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Developing an extended Theory of Planned Behavior model to predict consumers' intention to visit green hotels

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ABSTRACT

This study aims to develop an extended Theory of Planned Behavior (TPB) research model which includes environmental concern and perceived moral obligation to predict consumers' intention to visit green hotels. A total of 559 respondents collected in Taiwan as data input. The empirical results of structural equation modeling (SEM) indicate that consumers' environmental concern indeed exert a positive influence on their attitude toward green hotels, subjective norms, and perceived behavioral control (i.e., the antecedents of the TPB model) as well as their perceived moral obligation, which in turn influence their intention to visit green hotels as expected. The results obtained from this empirical study verify that the extended TPB model has a good explanatory power. The implications of the research findings and suggestions for the Taiwan Environmental Protection Administration and the hotel accommodation industry to increase the popularity of green hotels choice are included in the study.

1. Introduction

Environmental issues have accompanied the development of human society and also exert different impacts on human beings. For a long time, the development of human society has relied on the consumption of fossil fuels and other natural resources (Chang and Cheng, 2011). According to a 2010 report by the World Wide Fund for Nature (WWF), over the last 50 years, human needs for natural resources had doubled and gone beyond the earth's maximum loading. The report went on to point out that if humans continue to have excessive demand for natural resources without exercising control over their consumption, they may need a second earth by 2030 (WWF, 2010).

Public concern about environmental issues has been on the increase. Many consumers are aware that their buying behavior may do harm to the environment and start to search and purchase eco-friendly products, sometimes even paying more for such products (Kahn, 2007; Laroche et al., 2001; Lee et al., 2010). This environmental concern has changed into ecologically favorable behaviors and eco-friendly purchasing decisions (Paco and Rapose, 2009). Thus, green consumption has become an important force, which can protect the environment and save the earth (Kim and Choi, 2005). Ecotourism is the very embodiment of green consumption and is receiving growing international recognition as it, while improving tourism management, supports sustainable development. According to the World Tourism Organization (WTO, 2002), ecotourism can be defined as an all-nature-based form of tourism in which the tourists' main motivation is the enjoyment of wilderness and of the traditional cultures inhabiting natural areas. Budeanu (2007) indicated that if tourists choose to stay in environmentally adapted accommodation facilities, the impact associated with their stay is automatically lower.

For those lodge consumers who try to lead a greener lifestyle, they will look for hotels that follow eco-friendly practices (Han et al., 2010; Manaktola and Jauhari, 2007). The hotel accommodation industry consumes substantial quantities of energy, water, and non-durable products because of the nature of its functions, characteristics, and services, (Bohdanowicz, 2006; Manaktola and Jauhari, 2007; Yue, 2012). Consumer behavior practiced by the lodgers will have serious impacts on the environment (Bohdanowicz, 2006). The Green seal (2012) pointed out that the average hotel purchase more products in one week than one hundred families typically do in a year. Therefore, it is not uncommon that the enterprises in the tourism sector adopt pro-environmental strategies such as energy-saving, proper disposal of solid waste, etc. (Manaktola and Jauhari, 2007) to minimize the related expenditures (Erdogan and Baris, 2007) so as to maximize profit. Some previous studies also found that the tourism industry is only interested in environmental protection so long as it reduces operating and activity costs (Akis, 2001). This means that some of the

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hoteliers go green out of consideration for money savings instead of environmental protection. Though these hoteliers' may not be motivated by environmental protection at the very beginning stage, their actions indeed result in a sustainable environment.

According to the Green Hotels Association (2012), green hotels can be defined as pro-environmental lodging properties which implement different green practices such as saving water and energy, reducing the solid waste, and recycling and reusing the durable service items (e.g., bins, towels, etc.) to protect the earth we live in. In Taiwan, the Environmental Protection Administration (EPA, Executive Yuan, R.O.C.) defines green hotels as hotels which implement waste reduction programs such as reducing the frequency of changing and washing coverlets and towels, limiting the disposable toiletry supplies, and carrying out the recycle plans (EPA, 2011). Given that the hotel accommodation industry generates extensively negative impacts on the environment in daily operations (Bohdanowicz, 2005), and that green consumption beliefs have become prevalent, the concept and practices of green hotels are currently advocated in many countries. For example, in the USA, Green Seal has promoted the environmentally responsible products and practices within the hotel accommodation industry since 1995 (Shieh et al., 2012). Another example is the Beijing Olympic Committee, which was in charge of the Beijing 2008 Olympic Games. Acting on the recommendation of Unite Nations Environment Program (UNEP), it set up various pro-environmental programs. This committee contracted only with hotels which followed the Environmental Protection Guidelines for the Beijing 2008 Hotel Services (UNEP, 2012). In addition, some countries developed a rating system to assess whether or not a hotel adopting environmentally friendly practices. For example, Canada has developed the "Hotel Association of Canada-Green Leaf Eco-rating Program" since 1998. The use of eco-labels, such as the European Eco-label (European Commission, 2013) in the E.U. area and the Swan eco-label in Sweden (Budeanu, 2007) has achieved relative success in promoting accommodation facilities with high environmental performances. In Asia, Thai Hotels Association (THA) has established "The Green Leaf Program" to certify hotels according to the level of their efficiency in managing energy, the environment and other natural resources (THA, 2013).

How to conserve energy and develop renewable energy sources has become a critical issue all over the world (EPA, 2011). Taiwan's government has not only started to actively promote the "energy saving and carbon reduction" policy but also encouraged Taiwanese citizens and industries to feel responsible for conserving the natural environment jointly to ensure a sustainable society. The EPA makes efforts to foster the green consumption beliefs and to build the GreenMark verification mechanism to reinforce green consumption in the hotel accommodation industry, which is treated as an industry involved in a high consumption of substances and energies (Bohdanowicz, 2006; Manaktola and Jauhari, 2007; Yue, 2012). For example, in the past Taiwanese consumers would use disposable toothbrushes when traveling. The Environmental Protection Administration (2011) reckoned that on average the hotel industry in Taiwan provides more than 35 million disposable toothbrushes per year. The amount of carbon footprint produced by these toothbrushes is about 1575 tons. Furthermore, both lodgers and staff may be exposed to many environmental toxins from products ranging from cleaners to paint to floor coverings. These all represent opportunities to reduce the impact on the environment and improve sustainability. That is the reason why the EPA chose the hospitality industry as an important target and hoped that consumers could become environmental protection practitioners.

The hotelier, however, is not the only one who should be responsible for the serious environmental problems caused by the hotel accommodation industry; in fact, consumers are also partly to blame. Therefore, the successful development of green hotels needs the support of both hoteliers and consumers (Dalton et al., 2008; Tsai and Tsai, 2008). According to Liu et al. (2012), a consumer's preference in engaging in certain behavior is important to the environment and his/her decision as to whether or not to buy pro-environmental goods or services has direct impacts on environmental protection. Many researchers have stated that understanding the consumer's pro-environmental purchasing decision is helpful to the companies in improving their environmental performances and policy making. For example, Flamm (2009) investigated the California households' pro-environmental attitude and their vehicle ownership and suggested that the policy makers should provide high-quality alternatives to reduce households' vehicle ownership and use. To give another example, Kuminoff et al. (2010) conducted an internal meta-analysis on travelers' willingness to pay for green hotels in Virginia and they also suggested that there should be a price premium for the green lodging. Given these, this study aims to find out the consumer's perceptions of the green hotel and his/her intention to stay in it in Taiwan.

The Theory of Planned Behavior (TPB), an extension model of the Theory of Reasoned Action (Ajzen, 1985, 1991; Ajzen and Madden, 1986), is one of the most widely researched models for predicting behavioral intentions by social psychologists (Armitage and Conner, 2001; Collins and Carey, 2007; Fielding et al., 2008; Norman et al., 2007). In the domain of pro-environmental behavioral intentions, many researchers (e.g., Bamberg and Schmidt, 2001; Bamberg et al., 2003; Chen and Tung, 2010; Lam, 1999; Terry et al., 1999) also take the TPB as an important theoretical basis to understand whether consumers intend to perform environmentally friendly behavior. Some of these studies combined and/or extended the TPB with other determinant factors into their research models. For example, Chen and Tung (2010) built an extended TPB research model that incorporates moral norms and consequences of recycling to explain consumers' recycling intentions and found that this extended TPB research model could explain consumers' recycling intentions well. In the green hotel context, for example, Han and Kim (2010) and Han et al. (2010) used the TPB model to explain consumers' decision-making process of visiting green hotels. The results of the two studies show that the TPB model can powerfully predict consumers' intention to visit green hotels.

Despite the general usefulness of the TPB, several studies made efforts to improve the explanatory power of this theory by adding additional constructs within the TPB model (Kaiser and Scheuthle, 2003). Past researches suggested that personal feelings of moral obligation are needed to be considered while examining an individual's willingness to perform certain behaviors (Gorsuch and Ortberg, 1983; Pomazal and Jaccard, 1976; Schwartz and Tessler, 1972). Both Ajzen (1991) and Beck and Ajzen (1991) asserted that perceived moral obligation should take into consideration moral issues to increase the TPB's predictive power. In the pro-environmental context, Kaiser (2006) pointed out that a model predicting consumers' conservation behavioral intention may contain a moral dimension, which is positively related to consumers' conservation behavioral intention. Visiting green hotels is a behavior containing elements of personal morality and social responsibility. Thus, the main aim of this study is to use the extended TPB model which includes consumers' attitude toward green hotels, subjective norms, perceived behavioral control and perceived moral obligation to probe into consumers' intention to visit green hotels. Moreover, a number of previous studies have stressed the importance of environmental concern in predicting environmentally oriented behavior (e.g., Kim and Han, 2010; Laroche et al., 2001; Paco and Rapose, 2009). As suggested by Bamberg (2003), an individual's environmental concern is a general attitude and indirect determinant of specific behaviors. That is to say, an individual's environmental concern would have impacts on

specific behaviors through situation-specific beliefs and attitude. Since environmental concern is an important antecedent determining an individual's eco-friendly purchasing behaviors, to better understand consumers' intentions to visit green hotels their environmental concern will also be considered as an antecedent of the components of the extended TPB model. It is hoped that the results of this empirical study can not only help the government and the hospitality industry in Taiwan understand consumers' view of green hotels but also provide some constructive suggestions to them.

2. Research framework and hypotheses development

The Theory of Planned Behavior model, as proposed by Ajzen in 1991, is derived from the Theory of Reasoned Action developed by Fishbein and Ajzen (1975). According to the TPB model, an individual's performance of a specific behavior is determined by his/her behavioral intention to perform the behavior. This behavioral intention is in turn determined by three factors related to the behavior: the person's attitude, subjective norms, and perceived behavioral control. In view of the fact that perceived moral obligation as an indispensable construct of pro-environmental behavior (e.g., Kaiser, 2006), this study incorporated perceived moral obligation into the TPB model to form the extended TPB model. As for the antecedent of the components of the extended TPB model, this study adopted Bamberg's (2003) view that environmental concern would exert some influences on consumers' pro-environmental behavioral intentions through situation-specific beliefs while believing that environmental concern would have some direct impacts on the components of the extended TPB model. The research framework of this study is depicted in Fig. 1.

2.1. The components of the extended Theory of Planned Behavior

The Theory of Planned Behavior model, as proposed by Ajzen in 1991 claims that attitude, subjective norms, and perceived behavioral control jointly influence a person's behavioral intention. The main basic assumption of the TPB model is that most behavior people engage in is under their own control and is rational. Moreover, the decision factor in a person's actual behavior is the tendency to behave, that is, behavioral intention. In addition, a person's personality, age, occupation, gender, etc. have no direct impact on his/her behavioral intention. In fact, these variables can only affect behavioral intention indirectly through attitude and subjective norms (Ajzen, 1991).

Attitude is defined as the psychological emotion and the positive or negative evaluation that arise when an individual engages in certain behaviors (Eagly and Chaiken, 1993). In the TPB model, attitude is a person's positive or negative evaluation of performing a specific behavior (Ajzen, 1991). According to Taylor and Todd (1995), when individuals have a more positive attitude, then his/her behavioral intention will be more positive and vice versa. Ajzen (1991) defined subjective norms as the degree of social pressure felt by the person with regard to the behavior. In other words, subjective norms are the perceived opinions of significant others who are close/important to an individual and who influence his/her decision-making. It also means an individual's feelings of social pressure from other people or groups (Ajzen, 1991). When examining the relationship between people's subjective norms and behavioral intention, most past researches confirmed that subjective norms positively affect behavioral intention (Han et al., 2010; Taylor and Todd, 1995; Tonglet et al., 2004). That is, the more positive subjective norms people have, the stronger their intention to act. Aside from an individual's attitude and subjective norms, perceived behavioral control is needed to be considered in the TPB model. Perceived behavioral control refers to an individual's perception of the possible difficulties when performing a specific behavior (Ajzen, 1991). The external and irrational factors such as time, money, chance, etc. may not be under the control of individuals. Therefore, the more individuals are able to have control over the opportunities and resources to perform a specific behavior, the more likely such a behavior will be engaged in. The above-mentioned three factors (e.g., attitude, subjective norm, and perceived behavioral control) are used in the TPB model to predict an individual's behavioral intentions.

Perceived moral obligation implies that someone feels responsible for performing a specific behavior morally when he/she faces with an ethical situation (Beck and Ajzen, 1991; Leonard et al., 2004). Manstead (2000) defined moral obligation as a personal norm by which an individual demonstrates his/her willingness to perform a particular behavior based on his/her personal responsibility or duty. Past researches suggested that a person's moral considerations play a prominent role in predicting intention when an individual's self-interest is at odds with others' (Kurland, 1995; Kaiser and Scheuthle, 2003). In some studies, including a moral factor as a predictor of behaviors has significantly improved the prediction of intentions – for example, carrying out dishonest actions (Beck and Ajzen, 1991), committing driving violations (Parker et al., 1992), and shoplifting (Tonglet, 2002). Based on the above findings, it seems that a person's perceived moral

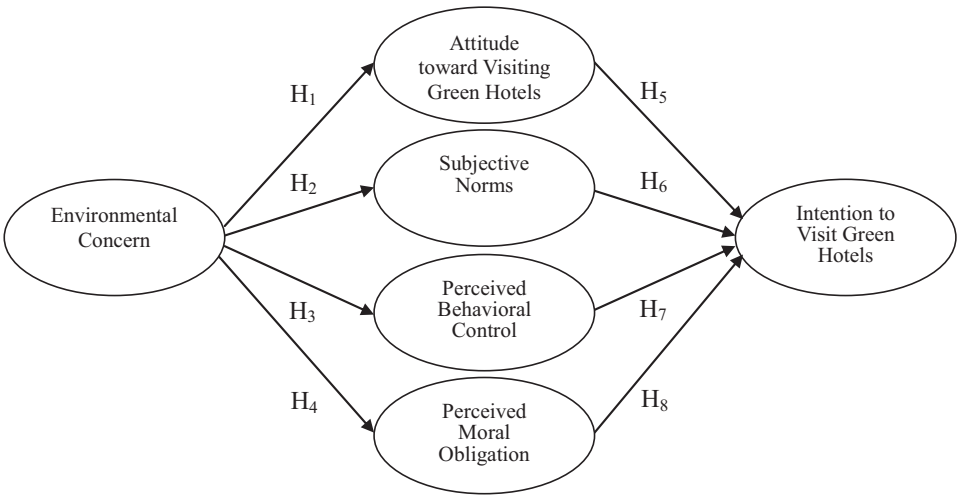

Fig. 1. Research framework of consumers' visit intention of green hotels.

obligation has a crucial impact on moral intention. Furthermore, Kurland (1995) examined the agents' intentions to release certain information to their clients and found that the TPB model with the perceived moral obligation included can explain more variance in the agents' intentions than one without. Thus, in addition to the three components in the TPB model, an individual's perceived moral obligation should also be included in the model.

2.2. The antecedents and consequences of the extended TPB model

Environmental concern is a general attitude toward environmental protection (Dunlap and Van Liere, 1978; Weigel and Weigel, 1978), which is an important determinant of making people change their behaviors to become more environmental friendly (e.g., Bamberg, 2003; Dunlap and Van Liere, 1978; Fransson and Gørling, 1999; Hansla et al., 2008; Stern, 1992; Weigel and Weigel, 1978). As more and more environmental problems keep cropping up, social scientists started to care about people's motivation for performing a specific behavior related to our environment (Maloney and Ward, 1973) and to try to convince people to engage in the pro-environmental behavior. Ajzen and Fishbein (1980) proposed that general attitude like environmental concern does not affect a specific behavior directly but indirectly. They suggested that an individual's attitude, subjective norm, and behavioral control are determined by his/her general attitude through situation-specific behavioral, normative, and control beliefs.

When conducting a meta-analysis about the correlation between environmental concern and behavior, Hines et al. (1987) and Eckes and Six (1994) found the average correlation of environmental concern and behavior was 0.35 and 0.26, respectively. The above findings seem to indicate that environmental concern does not bear very highly on behavior. One is thus led to suspect that environmental concern might have impacts on behavior through some other variables. In Bamberg's (2003) research into college students' behavior as exhibited in their request for a brochure on green electricity products, he found that environmental concern has direct effects not only on the perception of the normative, behavioral, and control beliefs but also on subjective norms and perceived behavioral control.

Green hotels are a product originating from the concept of environmental protection and visiting them is a specific behavior of environmental protection. Previous studies indicate that for those consumers who concern themselves with the environment will have favorable attitudes toward eco-friendly products or services including visiting green hotels (e.g., Aman et al., 2012; Han et al., 2009; Kim and Han, 2010). It is believed that consumers' attitude, subject norms, perceived behavioral control, and perceived moral obligation to visit green hotels are affected by his/her environmental concern. Therefore, we proposed environmental concern as the antecedent of the components of the extended TPB model and formulated the following hypotheses:

H_1. If an individual has a more positive environmental concern, then he or she will be more likely to have a positive attitude toward visiting green hotels.

H_2. If an individual has a more positive environmental concern, then he or she will be more likely to have positive subjective norms of visiting green hotels.

H_3. If an individual has a more positive environmental concern, then he or she will be more likely to have positive perceived behavioral control over visiting green hotels.

H_4. If an individual has a more positive environmental concern, then he or she will be more likely to have a positive perceived moral obligation to visit green hotels.

According to Ajzen (1991), an individual's positive attitude toward a certain behavior strengthens his/her intention to perform the behavior. Han et al. (2010) indicate that customers' intention to stay at green hotels is positively associated with their evaluation of the consequence of the green hotel stay. In addition, if people who are important to consumers think they should stay at green hotels, then they will have more intention to visit green hotels because of the higher degree of social pressure. When it comes to the consumer's perceived behavioral control of visiting green hotels, Han et al. (2010) and Han and Kim (2010) found that there is a positive relationship between the consumer's perceived behavioral control and his/her visit intention to stay in green hotels. To visit a green hotel is a kind of pro-environmental and pro-social behavior containing elements of personal morality and social responsibility. It is assumed that if the consumer has a higher degree of the perceived moral obligation, then he/she is more likely to have the intention to visit green hotels, and vice versa. Based on the literature review given above, the hypotheses related to the four antecedents of the extended TPB model in this study are proposed as follows:

H_5. If an individual has a more positive attitude toward green hotels, then he or she will be more likely to have the intention to visit them.

H_6. If an individual has a more positive subjective norm toward green hotels, then he or she will be more likely to have the intention to visit them.

H_7. If an individual perceives more behavioral control of green hotels, then he or she will be more likely to have the intention to visit them.

H_8. If an individual perceives more moral obligation to stay at green hotels, then he or she will be more likely to have the intention to visit them.

3. Methodology

3.1. Participants and sampling design

Taiwan has a population of over 23 million. According to the Taiwan Network Information Center (TWNIC, 2013), over 15 million used the Internet at the end of 2010. In other words, over 65% are Internet users in Taiwan. Of these Internet users, over 10 million used the Internet more frequently than the average person (Forseeing Innovatiotive New Digiservices of the Institute for Information Industry; FIND, 2010). Though non-users may not be included in this survey, with Taiwan's Internet users amounting to a percentage as high as 65% of its population, the online survey method is appropriate in this study.

This study posted the research questionnaire in Chinese on the electronic collection website http://www.my3q.com/, from 24 September to 21 October, 2010. The free online survey questionnaire collection website is very popular among undergraduate and graduate students in Taiwan and frequently serves as a first resort whenever they have to collect primary survey data related to Internet users. In carrying out their research programs, they often offer some gifts as incentives to the respondents so as to increase the response rate. The potential participants can surf the website for winning the prizes or the investigators can invite them to complete questionnaires on this website by e-mails. Some lodging coupons were provided as a gift by lottery for the Internet surfers who participated in the survey. There were in total 559 valid surveys returned. Of the 559 participants, 150 had heard about green hotels but the rest had not; 285 were men and 274 were women. Most of them were aged between 20 and 29 (over 87%), and about 60% were students. Since the Taiwan Network Information Center (TWNIC) provided only gender percentage for

Table 1
Sample data.

Items	Classification	Sample amounts	Percentage (%)
Gender	Male	285	51.0
	Female	274	49.0
Age	Under 20	32	5.7
	20–29	488	87.3
	30–39	34	6.1
	40 and over	5	0.9
Highest level of education	Senior high school/vocational high school	12	2.1
	University/college	389	69.6
	Graduate school	158	28.3
Occupation	Student	336	60.1
	Employee	186	33.3
	Unemployed/between job	37	6.6
Heard about green hotels	Yes	150	26.8
	No	409	73.2
Total		559	100

the Internet usage population (male = 50.5%, female = 49.5%), a chi-square test was therefore conducted to assure the agency of sample representativeness with the results indicating that the distribution of gender matched the distribution in the population ($\chi^2 = 0.052$; $p = 0.819$). According to a report by the Tourism Bureau, Ministry Of Transportation and Communication, Republic of China, Taiwanese citizens aged between 20 and 29 are the main domestic travelers in the past ten years. Moreover, the student group is also one of the main domestic travelers (Tourism Bureau, 2011). That is to say, both Taiwanese citizens aged between 20 and 29 and the student group usually has more chances to travel and to stay in hotels. Table 1 summarizes the demographic characteristics of the sample.

3.2. Measures

For the present study, the measurement scales for the studied constructs and the indicators were validated in previous studies. We used the original questionnaire items developed by Beck and Ajzen (1991) for the TPB model but slightly modified by Han et al. (2010) for predicting consumers' intention to visit green hotels. Except for the items of the attitude toward visiting green hotels, which were assessed by a 7-point semantic differential scale, those of the studied constructs were measured by a 7-point Likert scale from "strongly disagree" to "strongly agree".

A total of eight measurement indicators were used to measure environmental concern in this study. Five of them were developed by Kim and Choi (2005) and the remaining was developed by Fujii (2006). Perceived moral obligation was assessed with the following two items by Lam (1999) with slight modification: "Everybody is obligated to treasure nature resources" and "Everybody should save nature resources because they are limited." The detailed scale items of the studied constructs formulated for this study are provided in Appendix.

4. Data analysis and results

The application of structural equation modeling (SEM) not only can estimate the unknown coefficients of the causal relationship among latent variables but also can specify how the hypothetical constructs are indicated by observed variables (Jöreskog and Sörbom, 1998). We followed the two-stage procedure proposed by Anderson and Gerbing (1988) to conduct SEM data analysis and to test whether the collected data fit well with the proposed theoretical model by using the AMOS 6.0 and SPSS 14.0 software packages. First, confirmatory factor analysis (CFA) was conducted to test for the quality and adequacy of the measurement model (Anderson and Gerbing, 1988) in an attempt to ensure the reliability, convergent validity, and discriminant validity of the studied constructs. Second, in order to understand the causal relationships among the latent variables, SEM was adopted to verify the hypotheses presented in this study.

4.1. Testing of the measurement model

Table 2 shows the descriptive statistics and the correlation coefficient matrix of the constructs postulated for this study. Before testing the causality between the constructs in the proposed framework, the coded data were analyzed by conducting CFA to ensure the reliability and validity of the measurement model. The analytical technique of structural equation modeling (SEM) allows a stepwise strategy to progressively improve the goodness-of-fit indices of the model (Chau, 1997). Based on the modification indices and expected parameter change statistics, the fit of the analytical model can be slightly improved by allowing some pairs of errors to correlate step by step till all goodness-of-fit measures of the focal model achieve the recommended values (Schaufeli et al., 2002). After repeated modification, there was one indicator of environmental concern deleted as its factor loading is smaller than 0.7 (Hair et al., 1998). The results of CFA showed that the goodness-of-fit indices of the measurement model are as follows: the chi-square value for this measurement model was 778.340 with 253 degrees of freedom. The chi-square/chi-square d.f. equaled 3.07 and achieved Marsh and Hocevar's (1985) standard that the ratio of chi-square to the degree of freedom ratios should be between 2 and 5; besides, GFI = 0.89, AGFI = 0.86, CFI = 0.96, NFI = 0.94, RMSEA = 0.06, and RMR = 0.06. According to Marcoulides and Schumacker (1996), the goodness-of-fit model and the overall statistics both achieved the standards of model fitting and could not be further improved.

To test the internal consistency of the indicators of each studied construct, the most common method is to compute the coefficient alpha of a given construct. According to Nunnally (1978), a Cronbach's α value of greater than 0.7 implies that internal consistency of the measurement scales is high (Cronbach, 1951). The Cronbach's α value of the studied constructs were all greater than 0.7. Hence, there was internal consistency for the six measurement constructs under study.

Construct validity refers to the level of the measurement scale that can really reflect the constructs under investigation. To examine it, we test both convergent and discriminant validity. Convergent validity refers to the correlation between two or more scores on the tests which are designed to assess the same construct. The Average Variance Extracted (AVE) of constructs is commonly used to examine the convergent validity of the measurement scales. When AVEs are greater than 0.5, the convergent validity of the studied constructs is achieved (Fornell and Larcker, 1981). Table 3 reveals that all AVEs are greater than 0.5. Therefore,

Table 2
Descriptive statistics and the correlation coefficients matrix.

Constructs	*M*	*SD*	1	2	3	4	5	6
Environmental concern	6.18	0.85	1.00					
Attitude toward visiting green hotels	5.13	1.03	0.32	1.00				
Subjective norms	4.28	1.14	0.17	0.35	1.00			
Perceived behavioral control	5.12	1.02	0.29	0.34	0.36	1.00		
Perceived moral obligation	6.31	1.06	0.51	0.33	0.21	0.37	1.00	
Intention to visit green hotels	5.14	1.05	0.40	0.50	0.52	0.57	0.37	1.00

Table 3
Validity of the measurement model.

Construct	Indicator	Cronbach's alpha value	Average Variance Extracted	Standardized factor loadings	*t*-Value
Environmental concern	EC1 (deleted)				
	EC2	0.95	0.86	0.77	21.43***
	EC3			0.84	24.23***
	EC4			0.70	18.61***
	EC5			0.84	24.50***
	EC6			0.96	31.07***
	EC7			0.94	29.73***
	EC8			0.92	28.65***
Attitude toward visiting green hotels	ATT1	0.94	0.67	0.79	21.95***
	ATT2			0.81	22.79***
	ATT3			0.92	27.75***
	ATT4			0.84	24.23***
	ATT5			0.85	24.54***
	ATT6			0.77	20.89***
	ATT7			0.74	19.80***
Subjective norms	SN1	0.95	0.87	0.95	29.91***
	SN2			0.93	29.04***
	SN3			0.91	27.70***
Perceived behavioral control	PBC1	0.80	0.57	0.74	18.63***
	PBC2			0.82	20.92***
	PBC3			0.71	17.27***
Perceived moral obligation	PMO1	0.92	0.92	0.91	25.39***
	PMO2			0.93	26.20***
Intention to visit green hotels	VI1	0.89	0.74	0.82	22.97***
	VI2			0.85	24.45***
	VI3			0.90	26.30***

Note: * $p < 0.1$.
** $p < 0.05$.
*** $p < 0.01$.

the latent variables of this study have good convergent validity. Discriminant validity is the degree to which items differentiate between constructs. A comparison of the AVE with square multiple correlations show the AVE exceeding correlations in all cases, indicating that there is discriminant validity for each individual construct (Fornell and Larcker, 1981). In other words, the two constructs are viewed as distinct (but correlated) factors. In this study, the AVEs of the correlated latent variables were all greater than the square of the correlation between the latent variables. Therefore, the constructs in this study achieved discriminant validity.

4.2. Testing of the structural model

Path analysis with AMOS 6.0 was used to estimate the path coefficients of the relationships between the constructs in the research model. The overall goodness-of-fit indices of the structural model are as follows: χ^2 (260) = 988.88, chi-square/degree of freedom (= 988.88/260) = 3.80, GFI = 0.87, AGFI = 0.83, CFI = 0.94, NFI = 0.93, and RMSEA = 0.07. The data shows a good fit with the hypothesized structural model. Fig. 2 shows the path diagram with standardized coefficients and the corresponding *t*-values. The results of the structural equation model reveal that the path coefficients from the consumer's environmental concern to his/her attitude toward visiting green hotels, subjective norms, perceived behavioral control, and perceived moral obligation are all statistically significant ($b_{H1} = 0.32$, $p < 0.001$, $t = 7.06$; $b_{H2} = 0.15$, $p < 0.001$, $t = 3.49$; $b_{H3} = 0.35$, $p < 0.001$, $t = 7.27$; $b_{H4} = 0.55$, $p < 0.001$, $t = 11.93$) and in the expected directions. In other words, an individual's attitude toward visiting green hotels, subjective norms, perceived behavioral control, and perceived moral obligation are influenced by his/her environmental concern. Moreover, the three determinants of the original TPB model and an individual's perceived moral obligation are all statistically significant ($b_{H5} = 0.32$, $p < 0.001$, $t = 7.42$; $b_{H6} = 0.34$, $p < 0.001$, $t = 8.59$; $b_{H7} = 0.44$, $p < 0.001$, $t = 8.19$; $b_{H8} = 0.13$, $p < 0.01$, $t = 3.11$) and in the expected directions. The results indicate that an individual's intention to visit green hotels is determined by his/her attitude toward visiting green hotels, subjective norms, perceived behavioral control, and perceived moral obligation. The above results demonstrate that all the hypotheses in the research framework are supported.

According to Baron and Kenny (1986, p. 1173), "the mediator function of a third variable. . .represents the generative mechanism through which the focal independent variable is able to influence the dependent variable of interest". The mediation effect analysis offers an explanation for how, or why, two variables are related. Due to the indirect effects and mediated relations are critical to an explanation of SEM (James, 2008; Kenny, 2008). In order to have a better comprehension of a sequence of effects

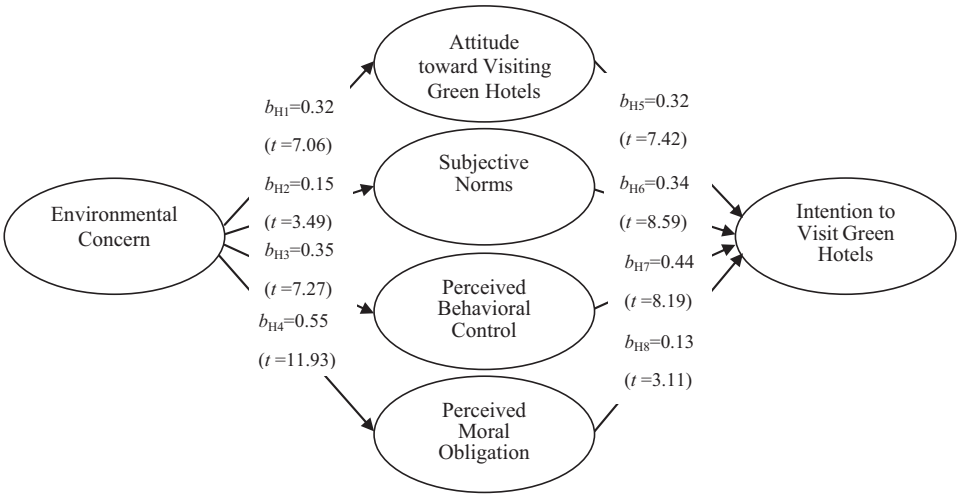

Fig. 2. The results of path analysis of consumers' visit intention of green hotels.

that leads to something, mediation effect analysis is important (Kenny, 2008). For testing the significance of the mediation effect, Sobel's (1982) z-test is one of the most well-known methods. According to Iacobucci et al. (2007), if both the z and the direct path are significant, then the mediation is "partial". The Sobel test results obtained reveal that an individual's environmental concern has a significant indirect effect on his/her intention to visit green hotels via the four components of the extended TPB model (Sobel $Z_{\text{Attitude toward Visiting Green Hotels}} = 4.93$, $p < 0.01$; $Z_{\text{Subjective Norms}} = 3.20$, $p < 0.01$; $Z_{\text{Perceived Behavioral Control}} = 5.26$, $p < 0.01$; $Z_{\text{Perceived Moral Obligation}} = 1.37$, $p < 0.10$). The results from Sobel's (1982) z-tests in this study indicate that all the four components of the extended TPB model exert their partial mediating effects between environmental concern and consumers' intentions to visit green hotels.

5. Conclusions and implications

This study adopts the TPB model proposed by Ajzen (1991) to investigate the consumer's intention to visit green hotels in Taiwan. The empirical results show that the consumer's attitude toward green hotels, subjective norms, and perceived behavioral control (i.e., the antecedents of the TPB model) indeed exert positive influences on the consumer's intention to visit green hotels as expected. These results are consistent with those yielded by previous studies (Han and Kim, 2010, Han et al., 2010). Moreover, in line with the findings reported in Bamberg's (2003) study, which examined consumers' intention to acquire information about green electricity products, the results of this empirical study indicate that the consumer's environmental concern is positively related to his/her attitude toward visiting green hotels. Moreover, the consumer's perceived moral obligation also has a positive impact on his/her intention to visit green hotels. The results are in agreement with those of the past researches using the TPB model to investigate consumers' intention to conserve water (Lam, 1999) and Haines et al.'s (2008) research on university students' moral intention. Furthermore, the results of the mediation analysis reveal that the consumer's environmental concern can exert indirect impact on his/her intention to visit green hotels through his/her attitude toward green hotels, subjective norms, perceived behavioral control, and perceived moral obligation.

In summary, our research findings make some theoretical contributions to the literature and provide insight into consumers' intention to visit green hotels. Our findings validate the claim that, if an individual's attitude and subjective norms toward visiting green hotels are positive and he or she perceives more behavioral control and moral obligation to patronize green hotels, then he/she will be more likely to have the intention to visit green hotels. The results also confirm that the TPB model is a research framework useful for explaining the consumer's intention to visit green hotels. In addition, our findings also verify that the consumer's attitude toward visiting green hotels is positively determined by his/her environmental concern. This means that Taiwan's consumers will form a more favorable attitude toward visiting green hotels if they have a high level of environmental concern.

The findings from this study have several implications for the policy development and program implementation bearing on green hotels. As the results from data analysis show, consumers will have a more positive attitude toward visiting green hotels when they are concerned about the environment. Therefore, the government must pay attention to promoting the concept of environment protection in order to heighten the public's environment concern. In doing so, the government can focus on public communication or in-school education about the environment issue. For example, the Environmental Protection Administration can make documentary films to convince consumers of the importance and confront them with the practical problems of the environment issue as well as to provide some relevant suggestions and guidelines for them to follow. As long as a consumer perceives a higher degree of environmental concern, he/she will take a more positive attitude toward visiting green hotels and behave accordingly.

A variety of communication programs such as media advertisements and sponsorship schemes can not only arouse consumers' environmental concern but also foster their awareness of the advantages of visiting green hotels. According to our findings, consumers will be likely to stay at green hotels when they have a more positive attitude toward visiting such hotels, subjective norms, perceived behavioral control, and perceived moral obligation to opt for them. As long as the consumers recognize the fact that visiting green hotels is really beneficial to the environment, their attitude, subjective norms, and perceived behavioral control of visiting such hotels could possibly be improved. Moreover, in order to improve the consumer's perceived moral obligation, the government and educators should let everyone know that he/she has the moral obligation to preserve the only living environment we have. They should not only adopt some eco-friendly programs on their own but also encourage others around them to join their efforts. After all, to maintain the quality of the human living environment is everyone's obligation in the world.

There is still one more thing worth mentioning. Our empirical study reveals that consumers' perceived behavioral control is the most indispensible factor in the TPB model ($b_{H7} = 0.44$). This implies that consumers' perception of the ready availability of visiting green hotels is one of the important determinants of his/her intention to visit green hotels. If green hotels are considered to be easily accessible to a consumer, then he/she will have more intention to opt for them. Therefore, whether there are plentiful green hotels for travelers to choose from become a major issue. However, so far there have been few green hotels in Taiwan. The government's communication and incentive programs are indispensable when hoteliers are encouraged to go green and to apply for the GreenMark. Of course, the agencies concerned should inculcate hoteliers with the environmental imperative and financial traction to go green. At the same time, they should also educate consumers to recognize the GreenMark and opt for the mark-bearers when the occasion arises.

Many factors contribute to inactivity among green consumers, and insufficient information is the most important reason. The hotel accommodation industry should effectively convey their messages that explain the goals of their environmental protection policies to make the consumers understand the ideas behind operating green hotels so as to build up the reputation and corporate profile of green hotels. The hotel management can remind consumers of their social responsibilities to save the environment rather than have in mind only their own personal needs and wants (Goldstein et al., 2007). For example, it can display the tent cards in a hotel's bathroom to inform lodgers about the impact of the daily change of towels and linens on the environments (Li and Wei, 2013). However, the recognition of green hotels among Taiwanese consumers being still in the early stage, it is recommended that the hotel accommodation industry can implement discounts for not requesting new towels daily, or for not using hotel-provided hygiene and sanitation products (Tsai and Tsai, 2008). Hopefully, with the various ways of information dissemination and education devoted by the government and the hotel accommodation industry as mentioned above, consumers' raised concerns about the environment will eventually lead them to visit green hotels.

The main limitation of this study is to examine consumers' intentions to visit green hotels based on the extended TPB model instead of their actual visiting behavior. Previous studies indicate that the behavioral intention models are robust in numerous behavioral domains (Ajzen, 2001; Eagly and Chaiken, 1993), but caution must be kept in mind that a consumer's actual behavior is not always equivalent to his/her attitudes; not even stated behavioral intentions (Belk, 1985). There are several suggestion for further research. It is suggested that researchers further investigate consumers' actual behavior by observing and/or interviewing in their future studies. In addition, future researches can take hoteliers as a sample to examine their viewpoints of being green hotels and also their perspectives on public policy of green hotels. Moreover, the lodging expense of the green hotels should be taken into account in the future studies to gain a more comprehensive picture of the public opinion of green hotels. Furthermore, future studies should take into account the frequency of past behavior into the analytical model when green hotels become more popular in Taiwan. Finally, future studies could test the impact of alternative communication interventions (e.g., environmental protection advertisements, education, etc.) on consumers' intentions to visit green hotels.

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Appendix.

Construct	Indicators	Source
Environmental concern		
EC1	**I am extremely worried about the state of the world's environment and what it will mean for my future**	Kim and Choi (2005)
EC2	Mankind is severely abusing the environment	
EC3	When humans interfere with nature it often produces disastrous consequences	
EC4	The balance of nature is very delicate and easily upset	
EC5	Humans must live in harmony with nature in order to survive	Fujii (2006)
EC6	I think environmental problems are very important	
EC7	I think environmental problems cannot be ignored	
EC8	I think we should care about environmental problems	
Attitude toward visiting green hotels		
ATT1	For me, staying at a green hotel when traveling is Extremely bad (1)/Extremely good (7)	Han et al. (2010)
ATT2	For me, staying at a green hotel when traveling is Extremely undesirable (1)/Extremely desirable (7)	
ATT3	For me, staying at a green hotel when traveling is Extremely unpleasant (1)/Extremely pleasant (7)	
ATT4	For me, staying at a green hotel when traveling is Extremely foolish (1)/Extremely wise (7)	
ATT5	For me, staying at a green hotel when traveling is Extremely unfavorable (1)/Extremely favorable (7)	
ATT6	For me, staying at a green hotel when traveling is Extremely unenjoyable (1)/Extremely enjoyable (7)	
ATT7	For me, staying at a green hotel when traveling is Extremely negative (1)/Extremely positive (7)	
Subjective norms		
SN1	Most people who are important to me think I should stay at a green hotel when traveling	Han et al. (2010)
SN2	Most people who are important to me would want me to stay at a green hotel when traveling	
SN3	People whose opinions I value would prefer that I stay at a green hotel when traveling	
Perceived behavioral control		
PBC1	Whether or not I stay at a green hotel when traveling is completely up to me	Han et al. (2010)
PBC2	I am confident that if I want, I can stay at a green hotel when traveling	
PBC3	I have resources, time, and opportunities to stay at a green hotel when traveling	
Perceived moral obligation		
MN1	Everybody is obligated to treasure natural resources	Lam (1999)
MN2	Everybody should save natural resources because they are limited	
Intention to visit green hotels		
IN1	I am willing to stay at a green hotel when traveling	Han et al. (2010)
IN2	I plan to stay at a green hotel when traveling	
IN3	I will make an effort to stay at a green hotel when traveling	

Note: The bold item was deleted in the subsequent analysis.

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