

Water conservation and waste reduction management for increasing guest loyalty and green hotel practices

ABSTRACT

This study tested the role of guests' perceptions regarding perceived hotel performance of water conservation and waste reduction management in increasing hedonic and utilitarian values, and examined the influence of such relationships on guest participation intention in green practices and loyalty intention by considering the moderating effect of environmental concern in the green hotel context. A field survey with a convenience sampling approach was conducted in Vietnam. A total of 289 responses were used for data analysis. Our findings revealed that hotel performances of water conservation and waste reduction management played a critical role in increasing values and pro-environmental intentions, and both hedonic and utilitarian values of green hotel stay acted as mediators. Additionally, environmental concern played a significant moderating role. Overall, we successfully developed a theoretical framework explicating the clear role of hotel performance of water conservation and waste reduction managements, values, and eco-concern in building guest pro-environmental intentions.

Keywords: Waste reduction management, water conservation management, hedonic value, utilitarian value, green hotel practices, loyalty intention

1. Introduction

For the last few decades, many practitioners have struggled to ensure the environmentally responsible management of hotels (Gabarda-Mallorgu  et al., 2017; Manaktola and Jauhari, 2007; Masau and Prideaux, 2003), while at the same time,

marketers in such hotels have been eager to developing a long-term relationship with increasingly eco-conscious guests (Han and Yoon, 2015; Kang et al., 2012). Pathak (2015) examined a survey result conducted by TripAdvisor and stated that about 62.0% of travelers are concerned about the environmental issue when deciding to stay at a hotel. According to Slye (2009), nearly 87.0% of guests are aware of the importance of eco-friendly hotel, about 80.0% of guests consider themselves as eco-conscious customers, and about 30.0% of them are willing to pay more for environmentally responsible hotels.

Greening hotel is believed to be one of the critical facets of ~~such quest for~~ sustainable development in the hotel industry (Chan, 2013; Han et al., 2010). In sustainable hotel management, improving guest loyalty is undoubtedly essential for firms' long-term success (Han et al., 2010; Jiang and Kim, 2015; Wu et al., 2016). In addition, increasing guest participation in pro-environmental practices is undeniably fundamental for the success of such sustainable hotel management (Chan, 2013; Lee et al., 2010). Accordingly, in recent years, hoteliers are active (1) in establishing an enduring relationship with eco-conscious guests and building a stronger level of their loyalty by making various endeavors such as improving health environments (fresh air, no-chemical cleaning), offering green education programs, improving healthy amenities, and providing green foods and beverages and (2) in encouraging these customers to participate in vigorous environmentally responsible activities in hotels (Jiang and Kim, 2015; Lee et al., 2010; Manaktola and Jauhari, 2007).

Although it is not an easy task to explicate individuals' complicated pro-environmental decision-making process, researchers in many contexts have asserted that uncovering key variables provides a clue to comprehending such eco-friendly decision

formation (Jiang and Kim, 2015; Lee et al., 2010; Song et al., 2012; Wu et al., 2016). Researchers in hospitality, tourism, and consumer behavior have paid attention to product/service performances and values (hedonic and utilitarian) in generating pro-environmental intentions (Han, 2015; Han et al., 2010; Lee et al., 2010). These cognitive and affective factors are regarded to be important driving forces of customers' diverse decisions (Kim, 2015; Ozturk et al., 2016; Ryu et al., 2010) comprising environmentally responsible intentions (Lee et al., 2010).

Despite the criticality of the concepts “performances” and “values”, these variables have rarely been utilized to predict guest participation intention for green hotel practices and loyalty intention for green hotels. In addition, water conservation and waste reduction are considered to be the major aspects of environmentally responsible management in hotels (Singh et al., 2014; Wyngaard and de Lange, 2013). Nevertheless, no research has examined the impact of perceived hotel performances of water conservation and waste reduction management on guest pro-environmental intention formation. A particular role of such performances in determining hedonic and utilitarian aspects of value and the influence of these intricate associations on guest intentions to practice green activities and be loyal to a green hotel has also been unknown. In addition, a recent line of empirical studies in hospitality and tourism indicated that individuals' environmentally responsible decision-making process is under the significant influence of environmental concern (Han and Hwang, 2015; Laroche et al., 2001; Steg and De Groot, 2010). These studies claimed that environmental concern is of utmost importance in patrons' eco-friendly intention formation as a moderator. Nonetheless, how environmental concern determines the magnitude of the associations between guest eco-friendly intentions and its proximal antecedents has hardly been

unearthed.

Given these research needs, in the present research, we attempted to develop a theoretical framework explicating guest participation intention for green hotel practices and guest loyalty intention for green hotel. Specifically, we aimed (1) to examine the role of perceived hotel performances of water conservation management and waste reduction management, (2) to test the moderating impact of environmental concern, (3) to identify the mediating effect of hedonic and utilitarian values of green hotel stay, and (4) to uncover the comparative importance of research variables in determining guest pro-environmental intentions. The theoretical background of this research and explications of study variables are presented in the following section. Methods used in this study are then explained. Next, results from the data analysis and research hypothesis testing are presented. Lastly, theoretical and managerial implications along with study limitations are discussed.

2. Literature review

2.1. Green movement of the hotel industry in Vietnam

While many conventional hotels are still not active in engaging in green business practices (Han and Yoon, 2015), recently greening hotels are becoming a more and more important trend and issue in hotel management, increasingly earning huge interest not only from the industry but from the public (Kang et al., 2012; Masau and Prideaux, 2003; Singh et al., 2014). In Vietnam, the hotel sector plays an important role in the tourism industry generating diverse benefits and monetary profits to tourist destinations such as foreign exchange earnings, income to the citizens/government, and employment. Yet, operating hotels in sustainable way has long been an issue due to the

hotels' harmful influences on the environment (ESRT, 2013a, 2013b). The Vietnamese government has made tremendous efforts on promoting environmentally responsible management and development of hotels by establishing "*the sustainable tourism Green Lotus Label*" for lodging accommodations. Specifically, in 2012, this Green Lotus Label was first initiated by the Vietnam National Administration (VNAT) and approved by the Ministry of Culture, Sports and Tourism (MCST).

Based on the set of evaluation criteria, the certificate including a total of 5 levels from 1 green lotus (the lowest level) to 5 green lotuses (the highest level) is granted to lodging accommodations that meet the diverse standards on sustainable development and environmental preservation, such as making efforts on saving natural resources and energy, protecting the natural environment, pursuing eco-friendly tourism development, preserving cultural heritage, and developing the local economy (MCST and VNAT, 2017). According to Grant Thornton's (2015) survey results, after these green initiatives, about 66.0% of hotels in Vietnam aimed to achieve the Green Lotus Label; about 82.0% made an eco-friendly hotel management or operation plans; 55.0% changed their awareness level for the environmental deteriorations incorporating environmental protection into their company mission; and, 65.0% of hotels evaluated their eco-friendly practices in a regular manner for the enhancement of energy efficiency and the reduction of waste and pollution. These showed the evidence of the green movement of the lodging industry in Vietnam (Grant Thornton, 2016).

2.2. Water conservation and waste reduction management in the hotel industry

Individuals' activities generate diverse types of wastes, and the way these wastes are collected, stored, and disposed increases risks to the natural environment and

to the health of citizens (Zhu et al., 2008). Similarly, increase in human activities leads to the huge amount of water consumption, which creates risks to the planet (Dimara et al., 2017; Goldstein, 2009; Wyngaard and de Lange, 2013). Natural resource conservation (e.g., water and energy conservation) and solid waste management (e.g., waste reduction and recycling) are major aspects of hotels' environmentally responsible management (Singh et al., 2014; Teng et al., 2012; Wyngaard and de Lange, 2013). Particularly, water conservation and waste reduction managements have widely been utilized as important green management strategies in the global hotel industry (Goldstein, 2009; Singh et al., 2014; Wyngaard and de Lange, 2013).

Existing studies indicated that individuals' water consumption while traveling is often higher than corresponding water use in their daily life both in developed countries (2 – 3 times) (Garcia and Severa, 2003) and developing countries (up to 15 times) (Gössling, 2001). In addition, according to Gössling et al. (2012) and Barberán et al. (2013), hotels with higher ratings (upscale/luxury) tend to consume a greater amount of water than those with lower ratings (budget/hostel). Water is undeniably essential natural resource in operating hospitality and tourism firms, particularly in hotels (Gabarda-Mallorguá et al., 2017). Water consumption for occupied hotel guestrooms is of importance as the consumption amount is not ignorable and increases in a steady manner (Chan and Lam, 2001). Indeed, in most cases, hotel customers' use of water is related to such behaviors as changing towels, taking a shower, changing bed linens/sheets, flushing the toilet, brushing teeth, and other washings (Page et al., 2014). Lodging operations can reduce the tremendous amount of water with effective water conservation management, significantly minimizing the hazardous impact on the environment (Baker et al., 2014; Millar and Baloglu, 2011; Mensah and Mensah, 2013).

Towel/bed linens reuse programs, low flow showerheads/toilets/sinks, and water-efficient sanitation practices can be the examples of such water conservation management.

Due to the rapid urbanization and the increase of individuals' business activities, solid waste generation has been rapidly enlarged. Inappropriate management of such waste brings various hazards for the humans, society, ecosystem, and whole environment (Singh et al., 2014). The key aspects of solid waste management comprise "reduce" and "reuse" (Memon, 2010). The lodging industry is regarded as a major contributor of wet waste (e.g., garden waste, food waste, cooking oil waste) and dry waste (e.g., cans/metal, plastics, linen, paper, other garbage) in landfills that eventually produces greenhouse gas emissions (Singh et al., 2014; Wyngaard and de Lange, 2013). According to Bacot et al. (2002), the hotel industry generates about 45.0% of all municipal solid wastes among municipal commercial sector facilities. Researchers agree that the proper waste reduction management in hotel leads to not only environmental protection but also economic benefits (Singh et al., 2014; Tang, 2004). Effective waste reduction management brings both direct benefits (e.g., financial benefits through waste minimization, cost saving through recycling) and indirect benefits (e.g., enhanced corporate image, positive eco-conscious customer responses, local government support) to hotels (Singh et al., 2014; Tang, 2004).

Many studies have demonstrated that travelers are willing to stay at an environmentally responsible hotel (Han et al., 2010; Han and Yoon, 2015) and to pay even more for eco-friendly products/services (Kang et al., 2012; Masau and Prideaux, 2003). Many lodging operations are thus active in developing environmentally friendly policies and practicing pro-environmental managements that ultimately lead to the

increase in profits and getting positive guest responses (Singh et al., 2014) and cognitive/affective evaluations (Han et al., 2010; Han and Yoon, 2015). Customers often form positive perceptions regarding the performances of the companies implementing socially responsible activities (e.g., environmentally friendly managements), and such perceptions eventually induce the customers' positive value assessment on the products/services generated by the companies (Donaldson and Preston, 1995; Freeman, 1984). Hotels' pro-environmental management such as water conservation and waste reduction is undoubtedly an important aspect of corporate social responsibility. Therefore, it is likely that eco-conscious guests, who assess hotel performances of water conservation and waste reduction managements positively, would have high value perception. Given this, the following hypotheses were developed:

H1: Perceived hotel performance of water conservation management is positively related to hedonic value.

H2: Perceived hotel performance of waste reduction management is positively related to hedonic value.

H3: Perceived hotel performance of water conservation management is positively related to utilitarian value.

H4: Perceived hotel performance of waste reduction management is positively related to utilitarian value.

2.3. Hedonic and utilitarian values

Babin et al. (1994) described value as one's assessment of his/her subjective worth regarding all related evaluation criteria of the object. This definition is coherent

with Zeithaml's (1988) earlier conceptualization of value that it is a customer's comparative assessment of all possible attributes encompassing objective, subjective, qualitative, and quantitative facets of consumption experiences. In consumer behavior, marketing, and tourism, this value is generally believed to include two key constituents such as hedonic and utilitarian dimensions that effectively cover product/service consumption-associated phenomenon (Babin et al., 1994; Kesari and Atulkar, 2016; Kim, 2015; Ozturk et al., 2016; Ryu et al., 2010). Hedonic value is related to obtaining the emotional/affective benefits (e.g., joy, pleased, and excitement) while consuming a specific product/service and experiencing its attributes whereas utilitarian value is related to acquiring the functional benefits during the consumption of the product/service (Babin et al., 1994; Holbrook and Hirschman, 1982).

Patrons often perceive hedonic value when having enjoyable and entertaining experiences with the product/service and frequently perceive utilitarian value when experiencing the high functional performances of the product/service (Kesari and Atulkar, 2016). Such hedonic value is regarded to be more subjective and personal as compared to utilitarian value (Holbrook and Hirschman, 1982). Existing studies in the literature indicated that customers consider both hedonic and utilitarian aspects of the product/service and its attributes in their pre-/post-purchase decision-making process (Kim, 2015; Ozturk et al., 2016; Ryu et al., 2010). For instance, in the hospitality context, Ryu et al. (2010) demonstrated that hedonic and utilitarian values significantly increased patrons' intentions to repurchase the product and recommend it to others. Their findings also revealed that utilitarian value included the greater influence on intentions than that of hedonic value. Kim (2015) examined airline travelers' intention formation by considering the impact of values. His finding indicated that both hedonic

and utilitarian values exerted a significant influence on travelers' behavioral intentions. Unlike Ryu et al.'s (2010) results, Kim's (2015) His finding further showed that hedonic value had a greater impact on intention to use a full-service carrier. In their investigation of guests' mobile hotel booking behaviors, Ozturk et al. (2016) identified that both hedonic and utilitarian values had a crucial role in determining guests' continued usage behavior intentions. In their research, utilitarian value played a stronger role in determining guests' continued usage intentions as compared to hedonic value. In these studies, hedonic and utilitarian values were generally employed and integrated into the theoretical framework as mediators. Based on this, we generated the following hypotheses:

H5: Hedonic value is positively related to guest participation intention for green hotel practices.

H6: Utilitarian value is positively related to guest participation intention for green hotel practices.

H7: Hedonic value is positively related to guest loyalty intention for green hotel.

H8: Utilitarian value is positively related to guest loyalty intention for green hotel.

2.4. Environmental concern

Environmental concern is believed to be a crucial precondition of pro-environmental intention and behavior. A large body of literature has identified that individuals who concern about the environmental impact of their behaviors are more likely to practice environmentally responsible activities in their daily life (e.g., recycling

activity, water/electricity saving, avoidance of disposable products), make an environmentally-relevant product choice, and are willing to consume the product in a pro-environmental way (Han et al., 2010; Kalafatis et al., 1999; Laroche et al., 2001). Environmental concern, cognitive construct, refers to individuals' conscious level of adverse/hazardous consequences for the objects, which they highly value, when not practicing an action pro-environmentally (Schwartz, 1977). An individual frequently evades a situation where the level of concern regarding a specific behavior is high. Eco-conscious tourists often decrease possible uncertainty by not engaging in the specific environmentally unfriendly consumption behaviors when they are concerned about the harmful consequences resulted from such behaviors (Han et al., 2016). Such environmentally harmful behaviors include using water/towels excessively in guest rooms, not practicing waste sorting, and generating food waste.

Many studies in the extant literature emphasized the important moderating role of environmental concern (Ar, 2012; Han and Hwang, 2015). For instance, in his research examining the relationships among green product innovation, firm performance, and competitive capability, Ar (2012) identified that managerial environmental concern significantly moderated the strengths of the associations. In the convention sector, Han and Hwang (2015) developed a nom-based loyalty theory. According to their framework, convention delegates' high level of environmental concern strengthens the relationships between pro-environmental behavioral intention and its predictors. The significant moderation nature of environmental concern was also supported by numerous researchers in environmental behavior and social psychology (De Groot and Steg, 2009; Schwartz, 1977; Steg and De Groot, 2010). In hospitality and tourism, environmental concern is broadly regarded to affect customers' pro-environmental decision-making

process or intention formation (Chan et al., 2014; Han and Hwang, 2015; Han and Yoon, 2015). Customers, whose conscious level related to the ecological issues are high, more actively participate in eco-friendly behaviors while consuming a hospitality/tourism product (Han and Yoon, 2015). Deeper concern of diverse environmental issues or problems and about how to deal with such issues or problems often results in travelers' a strong intention to take green actions to preserve the environment, and the strength of the intention and its predictor linkage often depend on the magnitude of the level of such environmental concern (Han and Hwang, 2015; Steg and De Groot, 2010). Given this, the following hypotheses were generated:

H9a: Environmental concern significantly moderates the relationship between hedonic value and guest participation intention for green hotel practices.

H9b: Environmental concern significantly moderates the relationship between utilitarian value and guest participation intention for green hotel practices.

H9c: Environmental concern significantly moderates the relationship between hedonic value and guest loyalty intention for green hotel.

H9d: Environmental concern significantly moderates the relationship between utilitarian value and guest loyalty intention for green hotel.

2.5. Guest behavioral intentions for green hotel and green practices

Consumer behavioral intention indicates his/her affirmed likelihood to perform a particular action in a specific consumption situation (Oliver, 1997). Consistently, in this study, guest participation intention for green hotel practices refers to hotel customers' sturdy likelihood to engage in pro-environmental practices while staying at a green

hotel and to follow its eco-friendly guidelines, and guest loyalty intention for green hotel refers to hotel customers' steady readiness to be loyal for a particular green hotel. In consumer behavior and marketing, an individual's behavioral intention is regarded to be crucial as his/her strong intention for a specific behavior is likely to result in his/her actual behavior (Ajzen and Fishbein, 1980). Thus, researchers in socio psychology generally agreed that various human behaviors comprising consumption/purchasing behavior are predictable based on behavioral intention (Ajzen, 1991; Perugini and Bagozzi, 2001).

Wolfe and Shanklin (2001) indicated that "green" is such behaviors as eco-friendly purchasing and recycling, which minimize the human influence on the natural environment. When a firm is eco-friendly, it institutes effective environmentally responsible programs and performs diverse practices for environmental protection such as use of renewable or reusable materials, reuse of resources, regional materials, energy and water saving, waste reduction, greywater use, and less use of chemical/toxic materials (Chan, 2005; Han and Yoon, 2015; Wolfe and Shanklin, 2001). Similarly, when an individual is eco-friendly, he/she actively practice diverse environmentally responsible actions for environmental preservation such as recycling, reusing, saving water and energy saving, using public transportation instead of self-driving, reducing wastes, eating locally grown foods, and willingly purchasing a green eco-friendly product and paying for it (Han et al., 2010). Green, sustainable, eco-friendly, pro-environmental, and environmentally responsible are all synonymically used (Han et al., 2010). Consistently, green and these terminologies were used in an interchangeable manner in the present study.

3. Methods

3.1. Measures and questionnaire development

In order to identify the attributes of perceived hotel performances of water conservation and waste reduction managements, in-depth interviews with actual hotel guests were conducted at green hotels. Choosing the involved guests was based on their frequent experiences with environmentally friendly hotels. Thirty guests were found to have a wide variety of experiences with an eco-friendly hotel and show their willingness to participate in the face-to-face interview. The objective of the study and interview were thoroughly explained to these participants. The qualitative question was “*what common words/attributes come to mind when you think of an eco-friendly/green hotel’s water conservation and waste reduction efforts/managements?*”. In addition, existing attributes related to water conservation and waste reduction were collected from the extant literature (Baker et al., 2014; Han and Chan, 2013; Millar and Baloglu, 2011; Millar et al., 2012; Mensah and Mensah, 2013; Verma and Chandra, 2016). Moreover, a series of in-depth interviews with 10 hospitality and tourism experts (i.e., academics, hotel managers, and government officials) were conducted. According to psychometric theory/process, a qualitative interview is of great importance in generating the sample of the items (Churchill, 1979). This qualitative process (or a focus group discussion) is regarded to be an essential step when exploring the new items of a theoretical construct unearthed in the existing literature (Churchill, 1979; Oh, 2005; Selltiz, Wrightsman, and Cook, 1976). A total of 6 major water conservation management attributes (i.e., [1] low flow toilets and good sanitation practices, [2] low flow sinks, [3] low flow/intelligent showerheads, [4] water-efficient appliances, and [5] towel reuse program, [6] bed sheets

and linens reuse program) and 4 main waste reduction management attributes (i.e., [1] recycled materials, [2] refillable soap/shampoo dispensers, [3] special containers/bins for recyclable items in guest rooms and hotel lobby, and [4] durable items rather than disposable products), which are applicable and adequate to the lodging industry, were identified through these processes.

To evaluate hedonic value, 4 items were employed from Kim and Han (2010) and Ryu et al. (2010). In addition, in order to assess utilitarian value, 3 items were adopted from Babin et al. (1994) and Ryu et al. (2010). A total of 3 items for the environmental concern were employed from Bamberg and Schmidt (2003) and Bamberg et al. (2007). The above items were evaluated with a 7-point scale from “*Strongly disagree*” (1) to “*Strongly agree*” (7). To measure guest participation intention for green hotel practices, we used 2 items employed from Goldstein et al. (2008) and Smith et al. (2015). Lastly, 3 items adopted from Ajzen (1991) and Perugini and Bagozzi (2001) were used to assess guest loyalty intention for green hotels. The items for intentions were evaluated from “*Very unlikely*” (1) to “*Very likely*” (7). An initial version of the questionnaire included these items for study variables, research description, explication of green hotels, and inquiries for personal characteristics. A pre-test was conducted with 30 actual hotel guests. A slight refinement was made based on their feedbacks. The survey questionnaire development was finalized based on these procedures. Multiple measurement items for study constructs are exhibited in Appendix.

3.2. Data collection and sample characteristics

A non-probability convenience sampling approach was used in this study. A sampling frame includes hotel guests in green hotels in Vietnam. In order to collect the

data, a field survey was conducted at hotels located in 4 famous tourist cities in Vietnam ([1] Ha Noi, [2] Da Nang, [3] Ho Chi Minh, and [4] Can Tho). A list of green hotel names published by the Vietnamese government was given to the potential participants. The hotels in the list were certified with at least the 3rd level of Green Lotus among a total of 5 levels. The respondents were requested to write the name of the green hotel that they stayed. Responses of those customers who stay at a hotel at least once a year and who had previously stayed at a green hotel in the list within the past 5 years were used as the samples of this study. The respondents comprising international and domestic guests were carefully invited as they were expected to have basic knowledge about green hotel in Vietnam and its attributes and to have an adequate awareness level of its standard. Without some prior awareness of sustainable products/services, the participants' responses on theoretical constructs (e.g., green product attributes, pro-environmental intentions) are often hypothetical, and the results are often highly speculative (Vermeir and Verbeke, 2008). The questionnaire was given to the qualified participants when checking in, and they returned the completed questionnaire when checking out of the hotel. A total of 289 usable responses were gathered through this process. Our final sample size was 289 cases.

Among 289 participants, 45.7% (n = 132) were male customers, and 54.3% (n = 157) were female customers. About 63.7% indicated that they are married, followed by single (31.1%) and divorced (5.2%). Approximately 31.5% of the respondents reported that their age is between 21 – 30 years old (31.5%), followed by between 31 – 40 years old (22.1%), between 41 – 50 years old (19.7%), between 51 – 60 years old (13.8%), over 60 years old (10.0%), and 20 years old or less (2.8%). The participants' education level was relatively high. Many participants indicated that they have a bachelor's degree

(36.7%), followed by masters' degree (24.9%), high school diploma (21.1%), 2-year college/vocational school degree (12.1%), and PhD degree (5.2%). The participants were from diverse countries such as Australia (23.9%), Vietnam (19.0%), UK (13.8%), New Zealand (8.3%), USA (6.2%), Germany (3.8%), Norway (3.1%), South Africa (3.1%), France (2.4%), Italy (2.4%), and so on. Among the participants, about 47.1% reported that they stay at a hotel between 2 – 5 times a year, followed by once a year (27.3%), between 6 – 10 times a year (15.6%), and 10 times or more per year (10.0%). A majority of the participants indicated that their purpose of travel (55.0%) was pleasure followed by business (25.5%) and others (19.5%). Regarding the visit frequency of green hotel, a majority of the respondents indicated that they had stayed at a green hotel once (78.5%). In addition, 20.4% reported between 2 – 3 times, and 1.0% reported 6 times or more.

The respondents' eco-conscious level regarding the hotel industry's environmentally harmful impact was relatively high (the mean value of environmental concern = 5.334). A total of 199 respondents were categorized into the high eco-conscious group based on the result of a K-means cluster analysis. With this eco-conscious group, (1) more number of female customers (56.3%) showed high environmental concern than male customers (43.7%), (2) married respondents (n = 62.3%) showed the higher concern than singles (31.7%), and (3) the participants' age in 21 – 30 years old (31.2%) showed the greater concern than that of other age groups.

4. Results

4.1. Reliability and validity assessments and confirmatory factor analysis

The measurement model was generated by conducting a confirmation factory

analysis. A maximum likelihood estimation approach was used for the analysis. The model was shown to fit to the data satisfactorily (goodness-of-fit statistics for the measurement model: $\chi^2 = 514.410$, $df = 227$, $p < .001$, $\chi^2/df = 2.266$, RMSEA = .066, CFI = .947, IFI = .948, TLI = .936). Composite reliability for 7 study constructs was calculated. As reported in Table 1, values of composite reliability ranged from .861 to .938. These values exceeded Bagozzi and Yi's (1988) suggested cutoff of .60. Therefore, an internal consistency of the items for each construct was evident. Average variance extracted value was then estimated. Our calculation revealed that all average variance extracted values exceeded Hair et al.'s (1998) minimum threshold of .500, and the values ranged from .518 to .792 (see Table 1). These values were also greater than the square of between-variable correlations. These evidences supported convergent and discriminant validity. All observed variables were also significantly loaded to their associated latent factor ($p < .01$).

(Insert Table 1)

4.2. Research hypotheses testing and structural equation modeling

A structural model was generated by using a maximum likelihood estimation method. The structural equation model was shown to adequately fit to the data (Goodness-of-fit statistics for the structural model: $\chi^2 = 550.632$, $df = 196$, $p < .001$, $\chi^2/df = 2.809$, RMSEA = .079, CFI = .930, IFI = .931, TLI = .918). The model in general included the satisfactory prediction power for guest participation intention for green hotel practices ($R^2 = .338$) and guest loyalty intention for green hotel ($R^2 = .392$). The details regarding the structural equation modeling results are displayed in Table 2

and Figure 1.

(Insert Table 2)

(Insert Figure 1)

The hypothesized impact of perceived hotel performances of water conservation and waste reduction managements on hedonic value was assessed. As expected, perceived hotel performances of water conservation management and hedonic value were positively and significantly associated ($\beta = .295$, $p < .01$), thus supporting hypothesis 1. Yet, the relationship between perceived hotel performances of waste reduction management and hedonic value was not significant ($\beta = .039$, $p > .05$). Hence, hypothesis 2 was not supported. The proposed influence of perceived hotel performances of water conservation and waste reduction managements on utilitarian value was evaluated. Our results indicated that utilitarian value was a significant and positive function of perceived hotel performances of water conservation ($\beta = .570$, $p < .01$) and waste reduction management ($\beta = .192$, $p < .01$). These results supported hypotheses 3 and 4. About 10.1% of the total variance in hedonic value and about 48.0% of the variance in utilitarian value were accounted for by perceived hotel performances of water conservation and waste reduction managements, respectively.

The hypothesized influence of hedonic and utilitarian values on guest participation intention for green hotel practices was assessed. It was found that both hedonic ($\beta = .400$, $p < .01$) and utilitarian ($\beta = .343$, $p < .01$) values exerted a significant impact on guest participation intention, thus supporting hypotheses 5 and 6. The proposed impact of hedonic and utilitarian values on guest loyalty intention for green

hotel was evaluated. As expected, hedonic ($\beta = .459, p < .01$) and utilitarian ($\beta = .338, p < .01$) values significantly increased guest loyalty intention. These results supported hypotheses 7 and 8.

Subsequently, the indirect impact and total impact of research variables were estimated. As reported in Table 2, our results revealed that perceived hotel performance of water conservation management significantly affected guest participation intention for green hotel practices ($\beta_{\text{PHPWCM} \rightarrow \text{HV and UV} \rightarrow \text{GPIGHP}} = .313, p < .01$) and guest loyalty intention for green hotel ($\beta_{\text{PHPWCM} \rightarrow \text{HV and UV} \rightarrow \text{GLIGH}} = .328, p < .01$) indirectly through hedonic and utilitarian values. In addition, it was found that perceived hotel performance of waste reduction management significantly influenced guest participation intention indirectly through values ($\beta_{\text{PHPWRM} \rightarrow \text{HV and UV} \rightarrow \text{GPIGHP}} = .151, p < .05$). Regarding the total influence of research variables, our results showed that hedonic value had the greatest total impact on guest participation intention ($\beta = .400, p < .01$), followed by utilitarian value ($\beta = .343, p < .01$), and hotel performance of water conservation ($\beta = .313, p < .01$) and waste reduction ($\beta = .151, p < .05$) managements. Moreover, findings indicated that hedonic value included the greatest total influence on guest loyalty intention ($\beta = .459, p < .01$), followed by utilitarian value ($\beta = .338, p < .01$), and perceived hotel performance of water conservation ($\beta = .328, p < .01$) and waste reduction ($\beta = .083, p > .05$) managements.

4.3. Moderation hypotheses assessment and test for metric invariance

To evaluate the proposed moderating impact of environmental concern, a test for metric variance was conducted. All survey responses were initially split into high ($n = 199$) and low ($n = 90$) environmental concern groups by using a the K-means cluster

analysis. Next, a baseline model was generated. The baseline model was shown to fit to the data adequately (Goodness-of-fit statistics for the baseline model: $\chi^2 = 951.522$, $df = 408$, $p < .001$, $\chi^2/df = 2.332$, RMSEA = .068, CFI = .895, IFI = .896, TLI = .881). The details related to the metric invariance test are exhibited in Table 3 and Figure 1. Employing a chi-square test, the generated baseline model was compared to nested models where one specific link of the model is restricted to be equal between high and low environmental concern groups.

(Insert Table 3)

Our results from this invariance assessment and chi-square test revealed that the path from hedonic value to guest participation intention for green hotel practices was not significantly different between groups ($\Delta\chi^2 [1] = 1.488$, $p > .05$). Yet, the link was only significant in the high group ($p < .01$). This result supported hypothesis 9a. Our finding also indicated that there was no significant difference on the utilitarian value – guest participation intention linkage ($\Delta\chi^2 [1] = 2.386$, $p > .05$), thus not supporting hypothesis 9b. In addition, our results showed that the relationship between hedonic value and guest loyalty intention differed significantly across the high and low groups ($\Delta\chi^2 [1] = 4.056$, $p < .05$). This result supported hypothesis 9c. Lastly, it was identified that the utilitarian value – guest loyalty intention link was not different significantly between groups ($\Delta\chi^2 [1] = .149$, $p > .05$). Therefore, hypothesis 9d was not supported.

5. Discussion and implications

The proposed conceptual model was an attempt to evidently explain guests'

pro-environmental decision-making process. In the green hotel context, there is limited scholarly research on customer participation intention for environmentally responsible practices during their visit to the hotel and customer loyalty intention for the hotel. Our theoretical framework constituting perceived hotel performances of water conservation and waste reduction managements as independent variables, hedonic and utilitarian values as mediators, and environmental concern as a moderator was demonstrated to be useful and satisfactorily predict guests' behavioral intentions. The hypothesized relationships among study constructs were in general supported. An assessment of the structural model indicated the criticality of hedonic value and perceived hotel performance on water conservation management. A significant mediating impact of values was also identified. Lastly, the test for metric invariance demonstrated the moderating role of environmental concern. Overall, findings of the present study provided a sturdy and integrative framework for research constructs and their relationships in the arena of green hotel guests' pro-environmental behaviors.

Our empirical evidences revealed that guest assessment regarding hotel's water conservation performance plays a decisive role in triggering hedonic and utilitarian values and generating participation intention for green practices during their stay at a green hotel and loyalty intention for the hotel, and that guest assessment regarding hotel's waste reduction performance plays an important role in increasing utilitarian value and building participation intention for green hotel practices. While there were some efforts on examining patrons' water conservation and waste reduction behaviors (Baker et al., 2014; Singh et al., 2014; Wyngaard and de Lange, 2013), customers' perceptions/assessments about hotel's performances of water conservation and waster reduction management and its role in their eco-friendly decision-making process have

been largely neglected. The present study is accordingly theoretically meaningful in that it provides an apparent comprehension of the active role of the hotel performances of water conservation and waste reduction managements in explicating guest pro-environmental behaviors.

From the practical aspect, our evidences informed green hotel practitioners in Vietnam that pro-environmental management on water conservation and waste reduction is a meaningful endeavor since it helps eco-conscious guests feel that staying at their green hotel is pleasant or enjoyable and is a good deal, eventually contributing to boosting guest favorable intentions for the hotel. Moreover, it is critical for hotel practitioners to let current/potential hotel customers know that the hotel is active in green management (e.g., more water-efficient appliances, lower flow sinks, showerheads, and toilet, better sanitation practices with the effective use of water, more use of recycled materials and durable items, and more recycling activities compared to conventional hotels or other competing lodging operations) fulfilling diverse criteria for the guidelines of the Green Lotus by the VNAT and the MCST in Vietnam through various communication channels. These efforts can help guests more positively evaluate the hotel performances of green managements.

It was unclear about what types of pro-environmental managements in a green hotel are actually influential in eliciting guest eco-friendly behaviors. Based on the results of Fisher's z test, the correlation coefficients across two paths from water conservation and waste reduction managements to hedonic value had a statistically different level of strength ($p < .01$). In addition, the coefficients between linkages from water conservation and waste reduction managements to utilitarian value also included a significantly different strength level ($p < .01$). That is, our empirical comparison of the

relative criticality between perceived hotel performance dimensions revealed that water conservation management had a stronger influence on guest hedonic and utilitarian values. From the practical point of view, dealing with water conservation management should be the priority for green hotel practitioners in that as our results showed, it can be more effective pro-environmental management approach to improve their guests' value perception leading to guests' environmentally responsible behavioral intentions.

Our results indicated that hedonic value had the greatest total importance in determining guest participation intention for green hotel practices and loyalty intention for the hotel. Fisher's z test also revealed that the direct impact of this variable on intentions was greater than that of utilitarian value ($p < .01$). These results are consistent with Kim's (2015) empirical finding that emphasized the prominent role of hedonic value in customer decision formation in the tourism context. Our results implied that customers tend to care more about hedonic attributes when consuming a green hotel product. Our findings further implied that enhancing hedonic experiences is inevitable for the increase of guest loyalty intention for the green hotel and pro-environmental intention for green hotel practices.

One of the research objectives associated with the identification of moderation effect of environmental concern was attained by conducting a test for structural invariance. Specifically, our findings revealed that the link from hedonic value to guest participation intention for green hotel practices was moderated by environmental concern (high group: $\beta_{HV-GPIGHP} = .416$, $p < .01$ vs. low group: high group: $\beta_{HV-GPIGHP} = .197$, $p > .05$), and the relationship between hedonic value and guest loyalty intention for green hotel differed significantly between environmental concern groups (high group: $\beta_{HV-GLIGH} = .457$, $p < .01$ vs. low group: high group: $\beta_{HV-GLIGH} = .323$, $p < .01$).

This result implied that at a similar level of hedonic value, guests who concern about the environment and the negative consequences when not engaging in pro-environmental consumption of a lodging product build a stronger level of participation intention for green hotel practices and form a stronger level of loyalty intention for green hotel. From the theoretical aspect, this study successfully unearthed the moderation mechanism of environmental concern affecting the hedonic value and pro-environmental intentions relationships, which was hardly uncovered in the green hotel context. The utilization of the concept of environmental concern as moderator variable is therefore to be critical in explicating green hotel guests' post-purchase decision-making process and behaviors in a clear manner.

From the managerial point of view, our results also provide important insights. In particular, our findings inform practitioners that the enhancement of guest environmental concern fortifies the impact of hedonic value on pro-environmental decisions. That is, increasing environmental concern ultimately contributes to triggering guests' active participation in green practices and their loyalty for green lodging firm. Green hotel operators in Vietnam should therefore create efficient ways to increase international/domestic guests' awareness about the seriousness of environmental deteriorations caused by conventional hotels in Vietnam through diverse channels. Investments for environmental campaigns and advertisements about existing environmental problems derived from such conventional hotel operations can be one of the efficient strategies to increase lodging customers' general concern for the environment issues in Vietnam and to fortify the environmental commitment of those who are already highly aware of such issues.

An investigation of the indirect relationships among research variables

indicated that value dimensions played a critical mediating role within the proposed conceptual framework. Hedonic and utilitarian values have broadly been utilized as predictors of behavioral intentions as well as mediators in generating such intentions in hospitality, consumer behavior, and marketing (Kim, 2015; Ozturk et al., 2016; Ryu et al., 2010). Our finding is coherent with these existing studies in the literature. These mediators can be used as important tools in further research in the green hotel context (e.g., development of theoretical model comprising values, extension of decision-making theories). Practically, for the maximum use of guests' positive assessments of hotels' water conservation and waste reduction performances, it is undoubtedly essential for green hotel practitioners to provide guests with valuable experiences in a hedonic/utilitarian manner.

This study included several limitations that provide an opportunity for future research. First, the sample population of this study comprised green hotel visitors in Vietnam. Thus, generalizing the findings to all green hotel purchase behaviors in other regions/countries should be cautious. For future study, a broader range of samples covering other regions/countries need to be included to avoid this generalizability issue. Second, in the present study, the impact of social norms (e.g., descriptive and injunctive norms) on intentions was not considered. According to Cestac et al. (2014) and Steg and Vlek (2009), a descriptive norm indicating the extent to which a particular action is perceived/believed common is vital in pro-environmental intention formation. Moreover, according to them, injunctive norm indicating the extent to which a specific behavior is perceived to be approved by others in common is also crucial in pro-environmental decision formation. Accordingly, future research should integrate such variables into our framework. Third, while water conservation and waste reduction are vital aspects of

sustainable management in the hotel industry (Singh et al., 2014; Wyngaard and de Lange, 2013), energy conservation is also of great importance. Future research should examine hotel performance of energy conservation management and its role in explicating guest pro-environmental behavior. Fourth, ~~Lastly~~, while relatively fewer studies have identified the impact of self-efficacy in pro-environmental behavior (Tabernero and Hernandez, 2011), self-efficacy along with perceived behavioral control have proven to play a large enough role in shaping individuals' behavior in contemporary psychology research (Bamberg et al., 2007; Bamberg and Möser, 2007; Judge et al., 2007). Thus, future research should include the concepts of self-efficacy and perceived behavioral control into our conceptual model. These efforts can lead to more accurate predictions of hotel customers' eco-friendly intentions. Fifth, our sample size ($n = 289$) surpassed the minimum size of model structure suggested by Westland (2010) and Hair et al.'s (1998) recommended size of 200 – 400 when utilizing the structural equation analysis. Yet, considering the size of the customer population visiting green hotels in Vietnam, our sample size ($n = 289$) was still somewhat small. An increase in sample size is recommended for future study. Lastly, although customers' behavioral intentions frequently results in actual actions (Ajzen, 1991; Ajzen and Fishbein, 1980), there is not an automatic translation of their intentions to behaviors (Oliver, 1997). For future research, the expansion of the proposed framework with the integration of actual pro-environmental behaviors is recommended for more clear understanding of guest pro-environmental behaviors.

6. Conclusion

Without a doubt, sustainability has become one of the most important issues in

the world's fast growing lodging industry. Nevertheless, perceived hotel performance of water conservation and waste reduction management and its influence on guests' decision formation for environmentally responsible behaviors have not been sufficiently explored. The present study filled this critical void in the existing hotel literature. The proposed theoretical framework was soundly supported; and the role of each study construct was clearly explored. The theoretical/conceptual basis for understanding the nature of sustainable tourism behavior of today's hotel customers is still in the developmental stage. In this aspect, despite some limitations, the present study includes a high degree of value. Our findings can be helpful for subsequent studies about individuals' diverse eco-friendly decisions and behaviors related to hotel stay. In addition, findings of this study can help hotel practitioners develop efficient strategies to facilitate guests various recycling behaviors (e.g., waste amount reduction and proper garbage sorting) and resource conservation behaviors (e.g., water saving, electricity saving, and local resources protection) while staying at a hotel.

Appendix

*Perceived hotel performance of water conservation management**

This hotel completely uses low flow toilets and good sanitation practices.

This hotel completely uses low flow sinks.

This hotel completely uses low flow/intelligent showerheads.

This hotel completely uses other water-efficient appliances.

This hotel completely encourages guests to reuse towels.

This hotel completely changes bed sheets and linens upon request only.

*Perceived hotel performance of waste reduction management**

This hotel completely uses recycled materials (e.g., paper, plastic,...).

This hotel completely uses refillable soap/shampoo dispensers.

This hotel completely places special containers/bins for various recyclable items in guest-rooms and hotel lobby.

This hotel completely uses durable items rather than disposable products (use napkins rather than paper towels).

*Hedonic value**

I think that visiting this green hotel is desirable.

I think that visiting this green hotel is pleasant.
I think that visiting this green hotel is favorable.
I think that visiting this green hotel is enjoyable.

*Utilitarian value**

This green hotel and its green attributes offer good value for the price.
This green hotel and its green attributes provide a good deal as compared to other conventional hotels.
This green hotel and its green attributes offer good benefits that I enjoy.

*Environmental concern**

The hotel industry can possibly generate the huge environmental impacts on the environment.
The hotel industry can cause environmental deteriorations (e.g., wastes from rooms, dining, and other facilities, excessive use of energy/water).

*Guest participation intention for green hotel practices***

I am willing to participate in pro-environmental practices in green hotels.
I try to participate in almost all pro-environmental practices in green hotels.

*Guest loyalty intention for green hotel***

When I travel to this location in the future, I am willing to stay at this green hotel.
When I travel to this location in the future, I will make an effort to stay at this green hotel.
I am willing to encourage others to stay at this green hotel.

* Questions for these constructs were evaluated from “Strongly disagree” (1) to “Strongly agree” (7).

** Questions for these variables were measured from “Very unlikely” (1) to “Very likely” (7).

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