

# Effect of Green Consumption Perception Degree on Relationship Model of Green Consumption Behavior

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## Abstract

Consumption behavior significantly influences environment; thus, in order to avoid the harm of consumption behavior on environment, consumers must pay attention to green consumption behavior in order to contribute themselves. This study aims to probe into difference of groups of different green consumption perception regarding relationship model of green consumption perceived benefit, perceived risk, subjective norm, perceived control, perceived value, behavior intention and actual behavior.

After retrieving 626 valid questionnaires, the researcher divided consumers into groups of medium and high green consumption perception. By comparison, the researcher realized that groups of different green consumption perception degrees have significant difference on effect of two relationship paths. The effect of green consumption subjective norm of group of high green consumption perception on behavior intention and actual behavior is significantly higher than group of medium green consumption perception. In addition, green consumption perceived risk of group of high green consumption perception significantly and negatively influences perceived value. Perceived control significantly and positively influences behavior intention. However, group of medium green consumption perception does not have significant effect on the two paths. On the contrary, green consumption perceived risk of group of medium green consumption perception significantly and negatively influences behavior intention. Group of high green consumption perception does not have significant effect on the path.

**Keywords:** green consumption, perceived benefit, perceived risk, subjective norm, perceived control, perceived value

## 1. Introduction

Human beings' consumption behavior is the main cause to harm the environment. Thus, in order to avoid harm of human beings' consumption behavior on environment, consumers must practice green consumption behavior. Green consumption means when making purchase decision, consumers concern about the impact of products on environment and select the goods which harm the environment the least (Muldoon, 2006). Human beings' green consumption must be practiced in daily lives. National policies lead to change of consumers' behavior (Barr & Gilg, 2006). However, will green consumption perception influence consumers behavior intention and actual action? It will rely on further study.

Lovelock (2001) and Chaudhuri (2002) suggested that individuals' behavior intention is influenced by their perceived benefit and perceived value. Thus, when consumers have higher green consumption perceived benefit and perceived value, their behavior intention will be higher. According to Pavlou & Gefen (2004), when consumers' green consumption perceived risk is higher, their perceived value and purchase intention is lower. Thus, green consumption perceived risk negatively influences perceived value and behavior intention (Snoj, Korda & Mumel, 2004). In addition, consumers' subjective norm and perceived control influence behavior intention, and directly affect actual behavior (Ajzen, 1989; 1991). There is high relationship between behavior intention and actual behavior

(Venkatesh & Agarwal, 2006). Based on the above, consumers' green consumption perceived benefit, perceived risk, subjective norm and perceived control influence their green consumption perceived value and behavior intention, and further affect actual behavior.

Since previous studies were explored the relationship between two or three variables, but were not an integrated study in the green consumption topic. Therefore, this study treats consumers' green consumption perceived benefit, perceived risk, subjective norm and perceived control as independent variables, perceived value and behavior intention as moderating variables and actual behavior as dependent variable to probe into causal relationship of variables. This study furthering tries to find if groups of different degrees of green consumption perception are different in relationship model of green consumption. This issue is a rare research.

## 2. Literatures Review

### 2.1 Green Consumption Perception

Green consumption perception means consumers concern about the impact of products on environment and select the products which harm the environment less or benefit the environment. In other words, they realize that green consumption is the most environmental-friendly consumption behavior (Liedekerke & Dubbink, 2008; Svensson & Wood, 2008).

If consumers can recognize the goals of green consumption, such as: 1. Avoidance of impact on environment; 2. Respect for limited resources; 3. Avoidance of over use, to avoid negative impact on environment and they have turned from past price-oriented attitude to concern about universal value, it means that they have *green consumption perception* (Nash, 2008; Lemos & Giacomucci, 2002).

### 2.2 Perceived Benefit

When purchasing things, consumers have expectation toward the products. If consumers have positive perception of products, it is called perceived benefit (Monroe & Krishnan, 1985). Perceived benefit means customers' perceived acquisition in consumption (Lovelock, 2001). Customers not only ask the necessary function of products, but also pursue the benefits of additional functions and services (Drennan, Mort & Previte, 2006).

Park, Jaworski & MacInnis (1986) suggested that consumers need different kinds of benefits: 1) Functional Benefits: benefits and advantages acquired by green consumption; 2) Symbolic Benefits: by green consumption, they can enhance personal image and be respected by others; 3) Experiential Benefits: green consumption can lead to positive feelings and pleasure for consumers; 4) Financial Benefits: by green consumption, they can save money. Thus, this study measures perceived benefit of green consumption by above items.

### 2.3 Perceived Risk

Featherman & Pavlou (2003) suggested that perceived risk is the combination of uncertainty and complicated result and it is treated as the suppressor variable of purchase behavior. Pavlou (2003) defined perceived risk as users' subjective prediction of loss in the process to pursue the expected result. Dowling & Staelin (1994) found that perceived risk is consumers' perception of uncertainty and negative results in purchase of products. Thus, with green consumption behavior, consumers might worry that they will not accomplish the goals of consumption. With the uncertainty, consumers should undertake the risk (Bauer, 1960).

Jacoby & Kaplan (1972) divided consumers' perceived risk into financial risk, performance risk, physical risk, psychological risk and social risk. Bansal & Voyer (2000) measured perceived risk of consumption by financial risk, performance risk, physical risk, psychological risk, social risk and convenience risk. Thus, consumers' perceived risk is multi-dimensional structure (Roselius, 1971).

This study generalizes four dimensions of perceived risk related to green consumption: 1) Financial Risk: it is perceived financial loss of green consumption; 2) Social Risk: it means green consumption is not identified by others; 3) Physical Risk: it means green consumption might lead to physical harm; 4) Performance Risk: it means green consumption might not accomplish expected benefit.

### 2.4 Subjective Norm

Bearden & Etzel (1982) suggested that subjective norm means to treat reference group as the standard of self-evaluation or personal criterion. Subjective norm can be measured by correlation between individuals and reference groups (Schiffman & Kanuk, 2000). Subjective norm includes beliefs of norm, intention to follow and moral responsibility (Ajzen, 1991). Beliefs of norm mean effect of social environment on individual behavior intention (Ajzen & Fishbein, 1980). Intention to follow means to particularly value others' opinions and try to enhance personal image and self-esteem by identification from reference group (Pyszczynski, Greenberg, Solomon, Arndt & Schimel, 2004). Moral responsibility is the standard to regulate behavior in order to accomplish goals of life

(Jones & Ryan, 1997). Based on the above, this study measures subjective norm of green consumption.

### *2.5 Perceived Control*

Perceived control means consumers' perception of control of results in decision making (Averill, 1973). It is consumers' perceived total control capacity regarding consumption process or result (Bateson & Hui, 1987; Dabholkar, 1996).

By three measures proposed by Averill (1973) and Faranda (2001), this study measures perceived control of green consumption: 1. behavioral control: consumers' perceived capability and degree to adopt green consumption; 2. cognitive control: consumers realize content of green consumption; 3. decisional control: consumers have the capability to decide or select green consumption.

### *2.6 Perceived Value*

Monroe & Krishnan (1985) suggested that "perceived value" is based on comparison between "perceived quality" and "perceived sacrifice". Perceived value is the balance between acquisition and sacrifice (Zeithmal, 1988). Fornell, Johnson, Anderson, Cha & Bryant (1996) suggested that perceived value is the factor of perceived performance. When making a purchase, consumers are influenced by perceived value.

Sweeney & Soutar (2001) divided perceived value into four dimensions: affection, society, quality/performance, and value/money. It can measure perceived value of green consumption.

### *2.7 Behavior Intention*

Behavior intention means individuals' subjective probability to adopt certain behavior. It is the drive of actual action (Ajzen & Driver, 1991). Ajzen & Manstead (2007) suggested that behavioral intention was influenced by three factors, including personal attitude, subjective norm and perceived control. According to Cronin, Brady & Hult (2000), when customers are loyal to service providers, they have behavior intention of repurchase.

This study measures behavior intention by intention of green consumption and based on dimensions of behavior intention proposed by Cronin, Brady & Hult (2000), it measures behavior intention of green consumption by consumers' intention of green consumption, recommendation to others and intention of repurchase.

### *2.8 Actual Behavior*

Actual behavior means consumers practice green consumption in order to respond to environmental protection and environmental ethics ((Lemos & Giacomucci, 2002; Chen, 2008), such as green consumption behavior by Reduce, Recycle, Reuse, Regeneration, Refuse waste and related environmental concerns.

## **3. Research Hypotheses**

### *3.1 The Influence of Perceived Benefit on Perceived Value*

Chen & Dubinsky (2003), Grewal, et al. (1998) suggested that consumers' acquisition can be divided into benefits obtained from products and transaction value. When consumers' perceived benefits are higher, perceived value is higher (Petrick, 2004).

Thus, perceived value is based on consumers' perceived benefit. By increasing perceived benefit, perceived value is enhanced (Monroe, 2003). Thus, perceived benefit positively influences perceived value (Lovelock, 2001). H1 is proposed as follows:

***H1: Consumers' perceived benefit of green consumption significantly and positively influences perceived value.***

### *3.2 The Influence of Perceived Benefit on Behavior Intention*

Important dimensions of green consumption for consumers are broad. Besides functions of products, they also include entertainment, subjective perception and economic benefits (Park, Jaworski & MacInnis, 1986). For instance, consumers' expectation toward consumption experience influences purchase intention (Bredahl, Brunso & Grunert, 2004). When financial payment is lower, purchase intention is higher (Chaudhuri, 2002). Thus, perceived benefit directly and positively influences behavior intention. H2 is proposed as follows:

***H2: Consumers' perceived benefit of green consumption significantly and positively influences behavior intention.***

### *3.3 The Influence of Perceived Risk on Perceived Value*

Sweeney, Soutar & Johnson (1999) suggested that in purchase decision making, consumers evaluate risk first and moderate perceived value by performance risk. They moderate expected sacrifice and value by financial risk. When risk is lower, their perception of value is higher (Agarwal & Teas, 2001). Thus, perceived risk is important variable of perceived value, and directly and negatively influences perceived value (Snoj, Korda & Mumel, 2004). H3 is

proposed as follows:

**H3: Consumers' perceived risk of green consumption significantly and negatively influences perceived value.**

#### *3.4 The Influence of Perceived Risk on Behavior Intention*

Bettman (1973) suggested that consumers' purchase intention is influenced by perceived risk. For instance, their purchase intention is lowered by worrying about the functions of products. Thus, consumers' perceived risk negatively influences purchase intention. Shimp & Bearden (1982) found that consumers' perceived risk of products influences their preference for the products. Thus, when consumers' perceived risk of green consumption is higher, their intention of green consumption is lower (Pavlou & Gefen, 2004; Kim & Ahn, 2006). H4 is proposed as follows:

**H4: Consumers' perceived risk of green consumption significantly and negatively influences behavior intention.**

#### *3.5 The Influence of Subjective Norm on Behavior Intention and Actual Behavior*

Ajzen (1985; 1991) suggested that when individuals' subjective norm of certain behavior is higher, their behavior intention is higher, and they are more likely to have actual action. Thus, subjective norm is the key of behavior intention and actual behavior. Behavior intention is the critical factor of actual behavior. Subjective norm directly influences behavior intention and actual behavior (Jane, 2001). Ajzen & Driver (1991) and Westaby (2005) found that subjective norm positively influences behavioral intention and actual action. Thus, the following hypotheses are proposed:

**H5: Consumers' subjective norm of green consumption positively and significantly influences behavior intention.**

**H6: Consumers' subjective norm of green consumption positively and significantly influences actual behavior.**

#### *3.6 The Influence of Perceived Control on Behavior Intention and Actual Behavior*

Perceived control means individuals' perceived difficulty with specific behavior and it significantly influences their actual behavior (Ajzen, 1991; Hagger, Chatisarantis & Biddle, 2001). Therefore, when individuals can control and have more opportunities and resources for the behavior, they are more likely to conduct it (Taylor & Todd, 1995). Ajzen (2002), Kerner & Kalinski (2002) found that perceived control directly influences behavior intention and actual behavior. When consumers' perceived resources and capabilities of green consumption are higher, their intention of green consumption behavior is more significant and they tend to have actual action (Berry et al., 2002). Thus, the hypotheses below are developed:

**H7: Consumers' perceived control of green consumption positively and significantly influences behavior intention.**

**H8: Consumers' perceived control of green consumption positively and significantly influences actual behavior.**

#### *3.7 The Influence of Perceived Value on Behavior Intention*

There is positive correlation between perceived value and purchase intention (Zeithaml, 1988; Grewal et al., 1998). When consumers' perceived value is higher, behavior intention is higher (Parasuraman & Grewal, 2000). Kaufman (1998) suggested that customers' needs, exchange value and purchase can be discovered by perceived value. Perceived value is consumers' subjective perception and it is related to consumers' affective response and consumption experience. It will further influence consumers' behavior (Dumana & Mattil, 2005; Petrick, 2004). H9 is proposed as follows:

**H9: Consumers' perceived value of green consumption significantly and positively influences behavior intention.**

#### *3.8 The Influence of Behavior Intention on Actual Behavior*

Behavior intention is the best variable to predict behavior and the best factor to predict actual behavior (Engel, Blackwell, & Miniard, 2000). Thus, there is high degree of correlation between behavior intention and actual behavior (Venkatesh & Agarwal, 2006). Jostein, Thompson & Verplanken (2003) suggested that behavior intention is the key factor of actual behavior. Behavior intention is the best indicator to predict individual behavior. When behavior intention is stronger, individuals are more likely to have the behavior (Hartwick & Barki, 1994). H10 is proposed as follows:

**H10: Consumers' behavior intention of green consumption significantly and positively influences actual behavior.**

#### *3.9 The Difference between Green Consumption Clusters*

Consumers tend to decide their consumption by environmental and social norms. Their green consumption degrees are different (Peattie, 1992). Consumers show their concerns about environment by different measures. However, by influence of information content and life style, they have different degrees of green consumption behavior (Ottman,

1999). The Roper Organization (1990) and Coddington(1993) divided consumers into five different types of “green consumption” and found that with different types of consumption, perception of green consumption differs, and influences their green consumption behavior. Therefore, this study divides consumers into groups of different degrees of green consumption perception in order to probe into difference of different groups of green consumption perception regarding relationship model of green consumption. Thus, H11 is developed:

**H11: With different degrees of green consumption perception, relationship model of green consumption is significantly different.**

**4. Research Methodology**

*4.1 Research Framework*

Based on the above literature review and hypotheses, this study constructs relationship model of green consumption, as shown in Figure 1. It aims to probe into effects of consumers’ green consumption perceived benefit, perceived risk, subjective norm and perceived control on two moderating variables, perceived value and behavior intention, and dependent variable, actual behavior. The researcher compares groups of different green consumption perception degrees.

This study first collected related theories and literatures as the base of research framework and then collected primary data by in-depth interview of qualitative research and questionnaire survey of quantitative research in order to recognize consumers’ perception and behavior of green consumption. Consumers above 18 years old in Taiwan were the main subjects.

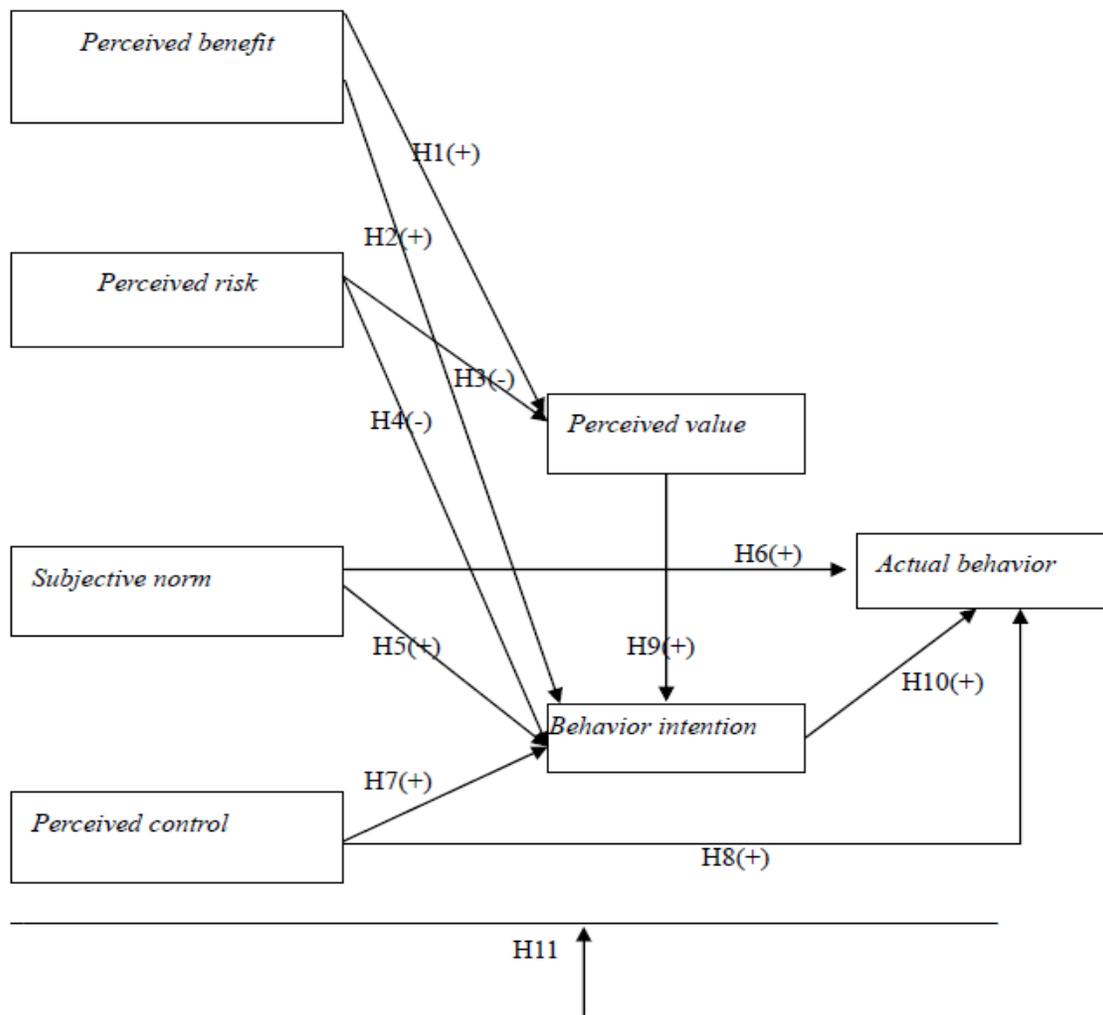


Figure 1. Research framework

#### 4.2 Research Design

According to literature above, this study developed the model of questionnaire. By focus group of qualitative research, the researcher discussed draft of questionnaire with scholars and experts and conducted in-depth interview on 30 consumers with the draft in order to reorganize the indicators of items. A pilot test was conducted on 100 consumers to validate reliability and validity of questionnaire and form formal questionnaire. Finally, formal investigation and quantitative analysis were conducted. Questionnaire includes nine sections. Among others, green consumption perception, perceived benefit, perceived risk, subjective norm, perceived control, perceived value, behavior intention and actual behavior were measured by 7-point scale. When scores were higher, it means the subjects tended to agree with the item. Subjects' data in Section 9 was measured by nominal scale.

By convenience sampling, this study conducted formal investigation by interviewers' interview. 700 questionnaires were distributed. After deleting invalid questionnaires, the researcher obtained 626 valid questionnaires. Mean (5.4) of six items of consumers' green consumption perception is the base of clustering. Since means are high, consumers are divided into medium green perception group (means: 3.8-5.4) and high green perception group (means: 5.4-7.0). There are respectively 313 subjects in two groups.

### 5. Research Results

#### 5.1 Reliability and Validity Analysis

Regarding two groups of valid questionnaires, by Cronbach  $\alpha$  and correlation analysis, this study evaluated the reliability of questionnaire and found that Cronbach  $\alpha$  of dimensions are above 0.7 (Nunnally, 1978) and correlation coefficients of item to total are above 0.5 (Kerlinger, 1978). Thus, reliability of scale is good.

According to Kaiser (1958), factor eigenvalue extracted by factor analysis must be above 1 and cumulative explained variation must be higher than 0.5. Factor loading of variables must be higher than 0.5. Thus, convergent validity of questionnaire in this study is good (as shown in Tables 1, 2 and 3).

In addition, since correlation coefficients of pair dimensions in questionnaire are lower than Cronbach  $\alpha$  of individual dimensions, there is discriminant validity among dimensions of questionnaire (Gaski & Nevin, 1985).

Table 1. The reliability and validity analysis of indicators of green consumption perception

Indicators	Mean	Item to total	Factor loading	Eigenvalue	Cumulative explained variation	Cronbach $\alpha$
Green consumption perception						
1. We should not purchase products which harm the environment	5.55	0.497	0.625	3.528	58.801	0.856
2. We should avoid unnecessary waste of resources	5.76	0.603	0.717			
3. We should have personal shopping bag prepared when buying things	5.31	0.563	0.696			
4. We should buy the products which can be recycled	5.49	0.769	0.865			
5. We should purchase products with recycled materials	5.25	0.733	0.847			
6. We should select products with recycling mark	5.26	0.699	0.821			

Table 2. The analysis of reliability and validity of questionnaire for medium green perception group

Indicators	Mean	Item to total	Factor loading	Eigenvalue	Cumulative explained variation	Cronbach $\alpha$
<b>Perceived benefit</b>						
1. Green products are more reliable	5.08	0.556	0.706	3.288	54.806	0.833
2. Quality of green products is better	4.78	0.653	0.782			
3. Green consumption behavior is pleasant	5.02	0.489	0.634			
4. We save expense by purchasing green products	4.36	0.589	0.723			
5. We enhance personal image by green consumption behavior	4.47	0.667	0.787			
<b>Perceived risk</b>						
1. Advantages to purchase green products do not match the payment	3.99	0.527	0.654	3.509	58.486	0.856
2. Green consumption behavior is not necessarily identified by the public	3.24	0.609	0.728			
3. Green consumption behavior cannot enhance personal image	3.43	0.645	0.762			
4. Use of green products does not guarantee safety	3.64	0.723	0.832			
5. Use of green products cannot enhance health	3.26	0.689	0.805			
6. Effectiveness of green products does not necessarily match the expectation	3.73	0.678	0.793			
<b>Subjective norm</b>						
1. Green consumption behavior is responsible for environment	5.63	0.729	0.816	4.026	67.101	0.901
2. Green consumption behavior matches social norms	5.42	0.670	0.770			
3. Green consumption behavior matches the public's expectation	5.42	0.769	0.856			
4. Green consumption behavior is right	5.52	0.779	0.863			
5. Green consumption behavior is necessary	5.10	0.667	0.765			
6. Green consumption behavior benefits others as well as oneself	5.40	0.762	0.839			
<b>Perceived control</b>						

1. I have sufficient money for green consumption	4.70	0.560	0.696	3.387	56.456	0.844
2. I have sufficient knowledge of green products	4.56	0.736	0.841			
3. I have the ability to practice green consumption	4.93	0.656	0.769			
4. I can clearly identify green products	4.57	0.645	0.773			
5. I have information of green consumption	4.54	0.637	0.769			
6. I can make decision in green consumption	5.25	0.507	0.644			
<b>Perceived value</b>						
1. I feel happy and save by using green products	4.95	0.738	0.850	3.330	66.598	0.874
2. I can have positive image by green consumption	5.08	0.715	0.835			
3. It is worthy to practice green consumption	5.28	0.714	0.826			
4. Green products can satisfy my needs	4.79	0.700	0.805			
5. Benefits of green consumption are more than payment	4.76	0.642	0.761			
<b>Behavior intention</b>						
1. I have the intention to purchase green products	5.32	0.717	0.858	2.895	72.387	0.871
2. Green products are my priority	4.86	0.775	0.886			
3. I have the intention to practice green consumption behavior	5.14	0.811	0.909			
4. I have the intention to recommend green products to others	4.88	0.585	0.740			
<b>Actual behavior</b>						
1. I select products with green mark as priority	4.97	0.775	0.858	3.771	75.425	0.918
2. I select low-polluted products as priority	5.24	0.831	0.898			
3. I select energy-saving products as priority	5.35	0.777	0.861			
4. I select products which harm the environment the least	5.31	0.845	0.907			
5. I select products which can be recycled as priority	5.22	0.718	0.814			

Table 3. The analysis of reliability and validity of questionnaire for high green perception group

Indicators	Mean	Item to total	Factor loading	Eigenvalue	Cumulative explained variation	Cronbach $\alpha$
<b>Perceived benefit</b>						
1. Green products are more reliable	6.06	0.608	0.741	3.602	60.027	0.864
2. Quality of green products is better	5.72	0.714	0.830			
3. Green consumption behavior is pleasant	6.03	0.492	0.623			
4. Green products are more reliable	5.38	0.669	0.773			
5. Quality of green products is better	5.29	0.734	0.822			
<b>Perceived risk</b>						
1. Advantages to purchase green products do not match the payment	3.98	0.493	0.604	3.956	65.929	0.893
2. Green consumption behavior is not necessarily identified by the public	2.84	0.670	0.772			
3. Green consumption behavior cannot enhance personal image	3.02	0.770	0.854			
4. Use of green products does not guarantee safety	3.21	0.794	0.876			
5. Use of green products cannot enhance health	2.94	0.772	0.859			
6. Effectiveness of green products does not necessarily match the expectation	3.33	0.795	0.872			
<b>Subjective norm</b>						
1. Green consumption behavior is responsible for environment	6.22	0.696	0.794	4.017	66.952	0.901
2. Green consumption behavior matches social norms	6.13	0.711	0.805			
3. Green consumption behavior matches the public's expectation	5.98	0.769	0.852			
4. Green consumption behavior is right	6.04	0.796	0.872			
5. Green consumption behavior is necessary	5.82	0.727	0.813			
6. Green consumption behavior benefits others as well as oneself	6.07	0.677	0.770			
<b>Perceived control</b>						
1. I have sufficient money for green consumption	5.18	0.615	0.746	3.459	57.657	0.852
2. I have sufficient knowledge of green products	5.05	0.721	0.826			

3. I have the ability to practice green consumption	5.63	0.665	0.785			
4. I can clearly identify green products	5.08	0.547	0.679			
5. I have information of green consumption	5.14	0.688	0.790			
6. I can make decision in green consumption	5.79	0.586	0.720			
<b>Perceived value</b>						
1. I feel happy and save by using green products	5.59	0.748	0.851	3.494	69.884	0.892
2. I can have positive image by green consumption	5.70	0.781	0.872			
3. It is worthy to practice green consumption	5.92	0.706	0.813			
4. Green products can satisfy my needs	5.40	0.733	0.829			
5. Benefits of green consumption are more than payment	5.36	0.709	0.815			
<b>Behavior intention</b>						
1. I have the intention to purchase green products	5.99	0.750	0.856	3.172	79.302	0.913
2. Green products are my priority	5.66	0.816	0.900			
3. I have the intention to practice green consumption behavior	5.87	0.840	0.914			
4. I have the intention to recommend green products to others	5.78	0.801	0.891			
<b>Actual behavior</b>						
1. I select products with green mark as priority	5.81	0.773	0.855	3.838	76.769	0.924
2. I select low-polluted products as priority	6.07	0.857	0.913			
3. I select energy-saving products as priority	6.12	0.799	0.877			
4. I select products which harm the environment the least	6.11	0.841	0.905			
5. I select products which can be recycled as priority	6.08	0.737	0.827			

### 5.2 Competing Model Analysis

By AMOS, this study conducts *competing model* analysis, and analytical result reveals that  $\chi^2/df$  of the model is 1.360 (Carmines & MacIver, 1981), GFI is 0.895, AGFI is 0.850, NFI is .921, RFI is 0.893, CFI is 0.977 and RMSEA is 0.024. Thus, propriety of the model is acceptable (Joreskog & Sorbom, 1989; Browne & Cudeck, 1993).

According to result of path analysis of two groups (see Table 4):

Group of medium green perception is not significant on four paths: (H2) perceived benefit → behavior intention, (H3) perceived risk → perceived value, (H7) perceived control → behavior intention, (H8) perceived control → actual behavior. Effect of path (H10) behavior intention → actual behavior is the strongest (0.524\*\*\*) and the second is (H5) subjective norm → behavior intention (0.483\*\*\*). Thus, main path of group of medium green perception is subjective norm → behavior intention → actual behavior.

Group of high green perception is insignificant on three paths: (H2) perceived benefit → behavior intention, (H4) perceived risk → behavior intention and (H8) perceived control → actual behavior. On the contrary, effect of path (H5) subjective norm → behavior intention is the strongest (0.565\*\*\*) and the second is (H10) behavior intention →

actual behavior (0.487\*\*\*). Thus, main path of group of high green perception is subjective norm → behavior intention → actual behavior.

Difference result of path analysis of two models is shown as follows:

- (1) According to effect of “subjective norm” on “behavior intention”, groups of medium and high perception are significantly different on the path. Effect of group of high green perception on the path is more significant. It means that when group of high green perception has higher green consumption subjective norm, their intention of green consumption is higher.
- (2) According to effect of “subjective norm” on “actual behavior”, effects of groups of medium and high green perception are significantly different on the path. Effect of group of medium green consumption is more significant on the path. Thus, actual behavior of group of medium green consumption is influenced by subjective norm.
- (3) Green consumption perceived risk of group of high green perception significantly and negatively influences perceived value. Moreover, perceived control significantly and positively influences behavior intention. However, effect of group of medium green consumption perception is insignificant on the two paths. On the contrary, green consumption perceived risk of group of medium green consumption perception significantly and positively influences behavior intention. However, effect of group of high green consumption perception is insignificant on the path.

Based on the above analysis, according to comparison of relationship models of groups of medium and high green perception, paths of subjective norm on behavior intention and on actual behavior is significantly different according to groups of different degrees of green consumption. Thus, H11 is partially supported.

Table 4. The Competing model analysis

Paths	Comparison between two groups		T value (H11)	
	Medium (313)	High (313)		
(H1) <i>Perceived benefit</i> → <i>Perceived value</i>	0.386***	0.316***	-0.716	
(H2) <i>Perceived benefit</i> → <i>Behavior intention</i>	0.057	0.102	1.447	
(H3) <i>Perceived risk</i> → <i>Perceived value</i>	-0.078	-0.324***	0.501	
(H4) <i>Perceived risk</i> → <i>Behavior intention</i>	-0.156**	-0.011	1.822	
(H5) <i>Subjective norm</i> → <i>Behavior intention</i>	0.483***	0.565***	<b>2.202***</b>	
(H6) <i>Subjective norm</i> → <i>Actual behavior</i>	0.191**	0.182*	<b>2.164***</b>	
(H7) <i>Perceived control</i> → <i>Behavior intention</i>	0.002	0.174**	-1.312	
(H8) <i>Perceived control</i> → <i>Actual behavior</i>	0.035	0.103	0.338	
(H9) <i>Perceived value</i> → <i>Behavior intention</i>	0.290***	0.152*	0.853	
(H10) <i>Behavior intention</i> → <i>Actual behavior</i>	0.524***	0.487***	-0.727	
<b>Fitness index:</b>				
$\chi^2$	d.f	$\chi^2/ d.f.$	P value	GFI
1414.015	1040	1.360	0.000	0.895
AGFI	NFI	RFI	CFI	RMSEA
0.850	0.921	0.893	0.977	0.024

\*\*\*: p<0.001, \*\*: p<0.01, \*: p<0.05

## 6. Conclusions and Suggestions

### 6.1 Conclusions

This study explored the relationship among consumers' green consumption perceived benefit, perceived risk, subjective norm, perceived control, perceived value, behavior intention and actual behavior. It is a vital issue but few researches focus it. After constructing efficient variables and comparing relationship models of different perception groups of green consumption, this research obtains specific result such as useful measurement tool and conceptual framework for industry and academia. Thus, this study has practical and academic value. According to analysis:

- (1) Two groups' green consumption perceived benefit significantly and positively influences perceived value. The result is consistent with Petrick (2004) and Monroe (2003), suggesting that consumers' perceived benefit of green consumption enhances their perceived value. On the contrary, perceived benefit does not significantly influence behavior intention, indicating that benefit of green consumption does not directly enhance behavior intention, but is indirectly influenced by perceived value. This is consistent with Dumana & Mattil, (2005). Thus, firms should promote consumer value of green consumption in order to indirectly accomplish the goal of enhancement of green behavior intention.
- (2) Perceived risk of group of high green perception significantly and negatively influences perceived value. This finding is consistent with Snoj, Korda & Mumel (2004) and Agarwal & Teas (2001), namely group of high green perception is influenced by perceived risk. Thus, firms should avoid the risk in order to increase confidence of group of high green perception. On the contrary, perceived risk of group of medium green perception significantly and negatively influences behavior intention. Perceived risk directly lowers behavior intention of group of medium green consumption, and thus, reduction of risk is necessary.
- (3) Two groups' green consumption subjective norm significantly and positively influences behavior intention and actual behavior. This result is in line with Jane (2001) and Westaby (2005). Subjective norm of group of high green perception enhances behavior intention. Subjective norm of group of medium green perception influences actual behavior. Thus, subjective norm influences actual action of group of medium green perception and it is important.
- (4) Effect of green consumption perceived control on behavior intention only exists in group of high green perception. This finding is consistent with Ajzen (2002), Kerner & Kalinski (2002), suggesting that when group of high green perception perceives more resources and capabilities controlled, their intention of green consumption behavior is higher. Thus, related knowledge and convenient channels are important for firms.
- (5) Two groups' green consumption behavior intention positively and significantly influences actual behavior. This result is consistent with Venkatesh & Agarwal (2006), Jostein, Thompson & Verplanken (2003), indicating that consumers' green consumption behavior intention leads to consumers' actual green consumption behavior.

According to research findings, consumers' green consumption behavior is influenced by subjective norm the most, and can directly enhance green consumption behavior intention and actual behavior. Thus, firms should promote green consumption behavior as the one matching environmental responsibility, social norms, the public's expectation and it is the concept benefiting others and oneself. The government should specifically construct laws of green consumption to reinforce consumers' intention and action of green consumption.

### 6.2 Study Limitations and Suggestions

Although this study has accomplished the goals, there are some limitations:

- (1) Since scope of green consumption behavior is broad, future researchers can explore different fields or products in order to obtain more specific results.
- (2) There are many factors of consumers' green consumption behavior. This study only discussed perceived benefit, perceived risk, subjective norm, perceived control and perceived value and cannot include all factors. Future researchers can include more related variables to complete the research.

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