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Using Theory of Planned Behavior to Determine Consumer Intention in Choosing Cloth vs Plastic Bags

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Abstract

Plastics bags waste presets serious danger to human and animal health. A descriptive study was conducted on 250 consumers who were shopping in different stores of Kashan city in Iran in 2020 to investigate the consumers' intention, attitude, subjective norms and perceived behavioral control towards reducing the consumption of plastic bags and using cloth bags based on the theory of planned behavior (TPB). Stratified sampling was applied to select the consumers to filled out a questionnaire developed based on the TPB in Farsi. A path analysis was used to investigate whether attitude, subjective norms, and perceived behavioral control would have any relation with the intention to reduce the consumption of plastic bags and to use cloth bags and whether the pathway model was acceptable. Results showed that certain demographic characteristics such as age and gender affects the perceived behavioral control. Employed consumers had stronger intention in using cloth bags. The path analysis results showed positive correlations between intention and other components of TPB such as attitude, subjective norms, and perceived behavioral control. There was a medium correlation between different dimensions of TPB. Weak correlation was observed between the attitude and perceived behavioral control and maximum correlation was observed between perceived behavioral control and intention. Employed and housewives consumers had strong intentions in using clothe bags. Attitude was not a strong determinant of intention and perceived behavioral control. Thus educational and awareness-raising programs should be accompanied by other reinforcing/ encouraging programs targeting at changing the intention directly. Employed individuals and housewives are more likely to change their behavior and benefit from such programs.

Keywords: Intention; Attitude; Plastic bag, cloth bag; Subjective norm; Perceived behavioral control

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Introduction

June 5, 2018, "Beat plastic pollution" is a call for action for the world to collaborate to address one of the greatest environmental challenges and to raise universal awareness of the importance of reducing the impact of plastic pollution on public health and the threat it poses to the environment and wildlife. This day is celebrated by WHO, United Nations sister agencies, and several communities and organizations [1]. The use of plastics has not only negative environmental effects but also negative effects on human and animal health. Plastics remain in the environment for a long time and are not prone to biodegradation, they only break down into micro plastics or smaller pieces [1–2] regarded as the main environmental pollutants, almost existence ubiquitous in the atmosphere, soil, water, and other environmental places. Microplastics because of the very slow biodegradation and small size of their particles, can be easily absorbed by organisms and enter into the food chain [3]. It takes 400 to 1000 years for plastic bags to decompose, and when they do decompose, they contaminate water and soil and affect animal hormones, tissues and organs as they cross the food chain, which can eventually affect humans [4].

To protect the environment, certain measures should be taken such as community education, promotion of environmental programs, and passing and implementing more effective environmental laws and policies [5]. According to statistics reported in World Population Review, plastic waste was 3,919,268 t in Iran in 2021. Nauru had the lowest rate of plastic waste just 527 t and China had the highest rate reported to be 59,079,741 t [6]. Statistics show that 500 billion plastic bags are used in the world every year and 50% of them are single-use plastics [7].

To reduce the environmental impact of single-use plastic bags, some countries, including Australia, Italy, the United States, Tanzania, and Ireland, have taken steps such as imposing taxes, fees or banning the use of plastic bags, and some countries have implemented "the no plastic bag day" [8]. But among these strategies, several studies argue that imposing a fee for plastic bags is a more effective way to change consumer behavior [9–11].

A study showed that imposing a tax on the use of plastic bags is up to 70% effective in reducing its use [12]. Applying a combination of tax receiving and restrictions on the use of plastic bags, educating the public, and raising their awareness of the environmental risks of using plastic bags are reported to be effective. Enforcing regulations such as requiring retailers to restrict the use of plastic bags only to those who wish to pay taxes is a way to minimize the use of plastic bags. These regulations play an important role in inducing ethical commitment for producers [13]. In the United States, local governments have taken various measures to reduce the use of single-use shopping bags in stores in five main categories: banning the use of plastic bags, imposing fees and taxes, minimizing the design of plastic bags, and educating consumers [14].

Unfortunately, no steps have been taken in order to limit the plastic pollution in Iran. At supermarkets, plastic bags are available to consumers without limit, and consumers either dispose them in the bins after use or reuse them as garbage bags. As a result, supermarkets have to buy more plastic bags than required. The psychological determinants of environmental and recycling behaviors need to be investigated to plan and to implement effective measures to beat plastic pollution. An appropriate theory that investigates the psychological determinants of environmental and recycling behaviors is the theory of planned behavior (TPB) which has been extensively used in several studies investing the similar behavioral issues [15–16]. The TPB is

a theory designed to understand the psychosocial determinants of social behavior. The TPB suggests that there are six interacting components collectively signify an individual actual control over performing a specific behavior. These components are attitude, intention, subjective norms, social norms, perceived power and perceived behavioral control. The attitude toward the behavior affects the intention of the behavior, which affects the behavior. Subjective norms are the expectations of significant others (such as friends, colleagues, neighbors) and the individual's willingness to fulfill those expectations. The intention is the most important part of behavior in social psychology. Social norms are the customary codes of behavior in a community. Perceived power is the perceived presence of factors facilitating or impeding the performance of a behavior. The perceived behavioral control refers to the degree to which a person considers it difficult or easy to do certain behavior in a special context. The TBP claims that behavior is not determined directly by attitude, but instead is determined indirectly by behavioral intention. Behavior is an observable and measurable action [17].

Ari and Yilmaz conducted a study on consumer attitudes, intentions, and behavior on the use of plastic and cloth bags. They found out that consumers who were informed about environmental risks and put under social pressure were more willing to reduce the consumption of plastic bags and tended to use cloth bags [16]. In another study conducted on consumer intention toward bringing their own shopping bags, Chang and Chou found out that consumers' responsibility was positively related to their attitudes, subjective norms, and perceived behavioral controls. They argue that consumers' attitudes and perceived behavioral controls are positively related to the intention of bringing their own shopping bags, while the subjective norm is not [18].

The attitudes of individuals, regarding the intention of using plastic or cloth bags, are considers important in promoting a habitable environment and a healthy life. According to the increasing consumption of plastic bags and their harmful effects on the environment, this study was conducted to investigate the intensions of consumers with different demographic characteristics to reduce the consumption of plastic bags and to use cloth bags based on the relation among four core components of TPB (intention, attitude, subjective norms, and perceived behavioral control) in Kashan-Iran using structural equations.

Materials and methods

This was a descriptive study conducted on 250 customers – a sample size considered to be acceptable according to the structural equation modeling (SEM) – who went shopping in the stores of Kashan City in Iran in 2020. Stratified sampling was applied to select the customers. Among the total stores in Kashan, five stores were randomly selected from different areas, nearly 5 km apart. We asked 50 consecutive costumers in each store to fill our 32-item questioners. The Inclusion criteria consisted of being a resident in Kashan and exclusion criteria consisted of being a Passenger or a foreign national. Care was taken to select the customers who were resident in Kashan City and had already completed their shopping.

We developed a 32-item questionnaire out of the questionnaires used in the previous studies [16, 19–20] to investigate the intention of using plastic and cloth bags based on TPB. The first section of the questionnaire contained 12 items to explore demographic characteristics of the consumers such as age, gender, educational level, employment status; income, number of family members and also the number of plastic bags taken home after each shopping and whether the plastic bags were used as recycling bags.

The second section contained 20 items to explore the relation among the TPB components, including attitude toward behavior (4 items; Q1–Q4. Plastic bags hurt the environment, harm animals live, produce toxic gases, and raise cancer risk), subjective norms (6 items; Q5– Q10. If my family members/ friends/ neighbors/ colleagues want me to use cloth instead of plastic bags, I would most likely use cloth bags. If my family members/ friends/ neighbors/ colleagues use cloth instead of plastic bags, I would more likely use cloth bags), perceived behavioral control (7 items; Q11, Q17, prohibiting selling fruit and vegetables in plastic bags/ discounting to shoppers who brought their own cloth bags/ low quality of plastic bags/ charging for plastic bags/ difficulty in bringing their own bags/ government bans on using plastic bags), and intention (3 items; Q18– 20, consuming less plastic bags, using cloth bags instead of plastic bags, using cloth bag and plastic bags from next week). Each item was measured based on a five-point Likert scale (strongly agree to strongly disagree). To reduce the likelihood of common method variance (CMV), the questionnaire was designed using different scale types and mixing the order of the questions.

To calculate the sample size we used a 'mini' online power analysis application which determines the sample size for research in SEM modeling. Since in this study, we have 4 latent and 20 observed variables with 95% confidence and 80% power if the effect size is considered to be 0.25 we need 209 subjects. However, we selected a sample size of 250 that is roughly 20% more than our calculation to be on the safe side [21].

The questionnaires were translated from English into Persian and were reviewed by native speakers for potential syntax errors. Then the Content Validity Ratio (CVR) and the Content Validity Index (CVI) were used to determine content validity. First, to determine CVR, 10 experts of health educationists were requested to identify whether an item is necessary or not in a 3-Likert scale (1. Essential, 2. Useful but not essential, 3. Not necessary). The numeric value of the CVR was determined by Lawshe Table. In our study, if CVR is greater than 0.62, the item in the questionnaire with an acceptable level of significance was accepted. The results of CVR indicated that the score of all items was greater than 0.62 and all items remained in the questionnaire.

To calculate CVI, 10 experts were asked to identify three criteria of simplicity, relevance, and clarity. These criteria were considered separately in a 4-scale Likert for each item. CVI equal or higher than 0.79 were considered excellent, 0.70 to 0.79 required a revision, and less than 0.70 were unacceptable and eliminated. The results of CVI indicated that the scores of all items were greater than 0.79 and all items remained in the questionnaire.

To prepare data for analysis, we checked the Cronbach's Alpha for each subscale and the results have shown that except for the behavioral control all subscales had acceptable reliability (greater than 0.7). To reach, this subscale to acceptable Alpha we eliminated Questions 13 and 14 so the Alpha attained more than 0.7.

To determine test-retest reliability, the questionnaire was completed by 15 more customers who referred to the stores other than those selected for the study. After two weeks, they were asked to complete the questionnaire again. The Intra-Class correlation was used to determine test-retest reliability. A reliability coefficient higher than 0.7 was regarded as acceptable. The results of ICC indicated that the score of all items was 0.83 and all items were acceptable. The results of ICC indicated that the score of attitude toward behavior (4 items) was 0.75, intention (3 items) 0.86, subjective norms (6 items) 0.77, and perceived behavioral control (6 items) 0.76.

The statistical analysis was performed using SEM, a multivariable statistical method, which applies a linear method to determine complex theoretical structures. The statistical analysis was performed using Smart PLS 2. We used path analysis to examine whether the attitude toward behavior, subjective norms, and perceived behavioral control would affect the intention of individuals to reduce the consumption of plastic bags and to use cloth bags and whether the pathway model was acceptable. We calculated Goodness of Fit Indexes containing Chi-Square, Root Mean Square Error of Approximation (RMSER). Comparative Fit Index (CFI), Incremental Fit Index (IFI), and Tucker-Lewis Index (TLI) were employed to evaluate the fitness of the model.

Ethical approval for this study was obtained from the Ethics Committee of Kashan University of Medical Sciences (under the code of ethics IR.KAUMS.NUHEPM>REC.1399.059). Informed consent was obtained from all the participants.

Results and discussion

A 32-item questionnaire was filled by 250 consumers referring to four shops. All demographic characteristics and their viewpoints regrading four components of TPB were analyzed to explore the relation between demographic characteristics and the four components of the TBP and also to investigate the relation between the four components of the TPB. A model based on the relation between the components is developed and its reliability is calculated.

1) Demographic characteristics and TPB components

The demographic characteristics of all the consumers and their consumption of plastic bags and bottles in each week are presented in Table 1. We investigated the relation between demographic characteristics and TPB components. We classified the age into two groups below 40 and above 39, level of income into low and high, number of family members into low family number (1-3 members) and high family number (4 and above), education into low education as diploma and lower diploma and high education as above diploma and employment status as employed (self and governmental employees) and unemployed (retired, jobless and housewives). Table 2 indicates that the total mean score for intention was 3.76, most of the answers being above the average, that is, most consumers had the intention of using cloth bags. The consumers who were employed or self-employed had significantly stronger intention in using cloth bags. However, intention was not influenced by age, gender, marital status, income, education and number of family members.

Table 1 Demographic characteristics and weekly consumption of plastic and cloth bags

	N	%		N	%
Demographic information					
Gender			**Level of education**		
Female	191	76.4	Elementary	20	8
Male	59	23.6	Diploma	44	17.6
Total	250	100	Bachelor	115	46
Age			MSc	43	17.2
20–29	46	18.4	Doctoral	28	11.2
30–39	97	38.8	Total	250	100
40–49	64	25.6			
50+	43	17.2			
Total	250	100			

Table 1 Demographic characteristics and weekly consumption of plastic and cloth bags (*continued*)

Weekly consumption of plastic and cloth bags					
Number of plastic bags taken home per week as a result of grocery shopping			**Number of plastic bottles at home per week**		
0–2	38	15.4	0–2	141	58.5
3–4	36	14.6	3–4	59	24.5
5–6	53	21.5	5–6	18	7.5
7–8	25	10.1	7–8	7	2.9
9–10	47	19	9–10	9	3.7
11+	48	19.4	11+	7	2.9
Total	247	100	Total	241	100
Number of plastic bags taken home per week as a result of market shopping			**Number of plastic bags are used as garbage bags**		
0–2	103	43.6	0–2	44	18
3–4	44	18.6	3–4	36	14.8
5–6	48	20.3	5–6	59	24.2
7–8	6	2.5	7–8	37	15.2
9–10	18	7.6	9–10	33	13.5
11+	17	7.2	11+	35	14.3
Total	236	100	Total	244	100
Number of plastic bags taken home per week as a result of fruits shopping					
0–2	48	20.3			
3–4	60	25.3			
5–6	52	21.9			
7–8	19	8			
9–10	34	14.3			
11+	24	10.1			
Total	237	100			

Table 2 The independent t-test results of the demographic characteristics and the components of TPB (the means are based on the score of the Likert scale 1–5)

Demographic characteristics	**N**	**Attitude (mean±sd)**	**Subjective norms (mean±sd)**	**PBC (mean±sd)**	**Intention (mean±sd)**
Age (sig)		0.13	0.07	0.00	0.58
>40	143	4.54±0.51	4.11±0.92	3.69±0.86	3.74±1.01
≤40	107	4.64±0.51	4.32±0.80	3.98±0.80	3.80±0.84
Gender (sig)		0.09	0.52	0.00	0.21
Female	191	4.61±0.50	4.22±0.85	3.90±0.77	3.84±0.90
Male	59	4.48±0.55	4.14±0.93	3.52±1.0	3.52±1.03
Marital status (sig)		0.46	0.82	0.43	0.15
Single	53	4.53±0.56	4.17±0.97	3.73±1.09	3.57±1.12
Married	195	4.59±0.50	4.20±0.85	3.83±0.76	3.81±0.88
Education (sig)		0.61	0.85	0.50	0.08
Low	64	4.55±0.52	4.18±0.86	3.72±0.69	3.94±0.88
High	186	4.59±0.51	4.20±0.88	3.65±0.70	3.70±0.95
Employment status (sig)		0.66	1.00	0.37	0.00
Employed	82	4.60±0.52	4.20±0.84	3.88±0.73	4.02±0.88
Unemployed	168	4.57±0.51	4.20±0.89	3.78±0.90	3.64±0.94

Table 2 The independent t-test results of the demographic characteristics and the components of TPB (the means are based on the score of the Likert scale 1–5) (*continued*)

Demographic characteristics	N	Attitude (mean±sd)	Subjective norms (mean±sd)	PBC (mean±sd)	Intention (mean±sd)
Income (sig)		0.08	0.22	0.13	0.33
Low	109	4.52±0.56	4.12±0.92	3.60±0.86	3.83±0.93
High	141	4.63±0.47	4.26±0.83	3.84±0.79	3.72±0.95
Family number (sig)		0.75	0.85	0.14	0.98
1 to 3	120	4.59±0.53	4.19±0.89	3.90±0.83	3.77±0.99
4 and more	130	4.57±0.50	4.21±0.86	3.74±0.85	3.76±0.90
Total	250	4.58±0.51	4.20±0.87	3.81±0.84	3.76±0.94

Table 2 indicates that the total mean score for attitude was 4.58 out of 5, that is, more than half of the consumers had selected the highest scale of 5 (strongly agree) and the majority of the remaining consumers had selected 4 (agree) indicating a high level of attitude toward using cloth bags. When analyzing attitude based on the classifications of the demographic characteristics, we can see that attitude was not influenced by differences in age, gender, marital status, education, employment status, income or number of family members suggesting that due to the mean of 4.58 being very close to 5, the variations between the scores in each demographic characteristics cell were so negligible to lead to significant differences. Thus we can conclude that attitude was very strongly positive among most of the consumers regardless of demographic characteristics. However, it should be noted that due to social desirability, people may report more desirable personality characteristics.

Table 2 indicates that the total mean score for subjective norms was 4.20, that is, most of the answers were between agree and strongly agree suggesting that the consumers were highly influenced by the opinions of their friends and family members in deciding to use cloth bags vs plastic bags. However subjective norms were not influenced by age, gender, marital status, education, employment status, income and number of family members. Nevertheless, it should be noted that, although not significant at 0.05, consumers aged 40 and over had reported higher influence of subjective norms in their decision making regarding cloth bag use than consumers below 40 (0.07).

Table 2 indicates that the total mean score of perceived behavioral control was 3.67 being above the mean score, that is, the consumers had a high rate of agreement over using cloth bags. Perceived behavioral control was significantly influenced by age and gender, that is, consumers aged below 40 and females had significantly reported more perceived behavioral control than over 40 and males respectively. One possible explanation for this strong perceived behavioral control is that women feel more comfortable to carry a cloth bag in their hand bags than men who usually are not carrying a hand bag. Another possible explanation is that women go shopping from home so they can take a cloth bag while men often on the way coming home from work go shopping. Perceived behavioral control was not influenced by other demographic characteristics such as marital status, education, employment, income and number of family members.

2) The relation among the components of TPB

We investigated the intention of consumers to reduce the consumption of plastic bags and to use cloth bags based on TPB using structural equations. Table 3 shows the Skewness and Kurtosis of the subscale. The results have shown

that there are certain evidence of skewness and Kurtosis in the attitude and perceived behavioral control subscales. Table 4 shows the Pearson correlation between the dimensions of TPB. The results have shown that there are moderate correlations between different dimensions of TPB. While there were no significant correlations between attitude and perceived behavioral control, moderate positive correlation can be observed between them (0.306) suggesting that a higher attitude is moderately related to a higher perceived behavioral control and vice versa. Thus a change in one variable as behavior or attitude may be reflected in certain moderate changes in the other variable, that is, increasing the attitude lead to a moderate but not significant increase in perceived behavioral control. However, there were significant positive correlations between perceived behavioral control and intention (0.558) suggesting that when consumers have more positive intention in using cloth bags their behaviors in performing the intended action is positively changed. Thus, we recommend educational and awareness raising programs and facilitating programs to increase intention in using less plastic bags and more cloth bags.

Table 3 Min, max, mean, SD, skewness and kurtosis of subscales

Scale	Minimum	Maximum	Mean	Std. deviation	Skewness	Kurtosis
Attitude	10.00	20.00	18.3520	2.01901	-1.410	1.973
SN	6.00	30.00	25.1920	5.22997	-1.226	1.396
PBC	5.00	25.00	19.0760	4.21584	-.708	.743
Intention	3.00	15.00	11.2960	2.81854	-.749	.896

Table 4 The Pearson correlation between the components of TPB

		Attitude	SN	PBC	intention
Attitude	Pearson correlation	1	.338**	.306**	.346**
SN	Pearson correlation	.338**	1	.441**	.530**
PBC	Pearson correlation	.306**	.441**	1	.558**
Intention	Pearson correlation	.346**	.530**	.558**	1

** Correlation is significant at the 0.01 level (2-tailed). (SN=subjective norms, PBC=perceived behavioral control)

3) The hypothesized model

Our hypothesized model is shown in Figure 1 and the Path diagram with a standardized estimation of the final model in Smart PLS in Figure 2. The model explains the relations among four core components of TPB, that is, attitude, subjective norms, and perceived behavioral control with the intention. The results of the path analysis show that while the intention is affected by the attitude indirectly, it is affected by subjective norms and perceived behavioral control directly. These three variables can explain 42.2 variances of intention. Thus as the model indicates attitude and subjective norms may not directly change intention but intention directly change the perceived behavioral control leading to perform the intended behavior. Our results provide more evidence for the study conducted by Arı and Yılmaz who reported relationship between attitude with behavior, subjective norms, and perceived behavioral control [16]. Our model showed that the attitude toward the behavior has a weak positive impact on perceived behavioral control and the intention of behavior. The possible explanation of the weak correlation is that attitude alone cannot be considered as a factor predicting perceived behavioral control and the intention of behavior.

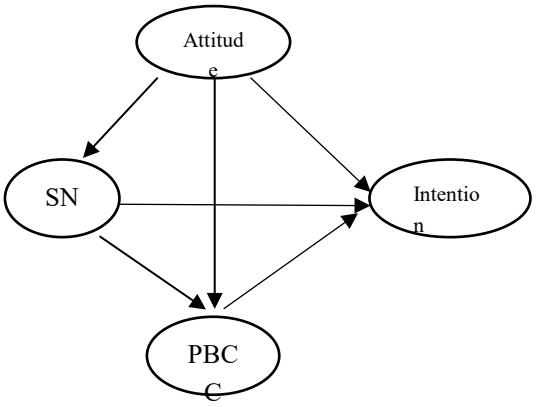

Figure 1 Hypothesized model of influencing the dimensions of attitude, subjective norms and perceived behavioral control on the intention (SN=subjective norms, PBC=perceived behavioral control).

A study showed that although most consumers believe that plastic bags will put the environment in danger, unfortunately, most consumers would still choose plastic bags instead of bringing their own bags [16]. This is possibly due to difficulties that a person may be faced during shopping, such as bringing their own bags or forgetting to do that. Or this is probably because plastic bags are available, free, and convenient. The results of previous studies showed that attitude alone did not change intention [22–23]. Muralidharan and Sheehan's study showed that the impact of attitude depends on penalties framed as a tax or fee [24]

In our model, subjective norm has a moderate positive correlation with intention. The possible explanation is that family and friends play major roles in the individual's decision-making processes. Subjective norms are in fact influenced by the perceived social pressure from others such as friends and family members for the person to behave in a particular manner. So, if one's family members or peers tend to comply with environmental regulations, then one would subjectively accept that the behavior is valuable. Our results support those of Arı's study about attitudes of the consumers regarding the use of plastic and cloth bags. They argued that the consumers, who were under social pressure were more willing to use cloth bags and reduce their plastic bag use [16]. In line with the results of our study, several other studies showed that there were positive correlations between subjective norms and intentions [22, 29]. However, Muralidharan and Sheehan argue that free access to plastic bags weakens the positive correlation between subjective norms and intentions. [24].

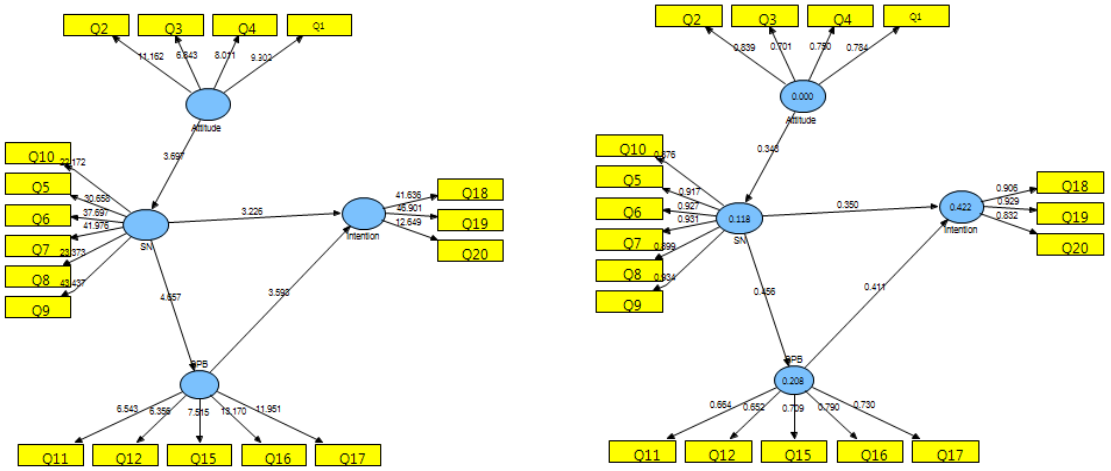

Figure 2 The Path diagram with standardized estimation of the final model in Smart PLS (F1: Attitude toward the behavior (Q1–Q4), SN (Q5–Q10), PBC (Q11–Q12 and Q15–Q17), intention (Q18–20)) SN=subjective norms PBC=perceived behavioral control).

Our results showed that perceived behavioral control is the strongest predictor of behavioral intention. One possible explanation for this strong prediction is that one's perception of the difficulty or ease of doing something has a significant effect on the intention to step in and do it. Our results support other studies which argue that charging for plastic bags giving discount to those bringing their own bags, availability of reusable cloth bags and government bans on using plastic bags can influence the behavior and intention [9, 16, 18, 22, 24, 26–27].

4) The validity of the model

For construct validity, we used different criteria such as Construct Reliability (CR) and Average Variance Extracted (AVE). The results are in Table 5. As suggested by Hair et al., the CR should be significant at .70 or higher and the AVE percentage should be .50 or higher than the CR [28]. Since the AVE for perceived behavioral control was 47%, the latent variable with standardized loading factors below 0.5 was required to be eliminated in order to improve the AVE value of above 50% but all the load factors were above 0.5 on the perceived behavioral control scale. We decided to delete question 13 that has a minimum factor loading (0.611). Therefore, in the modified model the AVE reached 50.5%. Also in the modified model, we inserted the six variables because just this variable in the bivariate test had a significant effect on the perceived behavioral control scale. But based on the t-values the effect was not significant neither the Attitude effect on intention and perceived behavioral control. Thus the high attitude among the consumers was not regarded as a determinant factor for changing intention and perceived behavioral control. This lack of strong correlation between attitude and intention and perceived behavioral control may be due to the fact that the consumers may report more desirable personal characteristics due to social desirability. For assessing the multicollinearity, we calculated VIF for the measurement model which Average full collinearity VIF (AFVIF) =1.491 and this value has shown there wasn't a collinearity problem in our model. For discriminating validity, we used the Partial Least Squares Approach [29] which the indicators loadings on its own item must be higher than all of its cross-loadings with another item (Table 6). For assessing the overall fit of the model we used the GOF (Goodness-of-Fit) criteria which was introduced by Tenenhaus et al 2005 [30]. GOF is the geometric mean of the commonality and the average R square. In the final model, the global fit index obtains 0.43, which indicates that empirical data fits the model very well. Based on Akter et al. [31], the values above 0.36 have shown goodness of fit.

Table 5 Construct reliability and validity

Scale	AVE	CR	Alpha Cronbach
Attitude	0.593	0.853	0.769
SN	0.836	0.968	0.961
PBC	0.505	0.835	0.754
Intention	0.793	0.920	0.869

Table 6 Cross loading test for discriminating the validity of the sub scales

Item	Attitude	SN	PBC	Intention
Q1	**0.784**	0.2678	0.257	0.2745
Q2	**0.8392**	0.2808	0.2882	0.2545
Q3	**0.7007**	0.2838	0.2568	0.221
Q4	**0.7496**	0.234	0.2523	0.2219
Q5	0.2637	0.473	**0.917**	0.4146
Q6	0.2886	0.5149	**0.9271**	0.3941
Q7	0.3116	0.5151	**0.9314**	0.4233
Q8	0.2533	0.4355	**0.8987**	0.3775
Q9	0.3432	0.4887	**0.9344**	0.3915
Q10	0.3996	0.5072	**0.8758**	0.4838
Q11	0.1786	0.3836	0.1969	**0.6635**
Q12	0.2275	0.4755	0.2766	**0.6518**
Q15	0.1752	0.3415	0.2965	**0.7091**
Q16	0.2762	0.4113	0.4643	**0.7897**
Q17	0.2441	0.4042	0.3404	**0.7305**
Q18	0.3242	**0.9063**	0.4986	0.5005
Q19	0.3226	**0.9293**	0.5467	0.5431
Q20	0.2765	**0.8325**	0.3731	0.4769

One limitation of the study is that the validity of consumers' reports of their own attitudes toward using cloth bags may be compromised due to social desirability, reporting more desirable personality characteristics.

Conclusion

According to our results, attitude was not a strong determinant of intention and perceived behavioral control. Thus, having educational and awareness-raising programs such as holding seminars, social media, health educational programs, making commercials on TV, or communication campaigns to change attitude may not by itself result in sufficient pressure to change intention towards behavior. They should be accompanied by other reinforcing/encouraging programs targeting to change the behavior directly such as governmental bans on plastic use, charging fees for plastic bags, providing free and easy access to cloth bags, giving discount to customers who have their own cloth bags. Thus, educational and awareness-raising programs together with reinforcing/encouraging programs may change attitude, perceived behavioral control and intention toward behavior. All of these programs are in fact advocating the subjective norms providing and facilitating an encouraging dialogue with the consumers to use less plastic bags and use more nature-friendly materials. Thus multi approach programs are needed not only to inform and educate consumers but also to facilitate and encourage the performance of a particular behavior, and at the same time removing all the obstacles impeding the performance of the intended behavior. Consumers who are employed, under 40 or women are better targets for such multi approach programs and their behaviors may change easier than the others.

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