

Article

## The Influence of Green Restaurant Decision Formation Using the VAB Model: The Effect of Environmental Concerns upon Intent to Visit

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**Abstract:** The study investigates consumers' intent to patron green restaurants by application of the Value-Attitude-Behavior model. The present study examines the interrelationships among consumers' values, attitudes, and environmental concerns, and explores how they relate to their intentions to visit green restaurants in Taiwan. Data were gathered by face-to-face surveys, 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. The findings of this study suggest that the personal values and general attitudes positively affect consumers' intentions to visit a green restaurant. Additionally, the results found personal values and environmental concern have significant influence on the attitude toward green restaurants. Managerial implications and future directions of these findings were also discussed.

**Keywords:** green restaurant; value; attitude; environmental concern; behavioral intention

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## 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 [1], 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 [2,3]. Because of these negative impacts, the issue of environmental protection has become highly relevant. Indeed, environmental awareness has grown, from the 1960s ecology movement that focused on pollution and energy conservation, to the more recent efforts to reduce our carbon footprint [4].

These environmental problems have challenged the ways people live, and have resulted in increased environmental consciousness, with consumers now choosing to integrate environmental considerations into their lifestyle choices [5]. Indeed, some groups of consumers are willing to pay a premium for environmentally friendly products that satisfy their needs (e.g., [6–9]). 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 [10]. This is certainly the case for the hospitality and tourism sectors, where businesses often rely on the health of the environment for their survival. According to the Stys [11], the restaurants consume a vast volume of disposable products, water and energy in the USA. Referring to the research of Horovitz [12], restaurants are the worlds' largest energy users. The restaurants use almost five times more energy per square floor than any type of commercial building. Hu *et al.* [13] claimed that hospitality businesses could negatively influence the sustainability of the local environments in which they operate through their overconsumption of natural resources. As a way of assuming their environmental responsibility, the restaurants are expected to be subjected to green trends. As an important issue, we cannot ignore the consumers' growing understanding of the effect of food consumption on health [10], together with increasing environmental awareness throughout society, which has resulted in a growing trend of green restaurants.

Lorenzini [14] 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”. Increased competition in the marketplace coupled with changing guest demand for green as well the need to ensure guest satisfaction are some of the driving factors for restaurants to go green. Despite this important trend, however, there has been still no green restaurant certified in Taiwan. Although there does not exist “green certified restaurants”, actually, there are many restaurants engaging in green practices, such as recycling, developing their energy and water efficiency, providing sustainable and organic food, and preventing pollution. This study specifically discusses the concept of green restaurants whereby restaurants engage in green practices, green building, and provide organic food.

According to marketing concepts, the consumers are the core element for promoting green restaurants. Increasing understanding of consumers' attitudes and their responses to green restaurants is the aim of this research. A number of researches have focused on green consumers' purchases of sustainable food, such as green food, organic food, eco-friendly food [6,15]. There are some researchers focused on the relationship between consumer attitude and behavior in response to green products [2,5].

In the literature, Value-Attitude-Behavior approach has proved to be a useful framework for investigating a wider range of consumer behavior [16]. The VAB model is a popular theoretical model for explaining consumer behavior [17]. It has been widely used as a framework to investigate the role of personal values and value orientation in consumers' behavior toward the choice of leisure activities [18], buying organic foods [19], mall shopping [20], and consumer behavior intention towards functional foods [16].

Numerous studies have focused on consumers' purchases of organic and eco-friendly food (e.g., [6,15]). 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 [21]. Moreover, several studies have found a positive relationship between consumers' environmental concerns and their subsequent environmentally-friendly behavior (e.g., [13,22,23]). However, although some studies have focused on ecological initiatives within the hospitality industry [24–28], few have specifically examined environmental issues in the restaurant industry [13], especially the investigation of consumers' perspectives of green restaurants. However, to our knowledge, the relationships between personal values and intention towards green restaurant remain untouched in the literature. This study helps to fill the current gap and proposes an integrated model that combines the value–attitude–behavior model with environment concern to understand the underlying values, attitudes, and intentions of Taiwanese consumers' patron intention toward green 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.

The rest of the paper is organized as follows. First, a literature review and hypotheses are provided in Section 2. Research methodology is discussed in Section 3, and results and discussion are provided in Sections 4 and 5, followed by the conclusion in Section 6.

## 2. Literature Review and Hypotheses

### 2.1. Green Restaurants

According to "1000 Restaurants Certified as Green, 2007", only 1000 restaurants in 23 states have gained the GRA (Green Restaurant Association) certification. On the contrary, there are relatively high numbers of green restaurants in Europe. Thirty-four percent of the restaurants and 44% of hotels in Europe have set energy-reduction targets [10]. Lorenzini [14] defined the green restaurant as "new or renovated structures designed, constructed, operated, and demolished in an environmentally-friendly and energy-efficient manner". GRA, a national non-profit organization that promotes "Creating an environment Sustainable Restaurant Industry" provides a convenient and cost-effective way for restaurants, manufacturers, distributors, and consumers to become more environmentally responsible [29]. From the GRA website [29], now the certification of a Green Restaurant® 4.0 provides a comprehensive and user-friendly method of rewarding existing restaurants and foodservice operations, new builds, and events with points in each of the GRA's seven environmental categories. The guidelines for certification of a Green Restaurant® 4.0 are based on the following:

- (1) Water efficiency;
- (2) Waste reduction and recycling;

- (3) Sustainable furnishing and building materials;
- (4) Sustainable food: Restaurants purchase sustainable organic and local family farms;
- (5) Energy: using more energy-efficient equipment, offsetting energy usage, and generating on-site renewable clean sources of energy;
- (6) Disposables: Restaurants should use products that are made from bio-based materials, or materials that have been previously recycled and made into these new products;
- (7) Chemical and pollution reduction.

Green practices in the restaurant industry have attracted research interest recently [30–33]. Chou *et al.* [30] founded that when restaurants are faced with environmental innovations, they will place great emphasis on economic and positive benefits that are associated with observable resource savings. Furthermore, previous scholars have incorporated the Delphi Technique to develop green standards of restaurant management. The results show that green restaurant management standards comprise three facets: green foods; green environment and equipment; and green management and social responsibility for existing restaurants in Taiwan [34]. This view is in line with our definition of a green restaurant. Although previous literatures have discussed the green practices or management in the restaurant industry, however, there are only a few studies on patron intention toward green restaurants [13], and green restaurant effect on brand equity formation [35]. To supplement this gap in the literature regarding green restaurant research, a structural investigation of the impact of consumers' values, environment concerns, and attitudes on green restaurants seems fundamental.

## 2.2. VAB Model

The VAB model involves three variables: values, attitudes, and behaviors. The value–attitude–behavior model indicates that values exist in a hierarchical structure and suggests that value perceptions influence consumers' attitudes, which eventually influence their behaviors [17]. According to Rajani [36], attitudes and behaviors are manifested from values, which are the most abstract of the social cognitions. The concept of value is a desirable and fundamental standard that guides people's actions [37]. Value is more subjective and personal in nature which will develop slowly as part of consumers' social and psychological development. An individual's attitude is one of the important factors determining behavior [38]. An individual's perceived value both directly and indirectly influences attitudinal variables. [16]. In the early study by Rokeach [39], it asserted that attitudes resemble values in that both are abstract social cognitions, and values are more fundamental than attitudes. It formed the following hierarchical ordering: values, attitudes, and then behaviors.

Likewise, Homer and Kahle [17] asserted that values are similar to attitudes in that both emerge continuously from assimilating, accommodating, organizing, and integrating environmental information (in the present case), in order to promote interchanges with the environment that are favorable to optimal functioning. Vaske and Donnelly [40] also proposed that the individual's view of the environment in which he/she lives could be organized into a cognitive hierarchy that consists of values, value orientations, attitudes, behavioral intentions, and behaviors, with each of these elements building on one another. Values represent consumers' behavior by affecting the flow from abstract values to midrange attitudes to specific behaviors (*i.e.*, the VAB hierarchy). The VAB approach has thus proven to be a

useful framework for investigating a range of consumer behaviors, such as the choice of buying organic foods [19], e-shopping [41], adoption of mobile healthy service [42], travel mode choice [43].

### 2.3. Effects of the VAB Model on Visiting a Green Restaurant

Vaske and Donnelly [40] declared that personal values influence attitudes and behaviors indirectly through domain-specific values that help strengthen and give meaning to personal values. Specifically in the context of the present study, personal values had also been shown to influence individuals' intentions to dine in green restaurants. Consumers are "value-driven" and high value is a primary motivation for customer patronage [42]. Value lies at the heart of an individual's belief system, serving as prototypes from which attitudes and behaviors develop [43]. Vermeir and Verbeke [44] showed that personal values (particularly universalism) have a significant positive impact on the intent to engage in sustainable behavior. Similarly, benevolent or kind-hearted consumers are motivated by social norms in addition to their own beliefs on sustainability. Further, Rajani [36] showed that personal and domain-specific values were highly associated with attitudes about wild fish consumption. In other words, attitudes pertaining to wild fish directly influenced the intention to consume it. Moreover, domain-specific values and attitudes to wild fish had a mediating role in the VAB model used in this research. Previous studies in the literature shows that universalism and benevolence values in the Schwartz Values Survey are considered relevant to the food attitudes and behavior that correlate to environmental protection [45,46]. The higher order value type of self-transcendence consists of universalism and benevolence domains [47]. To echo prior scholars' views, this study consists of universalism and benevolence to represent the personal values that are a kind of self-transcendence. We expect to find out their relative importance to the consumers as well as their effect on environment concern, attitudes and intention to patron green restaurants.

Ajzen [48] 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 [49], while some studies have shown evidence that attitude toward environmental issues is positively related to willingness to purchase [2,5].

Behavioral intention is taken in the literature to be a proxy measure of likely behavior (e.g., [32,50–53]). Further, volitional behaviors are influenced by behavioral intention, which is the likelihood to act [54]. Moreover, the intention to act in a certain way is the immediate determinant of a behavior [38]. 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 [52], the present study used 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 three hypotheses to be formulated:

H1: Consumers' personal values (self-transcendence) have a significant positive effect on attitudes toward consumption in green restaurants.

H2: Consumers' attitudes toward green restaurants have a significantly positive impact on intention to visit green restaurants.

H3: Consumers' personal values (self-transcendence) have a significantly positive effect on intention to visit green restaurants.

#### 2.4. Environmental Concern

Lee [55] defined environmental concern as the degree of emotional involvement in environmental issues. Environmental concern thus refers to the belief, stance, and degree of concern an individual holds toward the environment [56]. The groups with higher environmental concern would have stronger intention to engage in pro-environmental behavior [57]. Some scholars 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 [58,59]. Indeed, environmental concern is a frequently used construct for measuring the importance of sustainable tourism behavior [13,60].

#### 2.5. Relationship among Environmental Concern, Values, Attitude, and Behavioral Intention

Schwartz, Sagiv and Boehnke [61] and Rajani [36] showed that personal values (particularly universalism) correlate positively with macro-level environmental concerns, while Schultz *et al.* [62] demonstrated a positive correlation between self-transcendent values (*i.e.*, personal values) and environmental concerns (particularly altruistic and biospheric concerns). Similarly, Kilbourne and Pickett [63] demonstrated that personal values (particularly materialism) negatively influence environmental beliefs, which positively affect environmental concern and environmentally responsible behaviors. In other words, consumers who have stronger personal values are likely to place more emphasis on environmental concerns. This literature allows the following hypothesis to be formulated:

H4: Personal values have a significantly positive effect on environmental concern.

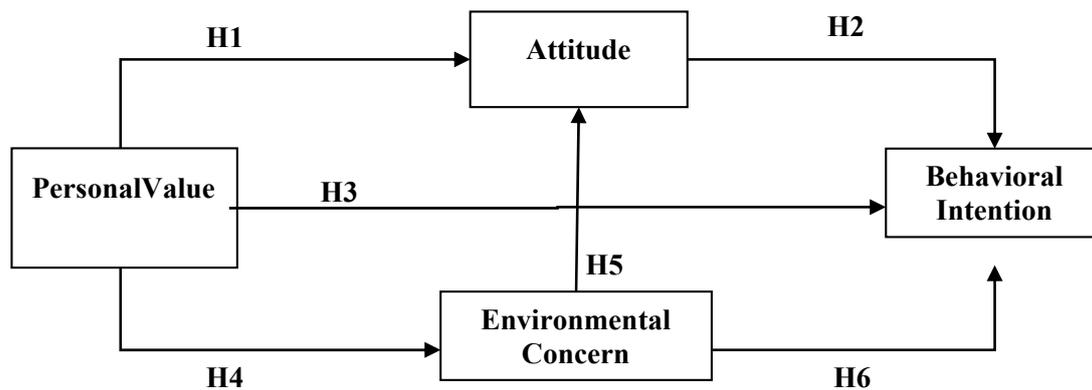
Several studies that have found a significant relationship between consumers' environmental concerns and environmentally friendly behavior (e.g., [22,23]) have also found that environmental concern positively influences environmentally-friendly consumption behavior. Several previous studies have shown a positive correlation between environmental concern and green behavior (e.g., [4,58,64]). Kilbourne and Pickett [63], for example, suggested that the paths from environmental concern to both direct and indirect behaviors are positive, while Lee [55] found a significant relationship between environmental concern and green purchasing behavior among Hong Kong consumers. Nabsiah *et al.* [65] showed that a positive and significant relationship exists between environmental concern and green purchasing behavior, while Hu *et al.* [13] found that the relationship between environmental concern and patronage intention to visit green restaurants was statistically significant. In addition, Hirsh [1] found that environmental concern has a significantly positive impact on attitudes to wild fish consumption. In the same vein, environmental concern has been found to be positively related to consumers' intentions to purchase green products in Egypt [66]. Many studies have also confirmed that environmental concern positively affects pro-environmental intention and behavior (e.g., [67,68]). In view of the foregoing, we formulate the following two hypotheses:

H5: Environmental concern has a significantly positive impact on attitudes to visiting green restaurants.

H6: There is a positive and significant relationship between environmental concern and behavioral intention to visit a green restaurant.

Based on this discussion, the proposed model is outlined in Figure 1.

Figure 1. Research framework.



### 3. Methodology

#### 3.1. Sample Design and Data Collection

This study uses the questionnaire survey to test the hypotheses. Data was collected from people above 20 years of age in Taipei, Taiwan. A screening question was directed to respondents regarding their interest in green restaurants. The self-administered questionnaires were sent to 500 people who were interested in the green restaurants in Taiwan through a face-to-face survey used to collect data. Face-to-face surveys were conducted by trained interviewers in various locations (for example, train stations, department stores, shopping malls, *etc.*) to obtain data from a representative demographic profile.

Qualified persons who were willing to participate in the survey were provided with the purpose of the study and the definition of a green restaurant. Green restaurants in this study are defined as food establishments that engage in green environmental practices, such as energy efficiency, recycling, or sustainable and organic products [35].

A total of 254 usable responses were received from participants during the month-long survey period (January 15, 2012 to February 14, 2012). 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 21–30 years and 56 (22%) were aged 31–40 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 20,000–40,000.

#### 3.2. Measurement Instruments

The goal of this study was to examine the effects of consumers' value–attitude–behavior and environment concern toward green restaurants. All scales have been adopted from the existing literature. Because the respondents were interested in green restaurants in Taiwan, the translation-back-translation procedure was recommended by Brislin [69], and Douglas and Craig [70] to ascertain cultural equivalence.

The questionnaire consists of five parts. Part I of the questionnaire deals with the measurement of personal values (benevolence: such as responsibility, honesty; and universalism: such as a world of beauty, helpful) with 17 attributes measured with the Schwartz Value Survey [47]. Part II deals with the

measurement of environmental concern with 12 items covering the three aspects of human nature, balance of nature, and limits to growth [71]. Part III deals with the measurement of general attitudes with six items covering the two aspects of “health attitude” and “environmental attitude” was adopted from the scales developed by Gil *et al.* [72], with slight modification. Part IV deals with the measurement of four items regarding behavioral intentions following Hu *et al.* [13], and Wu and Teng [28]. 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 V presents respondents’ demographic information with four items, such as gender, age, education level, and monthly income via a categorical scale.

## 4. Results

### 4.1. Exploratory Factor Analysis

In order to reduce the number of variable dimensions and to identify the underlying factors for 17 personal values items, a series of exploratory factor analyses with principle component and varimax rotation were conducted. Items with low factor loadings (less than 0.50), high cross loading with other items (greater than 0.40), or low communalities (less than 0.30) were all deleted [73]. Only factors exhibiting an eigenvalue greater than 1 and factor loading of 0.50 or greater were retained. From this procedure, three items of personal values were deleted. Two factors were extracted for the personal values and labeled as factor PV1 = Benevolence and factor PV2 = Universalism (Table 1). The loadings of the items for each consequent factor were all above 0.50. The three factors explained approximately 64.092% of the total variance. KMO measuring of sample accuracy of 0.933 has met the recommended index of 0.60 and the Bartlett Test of Sphericity was 3175.052 ( $p = 0.000$ ) [74]. The two factors have Cronbach’s  $\alpha$  greater than 0.80, indicating an appropriate level of internal consistency. Both factors are the sub-dimensions of personal values as aforementioned with the proposed model.

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 1.** Factor analysis of personal value.

Factor/Item	Factor Loading	Variance Explained (%)	Cumulative Variance Explained (%)	Cronbach $\alpha$
<b>PV1:Benevolence</b>				
Mature Love	0.820			
Responsible	0.817			
True Friendship	0.804	32.083	32.083	0.899
Loyal	0.695			
Honest	0.623			
A world at peace	0.616			
Wisdom	0.600			
<b>PV2:Universalism</b>				
A world of beauty	0.813			
Broad minded	0.796			
Meaning in life	0.741	32.009	64.092	0.901
Inner harmony	0.707			
Equality	0.700			
Helpful	0.639			
Unity with nature	0.574			

**Table 2.** Factor analysis of environmental concern.

Factor/Item	Factor Loading	Variance Explained (%)	Cumulative Variance Explained (%)	Cronbach $\alpha$
<b>EC1: Human over nature</b>				
Humankind 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	27.195	27.195	0.883
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			
<b>EC2: Balance of nature</b>				
Humans must live in harmony with nature in order to survive	0.902			
When humans interfere with nature, it often produces disastrous outcomes	0.797			
To maintain a healthy economy, we will have to develop a steady-state economy where industrial growth is controlled.	0.663	23.956	51.150	0.808
The balance of nature is very delicate and easily upset.	0.610			

Table 2. Cont.

Factor/Item	Factor Loading	Variance Explained (%)	Cumulative Variance Explained (%)	Cronbach $\alpha$
EC3:Limits to growth				
We are approaching the limit of the number of people the earth can support.	0.843			
Humankind is severely abusing the environment.	0.772	20.323	71.473	0.810
There are limits to growth from which our industrialized society cannot expand.	0.733			

Table 3. Factor analysis of attitude.

Factor/Item	Factor Loading	Variance Explained (%)	Cumulative Variance Explained (%)	Cronbach $\alpha$
AT1:Health attitude				
Green restaurant foods are more tasty	0.881			
Green restaurant foods have superior quality	0.803	42.230	42.230	0.845
Green restaurant foods are more attractive	0.731			
Green restaurant foods are healthier	0.703			
AT2: Environment attitude				
I practice environmental conservations tasks	0.876			
Unless we do something, environmental damage will be irreversible	0.871	32.664	74.894	0.792

Reliability for each of the factors was obtained using the calculation of a Cronbach  $\alpha$  coefficient. The Cronbach  $\alpha$  coefficients ranged from 0.792–0.901 (see Tables 1–3). All factors were above the cut-off criterion of 0.7 recommended by Nunnally [75].

#### 4.2. Confirmatory Factor Analysis

Confirmatory factor analysis (CFA) was then conducted using AMOS16 [76] to test the convergent validity of the constructs used in subsequent analysis. The fit indices suggested by Joreskog and Sorbom [77] and Hair, Black, Anderson, and Tatham [78] were used to assess the model adequacy. Convergent validity of CFA results should be supported by item reliability, construct reliability and average variance extracted [78]. 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 0.70–0.87 exceeded the critical value of 0.7 recommended by Hair *et al.* [78], indicating it was satisfactory. The average variances extracted for all the constructs fell between 0.55 and 0.77, and were

greater than the value of 0.5 suggested by Hair *et al.* [78]. 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 $\alpha$
Personal Values	Benevolence	0.893	---	0.87	0.77	0.937
	Universalism	0.856	13.933 ***			
Environmental Concern	Balance of Nature	0.950	---	0.82	0.70	0.871
	Limits to Growth	0.707	9.896 ***			
General Attitudes	Healthy Environment	0.843	---	0.70	0.55	0.848
	Willing to patronize	0.616	7.682 ***			
Behavioral intention	Considerable chance of patronizing	0.698	---	0.87	0.62	0.859
	Predominantly patronize	0.933	13.165 ***			
	Recommend others to patronize	0.812	12.006 ***			
		0.692	10.334 ***			

The proposed conceptual model was tested by using the fourth constructs: namely personal values, environmental concern, general attitudes and behavioral intentions. Factors of “benevolence” and “universalism” were served as the measurement variables of personal values. 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” were used as the measurement variables of general attitudes.

Fornell and Larcker [79] 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	PV	EC	AT	BI
PV	<b>0.77</b>			
EC	0.312 **	<b>0.70</b>		
AT	0.141 **	0.128 **	<b>0.55</b>	
BI	0.129 **	0.102 **	0.302 **	<b>0.62</b>

\*\*  $p < 0.01$ ; PV = Personal Values; 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 in order to test H1–H6. According to Gefen *et al.* [80], 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 six goodness-of-fit indices yielded values above the recommended threshold levels. Consequently, the goodness of fit between the proposed model and the observed data in the present study was deemed acceptable [80].

**Table 6.** Recommended and actual values of fit indices.

Fit Index	$\chi^2/df$	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	3.331	0.931	0.869	0.947	0.927	0.948	0.096	0.049

$\chi^2/df$  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.

#### 4.3. 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 personal values (PV) positively influence general attitudes (AT). The path coefficient from PV to AT ( $\beta = 0.278, p < 0.05$ ) was statistically significant at the 5% level, indicating the positive effect of PV on AT. Thus, H1 was supported.

H2, H3 and H6 proposed that personal values (PV), general attitudes (AT), and environmental concern (EC) positively influence behavioral intention (BI) to patronize a green restaurant. First, the path coefficients from PV to BI ( $\beta = 0.182, p < 0.05$ ) and from AT to BI ( $\beta = 0.624, p < 0.001$ ) were statistically significant at the 0.05 level, indicating the positive effects of PV and AT on BI. However, the path coefficient from EC to BI ( $\beta = -0.324, p > 0.05$ ) was not statistically significant at the 5% level. Thus, only H2 and H3 were supported, but H6 was not. According to the size of the presented beta values, the magnitude from AT to BI ( $\beta = 0.624, p < 0.001$ ) was larger than that from PV to BI ( $\beta = 0.182, p < 0.05$ ).

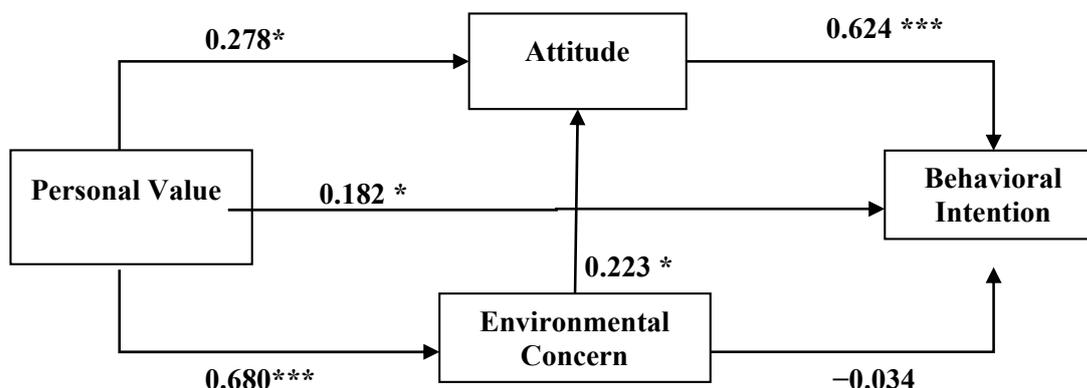
H4 proposed that personal values (PV) positively influence environmental concern (EC). The path coefficient from PV to EC ( $\beta = 0.680, p < 0.001$ ) was statistically significant at the 1% level, indicating the positive effect of PV on EC. Thus, H4 was supported. H5 proposed that environmental concern (EC) positively influences general attitudes (AT). The path coefficient from EC to AT ( $\beta = 0.223, p < 0.05$ ) was statistically significant at the 5% level, indicating the positive effect of EC on AT. Thus, H5 was supported.

**Table 7.** Results from hypothesis testing.

Hypothesis	Path	Path Coefficient	t Value	Results
H1	PV→AT	0.278	2.552 *	Supported
H2	AT→BI	0.624	5.784 ***	Supported
H3	PV→BI	0.182	2.006 *	Supported
H4	PV→EC	0.680	10.838 ***	Supported
H5	EC→AT	0.223	2.008 *	Supported
H6	EC→BI	-0.034	-0.324	Not supported

\*  $p < 0.05$ ; \*\*  $p < 0.01$ ; \*\*\*  $p < 0.001$ .

Figure 2. The Hypothesized Model.



\*\*  $p < 0.01$ ; \*\*\*  $p < 0.001$ .

#### 4.4. The Mediating Effect of Attitude on the Relationships between Personal Value and Behavioral Intention

First, PV (independent variable) significantly ( $\beta = 0.376$ ,  $p < 0.001$ ) positively affects AT (mediator variable). Second, PV significantly positively affects BI ( $\beta = 0.359$ ,  $p < 0.001$ ). Third, AT significantly positively affects BI ( $\beta = 0.550$ ,  $p < 0.001$ ). Finally, when AT is controlled, the previous effect of PV on BI is reduced significantly but not to zero (Table 8). As a result, AT can be viewed as a partial mediator variable upon the effects of PV on BI because the previous effect of PV was affective BI was reduced significantly.

In order to support the findings of the mediator processes by recommended Baron and Kenny [81], a Sobel test was conducted. The Sobel test was carried out to tell us whether a mediator variable significantly carries the influence of an independent variable to a dependent variable; *i.e.*, whether the indirect effect of the independent variable on the dependent variable through the mediator variable is significant. In order to perform the Sobel test, an ordered package program, the “Sobel test calculator for the significance of mediation” from the internet was used [82]. According to the results of the Sobel test, it indicated that AT significantly mediated the relationship between PV and BI, test statistic = 4.519,  $p < 0.001$ . According to results of these Sobel test scores, there was evidence of the mediation for AT in the relationship between PV and BI.

**Table 8.** Mediator between PV and BI.

Independent Variable	AT	Behavior Intention (BI)	
		Step I	Step II
PV	0.376 ***	0.359***	0.177 **
AT	-	-	0.483 ***
$R^2$	0.142	0.129	0.330
F-statistics	41.615	37.362	61.797

The number denotes the beta coefficient for the particular variable. \*\*, \*\*\* Denote significance at the 0.01 and 0.001 level.

## 5. Findings

The present study investigated consumers' values, 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 supported data showed that personal values significantly influence consumers' attitudes, environmental concerns and their intention of visiting a green restaurant. Specifically, these demonstrate that the values of universalism and benevolence are important to consumers' intentions to choose a green restaurant. As the significant effects of the personal values on attitude, environmental concern and behavior intention, which demonstrated that more personal value of self-transcendence, the more likely that consumers would have a more positive attitude and behavioral intention to consume the green restaurants. This confirms using the VAB model and is consistent with previous studies [83,84]. The findings of the personal value effects provide green restaurant practitioners some insights regarding consumers' green restaurants patronizing behavioral. Based on the results, practitioners need to identify which group of consumers has higher self-transcendence values, such as charitable organizations. Attending their council meetings and advertising during their activities for the purpose of exploring the benefit of green restaurants may be advisable.

As shown by the support for H1, personal values significantly influence consumers' attitudes by guiding their actions and by helping them to develop positive attitudes toward relevant objects and situations. Several authors have found similar results, including Rajani [36], who identified that personal values (particularly universalism) significantly and positively affect environmental concern. Consumers that display values of universalism thus consider the consequences of such behavior on the environment [44]. However, we cannot overlook the potential role of personal values in predicting the use of green restaurants.

Second, attitude toward intention to visit a green restaurant is the prominent variable in our model among those constructs tested. This finding is in line with the attitude toward environmental sustainability, which increases intention to dine at a green restaurant and implies that future research should take more account of the effect of favoring a healthy and sustainable attitude.

Third, the present research discusses both the direct and the indirect effects among the investigated variables, in order to explain their interrelationships. The results verified that consumers' attitudes partially mediate the influence of personal values on intent to visit a green restaurant. In this regard, our findings imply that the values of universalism and benevolence are likely to help individuals positively evaluate 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 values 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 cannot predict intent to visit a green restaurant. In other words, although consumers may show concern for the environment, they may not follow through with this line of behavior and actually eat in a green restaurant.

## **6. Conclusions**

There are four academic contributions in this study. First, we combine the concepts of personal value, attitude, environmental concern, and behavioral intention to propose a research framework for green restaurants. Second, we develop a framework to enhance understanding green restaurants' patron behavior. We prove that personal value positively influences attitude and visiting intention for green restaurants. Third, we demonstrate that attitude not only has a positive effect on behavioral intention but also plays a mediating role in the relationship between personal value and behavioral intention. Fourth, this paper extends the research of the value–attitude–behavior model into the field of green hospitality.

In terms of future research avenues, first of all, we suggest adding perspectives on universalism, environment compassion, willingness to give back, and benevolence values to ethics courses starting in basic education such as elementary school, also emphasizing environment ethics in tertiary education programs, because cultivating such values when consumers are students would help to develop social responsibility. Consequently, when they have the opportunity to dine out with family or friends, they may increasingly favor a green restaurant over a traditional one. Secondly, we would also suggest that the relevant government agencies formulate a policy to encourage the patronage of green restaurants as a type of benevolent and health-conscious behavior. Thirdly, as with the prior study by Crompton [85], it is increasingly evident that resistance to action in society to address environment crises lies in cultural values. Debates on the consequences of cultural values and mechanisms become vigorous regarding the evidence base for sustainability civil society campaigns. Echoing this view, we suggest future study on consumers' behaviors toward green restaurants should use the VAB model integrating cultural values to enrich the model context. Finally, a revised NEP scale [86–87] should be considered for use in future research.

As with all research, this study has several 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 knowledge, 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 [88]. Following up on surveys by examining actual patronage behaviors is suggested.

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## **Author Contributions**

Kun-Shan Wu initiated the project and conceptualized the paper. Yi-Man Teng analyzed the data and completed the paper in English. Di-Man Huang made contributions in data collection and writing material.

## Conflicts of Interest

The authors declare no conflict of interest.

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