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Abstract

A significant number of the Chinese population is faced with environmental challenges like air and water pollution. Based on protection motivation theory, this research examines Chinese consumers' perception of threat and coping mechanisms regarding environmental problems and investigates their predictive power for intention and behavior to make green consumption choices. In co-operation with the Norwegian cruise company Hurtigruten, a conjoint analysis measures the relevance and actual price tag consumers put on green product attributes in a choice-situation with multiple product attributes. Analysis of variance will be used to determine whether differences between segments exist. We expect the effects of threat and coping appraisal on intention to occur in line with predictions of protection motivation theory and the effect of intention on monetary value of environmental friendliness to be moderated by the presence of tradeoffs. High levels of threat perception among consumers may therefore create demand for green products. Further implications, limitations and suggestions for future research are discussed.

Introduction

There exist a number of behavioral choices consumers can make to reduce the impact of their consumption on the environment. However, previous research has identified a significant value-action gap. Consumers report that they are environmental-conscious, but do seldom make corresponding green choices. (Barr 2006; Olson, 2012) When consumers actually feel the impacts of environmental change themselves, will this give the much-needed push in the right direction to finally make green consumption choices?

Environmental challenges are very real in many parts of the world today. In particular, pollution is an increasing problem in low and medium income countries where as many as 98% of cities with above 100,000 inhabitants do not meet air quality guidelines set by the World Health Organization. Despite improvement in some regions such as high income countries where only 56% of cities fail to meet air quality standards, global air pollution has increased by 8% from 2008 to 2013 (WHO, 2016).

To gain a deeper understanding of how people perceive and react to environmental threats, we apply protection motivation theory (Rogers, 1975; Maddux & Rogers, 1983). This theory dictates that different variables of fear appeal can predict how people will try to defend themselves against the perceived threat. Consumers' attitudes towards green consumption should vary with the degree of environmental threat they perceive.

China is a very suitable country for this kind of research for various reasons. There has been limited research on green consumption in China and it is the largest contributor to global CO₂ pollution (IPCC, 2014). Also, China struggles with a number of serious environmental challenges, with air pollution being the best known and, arguably, most serious (Chan et al., 2008). In what is defined as megacities by Chan and Yao (2008) such as Beijing, Shanghai and Guangzhou there is a significant problem with low air quality and between 10 and 30 percent of days the air quality falls below the Grade II standards, a threshold for the amount of micrograms of certain particles in the air set by Chinese authorities. Compared to European standards, Grade II is equivalent to what is defined as the 'alert threshold' (Amfic, n.d.). Although measures have been taken to increase air quality in China, air pollution remains an issue, especially during summertime (Streets et al., 2007). Consequently, many of China's citizens directly feel the impact of air pollution.

One of today's sinners when it comes to air pollution is the ever growing fleet of massive cruise liners emerging around the globe. Cruise ships release massive amounts of carbon dioxide, nitrogen oxide and particles. One large cruise ship can release the equivalent amount of CO₂ as just above 83,000 cars. The environmentally harmful gas which cruise ships release the most disproportionate amount of, at least compared to cars, is sulfur dioxide (SO₂) where one large cruise ship can release an equivalent amount to 376 million cars. The higher amount of sulfur released can largely be attributed to differences in the quality of the fuel burned. While normal cars burn refined gasoline or diesel, ships often use heavier fuels such as marine fuel oil which can contain up to 3,500 times more sulfur than road-diesel. (The Guardian, 2016). This sulfur is deliberately not distilled from the marine fuel as a cost saving measure from the company's side. (Kittiwake.com, n.d)

This research project is supported by the Norwegian cruise ship operator Hurtigruten. Hurtigruten operates 15 cruise ships (Hurtigruten.no) along the Norwegian coast, the Arctic and Antarctica. Although the ships operated are smaller

than conventional massive cruise ships, they contribute to a total of 1% of Norway's net emissions of CO₂. The numbers are even higher on SO₂ and NO_x, where the numbers are six and four percent of Norway's national emissions respectively (NRK, 2008).

As such, we are interested to see if protection motivation theory in any way could help predict cruise trip purchases based on the environment around the consumer at the time of purchase. Comparable research has been done on the adoption of electric vehicles by Bockarjova & Steg (2014). Should it be shown that consideration of environmental issues can predict how consumers choose or value cruise trips, this could be valuable information for Hurtigruten when conducting their marketing. Considering that the Chinese cruise market is among those with the highest growth worldwide (CLIA 2016). According to Cruise Lines International Association (2016) there were 986,000 cruise passengers stemming from China in 2015. With modern developments such as hybrid cruise ships (Hurtigruten, 2016), cruise companies can start offering more environmentally friendly options, enabling the consumers to make this choice.

Our specific research question is then:

How do green product attributes affect Chinese consumers purchase intentions? And how does this affect the price they are willing to pay for those attributes, controlling for different levels of perceived threat severity and vulnerability?

In the remainder of this article, we review the literature on environmental product attributes, the value-action gap and protection motivation theory. From this, the conceptual model and hypotheses are developed. The methodology gives detailed descriptions about research and survey design, sampling, data collection as well as dependent and independent variables. We conclude with a discussion of expectations, implications, limitations and suggestions for further research.

Literature review

We will now present an overview of previous literature on green product attributes, value-action gap and protection motivation theory.

Green products / attributes

What is considered to be green by consumers and what actually contributes the most to reduce environmental impact may differ. According to Gershoff & Frels (2015), the centrality of the “green” product advertised can affect how green a product feature is perceived. For instance, improvements in the engine of a ship could be considered as having a higher benefit to the environment than improvements in e.g. the marine paint or hull design. In their research on adoption of electric vehicles, Bockarovja and Steg (2014) use measures such as air pollution, CO₂ and climate change as measures for environmental risks but also apply some energy security risks such as exhaustion of our petroleum resources, price changes and dependency on import of fossil fuels.

For cruise liners, green attributes can for instance be measured in the amounts of harmful gases and waste released by the ship. For instance, heavy fuel oils or marine gas oil such as those often used by cruise liners are much more damaging to the environment than regular fuel such as gasoline or diesel used in automobiles.

Some different ways to measure the green characteristics of a cruise ship are summarized in Table 1 below.

<p>Type of Bunker Fuel Marine Gas Oil Marine Diesel Oil Intermediate Fuel Oil Marine Fuel Oil Heavy Fuel Oil</p>	<p>Scrubber technology Yes No</p>	<p>Land power while docked? Yes No</p>
<p>Ship attributes Hull design Propellers Paint</p>	<p>Environmental actions Treatment of flora & fauna</p>	

Table 1. Examples of green attributes of a cruise ship

How considerate are they to flora and fauna in the environments they operate in? One example can be the way Hurtigruten conducts stress tests on penguins in order to ensure sustainable contact with the animals and disinfects tourists before entering fragile arctic environment (Internal source, Hurtigruten).

Value action gap

The concept of the value action gap can be described as the missing link between feeling that something should be done and actually doing it. One can for instance have a personal value that one should not pollute, but still feel incapable to find the motivation required in order to walk 20 meters to find the nearest trash can when disposing of a used soda bottle. Likewise, one can feel that sustaining air quality is an important effort, but still disregard environmental attributes of the goods or services that one consumes, for example a trip on a cruise ship. Some research has been done on this phenomenon, amongst others Kollmuss & Agyeman (2002) who describe the underlying complexities of the value-action gap with a range of models from economics, sociology and psychology. Each has some degree of validity under certain circumstances. Bamberg (2003) argues that environmental concern should not be seen as a direct, but as an indirect determinant of behavior. Further evidence of the existence of a value-action gap in the population can be inferred from the lack of significant increases in reported pro-environmental behavior, in spite of an increase in information about these issues that should have generated awareness. This is further exemplified by Olson (2012) who shows that the link between intention and behavior is significantly weakened in trade-off situations and by Barr in his 2006 work explaining that a range of other factors may be barriers between our attitudes and our intentions.

Protection Motivation Theory

Protection motivation theory (PMT) is part of expectancy-value theories and was first proposed by Rogers (1975) and Maddux & Rogers (1983). It aims to predict intentional and behavioral responses to a threat based on how individuals perceive different aspects related to both the threat itself and possible coping behavior.

Threat appraisal consists of three components. The assessment of perceived severity relates to the seriousness of the threat at hand. Perceived vulnerability is an assessment of how susceptible one is to the threat. The rewards which are connected to current behavior, such as the pleasure, are assessed under this category as well. An increase in perceived severity and vulnerability will increase the likelihood of adaptive behavior whereas an increase in the rewards of mal-adaptive behavior will work in the opposite direction.

Coping appraisal also consists of three psychological evaluations. Perceived self-efficacy refers to an assessment of whether one is able to actually perform the protective action. In other words, “Can I do what it takes?” Perceived response efficacy is an evaluation to which extent the protective action actually will reduce the risk. The perceived cost of the protective action covers both monetary costs as well as time, effort and inconvenience. Increases in self-efficacy and response-efficacy will increase motivation to perform an adaptive action while an increase in perceived cost will lower such behavioral intention. The final behavioral intention and outcome will be determined by a trade-off between threat and coping appraisal, which may happen both consciously or subconsciously. The original theory proposed multiplicative relationships among the variables, but those interaction effects lack empirical support (Norman et al., 2005). As most other PTM-studies, we assume the model to be additive and consider only main effects. (Bubeck et al., 2012)

Threat and coping appraisals are based on how an individual perceives their underlying elements. This has two important implications. Behavioral intentions and outcomes will differ among individuals as their perceptions are not only driven by environmental inputs such as facts or arguments, but also by top-down processes from individual experiences, attitudes and beliefs. In order to change behavior, one can specifically try to change how one or more elements of PMT are perceived in people's' minds. For example, anti-smoking campaigns have recently employed social risk messages to increase perceived severity and vulnerability among young smokers (Pechman et al., 2003).

At first glance, PMT might seem like an individual-focused theory. However, it can take into account an individual's social relations. In the special circumstance of slow-onset risks such as environmental threats, vulnerability and seriousness typically increase over time and reach higher levels for each new generation. Campis, Prentice-Dunn & Lyman (1989) extended PMT to include respondent's children. We too will measure how respondents perceive severity and vulnerability for future generations and how this might affect threat and coping appraisal factors. Another social aspect of PMT is that of interpersonal risk which may serve as a powerful motivator in addition to self-protection goals. (Maddux & Rogers 1983, Mahler et al. 1997; Schoenbachler and Whittler 1996) For example, smoking has developed from being socially desirable to highly undesirable in many Western

cultures. Likewise, aspects of green behavior have become a trend in some societies, putting social pressure on members to perform adaptive behavior. (Griskevicius et al., 2010; Mazar & Zhong, 2010)

Protection motivation theory was primarily used to study health-related topics such as preventing diseases by engaging into a healthy lifestyle (Miller & Sanchez 1994, Rippetoe & Rogers 1987, Plotnikoff & Higginbotham 2002). Two meta studies published in 2000 by Floyd et al. and Milne et al. summarized the first two decades of PMT research and found satisfactory results for its predictive power.

Already in 1983, Rogers acknowledged that protection motivation theory could be applied in a wide field of other research topics as well. But only in recent years has a new stream of literature emerged in which PMT is applied to measure people's motivation to engage in green behavior when faced with an environmental threat. When studying chronic exposure to an environmental hazard, Vaughan (1993) established the link for PTM from health to environment, laying the basis for its application for different environmental topics. Keshavarz & Karami (2015) studied how environmentally farmers behaved when faced with the threat of drought. Bubeck et al. (2012) applied PMT to better understand underlying motivations of citizens located in flood areas, finding that response- and self-efficacy were the most important determinants of coping intention and behavior.

Few other researchers have utilized PTM to research environmental behavior of Chinese consumers or tourists. Zhao et al. (2015) studied base-of-the-pyramid consumers' green behavior and found that they engage in such behavior to a great extent, motivated primarily by self-protection and care for environmental quality. Horng et al. (2013) examined energy saving and carbon reduction behavior of Asian tourists and identified a significant value-action gap between intention and behavior.

There remain several gaps in the current literature which our research project aims to close or narrow. First of all, we want to contribute to the young and still scarce stream of literature applying PTM to predict environmental behavior and demonstrate the applicability of PTM for this important research topic.

Second, the majority of PTM studies are survey-based measuring behavioral intentions or experiments measuring actual behavior. As previously mentioned,

there exist a significant value-action gap in our research area which can compromise validity when drawing conclusions from intentions to behavior. Experiments, on the other hand, are by their very nature a compromise between decreased ecological validity and increased control. With our research project, we aim to address both shortcomings. Values for threat and coping appraisal will be collected through a survey, but we introduce *monetary value of environmental impact* as an independent variable in addition to *behavioral intention*. Measured by a conjoint analysis, this will provide us with a price tag consumers put on the “greenness” of their product. Although this does not constitute an actual behavior, it should be highly predictive of such as respondents are forced to make realistic tradeoffs. The gap between both our independent variables can be conceptualized as the value-action gap.

Third, our study applies PTM to understand the environmental values and behaviors of potential outbound tourists in China, a group that to the best of our knowledge has not received such scientific attention .

Theoretical Background, conceptual model and hypotheses

Previous research on environmental behavior has utilized a number of different theories, of which theory of planned behavior (Ajzen, 1985) is among the most common. It is an extension of the theory of reasoned action (Ajzen & Fishbein, 1975). Attitude, perceived social pressure and perceived behavioral control lead to behavioral intention which results in behavior. We acknowledge the empirical support of the theory of planned behavior (Ajzen, 1991, Riebl et al., 2015) and its explicit mentioning of social pressure which seems to be a powerful factor especially in Asian outbound tourism. (Sparks & Pan, 2008) However, we believe that protection motivation theory has superior predictive power for our research setting as it is specifically designed to predict behavior in the presence of a threat. Although the aspect of social pressure is less obvious, it is still incorporated in the theory in terms of social risk. We therefore develop our hypotheses from PMT. (Figure 1)

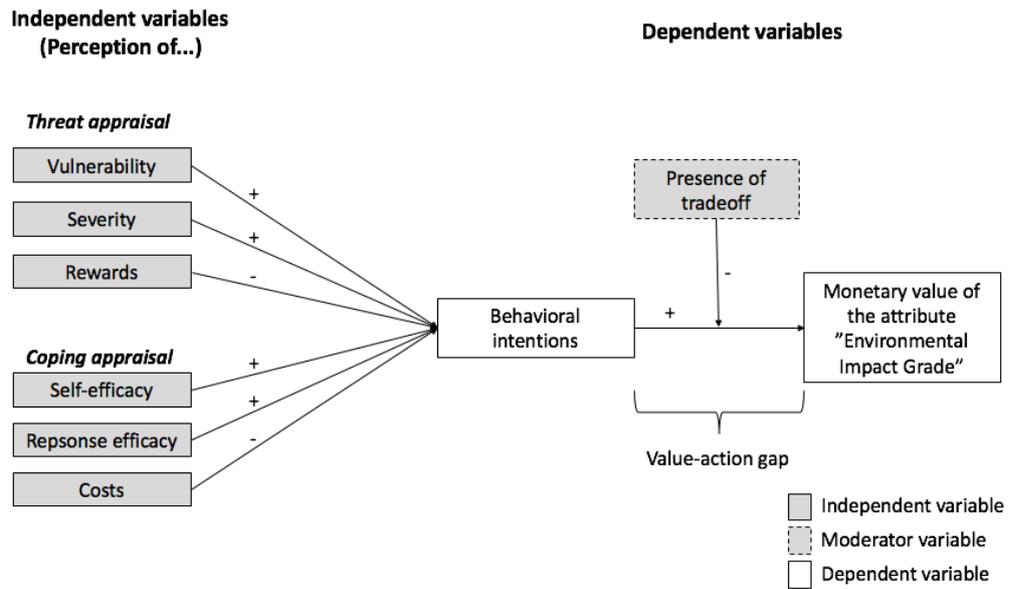


Figure 1: Conceptual Model

Hypothesis 1: Perceived vulnerability to environmental problems has a direct positive effect on intention to pursue coping behavior.

Hypothesis 2: Perceived severity to environmental problems has a direct positive effect on intention to pursue coping behavior.

Hypothesis 3: Perceived rewards of maladaptive behavior has a direct negative effect on intention to pursue coping behavior.

Hypothesis 4: Perceived self-efficacy has a direct positive effect on intention to pursue coping behavior.

Hypothesis 5: Perceived response efficacy has a direct positive effect on intention to pursue coping behavior.

Hypothesis 6: Perceived costs of pursuing adaptive behavior have a direct negative effect on intention to pursue coping behavior.

Hypothesis 7: Intention to pursue an adaptive behavior has a direct positive effect on the monetary value of "Environmental Impact Grade".

In the domain of environmental behavior, previous research has established that the effect of behavioral intention on actual behavior is weaker in the presence of tradeoffs. (Olson, 2012) The majority of people is willing to make green consumption choices as long as those choices do not involve sacrifices on other product attributes. We expect this value-action gap to be present in our data and hypothesize its occurrence as follows:

Hypothesis 8: The effect of intention to pursue an adaptive behavior on the monetary value of environmental impact grade is weaker in the presence of negative trade-offs on other product attributes.

Methodology

Research design

The present research is confirmatory as it is using theory to develop and test hypotheses. We choose a survey-based quantitative research approach. More specifically, we perform an online survey in two parts. In the first part, we measure the dependent variable *behavioral intention* and perform a conjoint analysis in which respondents are asked to rate different cruises. Its output is the independent variable *monetary value of the cruise's environmental impact grade*. The second part employs well-established PMT scales to measure our independent variables.

Sampling

The data will be sampled from relevant Chinese citizens in a number of major cities in China. In order for the respondents to be relevant they should be current or potential cruise tourists. This is presumed to limit the sampling pool to the growing (upper) middle class as well as the rich in China. For the purposes of the paper it is also important that a sufficient amount of respondents are sampled in different locations and preferably, that some of these locations have measurable differences in air-quality. Ensuring randomization in the samples will also be paramount as this is one of the conditions of performing an ANOVA analysis.

Data collection

The survey will be administered to target samples through either the use of Hurtigruten's agent in China or a market research company. Communication with the agent has shown that they have a willingness to help out with the project but it is yet to be determined whether they have the reach required to spread the survey to enough respondents over a large enough diversity of areas.

A second option is to employ a market research firm with an existing pool of respondents in China. Key considerations will then be the agency's reach and possibilities of customising the target respondents. Unless Hurtigruten is willing to sponsor this part of the project price is also likely to be a consideration.

Survey design

Respondents are asked to fill in an online questionnaire. As warm-up questions, respondents are asked to disclose whether they have intentions of going on a cruise or travelling abroad some time in the future. We also collect data on previous travel experience. Respondents are then presented with conjoint cards displaying cruises with varying attribute levels. (Appendix, Figure 1) For each card, they are asked to give a score from 0 ("Would not consider buying") to 100 ("Would definitely buy") based on their overall preference and attribute evaluation. For some conjoint cards, we will keep all attributes constant except for environmental impact. This way, we temporarily remove the tradeoff situation and respondents are not forced to weigh environmental impact against other attribute levels. This allows us to measure the link from intention to behavior also when our binary moderator variable *presence of tradeoff* is inactive. In the following, questions about intentions to make green consumption choices and cruises in particular are presented to measure behavioral intention. We then measure the independent predictor variables suggested by protection motivation theory using well-established scales from previous research. (Appendix, Table 1) Each construct is measured on multiple dimensions using a five-point Likert scale, from "1 (strongly disagree)" to "5 (strongly agree)." The questionnaire finishes with questions about first-hand experiences of environmental problems and demographical questions.

The measurement of dependent variables is positioned before the measurement of the dependent PTM variables to avoid possible priming effects. Questions about

environmental threats might make respondents more sensitive to the environmental attributes than they would normally be.

A pretest will be used to identify any problems with the survey. Hurtigruten's marketing agency in China will translate the survey to Mandarin Chinese. An independent translator will then translate back to English to identify and resolve any problems which occurred during the translating process.

Conjoint Analysis

Conjoint analysis is a very informative form of regression analysis. (Green et al., 2001) Respondents are presented with various hypothetical products with different attributes. The products differ on attribute levels and respondents are asked to rate their attractiveness based on those descriptions. Coefficients can then be estimated from those ratings. In the data analysis, we can determine the relative importance of each attribute and the most preferred level of each.

Conjoint analysis is highly applicable in environmental choice situations in which value action gaps are likely to occur. When consumers are confronted with a tradeoff, they often behave differently from their intentions. (Olson, 2012) A conjoint analysis forces respondents to make such a tradeoff by evaluating several attributes combined and creates thus a more realistic environment for evaluation.

To the best of our knowledge, there is no research on which attributes are most important for consumers in a process of choosing and purchasing a cruise. Attributes and attribute levels were therefore developed together with Hurtigruten management. (Appendix, Table 2). Our focal attribute, the cruise's "Environmental Impact Grade", is adopted from the environmental organization Friends of the Earth (FoE). FoE has developed a Cruise Ship Record Card, a system in which cruise ships and cruise companies are given scores from A (very good) to F (fail) on three environmental dimensions. (Appendix, Table 3) "Service level" and "destination type" are two attributes which Hurtigruten uses as points of difference in their marketing and therefore seem suitable to include in product evaluation. "Price" is a natural attribute for any product and allows us to estimate the monetary value of each of the other attribute levels. SPSS software will be used for generation of conjoint cards and data analysis.

Analysis of Variance

In addition to the conjoint analysis an ANOVA will also be performed in order to measure differences between the measured groups. The main idea here is to test whether or not significant differences can be found between groups with different exposure levels from pollution suggesting that protection motivation theory can affect valuation of cruises. It can also be used to identify differences between for instance age groups or income groups.

It is essential for the ANOVA analysis that the sampling is done correctly, amongst others ensure normally distributed data and homogeneity. N-way analysis of variance can also be performed in order to identify and measure possible interaction effects between the measured factors in the surveys.

Expectations

Based on the relationships and directions suggested by PTM, we expect all our hypotheses to be confirmed. We also expect threat appraisal to be positive due to the scope and size of environmental challenges China is facing. Values will vary depending on the respondent's location, situation and exposure to environmental problems. We are less certain about the mean value of coping appraisal - considering the size of the population, do Chinese consumers think that their individual choices matter and can protect them to a certain degree? As a collectivistic culture (Hofstede, 1986), the answer is probably yes as each individual can imagine his or her place and role in the big picture. As such, positive threat and coping appraisal should motivate respondents to make green choices and put a positive price tag on the environmental friendliness of a cruise. In line with previous research, we expect the presence of trade-offs to significantly reduce the effect of intention on behavior.

Implications

The most obvious managerial implication of this research project is for Hurtigruten and other companies to know whether it is worthwhile to market green product attributes as competitive points of difference in China. If so, those companies which succeed at developing green products and communicating their (absence of) environmental impact will enjoy a competitive advantage. Also, detailed knowledge about how Chinese consumers evaluate environmental threats and

coping behavior presents an opportunity for companies and entrepreneurs. For example, high levels of vulnerability perceptions signal demand for protective products such as advanced air filters.

Academic implications reach back to the literature gaps identified earlier. This study contributes to a young stream of literature arguing for the applicability of PTM to environmental behavior research. Measuring behavioral output through a conjoint analysis shows a road to more realistic and predictive results.

Limitations and Suggestions for Future Research

This research project tries to strike a delicate balance between broad scientific contribution and the specific measures our supporting company Hurtigruten is interested in. We acknowledge two threats to its external validity. The sample composition might be highly homogenous as only a small percentage of the Chinese population can afford cruise holidays today. However, China's middle class is growing rapidly (McKinsey, 2013). It is therefore crucial to understand the underlying motivations of Chinese outbound tourists today to prevent damaging mass-tourism from developing in the future. Also, the setting of cruises might be too specific, thereby limiting external validity. Again, growth makes a solid counter argument. Since 2012, the number of Chinese cruise travellers has increased by a 66 percent compound annual growth rate, indicating that cruises will soon constitute a major share of the Chinese holiday market. (CLIA, 2016) To make the setting more relevant for today's broad public, upcoming research can adopt our model and apply it to mass products like airline tickets instead of cruises.

The nature of this study is descriptive, which is a necessary first step to understand Chinese tourists' underlying motivations. Future research might take on a prescriptive approach, trying to manipulate the six PTM variables through marketing communication to maximize the monetary value of the highest green attribute level. In other words, what is the most effective message to make consumers value green product attributes?

From a global perspective, when high levels of threat and coping appraisal evoke stronger intentions and behaviors to make green consumption choices, that could be interpreted as a "last-minute hope" for our planet. As more and more people

experience environmental problems first-hand, the cognitive mechanism suggested by PMT might lead to a rapid change towards greener consumption patterns. Future research might shed more light on whether high enough intention levels would lead to behavioral change in spite of the value-action gap. When consumers are willing to pay high prices for green product attributes, they constitute a profitable segment for any company able to satisfy this demand. Then it is no longer government regulations, but market forces driving mass consumers' green choices and producers' development of new sustainable products.

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Appendix

Table 1. Construct Indicators and Measurement Items

Measure	Items	Score
<i>Threat appraisal</i>		
<i>Vulnerability</i>	<p>I am vulnerable to the harmful effects by the polluted environment.*</p> <p>I feel that I am a victim of environmental deterioration.*</p> <p>I feel that my children's life will be negatively affected by the poor environment.*</p> <p>The social pressure to behave in an environmentally friendly manner really affects me.</p> <p>My friends and family would disapprove if they heard that I polluted the environment.</p>	
<i>Severity</i>	<p>My health is threatened by the environmental deterioration.*</p> <p>My life is getting worse due to the poor environment.*</p> <p>The air and water pollution is a serious problem in my area.*</p> <p>The quality of my children's life will be negatively affected by environmental problems.</p> <p>I feel very much pressure to behave in an environmentally friendly way.</p> <p>My friends and family would react strongly if they heard that I polluted the environment.</p>	
<i>Rewards</i>	<p>I have to choose between convenience and eco-friendly behavior.</p> <p>It feels good not having to think about pollution and environmental problems.</p> <p>Travelling by car is a much more convenient way of travelling than other modes of transport.</p>	
<i>Coping appraisal</i>		
<i>Self-efficacy</i>	<p>I know how to take precautions against environmental pollution in everyday life.*</p> <p>I am able to find ways to deal with air pollution in everyday life.*</p> <p>I know how to deal with new types of environmental pollution.*</p> <p>I believe I can even manage unexpected environmental problems.*</p>	
<i>Response efficacy</i>	<p>I am sure that our environmentally friendly behaviors can have a positive effect on the environment.*</p> <p>I am confident that together we can save the natural resources.*</p> <p>We can do nothing to help control pollution of the environment.*</p>	
<i>Costs</i>	<p>Behaving in an environmental friendly way puts an extra burden on my life.</p> <p>It is a hassle to recycle garbage.</p> <p>I would have to make large sacrifices if I wanted to live a more sustainable lifestyle.</p>	
<i>Dependent variable</i>		
<i>Behavioral Intention</i>	<p>It is important to me that the products I use do not harm the environment.**</p> <p>I consider the potential environmental impact of my actions when making many of my decisions.**</p>	

	<p>My purchase habits are affected by my concern for the environment.**</p> <p>I am concerned about wasting the resources of our planet.**</p> <p>I would describe myself as environmentally responsible.**</p> <p>I am willing to be inconvenienced in order to take actions that are more environmentally friendly.**</p> <p>When choosing a cruise, its environmental impact is important to me.</p> <p>I refuse to travel on cruise ships which pollute the environment more than necessary.</p>	
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* Scale items adopted from Zhao et al. 2016

** Scale items adopted from Haws et al. 2014

Table 2. Conjoint analysis attributes and attribute levels

Attribute	Description	Attribute levels	Description
Price	Total price per person for a 7-day cruise including taxes and meals. Excluding drinks, tips and land excursions.	\$1,500	-
		\$3,000	-
		\$4,500	-
Service level	Range of facilities, personalization of services, design quality and attention to detail	Luxury	Comparable to five-star hotel Formal atmosphere Formal dress code
		Premium	Comparable to four-star hotel Relaxed atmosphere Casual dress code
Destination type	Type of destinations the cruise ship calls at during the cruise	Remote natural area	E.g., Arctic or Alaska
		Major cities	E.g., European capitals
FoE Environmental Impact Grade	Score of the cruise ship's environmental Impact based on sewage treatment, air pollution and water quality compliance	A - very good	Very good - low negative impact on the environment
		C - medium	Medium - some negative impact on the environment
		F - very poor	Very poor - high negative impact on the environment

Figure 1. Examples of conjoint cards

<p>Price: \$3,000</p> <p>Service level: Luxury</p> <p>Destination type: Remote natural area</p> <p>FoE Environmental Grade: A – very good</p>	<p>Price: \$1,500</p> <p>Service level: Premium</p> <p>Destination type: Major cities</p> <p>FoE Environmental Grade: F – very poor</p>
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Table 3. Determinants of the Cruise Ship Environmental Impact Grade

Sewage Treatment	Has the cruise line installed on its ships the most advanced sewage and wastewater treatment systems available instead of dumping minimally treated sewage directly into the water? In determining a cruise line’s Sewage Treatment grade, we compared the number of cruise ships in the cruise line that have installed advanced sewage treatment systems against the total number of ships in the cruise line.
Air Pollution Reduction	Has the cruise line installed scrubbers or were capable of plugging into shoreside power. Cruise ships that installed both technologies and docked in ports with shore power received an A, while ships that only installed scrubbers or only installed shore power capability but did not dock at ports with shoreside power were given a C. In addition, ships were given credit if they only utilize low sulfur fuels continuously at levels lower than required by international and U.S. law.
Water Quality Compliance	To what degree cruise ships violated water pollution standards designed to better protect the Alaskan coast. In determining the Water Quality Compliance grade for cruise ships operating in Alaska, we used the notices of violation issued to each cruise line by the Alaska Department of Environmental Conservation from 2010 to 2014 for individual cruise ships.

Source: <http://www.foe.org/cruise-report-card>

Figure 2. Gantt chart with project progress

	January	February	March	April	May	June	July	August
Interviews and initial research	■	■						
Survey development		■						
Survey pretest, translation and optimization			■					
Data collection				■				
Data analysis					■	■		
Write-up					■	■	■	■