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ENVIRONMENTAL CONCERN, GREEN PURCHASE INTENTION AND CUSTOMERS' PERCEIVED GREEN BUILDING DESIGN

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ABSTRACT

Past research suggests a number of behavioural factors positively affect customers' decision on staying in a green hotel. The effect of environmental attitude or environmental concern on green purchase decision is widely researched, but there are also research that reveals a certain degree of inconsistency of the relationship between consumer attitude and purchase decision. This paper puts this concern in the context of the hospitality industry. It investigates the effects of customers' environmental concern (EC) on their intention of staying (IoS) in a green hotel and the moderating effect that the customers' perceived importance of green building design (PIGBD) may have on their IoS in a green hotel. A measurement scale of PIBD is developed based on a local green building certification scheme (HKBEAM PLUS) in Hong Kong and a survey of 166 hotel customers in Hong Kong was conducted. The regression-based statistical results show that both EC and PIGBD have a positive effect on IoS, and PIBA appears to be a moderator on the relationship between EC and IoS. Other findings include that customers of different age / gender / education groups do not differ significantly in their environmental concern. The findings of this study give useful implication for green hotel development and management in the future. We believe that hotel customers' understanding of green building can be enhanced through a hotel marketing strategy and a comprehensive integration of green attributes in building design.

Keywords: Green hotel, Environmental concern, Green building design, Green purchase, Moderator

INTRODUCTION

Hotels consume resources intensively due to its service-driven nature. Substantial quantities of energy, water and non-durable products are consumed in the service delivery process (Chen and Tung, 2014). Hong Kong is a famous tourism city. In 2018, the overnight arrival visitors in Hong Kong have reached 29.26 million, rising by 4.9% comparing with that in 2017 (HKTC, 2019). The hotel industry in Hong Kong has been active due to its high hotel room occupancy rate, 85% in average, in the past 10 years (Colliers, 2018). As the fastest growing hotel market in Asia in 2018, Hong Kong hotel industry has well recognised its responsibility to address sustainability as tourism activities generate a massive amount of energy consumption and pollutants (Chan and Lam, 2002). In order to facilitate sustainability and meet the needs of customers, hotels in Hong Kong are committed in incorporating green design and adopting green practice to reduce energy and resource consumption.

Customers with higher level of environment concern or green attitude are proved to have impact on customers' preference of green products consumption. This stream of studies focuses on customers' behaviour and investigates the factors that lead to green purchase. Understanding customers' intention to purchase green products is crucial for an organisation to develop its marketing strategies. Studies also show that the green attributes of products are one of the important factors that affect consumers' purchase

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intention. This study shed lights on hotel customers' intention of staying (IoS) in a green hotel. A survey is conducted to examine the relationships among customers' environmental concern (EC), perceived importance of green building design (PIBD) and intention of staying in a green hotel. The findings reveal that customers' environmental concern (EC) positively influences on their intention of staying (IoS) in a green hotel and customers' perceived importance of green building design (PIBD) has moderating effect on the relationship between EC and IoS. Other findings include that customers of different age / gender / education groups do not differ significantly in their environmental concern.

THEORY AND HYPOTHESIS

Customers' environmental concern and green purchase

An increasing numbers of individuals are aware of environmental issues and realise that natural resources will be exhausted one day (Han et al., 2011). Environmental concern is regarded to be an indicator that reflects an individual's awareness or attitudes about environmental issues. According to Schwartz's (1977) norm activation theory, environmental concern induces "a sense of responsibility to perform a behaviour, which in turn activates a personal norm or a moral obligation to perform the behavior" (Fujii, 2006). In other words, environmental concern would activate people's norm to behavior pro-environmental behavior or pro-environmental behavior intent. Also, environmental concern is found to relate to one's fundamental beliefs or values (Schultz, 2000; Stern et al., 1995). The attitudes are gradually formed and matured, and become a strong motivator to compel them to commit in environmentally friendly behavior. An individual's concern level regarding environmental issues is proved to be a useful predictor of environmentally conscious behaviour (Kim and Choi, 2005), such as recycling behavior and purchase behavior. Consumers with a stronger concern for the environment are more likely to purchase green products than those who are less concerned about environmental issues.

Green purchase intention is defined as the likelihood that a consumer would buy a particular product due to his or her environmental needs (Chen and Chang, 2012). Suggested by the theory of consumer demand (Lancaster, 1966), consumers make decision about a particular product or service based on the attributes of a product or service as a whole (Millar and Baloglu, 2011). However, other studies suggest that even though individuals understand the seriousness of environmental issues, their environmental attitudes do not necessarily lead to green purchasing). In the hospitality industry, the number of studies regarding consumers' green purchase behavior has increased. Chen and Tung (2014) test a theoretical framework developed based on theory of planned behaviour (TPB). Part of the theoretical model forms an awareness-attitude-behaviour intension relationship, which means consumers' environmental concern exert a positive influence on their attitude towards green hotels and in turn influences their intention to visit green hotels.

In this study, we hypothesise that hotel customers of different age, gender and with different education background differ in their environmental concern (H1 – H3). Also, hotel customers' environmental concern positively affects their intension of staying in green hotels (H4).

H1: Customers of different age differ in environmental concern

H2: Customers of different gender differ in environmental concern

H3: Customers with different education background differ in environmental concern

H4: Customers' environmental concern positively affects their intention to stay in green hotels

Perceived importance of building design and Intention of staying in a green hotel

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 (Chen, 2014). Green building design contributes significantly in hotels' green practice. A building feature or device with green attributes helps to reduce energy consumption, water wastage and avoid pollutant release into air, water or soil. According to Young et al., (2010), a product's green attributes is one of the major motives that influence customers' green purchase behavior. Gleim et al., (2013) indicates that

customers' perception of poor product is an important barrier that affecting their green purchase decisions. Products with favourable functions and ethical attributes and high quality have positive influences on customers' purchasing behavior (Joshi and Rahman, 2015). In this study, customers' perceived importance of green attributes of building is considered to be a factor that affect their intention to stay in a green hotel.

H5: The perceived importance of green building design (PIGBD) positively affects intention of staying in green hotels

The moderating role of PIGBD

In the marketing discipline, many studies indicate that there is significant relationship between environment concern or green attitude and green purchase intention while some studies suggest otherwise conclusion. The inconsistency between attitude and purchase intension towards green products or services has triggered further studies. A number of factors are identified to have moderating effects on the attitude-intension inconsistency of green purchase behavior, including price, social influence, availability of the product, etc.

Since previous studies have proved the association between EC and IoS, steps are taken to encourage customers to commit to green purchase. However, studies that focus on customers' consumption patterns also suggest that knowledge of the product also affect consumers' green purchase behaviour (Joshi and Rahman, 2015). Also, situation factors would undermine customers' responsible purchasing and lessen the influence of a positive environment attitude (Joshi and Rahman, 2015). Forkink (2010) and Luchs et al., (2010) suggest that consumers express their environmental concern according to the characteristics of products, such as the accuracy of green product claims, information provided on the products and its benefits to customers. In this study, we suggest that perceived importance of green attributes

of building on a certain extent reflect a customers' knowledge of green building. With a high level of environmental concern, a customer is assumed to pay more attention to

of products. Thus, a customer's perceived importance of green attributes would affect the relationship between environmental concern and intention to stay in a green hotel. In this study, we hypothesise that if a customer regards green building attributes to be more important, the relationship between environmental concern and intention to stay in a green hotel is stronger.

H6: Perceived importance of green building design (PIGBD) moderates the direct effects of customers' environmental on intention of staying (IoS) in green hotels

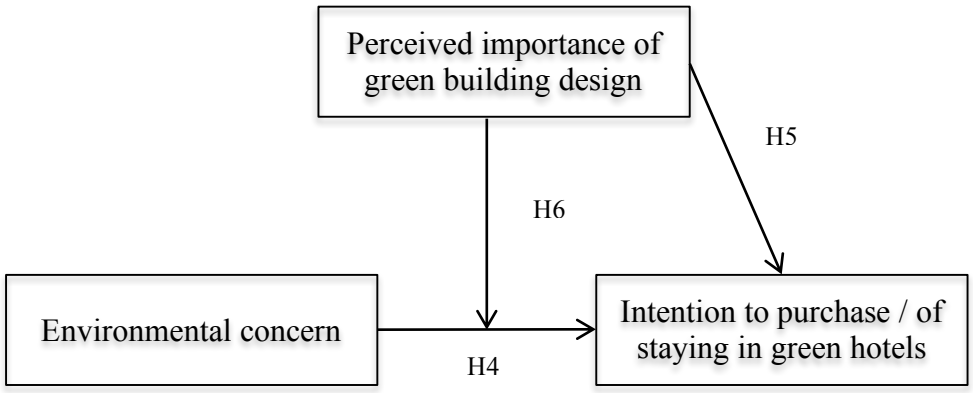

Figure 1. Proposed moderation model

METHODOLOGY

Design of the questionnaire

The questionnaire contains three parts. Part 1 includes questions to collect participants' demographic information. Table 1 lists the demographic information of the respondents. Part 2 includes 8 statements, each describe peoples' opinions towards environment. They were asked to rate their level of agreement based on a 7-point Likert scale (1 = strongly agree; 7 = strongly disagree). We adopt Chen and Tung (2014)'s measurement instrument on environmental concern. The eight questions are used to measure individual's environmental concern level.

Part 3 includes 10 statements describing the green attributes of a building and respondents were asked to rate their perceived importance regarding each green building attribute. In the 7-point Likert scale, 1 refers to extremely important while 7 refers to extremely unimportant. In this study, 15 original statements were designed based on HKBEAM PLUS. After a pilot study conducted among 10 hotel guests, 5 statements were removed from the questionnaire as they found it difficult to understand the specific green building designed cannot decide their importance.

BEAM PLUS is a green building rating system developed by the Hong Kong Green Building Council (HKGBC). We developed the statements based on the core design principles of green building defined by BEAM PLUS green building rating systems. They are *site aspects (SA), water use (WU), material aspects (MA), energy use (EU), indoor environment quality (IEQ) and innovations and additions (IA)*. As hotel customers are more familiar with the environment in the hotel room as they spend most of their time staying in hotel rooms. The selected green building attributes mainly describe the green building design that can be identified in the hotel room environment. Except IA, 7 green building attributes are designed under the rest of the 5 core design principles, shown as follows:

- Building design to maximize passive solar energy (SA)
- Rainwater / air-conditioning system water collection and grey water reuse (WU)
- Using water-saving plumbing fixtures (WU)
- Alternative renewable energy power sources, such as solar power or wind power (EU)
- Adopting energy-efficient lighting and appliances (EU)
- Efficient layout design to maximize space utilisation (EU)
- Using non-toxic materials (MA)
- Using environment friendly product (MA)
- Use of recycled building material (MA)
- Ventilation systems designed for efficient heating and cooling (IEQ)

The last question was designed to ask the respondents' intention of staying in a green hotel. Table 2 illustrates the 19 statements used in the questionnaire.

Table 1 Questionnaire instruments

Variable	Items	Statements
Environmental concern	EC1	I am extremely worried about the state of the world's
	EC2	Mankind is severely abusing the environment
	EC3	When humans interfere with nature it often produces
	EC4	The balance of nature is very delicate and easily upset
	EC5	Humans must live in harmony with nature in order to survive
	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
Perceived importance of green building design	PIGBD1	Ventilation systems designed for efficient heating and cooling
	PIGBD 2	Adopting energy-efficient lighting and appliances
	PIGBD 3	Using water-saving plumbing fixtures
	PIGBD 4	Alternative renewable energy power sources such as solar
	PIGBD 5	Building design to maximize passive solar energy
	PIGBD 6	Using environment friendly product
	PIGBD 7	Using non-toxic materials

	PIGBD 8	Efficient layout design to maximize space utilisation
	PIGBD 9	Use of recycled building material
	PIGBD10	Rainwater / air-conditioning water collection and grey water
Intention of staying	IoS	I am willing to stay at a green hotel when travelling / purchase a hotel room in a green hotel

Sampling procedure and data collection

The study was conducted in Hong Kong from December 2017 to April 2018. A survey was conducted and the questionnaire was distributed at 11 famous tourism spots in Hong Kong. The survey administers were trained to deliver a questionnaire-based interview with the tourists. The tourists were approached on a random basis and they were firstly asked whether they had experience of living in hotels in Hong Kong before they started to complete the questionnaire. After the respondents accepted the interview request, the survey administers provided a background introduction of the study to them. 180 questionnaires were collected and 166 of them are proved to be valid.

Data analysis

Analyses of variance (ANOVAs) were performed to test hypotheses 1, 2 and 3 to investigate the significance level of difference among groups of interviewees with different gender, age, and education background. A simple slope analysis in PROCESS (Hayes, 2017) is conducted to investigate the interaction between EC and IoS.

RESULT

Among the 161 questionnaires, 49.7% of the respondents were males. The majority of the respondents (50.3%) were from the age group 18-24 and 25-34. Most of the respondents' education is above undergraduate level (74.6%) and 60% of them have a full time job. Table 2 shows the demographic profile of the respondents.

Table 2 Frequency distribution for respondents' demographics (n=161)

Variable		Frequency	Percentage
Gender	Male	80	49.7%
	Female	81	50.3%
Age	18-24	31	19.3%
	25-34	55	34.2%
	35-44	26	16.1%
	45-54	29	18.0%
	55-64	16	9.9%
	65 and above	2	2.5%
Education	Postgraduate	22	13.7%
	Graduate	42	26.1%
	Undergraduate	56	34.8%
	Diploma	23	14.3%
	High school	17	10.6%
	Others	1	0.6%

Environmental concern as a significant between-group factor

One-way ANOVA tests were performed to test whether there is significant difference between groups (gender, age, education). Revealed in table 3, the results of all ANOVA tests show that the p-values are greater than 0.05. Thus, hypotheses 1 – 3 are rejected. The findings reflect that (1) male and female respondents do not significantly differ in environmental concern; (2) respondents of different age groups do not significantly differ in environmental concern and (3) respondents of different education background do not significantly differ in environmental concern.

Table 3. Between- group difference in environmental concern

			N	Mean	SE	p-value
Environmental Concern	**Gender**	Male	80	2.078	.152	.455
		Female	81	1.911	.158	
	Age	18-24	31	1.957	.188	.822
		25-34	55	1.946	.166	
		35-44	26	2.111	.191	
		45-54	29	2.006	.170	
		55-64	16	1.870	.224	
		>65	2	2.317	.391	
	Education	Postgraduate	22	2.198	.161	.754
		Graduate	42	2.226	.134	
		Undergraduate	56	2.111	.127	
		Diploma	23	2.262	.177	
		High school	17	2.176	.178	
		Others	1	1.235	.736	

Factor reliability of environmental concern (EC) and perceived importance of green building design (PIGBD)

The Cronbach's alpha values of environmental concern (EC: 8 items) and perceived importance of green building design (PIGBD: 10 items) were 0.889 and 0.919 respectively. All Cronbach's alpha values were higher than the threshold level of 0.7 (Hair et al., 2006), suggesting the items have good reliability and can be averaged into a single item respectively. Table 4 presents the mean and standard deviation of the three variables.

Table 4. Means and standard deviation

	Mean	SD
Environmental concern (EC)	2.1281	.70641
Perceived importance of green building design (PIGBD)	2.3677	.83663
Intention of staying (IoS)	2.360	.9052

Moderation analysis

We hypothesized that both EC and PIGBD have a positive effect on IoS. Additionally, PIGBD moderates the association between EC and IoS. A hierarchical multiple regression was conducted, and to avoid multicollinearity, the data has been standardized. Results show that the EC and PIGBD together accounted for 24.6% of variation in IoS (F (2, 158) = 25.74, p = .000), and the introduction of the interaction term explained a significant increase of the variation of IoS (F (1, 157) = 19.11, p = .000; R^2 change = .02, p < .05). Results implied that both the PIGBD and the interaction term have a significant effect on IoS (b PIGBD = .32, t = 3.32, p < .01; b interaction = .13, t = 2.16, p < .05), while the effect of EC on IoS does not (b EC = .14, t = 1.40, p > .1). Therefore, H5 and H6 were supported, whereas H4 was not.

A moderation test was conducted via PROCESS 3.3 (Hayes, 2017) to examine the details of this effect. Results indicate that although the effect of EC on IoS was generally not significant, it was when PIGBD is high (b 1SD above = 1.13, t = 2.81, p < .01). Put differently, there is a boundary condition for the effect of EC on IoS, that is, only when consumers perceive the green building design highly important, their environmental concern would increase the intention of staying in green hotel.

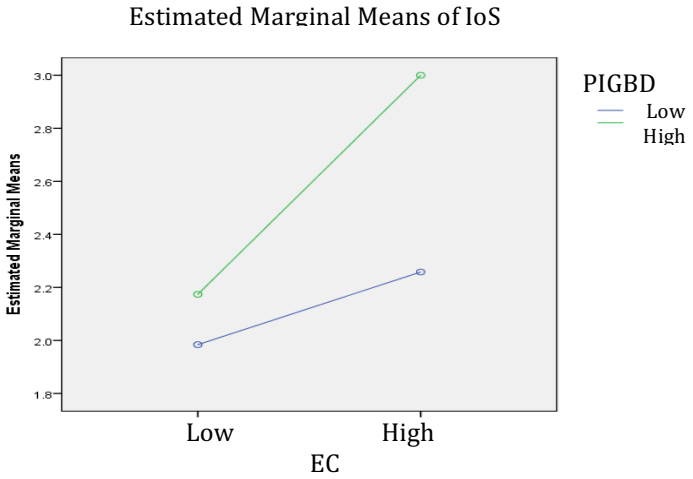

Figure 2. Simple slopes for the effect of EC on IoS by PIGBD

DISCUSSION

The study provides statistical evidence that male and female do not differ in environmental concern, customer from different age group and of different education background do not differ in environmental concern. Previous studies showed that male and female differ in their green attitude and customers with higher education tend to have a higher level of environmental concern. This study provides otherwise conclusion. It has implied that environmental concern can be nurtured through day-to-day life and not limited to classroom teaching. As social media has advanced in the recent years, it is possible that customers' environmental concern is influenced by information obtained through social media. Currently, customers are exposed to a considerable amount of information of environmental concern and thus their environmental concern is enhanced.

We explored environmental concern towards intention of staying in a green hotel and applied a moderation model to examine the moderation effect of perceived importance of green building design on the interaction between environmental concern and intention of staying in a green hotel. The findings suggest that hotel customers' level of environmental concern is positively associated with their intention of staying in a green hotel. This is consistent with the theoretical proposition that environmental concern or green attitude has positive impact on the green purchase intention. Further, the proved moderation effect of perceived importance of green building design implies that the environmental concern's impact on intention of staying

in a green hotel is moderated by customers' perceived importance of green building design. When they present a higher level of perceived importance of green building design, their environmental concern also has a higher level of positive impact on the intention of staying in a green hotel. This has never been studied before and it is regarded to be the contributions of this study.

CONCLUSION

The contribution of this study lies in that it has brought in a new factor in the customers' attitude-behaviour relationship in green hotel purchase behavior: perceived importance of green building design (PIGBD). The result show that PIGBD has moderating effect on the interaction of environmental concern and intention of staying in a green hotel. This implies that knowledge regarding green building attributes shall be promoted in order to strengthen some customers' (especially those with certain level of environmental concern) willingness or intent to stay in a green hotel.

This study made an attempt to understand hotel customers' perceived importance of green building design. Hotel customers may be more familiar with the green attributes of hotel operation while they may not have knowledge foundation to understand green building design. The response to the perceived importance of green building design may be bias when they do not fully comprehend the meaning of green building attributes. Also, the sample size is relatively small in this study. In the future study, a larger sample size will be considered to collect better quality of data.

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