Encouraging Green Purchase Behaviours of Hong Kong Consumers

Mark, Ng  
Hong Kong Shue Yan University

Monica Law  
Hong Kong Shue Yan University

Abstract

With China’s rapid economic development in recent years, a number of environmental problems have surfaced. More educated Chinese consumers are becoming concerned about the adverse environmental impacts of their consumption activities. Thus, the Chinese market for green products has been growing substantially, and research study of Chinese consumers’ green buying behaviours is important. This study was conducted in Hong Kong among 457 respondents to examine their environmental attitudes and green buying behaviours. The responses were analyzed by descriptive statistics, reliability analysis, and partial least square structural equation modeling (PLS-SEM). A model is proposed that depicts the influence of consumers’ environmental attitudes, environmental concern, perceived environmental responsibility, and perceived effectiveness on green purchase behaviour. The results demonstrate that consumers’ perceived environmental responsibility and perceived effectiveness of environmental protection play important roles in promoting their attitudes toward and intention of buying environmentally friendly products. Perceived environmental responsibility also fully mediates the relationship between consumers’ environmental concern and their intention of buying eco-friendly products. Finally, the current research supports the view that Generation X consumers put stronger emphasis on the effectiveness of their actions in pro-environmental consumption. The findings contribute to the literature on green marketing and have implications for conducting green marketing in Hong Kong and China.

Key words: Green marketing, perceived environmental responsibility, perceived environmental effectiveness, environmental concern, environmental attitude

Introduction

Facing the environmental problems such as pollution and global warming, consumers are more aware of the environmental impacts of their consumption activities and are more willing to change their buying decisions and shopping behaviors for environmental reasons (Lyon and Maxwell, 2004). As China turns to be a key market in Asia and it continues its economic development, increasingly affluent and educated
Chinese consumers have become more concerned about the adverse impact of pollution on their quality of life (Mohai et al., 2010). Many companies offer green version of products in China and successfully charged consumers with a premium. For example, according to Manget et al. (2009), 59% of respondents were willing to pay a premium to buy some green products. Thus, green marketing strategy becomes an option for international brands to develop competitive advantages in China market.

Some studies investigated the link between environmental consciousness and green purchase behaviors such as Chen (2009) and Kim and Seock (2009). However, the link between attitudinal components and consumer green purchase behavior is still under debated. Positive attitude towards the environment is not necessarily indicative high intention of buying green products (Gill et al., 1986). As such, this paper attempts to supplement the existing literature by proposing a comprehensive model to examine the relationship between environmental attitudes and green buying behaviors. This investigation will provide marketer with valuable insights into improving the effectiveness of their green marketing strategies.

Furthermore, most of these studies focused in the western countries and the research studies on green consumer behaviors in Asian countries is still limited (Lee, 2014). This study then aims to fill this gap by examining the green purchase behaviors of consumers in Hong Kong (China). Finally, generational differences between Generation X and Generation Y in consumer purchase patterns may exist and need to be addressed (Norum, 2003, Schewe and Meredith, 2004). Generation Y refers to the individuals born between 1980 and 1994 (Chung and Holdsworth, 2012). Although boomers and Generation X still dominated the eco-friendly marketplace, the percentage of eco-friendly Generation Y is increasing (Hill and Hyun-Hwa, 2012). Currently, the Generation Y population of China consists of approximately 200 million people (Kwok, 2012). Given the size and importance of the green product, a better understanding of this young consumer segment is vital.

**Theoretical framework**

**Environmental attitude**

Environmental attitude is defined as “a collection of beliefs, affect, and behavioral intentions a person holds regarding environmentally related activities or issues” (Schultz et al., 2004). It refers to consumers’ evaluation of environmental protection activities (Lee, 2009). Many studies support the use of environmental attitude as a predictor to individuals’ environmentally related behaviors such as organic food consumption (Chen, 2009), recycling (Park and Ha, 2012) and ecological behaviors (Lynne and Rola, 1988).

However, the predictive ability of attitude is still being debated by researchers. Earlier studies suggest that there is no significant correlation between attitudes and pro-environmental behaviors (Tracy and Oskamp, 1984). The relationship between environmental attitude and ecological behavior is from weak to moderate in a number of studies (Berger and Corbin, 1992, Smith et al., 1994). The inconsistency of results stemmed from researchers’ use of more generalized measurement of pro-environmental behaviors (Gadenne et al., 2011, Mainieri et al., 1997). To avoid this problem, this study would focus on consumers’ buying intention of green
products. Consumers with more positive attitude toward environmental issues tend to have positive attitude toward green products and higher intention of using green products (Kotchen and Reiling, 2000). This study would further ascertain the relationship between consumers’ environmental attitude and buying behaviors. Thus, we propose the following hypothesis:

H1: Consumers’ environmental attitude is positively related to their attitudes toward green products.

Environmental concern

Environmental concern refers to consumers’ emotional reactions such as worries, dislikes, and compassions, toward the environmental problems (Milfont and Gouveia, 2006, Yeung, 2004). Many studies examined the effects of environmental concern on the choice of products such as laundry detergents (Kinnear and Taylor, 1973), cosmetics and toiletries (Prothero and McDonagh, 1992), renewable energy (Bang et al., 2000), and organic food (Hoffmann and Schlicht, 2013). People with more environmental knowledge and concern tend to have positive attitudes toward environmental products (Suki, 2014, Karatu and Mat, 2014). The deteriorating environmental conditions in China have lead increasing numbers of people to become aware of the need for environmental protection (Wong, 2003). As in the case of environmental attitudes, some researchers find that the relationship between environmental concern and behaviors are weak or insignificant (Bamberg, 2003, Davis, 1995). Further study is required to clarify the relationship between environmental concern and consumers’ intention of buying green products. The following hypothesis is proposed:

H2: Consumers’ environmental concern is positively related to their attitudes toward green products.

Perceived responsibility

Perceived environmental responsibility refers to consumers’ intention to take action directed toward pro-environmental behaviors (Stone et al., 1995). The use of green products usually involve altruistic helping behaviors whereby consumers buying green product may need to pay higher price, or sacrifice their time and resources to protect the environment (Zelezny et al., 2000). According to the norm activation model, altruistic helping behavior is most likely to occur when an individual is aware of harmful consequences and feel responsible for these consequences (Schwartz, 1977, Schwartz and Howard, 1981). Consumers who perceived that they are responsible for handling environmental problems are more likely to engage in green consumption activities (Nyborg et al., 2006). They tend to display more ecological behavior including buying (Kim and Damhorst, 1998) and using green products (Kaiser et al., 1999).

In general, people having higher environmental attitude and environmental concern tend to perceive that they are responsible to take environmental protection measures, who are more likely to have positive attitude toward eco-friendly products and promotions (Kaiser et al., 1999, Yusof et al., 2013). However, Lai (2000) reported that Hong Kong consumers are concern about the environmental problems but their
perceived environmental responsibilities were weak, which affect their use of green products. Young people do not perceive or accept their responsibilities toward environment would reduce their intention to make green purchase (Lee, 2008). Thus, the following hypotheses are proposed:

H3a: Consumers’ environmental concern is positively related to their perceived responsibility to environmental protection.

H3b: Consumers’ environmental attitude is positively related to their perceived responsibility to environmental protection.

H3c: Consumers’ perceived responsibility to environmental protection is positively related to their attitudes toward green products.

H3d: Consumers’ perceived responsibility to environmental protection is positively related to their intention to buy green products.

**Perceived effectiveness**

Consumers’ environmental concern may not necessarily translate into action without a sense of empowerment. Self-efficacy theory suggested that people’s beliefs in his or her ability to accomplish a specific task play key roles in shaping their approaches to goals, tasks, and challenges (Bandura, 1977). Perceived consumer effectiveness refers to the extent to which consumers believe that their actions can contribute to solving a problem (Ellen et al., 1991). Consumers tend to purchase eco-friendly products if they perceived that their purchase could help protecting the environment (Haytko and Matulich, 2008).

Perceived effectiveness and environmental concern are different concepts as perceived effectiveness involves consumers’ evaluation of the self in the context of the issue (Berger and Corbin, 1992). Environmentally concerned consumers may not buy those eco-friendly products if they perceived that these products did not offer benefits to environment (Dobscha and Ozanne, 2001, Polonsky and Rosenberger III, 2001). Thus, we hypothesize that:

H4a: Consumers’ perceived effectiveness is positively related to their attitudes toward green products.

H4b: Consumers’ perceived effectiveness is positively related to their intention to buy green products.

**Proposed model**

Consumers’ green attitudes and buying behavior intention have been actively studied (Chang, 2011). Chen and Chang (2012) used perceived values, perceived risks and green trusts to predict consumers’ green buying behaviors. One of the most popular theories explains the attitude-behavior relationship is theory of planned behavior (TPB) (Ajzen, 2005). TPB regards a consumers’ behavior as determined by their behavioral intention, where behavioral intention is a function of their attitude toward the behavior and perceived control (Huang et al., 2014). TPB was applied in many
different studies in green marketing (Albayrak et al., 2013, Kim and Choi, 2004). In general, the attitude-behavior hierarchy model received support from different empirical studies (Homer and Kahle, 1988, McCarty and Shrum, 1994, Milfont et al., 2010). In the context of green consumer behavior, perceived behavioral control refers to perceived consumer effectiveness (Roberts, 1996) and perceived responsibility of environmental protection (Allen and Ferrand, 1999).

Based on the idea of TPB, a conceptual model is proposed in Figure 1 to illustrate the hypothesized relationship among the constructs environmental attitudes, environmental concern, perceived environmental responsibility, perceived effectiveness, attitudes toward green products, and intention of green buying behavior. The present model was conceived based on the ideas of previous researchers and their models such as Kim (2005), Chan (2001), and Lee (2008).

![Figure 1: Proposed Model](image)

**Figure 1:** Proposed Model

**Generational Theory: Generation X and Generation Y**

Generational theory proposes that similar life experiences and social context make consumers in the same age cohorts develop similar attitudes and beliefs (Meriac et al., 2010). It suggests that the sociocultural background helps create some homogenous traits among generations (Pendergast, 2009). Generational cohorts differ not only in their age, but also their values (Schewe and Meredith, 2004), and attitudes and beliefs (Meriac et al., 2010). The use of generational cohorts allows marketers to identify the key characteristics of different generations and develop more effective marketing activities for them (Meredith et al., 2002).

Previous research studies identified many key features of Generation Y consumers. For example, some studies suggested Generation Y is less loyal consumers than Generation Y (Bush et al., 2004, Wood, 2004). They are better educated and more aware of marketing tactics than previous generations (Tsui and Hughes, 2001). Growing up in a marketing saturated environment, Generation Y consumers utilize brands as an extension of themselves (Nowak et al., 2006). They are more concerned about the symbolic meaning of the brands in comparison with Generation X. Lee
(2008) also suggested that the green purchasing behavior of adolescents in Hong Kong are more likely activated by their environmental attitude and concern. In contrast, Generation X consumers generally respond to brands in a more pragmatic way (Ritchie, 2002). They seek products that help them solve their problems. Thus, we hypothesize that:

H6: When compared with Generation X consumers, environmental concern is a stronger predictor to intention of buying green products for Generation Y consumers.

H7: When compared with Generation X consumers, environmental attitude is a stronger predictor to intention of buying green products for Generation Y consumers.

H8: When compared with Generation Y consumers, perceived effectiveness is a stronger predictor to intention of buying green products for Generation X consumers.

**Research Methodology**

**Participants and data collection**

This research was conducted using a structured, self-administered questionnaire. Snowball sampling procedure was adopted to collect the responses. The link to questionnaire was sent through e-mail with a covering letter explaining the topic and goals of the research. Total 600 questionnaires were administered through social networking sites, resulting in 457 valid responses, with an overall response rate of 76.17 per cent. There were 188 men (41.1%) and 269 women (58.9%) among respondents. Most of them were university students and graduates (50.0%), followed by participants with secondary school or below educational level (42.5%) and primary education level (7.5%). 234 respondents were aged below 25 (51.2%) as Generation Y whereas 223 of them were from 25 to 45 (48.8%) for the group of Generation X.

**Instrument and measures**

This study was designed to investigate the key determinants of attitudes towards and intention of purchasing environmental friendly products. The questionnaire consisted of three sections. The first part was intended to collect participants’ attitudes and perceptions toward environmental protection. The second part consisted of scales measuring their attitudes and purchase intention toward green products. Measures for the variables in the proposed model were adapted from previous studies (Lee, 2008, Pickett-Baker and Ozaki, 2008) (Table 1). The measurement items used seven-point Likert’s scale anchored by “strongly disagree” and “strongly agree” with a point of neutrality in the middle. The last part was about the participants’ personal backgrounds.

**Data analysis**

The objective of this study is to analyze different factors in predicting local customers’ attitude and behavioral intention towards green products. Partial least
squares path modeling (PLS) with reflective indicators was applied in this study, utilizing the software package SmartPLS. While other methods of structural equation modeling are more widespread indeed, PLS was used due to its enhanced ability to process complicated models and does not require distributional assumptions of the sample (Chin, 1998).

To overcome the problem of no formal significance tests for the estimated parameters in non-parametric method, the t-statistic and standard deviation of each parameter is calculated by bootstrap technique (Chin, 1998). Bootstrapping was used to draw 5000 random bootstrap set to obtain stable standard errors and low differences between entire sample estimates and means of subsamples (Léger et al., 1992). After establishing the validity and reliability of measurement and structural model, a parametric multi-group analysis was used to examine the differences between generation X and Y customers.

Finding

Measurement model (Outer model)

There are several analyses to assess the adequacy of the measurement model: Evaluation of component loadings of the items for each measure, the reliability of the measures, convergent validity, and the discriminant validity of the constructs (Hair et al., 2014).

Reliability of the measures is evaluated by both Cronbach’s alpha and composite reliabilities (CR). Cronbach’s alpha is estimated using reliability analysis procedure in SPSS and composite analysis are obtained from principal component analysis procedure in PLS (Chin, 1998). As recommended by Nunnally (1978), the reliability indicators of each construct should meet the desired criteria of 0.70. As shown in Table 1, most of the reliability measures exceed 0.70, which indicates that the measurement model possessed good internal consistency reliability.

Table 1: Quality criteria of the constructs

<table>
<thead>
<tr>
<th>Item</th>
<th>Mean</th>
<th>SD</th>
<th>Standardized loading</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Attitude toward environmental protection (Lee, 2009) AVE=0.694, CR=0.919, CA=0.889</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>It is essential to promote green living in HK</td>
<td>5.888</td>
<td>1.001</td>
<td>0.821</td>
</tr>
<tr>
<td>I strongly agree that more environmental protection works are needed in HK</td>
<td>6.114</td>
<td>0.866</td>
<td>0.831</td>
</tr>
<tr>
<td>It is very important to raise environmental awareness among HK people.</td>
<td>5.941</td>
<td>1.112</td>
<td>0.855</td>
</tr>
<tr>
<td>Environmental protection works are simply a waste of money and resources</td>
<td>6.092</td>
<td>1.078</td>
<td>0.878</td>
</tr>
<tr>
<td>Environmental protection issues are none of my business (R)</td>
<td>5.755</td>
<td>1.298</td>
<td>0.777</td>
</tr>
<tr>
<td><strong>Environmental concern (Lee, 2009) AVE=0.643, CR=0.877, CA=0.822</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I am worried about the worsening of the quality of HK’s environment</td>
<td>5.735</td>
<td>1.254</td>
<td>0.689</td>
</tr>
<tr>
<td>Hong Kong’s environment is my major concern</td>
<td>5.546</td>
<td>1.093</td>
<td>0.835</td>
</tr>
<tr>
<td>I am emotionally involved in environmental protection issues in</td>
<td>5.311</td>
<td>1.156</td>
<td>0.857</td>
</tr>
</tbody>
</table>
Table 1: Quality criteria of the constructs (Cont’d)

| I often think about how the environmental quality in HK can be improved | 5.711 | 0.964 | 0.816 |

**Perceived environmental responsibility (Lee, 2009)** AVE=0.807, CR=0.926, CA=0.881
- I should be responsible for protecting our environment. 5.797 0.951 0.904
- Environmental protection starts with me. 5.558 1.050 0.919
- Environmental protection is the responsibility of the government, not me. 5.494 1.019 0.872

**Perceived effectiveness of environmental protection (Lee, 2008)** AVE=0.536, CR=0.822, CA=0.724
- I think if I carry out some pro-environmental behaviours in my everyday life, I would contribute a lot to our environment. 5.768 0.961 0.740
- I think my participation in environmental protection would influence my family and friends to participate too. 5.066 1.104 0.721
- The environmental quality of HK will stay the same even if I engage in some pro-environmental behaviours. (R) 4.420 1.486 0.735
- Even if I recycle and reuse things, the environmental quality of HK will remain as it currently is (R) 4.482 1.493 0.733

**Attitudes toward green product (Pickett-Baker and Ozaki, 2008)** AVE=0.574, CR=0.800, CA=0.634
- I feel good about buying brands which are less damaging to the environment 5.274 1.097 0.833
- It is easy for me to identify these products 4.536 1.274 0.651
- Some multi-national corporations who manufacture well-known consumer brands are redesigning their factory processes, their products and their packaging to be more environmentally friendly. If they advertised this fact I would be much more likely to choose that brand 4.692 1.297 0.777

**Buying intention of green product (Pickett-Baker and Ozaki, 2008)** AVE=0.617, CR=0.828, CA=0.689
- I buy green products even if they are more expensive than the non-green ones 4.384 1.391 0.724
- I choose to buy products that are environmentally-friendly 5.282 1.070 0.840
- When I want to buy a product, I look at the ingredients label to see if it, contains things that are environmentally-damaging 4.835 1.240 0.789

Recommended criteria of acceptance of composite reliability and Cronbach’s Alpha is 0.7 (Hair, 1997), and criteria of AVE is 0.5 (Fornell and Larcker, 1981).

All constructs have achieved an AVE greater than 0.50 and most factor loading measures are near/above 0.70, thus meeting the recommended criteria for convergent validity (Hair et al., 2011). The measurement model possessed adequate convergent validity. Discriminant validity was assessed by the examination of cross loadings of the indicators and Fornell-Larcker criterion (Fornell and Larcker, 1981). Table 2 summarizes the range of factor loading and cross loading of each construct. The item’s factor loadings on its construct is higher than all of its cross loadings with other
constructs, which provides support to discriminant validity. The Fornell-Larcker criterion assessment, which compare the square roots of the reflective construct’s AVE with the correlations between the constructs, further confirms the discriminant validity of the measurement model (Table 3). The measure of each item strongly related to the construct it attempts to reflect and did not have a strong connection with another construct. Hence, this measurement model provides acceptable discriminant validity.

### Table 2: Examination of Cross Loadings

<table>
<thead>
<tr>
<th>Construct</th>
<th>Range of Factor Loading</th>
<th>Range of Cross Loading</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attitude toward environmental protection (EA)</td>
<td>0.777-0.878</td>
<td>0.177-0.641</td>
</tr>
<tr>
<td>Environmental concern (EC)</td>
<td>0.689-0.857</td>
<td>0.154-0.581</td>
</tr>
<tr>
<td>Perceived environmental responsibility (PER)</td>
<td>0.872-0.919</td>
<td>0.283-0.584</td>
</tr>
<tr>
<td>Perceived effectiveness (PEE)</td>
<td>0.721-0.740</td>
<td>0.199-0.578</td>
</tr>
<tr>
<td>Attitudes toward green product (GA)</td>
<td>0.651-0.833</td>
<td>0.201-0.510</td>
</tr>
<tr>
<td>Buying intention of green product (GB)</td>
<td>0.724-0.840</td>
<td>0.267-0.532</td>
</tr>
</tbody>
</table>

### Table 3: Square root of AVE (diagonal elements) and inter-construct correlations

<table>
<thead>
<tr>
<th>Construct</th>
<th>EA</th>
<th>EC</th>
<th>PER</th>
<th>PEE</th>
<th>GA</th>
<th>GB</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attitude toward environmental protection (EA)</td>
<td>0.833</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Environmental concern (EC)</td>
<td>0.563</td>
<td>0.802</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Perceived environmental responsibility (PER)</td>
<td>0.467</td>
<td>0.394</td>
<td>0.898</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Perceived effectiveness (PEE)</td>
<td>0.655</td>
<td>0.584</td>
<td>0.612</td>
<td>0.732</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Attitudes toward green product (GA)</td>
<td>0.421</td>
<td>0.345</td>
<td>0.452</td>
<td>0.472</td>
<td>0.758</td>
<td></td>
</tr>
<tr>
<td>Buying intention of green product (GB)</td>
<td>0.455</td>
<td>0.401</td>
<td>0.489</td>
<td>0.499</td>
<td>0.598</td>
<td>0.786</td>
</tr>
</tbody>
</table>

### Structural Model (Inner model)

After establishing the reliability and validity of the measurement model, this section presents the results of the hypothesis testing of the proposed model. Hair et al. (2014) outlines the procedure in assessing structural model by PLS, which included collinearity assessment, significance and relevance of structural model relationships, the r-square (R²) for exogenous-endogenous relationships, effect size and predictive relevance of the model (Hair et al., 2014).

Before assessing the structural model, we need to analyze the collinearity issue of the model by variance inflation factor (VIF), which is the reciprocal of the tolerance. The VIF of EA, EC, PEE, and PER were 2.173, 1.807, 1.502, and 2.318, respectively. All VIF values are clearly below the threshold of 5 (Hair et al., 2011). Therefore, collinearity among the predictor constructs is not an issue in this model.

The variance explained in three endogenous variables, which included intention of buying green products, attitudes towards green products, and perceived responsibility of environmental, was 0.438, 0.282, and 0.497, respectively, which demonstrates moderate predictive power (Henseler et al., 2009). The structural model demonstrates
acceptable predictive power as the average explained variance $R^2$ is 0.406. The effect size $f^2$ assesses an exogenous constructs’ contribution to an endogenous latent variable’s $R^2$ values. The effect size $f^2$ ranged from 0.020 to 0.310, which reflects that the effect sizes of different endogenous constructs on exogenous constructs are from small to medium. Predictive accuracy $Q^2$ of the model was assessed by using the blindfolding procedure (Wold, 1982). The cross-validated redundancy values for all three endogenous constructs well above zero (PER: 0.394; GA: 0.161; GB: 0.255), providing support for the model’s predictive relevance (Table 4).

Finally, the significance of path coefficients was assessed by bootstrapping. Results from the bootstrapping procedure (5000 samples, no sign changes option) reveals that eight of nine structural relationships are significant ($p<0.01$). Figure 2 depicts my final model as well as the path coefficients, $p$-values, and $r^2$. The attitudes toward environmental protection, perceived environmental responsibility, and perceived effectiveness of environmental protection are key determinants of consumers’ attitudes toward green products with path coefficients of 0.152, 0.195 and 0.241, respectively. Surprisingly, environmental concern has no direct and significant effect on consumers’ attitudes toward green products.

![Figure 2: Results of the Study](image)

**Mediation analysis**

The results from the path model suggest that perceived environmental responsibility and consumers’ attitudes toward green products were mediators of consumers’ intention of buying green products. Thus, it is worthwhile to test for this potential mediating effect by procedures suggested by Hair, et al. (2014). After confirming the significance of indirect effects by bootstrapping, we compute the variance accounted for (VAF) of each constructs. The results suggested that the relationship between two general attitudes, which included “attitudes toward environmental protection” and “environmental concerns”, and intention of purchasing green products, are fully mediated by consumers’ perceived environmental responsibility and attitudes toward green products. VAF value of PER and PEE are 0.310 and 0.363, respectively, which,
according to Hair et al. (2014), consumers’ attitudes toward green products partially mediates the relationship between these two constructs and their buying intention.

**Generational differences**

After establishing the validity of the structural model, multi-group analysis was adopted to examine the differences between generation X and generation Y in their consumption behavior. Following the parametric approach introduced by Keil et al. (2000), we ran the PLS path modeling of each group and obtained standard errors of each group by bootstrapping procedure (Henseler et al., 2009). An empirical t-value was obtained to test the path differences. Table 5 shows that there are two significant path differences between Gen X and Gen Y consumers. Gen Y consumers with higher environmental concern tend to have more positive attitude toward green products. In contrast, perceived effectiveness of environmental protection has direct effect on intention of purchasing green product for Gen X.

**Discussion and Implications**

Previous studies questioned the relationship between consumers’ environmental attitudes and concern and their intention to buy environmentally friendly products. Few studies have attempted to model the mediation of ecological consumption and limited empirical research has tested a theoretical model integrating consumer environmental attitudes, perceived responsibility and perceived effectiveness, and assessing their influence on green purchase decisions in Chinese context. Consistent with the finding in earlier research studies, the model supports the validation and use of theory of planned behavior to predict the green purchase behavior of consumers (Dagher and Itani, 2014, Lee, 2008).

The results support the view that increased environmental concern and environmental attitudes lead to higher buying intention of eco-friendly products, which is consistent with previous research studies (Polonsky et al., 2014). Bang et al. (2000)suggested that consumers emotionally involved with the environmental issues were more willing to pay a premium price for renewable energy. To motivate consumers to pay a premium price for eco-friendly products, marketer should get consumers emotionally involved into specific environmental problems.

Consumers with high perceived consumer effectiveness tended to have more positive attitudes toward eco-friendly products and engage in green purchase behavior. Marketing communication should provide specific environmental claims with meaningful benefits, which shows consumers how these products may contribute to environmental improvement (Frankel, 1994). Marketers should demonstrate how consumers could contribute to the benefits for the entire society by using these products. The reinforcement of the usefulness of these products could further promote consumers’ commitment to green purchase (Kim and Choi, 2004).

Perceived environmental responsibility also had a direct, positive influence on green purchase, suggesting that consumers who accepted their responsibility to environmental protection are more likely to buy environmental products. Green marketers may make use of marketing communication campaign with strong emphasis in environmental problems and the urgency of environmental protection to raise
people’s environmental concern, which may lead to increase in perceived responsibility of environmental protection. In contrast to previous studies, this study found that the relationship between environmental attitudes and environmental concern and buying intentions of green products were fully mediated by consumers’ perceived environmental responsibility and consumers’ attitudes toward green product on their purchase of green products.

The environmental buying behaviors between Generation X and Y were similar to each other. Perceived effectiveness and perceived environmental responsibility were strong predictors to their buying intention of green products for both Generation X and Generation Y consumers. However, environmental concern is a stronger predictor for Generation Y consumers, while perceived effectiveness is a stronger predictor for Generation X consumers. These differences support the hypotheses that Gen X consumers are more concerned about the effectiveness of their pro-environmental behaviors, while Gen Y consumers’ pro-environmental behaviors are more likely stimulated by their environmental attitude and concern (Lee, 2008).

Taken together, this research supports past studies of green marketing by identifying the key determinants of consumers’ attitudes and buying intention of eco-friendly products. This study reveals several implications for theory and practice relating to the green marketing among consumers in Hong Kong. Theoretically, the findings firstly enriched the current green marketing literature by support the validation and use of theory of planned behavior in predicting consumers’ green buying behaviors. Second, the model proposed also extended the past studies of green marketing by identifying the key mediators between consumers’ green attitudes and their intention of buying green products. Finally, this study also explored the generational effects of pro-environmental buying behaviors. The findings supported that Generation X consumers were more pragmatic than Generation Y consumers in their buying decision.

The findings also offer practical implications for marketers of green products and public policy makers who promote pro-environmental behavior. To increase the number and degree to which consumer engage in pro-environmental behaviors, it is necessary to increase not only individual’s environmental attitude and concern, but their acceptance of personal responsibility for the environmental action, and their ability to contribute to environmental protection (Cleveland et al., 2012). Social marketing campaigns of policy makers should not only emphasize on the responsibility of environmental protections but also make individuals aware of their ability to make differences over environmental outcomes, which may encourage more people to engage in pro-environmental behaviors (Allen and Ferrand, 1999). Applied to the segmentation and targeting strategies, promotional messages can be tailored to young people with an appeal that emphasizes the seriousness of environmental problem and their roles in improving the environment. For those Generation X consumers, an emphasis on their contributions to environmental protection and the environmental benefits created by using the products.

**Limitations and Future Research**

In conclusion, this study extends previous research on green marketing, by showing how different environmental attitudes and perceptions are related to each other. Our
findings highlight the importance of perceived responsibility and effectiveness of environmental behavior in affecting their attitudes toward green products. Several major limitations concerning this study need to be acknowledged. First, the sampling method limited the external validity of our finding. A replication of this study with randomized sample might be necessary to attest the applicability of the model. Second, the focus of this research was consumers’ purchase intention of eco-friendly products. The key determinants identified in this study might not be applicable to predict other types of pro-environmental behaviors of consumers. Third, the present study measures consumers’ attitudes toward green products but not their actual purchase behaviors. Future research may address this limitation by linking the attitudes with the behavior. For example, a longitudinal research follows the consumer’s green behavior over time in respect to their willingness of green purchase would be able to draw conclusion on whether relationships accounted for here are consistent over time.

This study supported that the attitude-behavior model could be used for predicting consumers’ intention of buying green products. However, some researchers have argued that contextual factors such as external drivers and barriers would also affect the environmental behaviors of respondents. Future research should continue to identify what other factors drive these variables by incorporating more psychological, interpersonal, and cultural factors such as values (Leonidou et al., 2010), norms, peer influences (Lee, 2011)and habit strengths (Jansson et al., 2010). Inclusion of these factors in further research may develop a more comprehensive model with better explanatory power. Further research may also look into how corporations can build effective marketing campaigns that convey the green messages to their audiences.

Reference


Manget, J., Roche, C. and Munnich, F., (2009), *Capturing the green advantage for consumer companies*, Boston Consulting Group, Boston, MA.


Milfont, T. L. and Gouveia, V. V., (2006), "Time perspective and values: An exploratory study of their relations to environmental attitudes", *Journal of Environmental Psychology*, vol. 26, no. 1, pp. 72-82.


Wong, K.-K., (2003), "The Environmental Awareness of University Students in Beijing, China", *Journal of Contemporary China*, vol. 12, no. 36, pp. 519-536.


