Environmental Concerns, Attitudes and Behavior Intention toward Patronize Green Restaurant

Kun-Shan Wu [1], Di-Man Huang [2] and Yi-Man Teng [3]

[1.] Department of Business Administration, Tamkang University, Tamsui, Taipei 251, Taiwan
[2.] Department of Management Sciences, Tamkang University, Tamsui, Taipei 251, Taiwan
[3.] Department of Food & Beverage Management, Taipei Chengshih University of Science and Technology, Peitou, Taipei 112, Taiwan
E-mail: dimmhuang@yahoo.com.tw

Abstract: This study aims to develop a behavior model of visiting a green restaurant and validate the relationships among consumers' knowledge toward green restaurant, environmental concerns, attitudes and behavior intention. The objectives of the study are threefold. First, we empirically examine how individual characteristics of the consumers' knowledge affect behavioral intention to dine the green restaurants. Second, we test the effect that focuses on consumers' knowledge to environment concern and attitude imported from cognition-based research. Third, by capturing the affective component that motivates behavioral intention, these construct will help bolster the new thought to the domain of dining the green restaurant. The results of study revealed that consumers' knowledge toward green restaurant significantly influenced the consumers' environment concern, attitude but not behavioral intention of choosing green restaurant. And we also evidenced from the data that attitude plays as prominent significant predictors of the intention to visit to green restaurant among this study variables. This study also derives wider implications for managers in the hospitality industry, both from a theoretical and practical viewpoint.

1. Introduction

Rapid global economic growth over recent decades thanks to increasing consumer consumption has made human life more convenient and comfortable. However, rising levels of consumption have led to environmental deterioration through the overuse of natural resources (Hirsh, 2010), while the environment faces further degradation because of global warming, the depletion of the stratospheric ozone layer, water, air, noise, and light pollution, and the damage caused by acid rain and desertification (Chen & Chai, 2010; Ramlogan, 1997). As a result of these negative impacts, the issue of environmental protection has become highly relevant.

In the increasingly environmentally conscious marketplace, consumers have realized the effect of their purchasing behaviors, which are strongly associated with environmental problems (Laroche et al., 2001). The trend also affects the hospitality industry in the form of greater consumption of water, energy, and raw materials, and the increased emission of greenhouse gases (carbon dioxide), and the generation of waste.

Indeed, some groups of consumers are willing to pay a premium for environmentally friendly products that satisfy their needs (e.g., Bazoche, Deola, & Soler, 2008; Han & Kim, 2010; Han & Ham, 2012, Lee, Hsu, Han & Kim, 2010; Loureiro, 2003). Because of this growing consumer demand for eco-friendly products, socially responsible companies in all industrial sectors are constantly developing products and practices that minimize harmful environmental effects (Schubert, 2008). This is certainly the case for the restaurant industry, where businesses often rely on the health of the environment for their survival.

By contrast, restaurants have traditionally been less dependent on environmental factors, and it has been shown that this is why they have tended to show less concern for these issues. For example, Hu, Parsa and John (2010) claimed that hospitality businesses could negatively influence the sustainability of the local environments in which they operate through their overconsumption of natural resources. However, consumers' growing understanding of the effect of food consumption on health (Schubert, 2008), together with increasing environmental awareness throughout society, has resulted in a growing trend of 'green' restaurants.

Lorenzini (1994) defined a green restaurant as a restaurant with "new or renovated structures designed, constructed, operated, and demolished in an environmentally friendly and energy-efficient manner" (p. 119). In the same vein, the Green Restaurant Association (GRA, 2010), a non-profit organization in the US, certifies existing restaurants and food service operations, as well as new establishments, by awarding points in each of the following seven environmental categories: (1) Water efficiency; (2)Waste reduction and recycling; (3)

Sustainable furnishings and building materials; (4) Sustainable food (i.e., the restaurant must serve sustainable organic food from local farms); (5) Energy (i.e., use of energy-efficient equipment, carbon offsetting, and generating on-site renewable and clean sources of energy); (6) Use of bio-based and/or recycled materials; and (7) Reduced chemical and other pollution.

On the one hand, numerous studies have focused on consumers' purchases of organic and eco-friendly food (Bazoche et al., 2008; Davies, Titterington, & Cochrane, 1995; Loureiro, 2003). Indeed, environmental concern is often used to measure the importance of the environment and its protection and has been cited as an indicator of the 'greening' of consumption (Alwitt & Pitts, 1996). Moreover, several studies have found a positive relationship between consumers' environmental concerns and their subsequent environmentally friendly behavior (Ellen, Wiener & Cobb-Walgren, 1991; Hu et al., 2010; Laroche et al., 2001). However, although some studies have focused on ecological initiatives within the hospitality industry (Han, Hsu, Lee & Sheu, 2011; Rodriguez & Cruz, 2007; Scanlon, 2007; Tzschentke, Kirk & Lynch, 2008; Wu & Teng, 2011), few have specifically examined environmental issues in the restaurant industry (Hu et al., 2010), especially the investigation of consumers' perspectives of green restaurants. Thus, the consumers' knowledge, attitudes, and environmental concerns toward green restaurants have yet to be fully examined. To that end, the present study focuses on the influence of consumers' knowledge to the consumers' attitudes, environmental concerns, and intentions to dine at a green restaurant, in order to provide insights into the target markets of such restaurants. This study thus offers implications for academic and industry practitioners and contributes new knowledge to the theoretical understanding of consumers' perceptions of green practices in the hospitality industry.

Following this introduction, the article presents a brief review of the main constructs used in the present study. The article then presents a conceptual model of the constructs and proposes hypotheses regarding the relationships between them. An empirical study of the conceptual model in the context of the green restaurant is then presented. The findings of the study and its implications are then discussed. The article concludes with an acknowledgment of certain limitations and proposals for future research.

2. Literature Review

2.1 Relationship among Consumers' Knowledge, Environmental Concern, Attitude, and Behavioral Intention

The state of one's knowledge about an issue impacts significantly upon his or her decision making process (Kaplan, 1991). Blackwell, Miniard & Engel (2006), Laroche et al. (2001) and Loureiro (2003) have proposed that the consumers' knowledge is directly related consumer behavior. Further, Nabsiah, Elham, and Tan (2011) also demonstrated that all phase in buying decision processes can be influenced by consumers' knowledge. This study has initially conceptualized consumers' knowledge as having the knowledge of green restaurant features.

Bradley, Waliczek and Zajicek (1999) on the relationships between environmental knowledge and environmental attitudes were found to be significantly correlated between participant's attitudes and knowledge. Samantha Smith (2009) reported that as consumers' knowledge of environmentally friendly products increase, positive attitudes toward environmentally friendly products also increase. Nabsiah et al. (2011) found that the environment concern, green product knowledge, environment knowledge are having significant to green purchase behavior of green volunteers. While these results, we will assume that consumers' knowledge would affect the attitude, environment concern and intention toward green restaurant.

On the one hand, Loureiro (2003) and Bazoche et al. (2008) indicated that attempts to explain purchase behavior are associated with a consumer's knowledge of green issues. Yang (2007) found that the consumers' knowledge of green restaurants have positive impacts on the purchase intention of green restaurants. Hu et al. (2010) argued that consumers' knowledge of sustainable restaurant practices and environmental concerns were important determinants of consumers' intentions to patronize green restaurants. They also found that consumers' knowledge of green restaurants may influence their intentions to patronize a green restaurant indirectly by their environmental concerns and ecological behaviors. In view of the foregoing, the following hypotheses were postulated and tested:

H1: The higher the consumers' knowledge of green restaurants, the higher the environmental concern they have.

H2: An increase in knowledge of green restaurants increases the level of positive attitude toward visit green restaurants.

H3: Consumers' knowledge of green restaurants has positive impacts on the intention to visit green restaurants.

2.2 Effects of Attitude on Visiting Green Restaurant Behavioral Intention

According to Olson and Zanna (1993) and Blackwell et al. (2006), attitude refers to the individuals' recognition of likes and dislikes of

people, even objects and environment. Ajzen (1991) defined an attitude as a learned predisposition toward an object or action. Based on this definition, consistent empirical evidence has also supported a positive association between environmental attitude and behavior (Kaiser et al., 1999), while some studies have shown evidence that attitude toward environmental issues is positively related to willingness to purchase (Alwitt & Pitts, 1996; Barber et al., 2009; Chen & Chai, 2010). These literatures we referred above indicating that stronger attitudes towards environmental issues can influence consumers' purchase behavior.

On the one hand, behavioral intention is taken in the literature to be a proxy measure of likely behavior (e.g., Han, Hsu & Lee, 2009; Nonis & Swift, 2010; Philips & Jang, 2012; Sparks & Pan, 2009; Wang & Ritchie, 2012a,b). Further, volitional behaviors are influenced by behavioral intention, which is the likelihood to act (Fishbein & Ajzen, 1975). Moreover, the intention to act in a certain way is the immediate determinant of a behavior (Ajzen, 2005). This means that researchers need an accurate measurement of behavioral intention in order to understand behavior fully. Because the antecedents of intention are better understood than the antecedents of behavior (Philips & Jang, 2012), the present study uses consumers' intentions to patronize green restaurants as a proxy of likely behavior. The limitation of this measurement is discussed in the concluding section. This clarification allows the following hypothesis to be formulated:

H4: Consumer's attitudes have a significantly positive impact on the intention to visit green restaurants.

2.3 Relationship among Environmental Concern, Attitude, and Behavioral Intention

Lee (2008) defined environmental concern as the degree of emotional involvement in environmental issues. Environmental concern refers to the belief, stance, and degree of concern an individual holds toward the environment (Said et al., 2003). Ottman (1992) and Kim & Choi (2005) have posited that environmental concern denotes that an individual's concern about an environmental issue has been found to be a useful predictor of environmentally conscious behavior. Environmental issues in studying the dynamics of green restaurant patronage indicate that environmental concern is a construct frequently used as a measure of the importance of environment (Hu et al., 2010). In summary, environment concerns involve emotionality toward issues related to the environment. Actually, environmental concern is a variable that is often used as a measure of the importance of the environment and its protection and is cited as an

indicator of the greening of consumption (Alwitt & Pitts 1996).

The relationship between environmental concern and behavior has been explored in a variety of contexts. Several studies have found a significant relationship between consumers' environmental concerns and environmentally friendly behaviors (e.g., Ellen et al., 1991; Laroche et al., 2001). They also found that environmental concern has a positive influence on environmentally friendly consumption behavior. Several prior studies have proven a positive correlation between environmental concern and green behavior (e.g., Roberts & Bacon, 1997; Kim & Choi, 2005; Brosdahl & Carpenter, 2010). Kilbourne and Pickett (2008) suggested that the paths from environmental concern to both direct and indirect behaviors would be positive. Lee (2008) found a significant relationship between environmental concern and green purchasing behavior among Hong Kong's adolescent consumers. Nabsiah et al. (2011) showed that a positive and significant relationship existed between environmental concern and green purchase behavior among Penang green volunteers. More recently, Hu et al. (2010) found that the relationship between environmental concern and patronage intentions to green restaurants was statistically significant. Besides, Hirsh (2010) found that environmental concern has a significant positive impact on attitudes toward wild fish consumption. In the same vein, it is found that environmental concern was positively related to consumers' intention to purchase green products in a survey of Egyptian consumers (Mostafa, 2006). Many studies also confirmed that environmental concern positively affects pro-environmental intention and behavior (e.g., Pierce, Dalton, and Zaitsev 1999; Stern & Dietz, 1994). In view of the foregoing, we formulate the following hypothesis:

H5: Environmental concern has a significant positive impact on attitudes toward visiting green restaurants.

H6: There will be positively and significant relationship between environmental concern and behavioral intention to visit a green restaurant.

Based on the research objectives and literature review, a model for the present study is proposed.
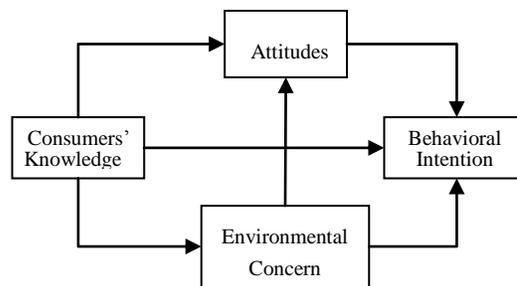
Figure 1: The Conceptual Model

3. Research Method
3.1 Questionnaire Design

The questionnaire was designed as the survey instrument including all constructs of the proposed model to investigate the hypotheses of interest. The questions in the questionnaire are based on a review of the literature. The questionnaire consists of five parts. Part 1 of the questionnaire deals with the measurement of consumers' knowledge of green restaurant with 36 attributes extracted from previous studies (Yang, 2007; Hu et al., 2010). Part 2 deals with the measurement of environmental concern with 12 items covering the three aspects of human of nature, balance of nature, and limits to growth (Dunlap & Van Liere, 1978). Part 3 deals with the measurement of general attitudes with 6 items covering the two aspects of "health attitude" and "environmental attitude" was adopted form the scales developed by Gil et al (2000), with slight modification. Part 4 deals with the measurement of 4 items behavioral intentions following Hu et al. (2010), and Wu and Teng (2011). Respondents are asked to indicate their agreement level for each item, for the first four parts on a seven-point Likert-type scale, from 'strongly disagree (=1)' to 'strongly agree (=7)'. Part 5 presents respondents' demographic information with four items, such as gender, age, education level, and monthly income via a categorical scale.

3.2 Sample and Data Collection

The inclusion criteria for customers in this research were that they must be older than 20 years and willing to patronize a green restaurant in Taiwan. Five hundred randomly selected participants were asked to complete a questionnaire in a face-to-face survey. Face-to-face surveys were conducted by trained interviewers in a variety of locations, including at train stations, supermarkets, department stores, shopping malls, and adult education classes, to obtain data from a representative demographic profile.

A total of 254 usable responses were received from participants during the month-long survey period (January 15 to February 14, 2013). The majority of respondents in the final sample were women ($n = 139$, 54.7%). In terms of age distribution, 90 subjects (35.4%) were aged 21 to 30 years and 56

(22%) were aged 31 to 40 years. In terms of educational background, 132 (52%) participants were university graduates and 108 (42.5%) had completed their formal education as far as senior high school level. In total, 114 respondents (44.9%) indicated that their monthly individual incomes were TWD 20,000 to 40,000.

3.3 Data Analysis

The data analysis was conducted in two stages. First, exploratory factor analyses using principal component method with varimax rotation were conducted on consumers' knowledge of green restaurants, environmental concerns, and general attitudes to examine their dimensionalities and psychometric properties. On that basis, the relationships of consumers' knowledge of green restaurants, environmental concerns, and general attitudes, and behavioral intentions were empirically tested using structural equation modeling (SEM) technique in the second stage.

4. Results and Analysis

In this study, a multi-attribute approach was employed to measure consumers' knowledge of green restaurant, environmental concern, and general attitudes. Employing the principal components factor analysis, six factors with an eigenvalue greater than one explained 71.596% of the variance of consumers' knowledge scale. Twelve items with factor loading less than 0.5 were removed from the scale. The varimax-rotated factor pattern implies that the first factor concerns "Waste recycle" (8 items, $\alpha = 0.930$). The second factor relates to "Energy efficiency" (4 items, $\alpha = 0.820$), the third factor relates to "Noise pollution" (3 items, $\alpha = 0.877$), the forth factor relates to "Employee education" (3 items, $\alpha = 0.832$), the fifth factor relates to "Do not use disposable or lose tableware" (4 items, $\alpha = 0.729$), and the sixth factor relates to "Management of the fumes (smoke)" (2 items, $\alpha = 0.770$). The arithmetic means of the six multi-item factors were used to build the construct consumers' knowledge of green restaurant for subsequent analysis. The result of the factor analysis for personal values was shown in Table 1.

Table 1. Factor analysis of consumers' knowledge of green restaurant

Factor/item	FL	VE (%)	CVE (%)	Cronbach's α
F1: Waste recycle		19.209	19.209	0.930
K42: The green environmentally friendly restaurant should set up the "recycle bin" to make sure have been well done the recycle works.	0.821			
K41: The green environmentally friendly restaurant should set up waste oil storage	0.806			

barrels to recycle the waste oil.			
K43: The green environmentally friendly restaurant should execute the "mandatory garbage classification" into three types: trash could be reused, food waste and general refuse	0.801		
K45: The green environmentally friendly restaurant must be well prepared the waste and litter.	0.751		
K44: The green environmentally friendly restaurant's kitchen should set up waste recycling bins in order to motivate employees and consumers to recycle the kitchen waste and residual food.	0.627		
K54: The green environmentally friendly restaurant's kitchen should be established fume filtering device or washable hoods.	0.598		
K53: The green environmentally friendly restaurant's kitchen should periodically replace or cleaned the fumes filtering device.	0.589		
K52: The green environmentally friendly restaurant should regularly clean or replace the vent of filter of air-conditioning.	0.517		
F2: Energy efficiency	12.269	31.478	0.820
K12: The green environmentally friendly restaurant lighting should change as energy-saving lamps	0.766		
K14: The green environmentally friendly restaurant in the procurement of equipment purchase should be optional with the "Energy Label" products	0.735		
K15: The green environmentally friendly restaurant paper types of supplies of the toilet paper, napkin, and administrative paper should use recycled paper.	0.720		
K11: The green environmentally friendly restaurant during the day as far as possible using natural lighting lighting	0.709		
F3: Noise pollution	10.708	42.186	0.877
K21: The green environmentally friendly restaurant shall be equipped with low-noise devices (such as mute air- conditioning), to reduce the noise	0.782		
K22: The green environmentally friendly restaurant should try to reduce the nuisance of noise, such as range hoods motor install silencer device.	0.767		
K23: The green environmentally friendly restaurant should be well prepared in noise control.	0.761		
F4: Employee education	10.639	52.824	0.832
K64: The green environmentally friendly restaurant should keep the environmental information to be one for staff training items.	0.826		
K65: The green environmentally friendly restaurant should keep the environmental protection to be the annual assessment project.	0.815		
K63: The green environmentally friendly restaurant should implementation of environmental management courses education training to employees on a regular basis and to preserve relevant records.	0.725		
F5: Do not use disposable or lose tableware	9.825	62.650	0.729
K110: The green environmentally friendly restaurant do not take the initiative to provide paper towels, napkin, straws, condiments and other supplies in response to consumer demand.	0.753		
K113: The green environmentally friendly restaurant should full use of green energy.	0.692		
K19: The green environmentally friendly restaurant should avoid using	0.660		

	FL			
disposable cutlery				
K112: The green environmentally friendly restaurant's kitchen should use high-biodegradable or environmentally friendly mark detergent, such as hand wash soap and wash-dish-soap.	0.644			
F6: Management of the fumes (smoke)		8.946	71.596	0.770
K51: The green environmentally friendly restaurant should fully execute non-smoking environment and promote the non-smoking labeled for consumers.	0.795			
K52: The green environmentally friendly restaurant should regularly clean or replace the vent of filter of air-conditioning.	0.787			

Notes: FL = Factor loading; VE = Variance explained; CVE = Cumulative variance explained

Similarly, three factors with an eigenvalue greater than one explained 71.473% of the variance of environmental concern scale using the principal components factor analysis. One item with loading factors less than 0.5 was removed from the scale. The varimax-rotated factor pattern implies that the first factor relates to ''Human over nature'' (4 items, $\alpha = 0.883$). The second factor relates to ''Balance of nature'' (4 items, $\alpha = 0.808$). The third factor concerns ''Limits to growth'' (3 items, $\alpha = 0.810$). The arithmetic means of the three multi-item factors were used to build the construct environmental concern for subsequent analysis. The result of the factor analysis for environmental concern was shown in Table 2.

In the same way, two factors with an eigenvalue greater than one explained 74.894% of the variance of general attitudes scale using the principal components factor analysis. The varimax-rotated factor pattern implies that the first factor relates to ''Health attitude'' (4 items, $\alpha = 0.845$). The second factor relates to ''Environment attitude'' (2 items, $\alpha = 0.792$). The arithmetic means of the two multi-item factors were used to build the construct general attitude for subsequent analysis. The result of the factor analysis for general attitude was shown in Table 3.

Table 2. Factor analysis of environmental concern

Factor/item	FL	VE (%)	CVE (%)	Cronbach's α
EC1: Human over nature		27.195	27.195	0.883
Mankind was created to rule over the rest of nature.	0.881			
Humans need not adapt to the natural environment because they can remake it to suit their needs.	0.866			
Humans have to the right to modify the natural environment to suit their need.	0.865			
Plants and animals exist primarily to be used by humans.	0.826			
EC2: Balance of nature		23.956	51.150	0.808
Humans must live in harmony with nature in order to survive	0.902			
When humans interfere with nature, it often produce disastrous	0.797			
To maintain a healthy economy, we will have to develop a steady-state economy where industrial growth is controlled.	0.663			
The balance of nature is very delicate and easily upset.	0.610			
EC3:Limits to growth		20.323	71.473	0.810
We are approaching the limit of the number of people the earth can support.	0.843			
Mankind is severely abusing the environment.	0.772			
There are limits to growth beyond which our industrialized society cannot expand.	0.733			

Table 3. Factor analysis of attitude

Factor/item	FL	VE (%)	CVE (%)	Cronbach's α
AT1:Health attitude		42.230	42.230	0.845
Green restaurant foods are more tasty	0.881			
Green restaurant foods have superior quality	0.803			
Green restaurant foods are more attractive	0.731			
Green restaurant foods are healthier	0.703			
AT2:Environment attitude		32.664	74.894	0.792
I practice environmental conservations tasks	0.876			
Unless we do something, environmental damage will be irreversible	0.871			

Reliability for each of the factors was obtained using the calculation of a Cronbach α coefficient. The Cronbach α coefficients ranged from 0.729 to 0.930 (see Tables 1, 2 and 3). All factors were above the cut-off criterion of 0.7 recommended by Nunnally (1978).

Confirmatory factor analysis (CFA) was then conducted using AMOS 7.0 (Arbuckle, 2006) to test the convergent validity of the constructs used in subsequent analysis. The fit indices suggested by Joreskog and Sorbom (1993) and Hair, Anderson, Tatham, and Black (1998) were used to assess the model adequacy. Convergent validity of CFA results should be supported by item reliability, construct reliability and average variance extracted (Hair et al., 1998). As shown in Table 4, t-values for all the standardized factor loadings of the items were found to be significant (p<0.01). In addition, construct reliability estimates ranging from 0.7 to 0.868 exceeded the critical value of 0.7 recommended by Hair et al. (1998), indicating it was satisfactory. The average variances extracted for all the constructs fell between 0.504 and 0.693, and were greater than the value of 0.5 suggested by Hair et al. (1998). Composite scores for each construct were obtained from the mean scores across items representing that construct.

Table 4. Reliability and validity of each variable

Construct	Items	Standardized factor loading	*t* value	CR	AVE	Cronbach's α
Consumers' knowledge	Waste recycle	0.851	--	0.857	0.504	0.930
	Energy efficiency	0.686	11.760***			
	Noise pollution	0.750	13.206***			
	Employee education	0.642	10.800***			
	Do not use disposable or lose tableware	0.564	9.217***			
	Management of the fumes (smoke)	0.731	10.502***			
Environmental Concern	Balance of Nature	0.923	---	0.817	0.693	0.871
	Limits to Growth	0.731	10.770***			
General Attitudes	Healthy	0.826	---	0.700	0.539	0.848
	Environment	0.629	8.006***			
Behavioral intention	Willing to patronize	0.700	---	0.868	0.624	0.859
	Considerable chance of patronizing	0.928	13.158***			
	Predominantly patronize	0.813	12.040***			
	Recommend others to patronize	0.697	10.411**			

The proposed conceptual model was tested by using the fourth constructs: namely consumers' knowledge, environmental concern, general attitudes and behavioral intentions. Factors of "Waste recycle'', ''Energy efficiency'', ''Noise pollution'', ''Employee education'', ''Do not use disposable or lose tableware", and ''Management of the fumes (smoke)" were served as the measurement variables of consumers' knowledge of green restaurant. Factors of "Balance of nature" and "Limits to growth" were served as the measurement variables of environmental concern. In addition, factors of "Health attitude" and "environment attitude" are used as the measurement variables of general attitudes.

Fornell and Larcker (1981) indicated that discriminant validity exists when the proportion of variance extracted in each construct exceeds the square of the coefficient that represents its correlation with other constructs. As shown in Table 5, all the AVE values were greater than the squares of the correlations between constructs; hence, discriminant validity was satisfactory for all constructs.

Table 5. Discriminant validity for the measurement model

Construct	CK	EC	AT	BI
CK	**0.504**			
EC	0.335**	**0.693**		
AT	0.190**	0.128**	**0.539**	
BI	0.175**	0.102**	0.303**	**0.624**

Notes: **$p < 0.01$; CK = Consumers' Knowledge; EC = Environmental Concern; AT = General Attitudes; BI = Behavioral Intention; The values on the diagonal (in boldface) represent the AVEs for each construct, whereas the variables below the diagonal represent the squares of the correlations between each pair of latent constructs.

After testing the reliability and validity of the measurement model, we next determined the goodness of fit of the structural model using AMOS 7.0 (Arbuckle, 2006) in order to test H1 to H6. According to Gefen et al. (2000), between 100 and 150 responses are necessary to carry out structural equation modeling. Thus, the fact that we received 254 responses in the present study implies that the sample size was sufficiently large. Table 6 shows that most of goodness-of-fit indices yielded values above the recommended threshold levels except RMESA and RMR. Consequently, the goodness of fit between the proposed model and the observed data in the present study was deemed acceptable (Gefen et al., 2000).

Table 6. Recommended and actual values of fit indices

Fit index	χ^2/df	GFI	AGFI	CFI	NFI	NNFI	RMSEA	RMR
Recommended value	<3	>0.90	>0.80	>0.90	>0.90	>0.90	<0.08	<0.05
Actual value	2.733	0.91	0.848	0.926	0.890	0.927	0.083	0.054

Notes: χ^2/df is the ratio of chi-squared to the number of degrees of freedom; GFI = Goodness of Fit Index; AGFI = Adjusted Goodness of Fit Index; CFI = Comparative Fit Index; NFI = Normed Fit Index; NNFI = Non-Normed Fit Index; RMSEA = Root Mean Square Error of Approximation. RMR = Root Mean Square Residual

Table 7. Results from hypothesis testing

Hypothesis	Path	Path coefficient	*t* value	Results
H1	CK→AT	0.407	3.207*	Supported
H2	CK→BI	0.085	0.788	Not Supported
H3	CK→EC	0.731	11.484***	Supported
H4	AT→BI	0.644	5.949***	Supported
H5	EC→AT	0.141	1.165	Not Supported
H6	EC→BI	0.024	0.241	Not supported

*Notes: *$p<0.05$; ** $p < 0.01$; ***$p < 0.001$

4.1 Testing the Hypothesized Relationships
    The path coefficients estimated using structural equation methods and the results of hypothesis testing are presented in Table 7 and Figure 2. H1 proposed that consumers' knowledge of green restaurant (CK) positively influence general attitudes (AT). The path coefficient from CK to AT (beta = 0.407, $p < 0.05$) was statistically significant at the 5% level, indicating the positive effect of CK on AT. Thus, H1 was supported.
    H2, H4, and H6 proposed that consumers' knowledge of green restaurant (CK), general attitudes (AT), and environmental concern (EC) positively influence behavioral intention (BI) to patronize a green restaurant. First, the path coefficients from AT to BI (beta = 0.644, $p < 0.001$) were statistically significant at the 0.001 level, indicating the positive effects of AT on BI. However, the path coefficient from CK to BI (beta = 0.788, $p> 0.05$) and from EC to BI (beta = 0.024, $p > 0.05$) was not statistically significant at the 5% level. Thus, only H4 was supported, but H2 and H6 were not.

H3 proposed that consumers' knowledge of green restaurant (CK) positively influence environmental concern (EC). The path coefficient from CK to EC (beta = 0.731, $p < 0.001$) was statistically significant at the 0.001 level, indicating the positive effect of CK on EC. Thus, H3 was supported. H5 proposed that environmental concern (EC) positively influences general attitudes (AT). The path coefficient from EC to AT (beta = 0.141, $p > 0.05$) was not statistically significant at the 5% level. Thus, H5 was not supported.
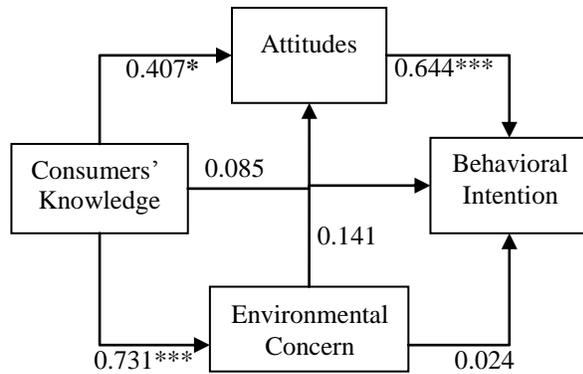

Figure 2: Hypothesized Model

*Notes: *$p<0.05$; ** $p < 0.01$; ***$p < 0.001$*

5. Concluding Remarks

Although there is wide acceptance of the assertion that an increase in knowledge will influence attitude, an important precursor to influencing behavior, prior studies has been mixed on whether, and to what extent, consumers' knowledge will affect environmental friendly consumption behavior (such as patronage green restaurant) on the part of consumers. As this view, the level of knowledge of the consumers toward green restaurant played the strong role in driving consumers' attitude or portability to dine the green restaurant. The present study investigated consumers' knowledge toward the green restaurant, attitudes, environmental concerns, and intentions to patronize green restaurants in Taiwan. It demonstrated that the proposed model fits the data well; thus did the findings enable us to draw the following four main conclusions.

First, the support for H1 showed that personal knowledge toward green restaurant significantly influences consumers' attitudes of visiting to dine in a green restaurant. Specifically, as shown by the support for H1, personal knowledge significantly influences consumers' attitudes by guiding their actions and by helping them to develop positive attitudes toward relevant objects and situations. This result is consistent with that presented by Haron et al. (2005). In the same vein, several authors have found similar results, including Mostafa (2006), who identified that knowledge about ecological issues is a significant predictor of proenvironmental attitudes that in turn motivate ecologically or environmentally responsible consumer behavior. This finding

demonstrates that people who possess greater knowledge will have a higher level of attitude toward green restaurant. However, from the result fail to support the H2, it indicated that consumers' knowledge toward green restaurant but not shown the significant effect on the dining behavioral intention to green restaurant. This fact point out that although the consumers' knowledge was significant influence in consumers' attitude but no clearly positive contribute consumers' patronage intention toward green restaurant.

Second, in regards to supported Hypothesis 4, the result indicated that consumers' attitude toward intention to visit a green restaurant is the prominent variable in our model among those constructs tested. The development of the attitude toward the green restaurant corroborates previous empirical studies of attitude-intention (Fishbein & Ajzen, 1975; Blackwell et al., 2006). They asserted that attitude refers to the individuals' recognition of likes or dislikes of people, even objects and environment. This finding is in line with the attitude toward environmental sustainability, which causes more behavioral intention toward dining in a green restaurant.

Third, the results verified that consumers' attitudes toward green restaurant had an indirect the influence of personal knowledge on intention to visit a green restaurant. In this regard, our findings imply that the consumers' knowledge toward green restaurant is likely to help individuals positively evaluate the attitude then the behavioral consequences of eating in a green restaurant. Thus, it is crucial for green restaurant managers to enhance individuals' attitudes in order to maximize the influence of personal knowledge on visiting intention.

Finally, we found that environmental concern does not have a significant relationship with intent to visit green restaurants nor does it mediate the effect of personal values on visit intention. These results show that environmental concern can not predict consumers' intent to visit a green restaurant. In other words, although consumers have knowledge to concern the environment, but in the end still can not really follow through with the line of behavior and dining in a green restaurant.

The resultant management implication of this study is that consumers' attitudes play an important role in promoting the patronage of green restaurants. Green restaurant operators must develop effective

strategies to improve patronage intention by targeting potential consumers who display favorable attitudes toward the environment and healthy living, such as members of sustainability and/or health-conscious associations. Furthermore, green restaurant managers should promote the consumers' knowledge that tell them the differences between their sustainable practices and those of traditional food outlets, and publicize the benefits of "green" food. They can have an exhibition to educate the consumers the knowledge toward green restaurant to boost the consumers' knowledge then raise the positive attitude then the dining intention to green restaurant. This educated consumers type of marketing strategy might attract consumers who have favorable attitudes toward the environment and healthy living, as well as those who believe that patronizing a green restaurant benefits the environment. Moreover, it might persuade consumers to believe that patronizing a green restaurant is a behavioral trait that minimizes the negative effects on the natural environment while contributing to a healthy lifestyle.

In terms of future research avenues, firstly, we suggest adding perspectives on green restaurant practice courses in tertiary education programs, because cultivating such knowledge toward green restaurant when consumers are still students would help to develop the green hospitality seed. As a consequence, when these people have the opportunity to dine out with family or friends, they may increasingly favor a green restaurant over a traditional one. Secondly, we suggest that the relevant government agencies could formulate policy and regularly hold seminars, forum, and conference to increase consumers' knowledge or encourage the positive attitude to patronage of green restaurants as a type of green consumer behavior that will decrease the negative influence toward the sustainability while dining with family or friends. Finally, we would like to suggest the government announced in the green restaurant consumption invoices can be tax deductible, then that will be the greatest incentives to stimulate consumers are willing to visit a green restaurant.

As with all research, this study has some limitations. First, we confined our sample to major cities in Taiwan, which may have similar levels of environmental awareness based on the similar profiles of respondents. Future research should be conducted with consumers with different degrees of environmental value, especially pertaining to green restaurants. Future samples should also be diversified in terms of the cultural backgrounds of respondents, by sampling respondents from other countries, for example. Second, the dependent variable used in this study is patronage intention of a green hotel rather than actual behavior itself, even though behavior intention is an adequate proxy of actual behavior (Champman, Davis, Toy, & Wright, 2004). Following up on surveys by using actual patronage behaviors is suggested.

References
1. Alwitt L, Pitts R. Predicting purchase intentions for an environmentally sensitive product. Journal of Consumer Psychology 1996; 5(1): 49-64.
2. Ajzen I. The Theory of planned behavior. Organizational Behavior and Human Decision Processes 1991; 50(2): 179-211.
3. Ajzen I. Attitudes, Personality and Behavior, second ed. Open University Press, Maidenhead, 2005.
4. Arbuckle JL. AMOS (Version 7.0) [Computer Program]. Chicago: SPSS, 2006.
5. Barber N, Taylor DC, Strick S. Environmental knowledge and attitudes: influencing the purchase decisions of wine consumers, 2009 ICHRIE Conference 1-11.
6. Bazoche P, Deola C, Soler L. An Experimental study of wine consumers' willingness to pay for environmental characteristics. 12th Congress of the European Association of Agriculture Economists, 2008. Retrieved from http://www.legrenelle-environment.fr/grenelle-environment.
7. Blackwell R, Miniard P, Engel J. *Consumer Behavior* (10th ed.). Thomson Southwestern: Mason, OH, 2006.
8. Bradley JC, Waliczek TM, Zajicek JM. Relationship between environmental knowledge and environmental attitude of high school students, Journal of Environmental Education 1999; 30(3): 17-21.
9. Brosdahl DC, Carpenter JM. Consumer knowledge of the environmental impacts of textile and apparel production, concern for the environment, and environmentally friendly consumption behavior, Journal of Textile and Apparel Technology and Management 2010; 6(4): 1-9.
10. Chapman K, Davis R, Toy D, Wright L. Academic integrity in the business school environment: I'll get by with a little help from my friends. Journal of Marketing Education 2004; 26(3): 236-249.
11. Chen TB, Chai LT. Attitude towards the environment and green products, Management

Science and Engineering 2010; 4(2): 27-39.

12. Davies A, Titterington JA, Cochrane C. Who buys organic food? British Food Journal 1995; 97(10): 17-23.

13. Dunlap RE, Van Liere KD. New environmental paradigm: A proposed measuring instrument and preliminary results. Journal of Environmental Education 1978; 9: 10-19.

14. Ellen PS, Wiener JL, Cobb-Walgren C. The role of perceived consumer effectiveness in motivating environmentally conscious behaviors. Journal of Public Policy & Marketing 1991; 10: 102-117.

15. Fishbein M, Ajzen I. Belief, Attitude, Intention and Behavior: An Introduction to Theory and Research. Addison-Wesley, MA, 1975.

16. Fornell C, Larcker DF. Evaluating structural equation models with unobservable variables and measurement error. Journal of Marketing Research 1981; 18(1): 39-50.

17. Gefen D, Straub DW, Boudreau MC. Structural Equation Modeling and Regression: Guidelines for Research Practice. Communications of the Association for Information Systems 2000; 4(7): 1-70.

18. Gil JM, Gracia A, Sanchez M. Market segmentation and willingness to pay for organic products in Spain, International Food and Agribusiness Management Review 2000; 3: 207-226.

19. GRA. http://www.dinegreen.com/restaurants/standards.asp, 2010.

20. Hair JF, Anderson RE, Tatham RL, Black WC. Multivariate Data Analysis, Prentice Hall, 1998.

21. Han Heesup, Hsu Li-Tzang, Lee Jin-Soo. Empirical investigation of the roles of attitudes toward green behaviors, overall image, gender, and age in hotel customers' eco-friendly decision-making process. International Journal of Hospitality Management 2009; 28: 519-528.

22. Han Heesup, Kim Yunhi. An investigation of green hotel customers' decision formation: Developing an extended model of the theory of planned behavior. International Journal of Hospitality Management 2010; 29: 659-688.

23. Han Heesup, Hsu Li-Tzang, Lee Jin-Soo, Sheu Chwen. Are lodging customers ready to go green? An examination of attitudes, demographics, and eco-friendly intentions. International Journal of Hospitality Management 2011; 30: 345-355.

24. Haron SA, Paiom L, Yahaya N. Towards sustainable consumption: An examination of environmental knowledge among Malaysians. International Journal of Consumer Study 2005; 29: 426-436.

25. Hirsh JB. Personality and environment concern. Journal of Environmental Psychology 2010; 20: 245-248.

26. Hu Hsin-Hui, Parsa HG, John Self. The Dynamics of green restaurant patronage, Cornell Hospitality Quarterly 2010; 51(3): 344-362.

27. Joreskog KG, Sorbom D. LISREL 8: Structural equation modeling with the SIMPLIS command language. Chicago: Scientific Software, 1993.

28. Kaiser FG, Wölfing S, Fuhrer U. Environmental attitude and ecological behavior. Journal of Environmental Psychology 1999; 19(1): 1-19.

29. Kaplan S. Beyond rationality: Clarity-based decision making. In Environment, cognition and action, ed. T. Garling and G. Evans, 171-190. New York: Oxford University Press, 1991.

30. Kilbourne W, Pickett G. How materialism affects environmental beliefs, concern, and environmentally responsible behavior. Journal of Business Research 2008; 61: 885-893.

31. Kim Y, Choi SM. Antecedents of green purchase behavior: an examination of collectivism, environmental concern, and PCE. Advances in Consumer Research 2005; 32: 592-599.

32. Laroche M, Bergero J, Barbarot-Forleo G. Targeting consumers who are willing to pay more for environmentally friendly products. Journal of Consumer Marketing 2001; 18: 503-520.

33. Lee K. Opportunities for green marketing: Young consumers. Marketing Intelligence and Planning 2008; 26: 573-586.

34. Lee Jin-Soo, Hsu Li-Tzang, Han Heesup, Kim Yunhi. Understanding how consumers view green hotels: how a hotel's green image can influence behavioural intentions. Journal of Sustainable Tourism 2010; 18(7): 901-914.

35. Lorenzini B. The green restaurant, part II: Systems and service. Restaurant & Institutions 1994; 104(11): 119.

36. Loureiro M. Rethinking new wines: implications of local and environmentally friendly labels. Food Policy 2003; 28: 547-560.

37. Mostafa M. Antecedents of Egyptian consumers' green purchase intentions: A hierarchical multivariate regression model. Journal of International Consumer Marketing 2006; 19(2): 97-126.

38. Nabsiah AW, Elham R, Tan SS. Factors influencing the green purchase behavior of Penang environmental Volunteers, International Business Management 2011; 5(1): 38-49.

39. Nonis S, Swift C. An Examination of the relationship between academic dishonesty and workplace dishonesty: A multicampus investigation. The Journal of Education for

Business 2010; 77(2): 69-77.

40. Nunnally JC. Psychometric theory (2nd ed.). NY: McGraw Hill, 1978.

41. Olson JM, Zanna MP. Attitudes and attitude change, Annual Review of Psychology 1993; 44: 117-154.

42. Ottman Jacquelyn. Industry's response to green consumerism, Journal of Business Strategy 1992; 13: 3-7.

43. Philips WJ, Jang SC. Exploring seniors' casino gaming intention. Journal of Hospitality & Tourism Research 2012; 36(3): 312-334.

44. Pierce J, Dalton R, Zaitsev A. Public perceptions of environmental conditions. In Critical masses, citizens, nuclear weapons production, and environmental destruction in the United States and Russia, ed. R. J. Dalton et al., 97-129. Cambridge, MA: MIT Press, 1999.

45. Ramlogan R. Environment and human health: A threat to all. Environmental Management and Health 1997; 8: 51-66.

46. Roberts JA, Bacon DR. Exploring the subtle relationships between environmental concern and ecologically conscious consumer behavior. Journal of Business Research 1997; 40: 79-89.

47. Rodriguez FJG, Cruz Y del Mar Armas. Relation between social-environmental responsibility and performance in hotel firms. International Journal of Hospitality Management 2007; 26(4): 824-839.

48. Said AM, Ahmadun FR, Paim LH, Masud J. Environmental concerns, knowledge and practices gap among Malaysian teachers. International Journal of Sustainability Higher Education 2003; 4: 305-313.

49. Samantha Smith. Eating clean & green? Investigating consumer motivations towards the purchase of organic food. ANZMAC 2009, 1-8.

50. Scanlon N. An analysis and assessment of environmental operating practices in hotel and resort properties. International Journal of Hospitality Management 2007; 26: 711-723.

51. Schubert Franziska. Exploring and predicting consumers' attitudes and behaviors towards green restaurants. Unpublished master thesis, College of Education and Human Ecology, Graduate School of The Ohio State University, 2008.

52. Sparks B, Pan GW. Chinese outbound tourists: understanding their attitudes, constraints and use of information sources. Tourism Management 2009; 30(4): 483-494.

53. Stern P, Dietz T. The value basis of environmental concern. Journal of Social Issues 1994; 50(3): 65-84.

54. Tzschentke NA, Kirk D, Lynch PA. Going green: Decisional factors in small hospitality. Intentional Journal of Hospitality Management 2008; 27(1): 126-133.

55. Wang J, Ritchie BW. Understanding accommodation managers' crisis planning intention: An application of the theory of planned bahaviour. Tourism Management 2012a; 33: 1057-1067.

56. Wang J, Ritchie BW. Attitude and perceptions of crisis planning among accommodation managers: results from an Australian study. Safety Science 2012b; http://dx.doi.org/10.1016/j.ssci.2012.02.005.

57. Wu KS, Teng YM. Applying the extended theory of planned behavior to predict the intention of visiting a green hotel. African Journal of Business Management 2011; 5(17): 7579-7587.

58. Yang YC. Identifying key factors that influence consumers' purchase intentions toward green restaurant. Master of Graduate School of Tourism, Ming Chuan University, 2007.

9/12/2013