, W. (2013). No plastic bag campaign day in Malaysia and the policy implication. Environ Dev Sustain, 15: 1259-1269.