Understanding the determinants of guests' behaviour to use green P2P Accommodation.

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Abstract

Purpose - This study aims to develop and empirically test a comprehensive framework in which to understand the determinants of guests' behavior to use green P2P accommodation in the U.K. P2P context by emerging the theory of planed behavior, environmental commitment theory, and the value-belief-norm theory into one model.

Design/methodology/approach - Adopting a quantitative approach, the present study proposes an integrated model integrating theory of planed behavior, environmental commitment theory, and the value-belief-norm theory and subsequently tests the model using Structural Equation Modelling (SEM) data analysis. Data collected from 721 respondents were analysed through (AMOS) to test the proposed model.

Findings - The results indicate that our integrated framework demonstrates a favorable level of prediction power for guests' behavior, which verified the superiority of the suggested framework. Furthermore, the findings verified the moderating impact of guest attributes on guests decision regarding the booking process.

Practical implications -This study contributes to the existing theory and practice by offering important insights about determinants of guests' behavior to use green P2P accommodation in the U.K. P2P context.

Originality/Value- This research was the first to explore the determinants of guests' behavior to use green P2P accommodation in the U.K. P2P context.

Keywords; Green P2P accommodation, Value-belief-norm theory, Theory of planned behavior, Environmental commitment theory, Structural Equation Modelling.

Paper type; Research *paper*

Introduction

The rapid development of Peer-to-peer accommodation business leads to great development in the hospitality and tourism industry (eMarketer, 2017; Fortune, 2017), making it one of the top priorities for practitioners and researchers in the field (Heo, 2016; Tussyadiah and Park, 2018). Today, individuals are able to easily connect with each other to share temporary access to underutilized spaces via platforms such as Airbnb, 9flats, and onefinestay. Researchers have argued that the accelerated growth in platform's market share may be attributed to its benefits that address the fundamental needs of consumers concerning societal and economic considerations (Yang et al., 2018; Ert et al., 2016). That is, the platform enables consumers to seek low-cost accommodation and desirable authentic experiences through more meaningful social interactions with the local community while visiting a travel destination.

Over the last few decades, it has been witnessed a remarkable awareness and progress of the sustainable consumption among consumers and businesses (Tang and Lam, 2017; Yadav and Pathak, 2017; Heo et al., 2018), as customers become more aware of the seriousness of environmental issues and continuously seek to search and use eco-friendly products and services (Line and Hanks, 2016; Paul et al., 2016 ; Yadav et al., 2016), and have increasingly adopted sustainable lifestyles (Gonçalves et al., 2016). As a response to the increase of environmental laws and pressures from the society and markets, a large number of hotels all over the world have performed a variety of green initiatives every day and be more aware with the environmental practices (Chan et al., 2014). Numerous studies highlighted the positive outcomes of carrying out green marketing initiatives, especially in the hospitality and tourism industry (Baker et al., 2014; Barber and Deale, .2014; Han and Yoon, 2015).

In the tourism and hospitality environment, several studies relevant to pro-environmental intentions have used the Theory of Planned Behavior (TPB) to understand consumer's

behavioral intentions through its three components i.e. perceived behavioral control, subjective norms, and attitude (e.g. Yadav and Pathak, 2017; Han et al., 2017; Miao and Wei, 2016). While the theory of planed behavior is a robust model that has been widely applied in the tourism context to investigate green behavior, it is established in the theory of expectancy–value (Ajzen, 1991). Consequently, the TPB is limited to explain green behavior, which many postulate are driven by egoistic value, Biospheric value, and altruistic value (Roos and Hahn, 2017). Myung et al. (2012) pointed out that a crucial gap in the green marketing studies relating to tourism and hospitality is a paucity of empirical research investigating and understanding customer behavior. Furthermore, studies in this research stream focus on one or two specific theories like theory of reasoned action (Fishbein and Ajzen's, 1975) and theory of planed behaviour (Ajzen's, 1991). Thus, there is a clear need to integrate novel theoretical perspectives or theories to examine the drivers of guests' behavior to use green P2P accommodation, and, therefore, develop strategies to encourage it.

With the above discussion in mind, the current study adopts a distinct approach to provide a complete model for investigating the drivers of guests' behavior to use green P2P accommodation. If it proves successful, the present study can contribute the following to the hospitality and tourism literature: 1) Build a robust framework that can provide us with a comprehensive understanding about guests' behavior to book green P2P accommodation by integrating TPB, VBN theory, and environmental commitment and sacrifice theory; 2) Compare TPB, VBN, environmental commitment and sacrifice theory, and our suggested framework in order to verify the suggested framework superiority; 3) Examining the role of study variables in predicting guests behavior to book green P2P accommodation; and 4) examining the moderating influence of guests attributes in P2P consumers' green decision-making process. The findings of this research offer a meaningful insight into the drivers of guests' behavior to book green P2P accommodation.

Literature Review

The Theory of Planned Behavior (TPB)

Ajzen's TPB model (1991), an extension model of the Reasoned Action Theory, was deemed one of the most widely studied models in consumer behavior studies in different contexts (Nguyen et al., 2017; Yadav and Pathak, 2017). Several studies related to pro-environmental intentions applied TPB to predict consumer's behavioral intentions through its three components (e.g. perceived behavioral control, attitudes, and subjective norms) (e.g. Morren and Grinstein, 2016; Yadav and Pathak, 2017). In hospitality and tourism industry, Han et al (2010) were considered the first to use the TPB to predict customer's intentions to visit a green hotel. After that, Han and Kim (2010) extended the TPB to predict customer's revisit intentions to a green hotel. Numerous studies show that the TPB's components powerfully predicted consumers' green purchase intention (e.g. Nguyen et al., 2017; Line and Hanks, 2016; Yadav and Pathak, 2017). Several studies (e.g. Paul et al., 2016; Goh et al., 2017; Yadav et al., 2016) stressed that other variables must be added to the TPB model to have a better understanding of consumers' green purchase intention comprehensively such as environmental concerns variable.

The effectiveness of TPB in investigating consumers' behaviors has been validated in a large variety of contexts (Han et al., 2010; Han and Kim, 2010). Particularly, it has been successfully used in tourism and hospitality context, such as international traveling (Lam and Hsu, 2004), convention participation (Lee and Back, 2009), leisure participation (Han and Hyun, 2018), destination choice (Lam and Hsu, 2006), purchase travel products online (Agag and El-Masry, 2017), green marketing and pro environmental behaviors (Han and Hyun, 2018; Gonçalves et al., 2016). Their findings offer provide sufficient evidence for the

incorporating of environmental concerns into the TPB model, which may give us a better understanding of guests' behavior to book green P2P accommodation.

Research Model and Hypotheses Development

Our conceptual framework is based on an extended theory of planned behavior with a value-based personal norm variable value (see Fig. 1). The theory of planned behavior (Ajzen, 1991) has been used as a useful model to understand green behavior for several reasons. First, the theory's basic factors capture primary predictors of consumers' behavior relevant in green consumption context. Furthermore, the theory of planned behavior model has shown a wide range of other customers' behaviors (Roos and Hahn, 2017). Second, Ajzen (1991) recommended the inclusion of additional variables. It is well suited to investigate the relative effect of egoistic and normative motives and examine customers underlying belief and value structure regarding green behavior. Finally, practitioners and managers use the theory of planned behavior as a very useful model to develop behavioral change interventions (Roos and Hahn, 2017). Furthermore, the present study adopted the VBN theory model in order to enhance the TPB power. Despite the TPB theory has been succeeded in explaining green consumption, it has also faced some criticism by some studies (Hsu et al., 2010). One notable criticism of the TPB is its paucity of the moral effect consideration. By integrating the TPB theory with the VBN theory, this limitation is supposed to be minimal. Prior studies integrated the TPB and VBN for better explanatory power of behavior (Kiatkawsin and Han, 2017). The Value-Belief-Norm Theory (VBN) has been applied in several studies contexts to examine pro-environmental behaviors (PEB). For instance, the self-reported pro-environmental behaviors (Wynveen and Sutton, 2017), learning outcomes of study abroad (Wynveen et al., 2012), water use (Landon et al., 2017), pro-sustainable behaviors (Landon et al., 2018). The results of these

studies revealed that the VBN importance as a model to understand the psychological processes that support environmental behavior, and examining green hotels behavior in hospitality context specifically. To the best of our knowledge, VBN theory has not been adopted to explain psychological predictors to green P2P accommodation, but has shown promising results in understanding other environmental behaviors, such as green and collaborative consumption behavior (e.g. Roos and Hahn, 2017; Gupta, Dash, and Mishra, 2019; Kiatkawsin and Han, 2017; Shin et al., 2018). Consequently, the present research provides empirical evidence by integrating the TPB and VBN into the research model to understand guest's behavior of booking green P2P accommodation (Figure 1).

According to the existing literature, this study suggests that attitude, perceived behavioral control, sense of obligation, and willingness to pay more mediate the relationship between the model variables and intention to use green P2P accommodation (e.g. Zhang et al., 2017; Wang et al., 2018; Verma et al., 2019; Han, 2015; Kiatkawsin and Han, 2017; Roos and Hahn, 2017; Rahman and Reynolds, 2017; Landon et al., 2018; Shin et al., 2018). For instance, Wang et al (2018) pointed out that consumer's attitude mediates the link between consumers concerns and intention to visit green hotels. In another example, Rahman and Reynolds (2017) utilized an extended planned behavior theory and demonstrated that egoistic value, altruistic value, and biospheric values positively influences willingness to pay more, which in turn significantly effects guests' intention to book green accommodation.

Insert figure 1 about here

Attitude to Green Products

Fishbein and Ajzen (1975, p.15) define attitude as "learned predisposition to respond in a consistently favorable or unfavorable manner with respect to a given object". For the purposes of the present study, attitude refers to the strength of a consumers' favorable or

unfavorable feeling towards green accommodation. Consequently, Paul et al (2016) propose that environmental concerns as variables must be added to Ajzen's TBP model to more comprehensively understand consumers' green purchase intentions, for few studies have explored the effect of environmental concerns on consumers' green purchase intention. In the tourism and hospitality context, numerous studies have established that consumers' attitude to green hotels is positively influenced by environmental concerns (Chen and Tung, 2014; Paul et al., 2016). Therefore, guests who feel strongly about environmental issues will have an entrenched positive attitude to eco-friendly products or services and will for instance book green accommodation (Kim and Han, 2010).

Because green P2P accommodation represent an emerging issue, subjective norm exert a powerful effect on the sustainable development of green consumption. Wu and Chen (2017) state that consumer behavior is influenced by that of other consumers. Therefore, we should investigate the influence of subjective norm on guests' intention to book green accommodation. In the context of marketing and consumer behavior, subjective norm is a key predictor of consumers' behavioral intentions and decision-making process (Paul et al., 2016; Han and Kim, 2010). In the tourism and hospitality context, several studies have remarked that customers' attitude to green hotels is positively susceptible to subjective norm (Han and Kim, 2010; Han et al., 2010; Kim et al., 2013; Nguyen et al., 2017).

In prior study, a high level of awareness of consequence is shown to lead to high social motivation and a more favorable attitude to green consumption (Park and Han, 2014). Zhang et al. (2017) declare that the awareness of consequences has a positive influence on personal norms and consumers' attitude to green consumption. Thus, a guest who is highly conscious of the positive outcomes of booking green accommodation will be more likely to form positive judgments about doing so. Moreover, guests with high awareness of the positive consequences

of booking green accommodation are more likely to feel under social pressure to book green accommodation. Based on the above discussion, the following hypotheses may be proposed.

H1: Environmental concerns have a positive influence on guests' attitudes to green P2P accommodation.

H2: Subjective norm has a positive influence on guests' attitudes to green P2P accommodation.

H3: Subjective norm has a positive influence on guests' intention to book green P2P accommodation.

H4: Awareness of consequences has a positive influence on guests' attitudes to green P2P accommodation.

H5: Awareness of consequences has a positive influence on perceived behavior control.

H6: Awareness of consequences has a positive influence on the sense of being obliged to green P2P accommodation.

Values and Beliefs Underlying Green Consumption Behavior

Building on the value-belief-norm theory of Stern et al (1999), an individual's concerns either bio-spheric (e.g., concern for the state of the environment and the well-being of other species) or altruistic (e.g., concern for other humans' well-being) have a positive influence on personal norms, while an individual's egoistic values (i.e. success, material wealth, and authority) have a negative influence on personal norms. Although little is known about the influence of the value orientation of (egoistic) self-enhancement and (altruistic and bio-spheric) self-transcendence as values on the sense of being obliged to book green accommodation, Roos and Hahn (2017) maintain that consumers' bio-spheric and altruistic value orientation positively influences consumers' personal norms, while consumers' egoistic values negatively affect personal norms.

Research has supported the positive association between egoistic value, altruistic value, biospheric values and willingness to sacrifice for the environment, which in turn influenced willingness to pay more and purchase intentions, (e.g. Rahman & Reynolds, 2016). In another

example, Rahman and Reynolds (2017) utilized an extended planned behavior theory and demonstrated that egoistic value, altruistic value, and biospheric values positively influences willingness to pay more, which in turn significantly effects guests' intention to book green accommodation. In summary, a guest can book a green P2P accommodation; sacrifice some luxkury, and quality, pay more to book green P2P accommodation. Biospheric value demonstrates an inveterate worry for the environment. As such, biospheric value is anticipated to significantly affect willingness to sacrifice for the environment. Hence, we debate that biospheric value would affect guest willingness to sacrifice for the environment positively.

In order to explain the green consumption behavior, there are several models that have been used to explain the link between the environment-persons, including connecting to nature (e.g. Rahman and Reynolds, 2016), environmental identity (Hinds and Sparks, 2008), and the environment commitment (Rahman and Reynolds, 2016). The present study is primarily concerned with the later approach. Research has supported the positive and significant association between that bio-spheric value and willingness to sacrifice for the environment (Rahman and Reynolds, 2016). Furthermore, prior studies pointed out that willingness to sacrifice for the environment has a significant effect on willingness to pay more for green hotels (Rahman and Reynolds, 2016). Additionally, the willingness to pay more is anticipated to effect guests' willingness to sacrifice for green P2P accommodation. In summary, according to our discussion of the theory of value and environmental commitment theory, in the green P2P accommodation context, we propose the following hypotheses:

H7: Guests' egoistic values negatively influence on their sense of being obliged to book green P2P accommodation.

H8: Guests' egoistic values negatively influence on willingness to pay more.

H9: Guests' altruistic values negatively influence on their sense of being obliged to book green P2P accommodation.

H10: Guests' altruistic values negatively influence on willingness to pay more.

H11: Guests' bio-spheric value orientation positively influence on their sense of being obliged to book green P2P accommodation.

H12: Guests' bio-spheric value orientation positively influence on willingness to pay more.

H13: Guests' bio-spheric value orientation positively influence on willingness to sacrifice for the green P2P accommodation.

H14: Guests' bio-spheric value orientation positively influence on willingness to sacrifice for the environment.

H15: Guests' willingness to sacrifice for the environment positively influence on willingness to pay more.

H16: Guests' willingness to sacrifice for the environment positively influence on willingness to sacrifice for green P2P accommodation.

Intention to Book Green P2P Accommodation

Customers' behavioral intentions have gained considerable attention, especially in the hospitality industry and are widely studied in consumer behavior research (Agag and El-Masry, 2017; Pont el al., 2015; Yadav et al., 2016). When a customer has a favorable behavioral intention towards a specific hotel, the probability of his/her booking and spreading positive WOM will be high in the future, which in turn enhances the company's profitability in the long term (Jani and Han, 2013). Regarding the link between consumers' behaviour intention and actual behaviour, the theory of planned behavior (TPB) holds that consumers intention to purchase act as a determinant of consumers actual behavior. Therefore, guests with a strong intention toward using P2P accommodation will be more likely to become involved in actual green consumption and book P2P accommodation.

According to Ajzen (1991, p.27), the attitude to the behavior is measured by "the degree to which the individual has a favorable or unfavorable evaluation of the behavior in question" and it refers to "consumers' feelings regarding achieving the target behavior" (Lee and Tsai,

2010, p.23). For the purposes of the present study, attitude refers to the strength of a consumers' favorable or unfavorable feeling towards green P2P accommodation. Attitude plays an important role in predicting consumers' behavior (Amaro and Duarte, 2015). In the context of green purchase intentions, many studies agree that customers' intention to purchase green products is positively effected by their attitude to it (Manaktola and Jauhari, 2007; Han et al., 2011; Chen and Tung, 2014; Han and Yoon, 2015; Line and Hanks, 2016; Teng et al., 2015; Paul et al., 2016; Nguyen et al., 2017; Tang and Lam, 2017; Paul et al., 2016).

Perceived behavioral control is considered one of the most important determinants of consumer behavior or intention (Zhou et al., 2013). Ajzen (1991, p. 16) defines perceived behavioral control as "the perceived ease or difficulty of performing the behavior" which reflects customers' anticipated obstacles and experiences. Prior studies have seen that perceived behavioral control (PBC) has a positive influence on consumers' intention in various contexts, such as green hotels (Verma and Chandra, 2018; Chen and Tung, 2014; Han et al., 2010), pro- environmental intention (Zhang et al., 2017), recycling (Taylor and Todd, 1995), and green products (Paul et al., 2016).

Personal norms or the sense of being obliged, regarding the booking of green P2P accommodation can be defined "as feelings of strong moral obligation to engage in altruistic or green behavior" (Schwartz, 1977, p. 36). Evidence shows that the sense of being obliged to purchase has a positive influence on green purchase intention (Jansson, 2011). Hence, a strong sense of being obliged can precipitate green behavior. Prior studies find a positive direct link between the sense of being obliged and consumers' intention to book green hotels (Prakash and Pathak., 2017; Jansson, 2011).

Rahman and Reynolds (2016) revealed that customers' willingness to pay more positively effect on consumers' willingness to sacrifice for green consumptions and intention to

purchase green products. Therefore, guests with a high commitment level to the environment are more likely to pay more for green accommodation and are more likely to sacrifice for the green accommodation (Rahman and Reynolds, 2016). This in turn would enhance guests' intention to book green P2P accommodation (Han and Hyun, 2017). Furthermore, Behavioral intention is the most driver of actual behavior in prior studies conducted in different contexts, including online banking (Yu, 2012), collaboration technology (Brown et al., 2010), mobile internet (Venkatesh et al., 2012). Therefore, stronger guests' intentions to use P2P accommodation will lead to a higher determination to engage in green consumption. Consequently, we may propose the following hypotheses.

H17: Guests' attitudes to green P2P accommodation has a positive influence on their intention to book green P2P accommodation.

H18: Perceived behavioral control has a positive influence on guests' intention to book green P2P accommodation.

H19: The sense of being obliged has a positive influence on guests' intention to book green P2P accommodation.

H20: Guests' willingness to pay more has a positive influence on their intention to book green P2P accommodation.

H21: Guests' willingness to pay more has a positive influence on their willingness to sacrifice for green P2P accommodation.

H22: Guests' willingness to sacrifice for green P2P accommodation has a positive influence on their intention to book green P2P accommodation.

H23: Guests' intention to use green P2P accommodation has a positive influence on their behavior to use green P2P accommodation.

The Moderating Effect of Guest Attributes (Age, Gender, and income).

Hotels encourage their guests to engage in green/ eco-friendly activities during their accommodation stay (e.g., saving energy/water, reusing towels, reducing solid wastes, choosing a green option, and recycling) and to protect natural resources. Guests' attributes such as age, gender, and income are vital factors influencing on consumers decision making of green behaviours (Han et al, 2011). In the green hotels context, prior studies pointed out that age, gender, and income are major factors that influence on guests behaviours (Han et al, 2011). However, these essential attributes of guests in P2P accommodation are less researched (Ufford, 2015). The role of age, gender and income in green behaviour has been a subject of interest in tourism and hospitality management and marketing as age, gender and income are considered key variables for market segmentation (Lee and Kim 2018).

In their study on conservation of water through the participation of customers in towel reuse, Dimara et al. (2017) found that guests' characteristics (e.g. age and gender) effect the decision making of loading patrons. Specifically, the findings of their study revealed that younger consumers show greater intention to pay more for the reuse program of the towel of the hotel compared to older consumers. These results are consistent with prior study findings in which hotel guests less than 30 years old exhibit a higher willing to book green hotels and willingness to pay more for green hotels compared to those consumers between 29 and 60 years old. Han et al. (2011) also pointed out that females are willing to pay more for green hotel and showing higher intention to visit green hotels compared to males. Therefore, the following hypotheses have been suggested:

H24: Guest attributes (Age, Gender, and income) moderate the relationship between attitude, perceived behavioural control, sense of obligation, willingness to sacrifice, willingness to pay more, and their intention to use green P2P accommodation.

Methodology

Sampling Procedure

A positivist research philosophy was adopted with a quantitative method in order to validate our model; the data were collected in May 2018 through a survey questionnaire. The study population involved all the guests who have had a P2P accommodation booking in the past year. The wide range of sustainably managed hotels in the U.K. is the main reason behind choosing the U.K. as the location of our study.

A pilot test was undertaken to evaluate the validity and reliability of the study instrument. A group of fifty-five guests who mentioned that they have had a P2P accommodation booking in the past year. Their comments lead to refinement of the instrument in terms of its readability, length, format, and clarity.

The respondents were frequent P2P accommodation users who resided in different regions of the United Kingdom randomly generated by a well-known U.K. online survey company. The hyperlink was sent to a random sample of 6,000 consumers from a database-marketing firm and this marketing firm had access to a representative panel of the travellers made up of more than 2.8 million registered travellers. The e-mail invitation also contained details of the purpose of the study, the time it would probably take to fill out the survey and the URL hyperlink to the questionnaire was shared through the company platform. Only those who agreed to participate in the survey were able to proceed. Respondents were selected by also considering their gender, age, occupation, and education level. Two screening questions about frequency of P2P accommodation stay and knowledge of green P2P were included in the e-mail invitations. In particular, to participate in the survey, the subjects had to be

frequent consumers who stayed at a P2P accommodation at least once every six months and who knew what a green P2P was. The questionnaires were posted between May 21, 2018, and June 5, 2018.

In total, 750 participants were approached and 29 with missing values were excluded. Therefore, 721 replies were considered valid for further analysis. This represents a large number of cases, as appropriate in a complete case approach (Hair et al. 2015). Amongst the 721 cases, male respondents formed the majority (56.0%), with female respondents totalling (44.0%). The participants' age ranged from 18 years old to 60 years old. The average age of all respondents was 34.5 years old. The majority of the respondents indicated their income as between L.E.25, 000- L.E.39, 999 (45.0%). The respondents' level of education was also asked; a majority of the participants reported that they have bachelor degree (56.0%). About 40.0% indicated, that they have a diploma. Moreover, these participants were from diverse geographical areas of the U.K. The survey participants' average frequency of booking P2P accommodation per year was 3-6 times. The respondents have about 5.3 room nights per year on average.

Measurement Instruments

For each construct, this study selected observed variables or items based on their theoretical relevance and appearance in previous research, and modified them in accordance with the advice of eight experts recruited from hotels and universities (see Table 1 and Appendix A). Specifically, Actual booking and Intention to book green P2P accommodation measures were borrowed from prior studies (e.g. Ajzen, 1991; Line and Hanks, 2016 ; Kanchanapibul et al., 2014), while four items from Han et al. (2011) and Line and Hanks (2016) measured consumers' attitude to green P2P accommodation. The construct 'environmental concerns' was measured through four items based on Schuhwerk and Lefkoff-Hagius (1995) and Line

and Hanks (2016). Perceived behavior control was operationalized with three items, as proposed by Ajzen (1991), Ajzen and Fishbein (1980) and Han et al. (2010). The sense of being obliged to book green P2P accommodation was measured through three items adopted from Onwezen et al. (2013). Subjective norms was measured using four items adopted from previous studies (e.g. Wu and Zhang, 2014; Dean et al., 2012; Chen and Peng, 2012; Arvola et al., 2008). Established and validated measures for the Bio-spheric, Altruistic, and Egoistic value orientations were adopted from Schwartz (1994) and Stern et al. (1999). Awareness of consequences was measured through four items adopted from Zhang et al. (2017). Finally, willingness to pay more, willingness to sacrifice for the environment, and willingness to sacrifice for P2P accommodation were borrowed from prior studies (e.g. Rahman and Reynolds, 2016; Davis and Coys, 2011).

Data Analysis and Results

To assess the research model nomological validity, the present study analyzed the survey data using SPSS and AMOS 20 software with a two-step analytic approach (Anderson and Gerbing, 1988). First, the measurement model was assessed to evaluate the reliability and validity of the study measures. Second, the structural model was established to assess goodness of fit of the model and hypothesis testing (Hair et al., 2015).

The normality of the data was assessed by estimating the skewness and kurtosis of each measurement item (Appendix A). As values for skewness and kurtosis between 2.00 and -2.00 are regarded to be acceptable in order to prove normal distribution (George & Mallery, 2010).

Measurement Model

To evaluate the measurement model, both reliability and validity must be satisfactory (Hair et al., 2015). All items had significant influence on their specified variables ($p < 0.001$), and loaded above 0.60 on their constructs (Hair et al., 2015). The findings of the present study provided evidence for each scale unidimensionally (Table 1). The internal consistency of each variable was supported as composite reliability, Cronbachs' α of study constructs gave results above 0.70, exceeding the recommended value proposed by Bagozzi and Yi (1988), and Hair et al. (2015) (see Table 1). The value of Average Variance Extracted (AVE) for each construct ranged from 0.580 to 0.741, exceeding the recommended value of 0.50 suggested by Fornell and Larcker (1981), and Hair et al. (2015). Therefore, convergent validity was supported. The Bentler-Bonnet coefficient for our model is 0.927, which is indicative of adequate convergent validity. Furthermore, the AVE square root for all variables was always greater than its correlation with any other variable, which supports the discriminant validity of the study constructs (Klarner et al., 2013) (Table 2). In addition, Building on Bagozzi et al. (1991), we addressed the multi-collinearity issue in our data sets. All the VIFs for the variables were below 2, suggesting that collinearity issues were absent from the measurement model (see Table 1).

Insert Table 1 about here

The current study statistically controlled for potential common method bias in three ways. First, we followed the procedure proposed by Podsakoff et al. (2003), who suggested that researchers should use different scale endpoints. In the case of our questionnaire there are three different types of scale endpoint. By applying that procedure, "respondents cannot easily combine related items to cognitively "create" correlation needed to produce a CMV-biased pattern of responses" (Chang et al., 2010, p. 180). Second, Harmans' single-factor test indicated that the largest factor accounted for 23.57% (the variances explained ranged from

17.36% to 23.57%) and no general factor accounted for more than 50 % of the variance (Teo et al,. 2015). Third, the study utilized the general factor covariate method in order to assess potential method effects. The findings demonstrated that the reestimated framework with the common method variance factor demonstrated insignificant framework improvement compared to the original one. Consequently, the results regarding the common method bias confirm that it was not a serious concern.

Insert Table 2 about here

Structural Model

As noted above, testing the hypotheses or the structure model evaluation was taken as the second step in assessing our proposed model after assessing the measurement model. The present study model assigns 73% to intention to use green P2P accommodation, and 69% to actual booking, which indicates that it has a stronger prediction capacity. The results of testing hypotheses from H1 to H23 using AMOS-SEM approach are illustrated in Figure 2. The values of the CFA with maximum-likelihood estimation method demonstrate the satisfactory fit of this model to the data (χ^2 = 1456.320, df = 608, p < .001, χ^2/df = 2.219, RMSEA = 0.067, CFI = 0.962, IFI = 0.965, TLI = 0.954) indicate that our model fit was suitable.

Insert figure 2 about here

Before testing the proposed links, our framework was compared to the VBN framework (χ^2 = 718.032, df = 168, p < .001, χ^2/df = 3.403, RMSEA = 0.096, CFI = 0.931, IFI = 0.940, TLI = 0.932), environmental commitment theory (χ^2 = 226.372, df = 64, p < .001, χ^2/df = 3.473, RMSEA = 0.098, CFI = 0.873, IFI = 0.894, TLI = 0.876), and TPB model (χ^2 = 1236.490, df = 502, p < .001, χ^2/df = 2.327, RMSEA = 0.094, CFI = 0.960, IFI = 0.962, TLI = 0.951)

in order to identify the superiority of the suggested model in assessing the intention to book green P2P accommodation. As demonstrated in Table 3, our suggested final model has a greater fit than do the TPB theory, environmental commitment theory, and the VBN theory. Furthermore, our model demonstrated better predictive ability for guests' behavior to book green P2P accommodation (R^2 = 0.691) than the original VBN theory (R^2 = 0.483), environmental commitment theory (R^2 = 0.306), and TPB (R^2 = 0.436). A chi-square difference test demonstrated that our final model was significantly superior to the VBN theory ($\Delta\square 2 = 368.439$, $p < .001$), environmental commitment theory ($\Delta\square 2 = 473.471$, $p < .001$), and TPB ($\Delta\square 2 = 862.240$, $p < .001$). Table 3 shows the findings of these comparisons. In line with previous studies, the present study results pointed out that the suggested extended model increased our prediction of guests' intention and seemed to be superior to the TPB, environmental commitment theory, and the VBN theory. Accordingly, this model was used in hypotheses testing.

Insert Table 3 about here

There are five other significant relationships that have not been proposed in our initial model have been discovered based on the SEM analysis. Those five relationships will be retained in the final model for further discussion. With adding of those five discovered links, our model showed improved fits compared to the hypothesized model and other models e.g. the VBN theory and the TPB model. Fig.2 demonstrated the final model and the results based on the SEM analysis.

All the hypotheses proposed in our study were supported, except H6. First, the links between the TPB theory variables (i.e., attitude, perceived behavioral control, subjective norm, and intention) were evaluated. As proposed, the relationships were all significant (β = 0.36, 0.11,

0.29, 0.21, $p<0.05$, 0.001), respectively. Environmental concerns has a positive influence on attitude ($\beta = 0.21$, $p<0.001$). Second, the relationships between the factors within the VBN theory (i.e., awareness of consequences, egoistic value, biospheric value, altruistic value, sense of obligation, and intention) were assessed. As expected, the relationships were all significant. Third, the links between the environmental commitment theory variables (i.e., willingness to pay more, willingness to sacrifice for the environment, willingness to sacrifice for green P2P accommodation, and intention were evaluated. As suggested, the associations were all significant.

Table 4 shows the indirect effects of the present study factors. Environmental concerns, subjective norm, and awareness of consequences had a significant indirect impact on behavioral intention through attitude. Awareness of consequences had a significant indirect impact on behavioral intention through sense of obligation and perceived behavioral control. In addition, egoistic value, altruistic value, and biosphric value had a significant indirect impact on behavioral intention through willingness to pay more and sense of obligation. Finally, willingness to sacrifice for green P2P accommodation and willingness to pay more mediate the relationship between willingness to sacrifice for the environment and behavioral intention.

Insert Table 4 about here

An interaction effect of guest attributes (age, gender, and income) on the relationships between attitude, sense of obligation, willingness to pay more, perceived behavioral control, willingness to sacrifice for green P2P accommodation and intention was conducted using The formula suggested by Chin et al (2003) has been utilized in order to assess the differences in path coefficients between subgroup (e.g. older vs younger, males vs females, high-income vs low-income). As shown in table 5, attitude and willingness to pay more have higher impact on intention to use P2P accommodation for younger guest. Gender has no influence on the

link among perceived behavioral control, willingness to sacrifice for green P2P accommodation, attitude, sense of obligation, willingness to pay more, and intention. On the other hand, guest income moderates the relationship between willingness to sacrifice for green P2P accommodation, attitude, sense of obligation, willingness to pay more, and intention to use P2P accommodation.

Insert Table 5 about here

Discussion and Conclusions

Conclusions

This study is a first attempt to predict guests' behaviour to use green P2P accommodation and corresponding determinants based on an integrative model of TPB and VBN theory. The proposed theoretical framework includes (1) four determinants of guests' intention: attitude, perceived behavioural control, sense of obligation and willingness to pay more; and (2) seven antecedents of those determinants. The final integrated model explains 73% of the variance in intention of using green P2P accommodation, which demonstrates the theory's appropriateness in the area of green accommodation behaviour research. Our findings indicate that extended TPB has higher utility than TPB and VBN to predict green purchase intention. This study confirmed the efficacy of an extended TPB as a research model useful for explaining consumers' green purchase intentions and validates the claim that, should attitude, perceived behavioural control, sense of obligation, and willingness to pay more be positive, consumers will be more likely to have book intentions for green P2P accommodation.

Our findings suggest that guests' intention to book green P2P accommodation is driven by their attitude to green P2P, perceived behavioral control, sense of obligation, and willingness to pay more, concurring with the findings of Yadav et al (2016), Choi, Jang, and

Kandampully (2015), Verma and Chandra (2018), Han (2015), and Tang and Lam (2017). They conclude that perceived behavioral control, sense of obligation, and willingness to pay more play a significant role in improving consumers' intention to book green accommodation. However, sense of obligation was the most significant variable in the TPB theory to predict guests intention to book green P2P ($\beta = 0.54$). However, the relative significance of variables is different from these studies. In the present research, sense of obligation is the strongest variable while perceived behavioural control exerted a marginal influence. These findings are in line with Zhang et al. (2017) results, which indicated that sense of obligation was generally the strongest drivers of behavior intentions. Conversely, Han et al. (2017) revealed that personal norm is a less significant variable effecting behavioral intention to take part in bicycle tourism compared to other self-interests, such as perceived behavioral control, subjective norm, and attitude.

Interestingly, sense of obligation and subjective norm revealed similar effect size while the influence of sense of obligation was slightly stronger. This is somewhat different from prior research in the U.S. that reported subjective norm has a stronger influence on behavior intention than sense of obligation (Shin et al., 2018). Our study also revealed that behavioral intention fully mediate the effect of sense of obligation on actual behavior but we found that sense of obligation had a direct influence on actual behavior as well. This result means that guests may use green P2P based on the strength of their moral obligation even when they may not consciously intend to use green P2P accommodation.

The results confirm that environmental concerns, subjective norms, and awareness of consequences have positive effect on attitude toward green P2P accommodation. These results are compatible with Line and Hanks (2016), Han (2015), Nguyen et al. (2017), and Wu and Chen (2017) who found that environmental concerns, subjective norm, and awareness of consequences positively effect on consumers attitude towards green hotels. The

findings imply that consumers' perceived probability of an expected outcome's occurrence, environmental concerns, subjective norm, and awareness of consequences contribute to building their attitude toward booking green P2P accommodation.

The results also indicate that awareness of consequences, altruistic value, and biospheric value orientation are relevant antecedents in order to form sense of obligation to book green P2P accommodation that is consistent with previous study (e.g. Roos & Hahn, 2017). In line with the original mediating model of the VBN theory (Stern, 2000), biospheric value, altruistic value, and adverse consequences for valued objects were indicated to have a significant indirect effect on behavior intention. These results reveal that using the sequential model of the VBN in generating intention or behavior is effective for theory extension or broadening rather than altering existing links within the theory or adding new links on the VBN model. Scholars should understand the efficacy of this sequential mediating model for factors when establishing a theory to investigate a pro environmental behavior. While, egoistic value did not result in a significant association to sense of obligation as initially proposed. A possible explanation could be that English consumers do not place a high emphasis about wealth, effecting power over others, social dominance, and authoritative power.

Empirical findings confirmed subjective norms, awareness of consequences, and sense of obligation to be essential in explaining consumers' green consumption behavior (Han, 2015). Notwithstanding, our results was slight vary compared to prior empirical studies. For instance, Han's (2015) pointed out that ascription of responsibility was the largest predictor of intention among the VBN factors, whereas sense of obligation was the highest in our study. The difference demonstrates how consumers' decisions are formed in two distinct environment.

Theoretical implications

This study contributes to academic knowledge by investigating Factors affecting guests' behavior to use green P2P accommodation and thus expanding the literature on green marketing. Therefore, we hoped by our study to contribute to the literature in the following ways. Our study extended the TPB model by adding some variables touching on environmental concerns and we combined it with the value-belief-norm model and the environmental commitment theory to provide a better understanding of guests' attitudes to green products and green booking intention. The present study integrated the VBN theory with the theory of planned behavior (TPB) and indicated the suggested model to be significantly more effective in explaining green P2P booking. Together with this study, both extended versions of the TPB model indicated the possibility of broadening the TPB theory to apply to a slightly different environment. Theoretical implications of the present study lie largely on the important value of the integrated theories' effectiveness in understanding green behavior intentions, comprehensiveness in terms of theory broadening and deepening, and its applicability to future studies, resulting in the fulfilment of this study's objectives.

Practical implications

The managerial implications from the findings of this study for hotels and P2P accommodation managers who want to address guests' intentions to use green accommodation are several. First, the knowledge of what drives guests' intention to book green P2P accommodation is useful for these managers, who ought to develop actions and strategies aimed at improving guests' intention to book green P2P accommodation. The findings of the present study provide hotels managers with the empirical validation of a model that helps them to understand the drivers of guests' intention to book green P2P accommodation. These

managers should actively find ways to increase environmental concern (e.g., by promoting green campaigns) that might contribute to building favorable attitudes to green consumption in the long term. As the findings of the present study indicate, hotels' managers can enhance their guests' attitude by communicating with them via all the media to strengthen their belief that they can be more socially committed and can actively participate in protecting the health of the environment if they stay in green P2P accommodation. Our results also indicate that attitude fully mediates the influence of subjective norm and awareness of consequences on guests' intention to book green P2P accommodation. This is why hosts should enhance the level of guests' attitude in order to maximize the effect of subjective norm and awareness of consequences on guests' intention to book green P2P accommodation. Through social media networks, these hosts can encourage guests to book green P2P accommodation as an expression of personal responsibility to our environment or can at least advise their relatives to book green P2P accommodation if they cannot themselves afford to do so. Managers need to make the green activities of their accommodation more visible. Managers should publicize the green practices of their accommodation. For instance, they can have a menu that shows items that have been prepared with organic ingredients. These activities are a good strategy to fulfil guests need and demand for healthy stay at a P2P accommodation.

Second, guests nowadays are more anxious about their health when traveling internationally and domestically. This being the case, if guests stayed at green P2P accommodation managers could for instance offer them the various health-related benefits, which make green P2P accommodation more attractive to guests than non-green P2P accommodation (e.g. organic foods, non-chemically-based amenities, cotton towels, and fresh air with only natural scents). Furthermore, Subjective norm plays an important role especially for triggering guests booking behavior. For instance, managers can develop a card including a massage on a moral norm (e.g.

saving energy and reusing towels is the right thing to do) and placing it in the guest room would be a useful strategy for promoting green accommodation.

Third, managers should direct their strategies to attract guests to enhancing guests' awareness of the outcomes of green P2P accommodation, intention to pay more, positive attitudes, moral obligation, moral norms, and willingness to sacrifice for green P2P accommodation. For instance, hosts should inform their guests of their green activities, as well as the negative outcomes of using non-green accommodation (e.g. the exhaustion and pollution of natural resources). Managers need to educate their customers on their green activities and the consequences of environmental issues (e.g., pollution, climate change, and natural resources exhaustion) and harmful environmental effects resulted on the P2P accommodation (e.g., wastes from rooms, excessive use of energy and water, and other facilities). These activities will improve the awareness of guests of the results of environmental issues and improve perceived social pressure level for green activities, which improve attitude toward green P2P accommodation to take a green behavior for a P2P accommodation.

Fourth, Managers to make the best use of the awareness of consequences, bio-spheric value orientation, and altruistic values in generating intention to book green P2P accommodation, need to increase such mediating factors. Managing these mediator factors in effective way will maximize the significant role of biospheric value, egoistic value, altruistic value orientation, awareness of consequences, and willingness to pay more in improving guests' intention to book green P2P accommodation. The results also suggest that green P2P accommodation need to target the guests who are having more concern on the environment (altruistic oriented) and who have a positive attitudes to green consumption by booking green P2P accommodation. For example, managers can advertise their environmental strategies, and play an important role in educating their guests with respect to (environmental) consequences, as well as explain the environmental threats posed by conventional P2P

accommodation. Furthermore, our study revealed that age and income play a crucial role in guests' green decision making pertinent to green accommodation. Our findings revealed that such willingness to pay more, attitude, sense of obligation, and willingness to sacrifice for green P2P accommodation for promoting green P2P accommodation is effective for female and young guests but not effective for male and older guests. Finally, for the government, it is fundamental to build and strengthen the idea of green consumption by awarding and promoting P2P accommodation and hotels to increase their involvement in protecting the environment. For instance, the government can create more public awareness by including environmental education in the colleges or school's curriculum. Governments should educate citizens about green consumption technology and its implications.

Limitations and future research directions

Though the present study makes some contributions, it also has some limitations, which provide a direction for further research. First, our study uses the TPB and VBN models to predict guests' behavior to book green P2P accommodation in developed countries (the U.K. context), so further research may need to apply our model in a developing countries context. Moreover, some variables such as trust in green accommodation, their perceived value and self-identity seem to be appropriate elements, which can affect the variables of guests' green booking behavior. Second, the cross-cultural issue was overlooked in our study, so further studies in different countries might add to the knowledge if our proposed model was validated there. Third, our proposed model has been applied in the P2P context; thus, further studies might focus on other sectors such as fast food restaurants and green travel products. Last, the present study model integrating the TPB, environmental commitment theory, and VBN theories is open to adding new variables. Essential factors in the context of green

consumption may not have been integrated in the framework. Examining such factors and adding them to our study model would be a helpful extension of the present study.

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Table 1. Measurement statistics of construct scales.

Construct/Indicators	Indicator loadings	CR	VIF	Cronbach's α	Cronbach's α of the original scale	AVE	MSV	ASV
Actual booking		**0.97**	**2.049**	**0.93**	**0.91**	**0.67**	**0.204**	**0.182**
ACT1	**0.92**							
ACT2	**0.94**							
ACT3	**0.89**							
ACT4	**0.92**							
Intention to book		**0.94**	**1.64**	**0.93**	**0.95**	**0.64**	**0.216**	**0.193**
INT1	**0.89**							
INT2	**0.92**							
INT3	**0.91**							
INT4	**0.96**							
INT5	**0.85**							
INT6	**0.92**							
Attitude toward green P2P accommodation		**0.93**	**2.073**	**0.94**	**0.93**	**0.72**	**0.239**	**0.164**
ATT1	**0.93**							
ATT2	**0.91**							
ATT3	**0.94**							
ATT4	**0.92**							
ATT5	**0.94**							
Perceived behaviour control		**0.93**	**2.037**	**0.92**	**0.90**	**0.65**	**0.203**	**0.273**
PBC1	**0.95**							
PBC2	**0.92**							
PBC3	**0.91**							
Sense of obligation		**0.92**	**2.720**	**0.93**	**0.94**	**0.68**	**0.303**	**0.216**
SOB1	**0.94**							
SOB2	**0.91**							
SOB3	**0.93**							
Environmental concerns		**0.93**	**2.102**	**0.90**	**0.89**	**0.62**	**0.219**	**0.028**
ENC1	**0.93**							
ENC2	**0.95**							
ENC3	**0.90**							
	0.89							

ENC4								
Subjective norms **SUB1** **SUB2** **SUB3** **SUB4**	 **0.89** **0.87** **0.92** **0.94**	**0.92**	**1.827**	**0.87**	**0.91**	**0.58**	**0.302**	**0.038**
Willingness to pay more **WPM1** **WPM2** **WPM3**	 **0.94** **0.91** **0.97**	**0.94**	**1.049**	**0.91**	**0.89**	**0.60**	**0.238**	**0.208**
Willingness to sacrifice for green P2P accommodation **WSP1** **WSP2** **WSP3**	 **0.90** **0.89** **0.91**	**0.92**	**1.283**	**0.87**	**0.90**	**0.59**	**0.219**	**0.201**
Willingness to sacrifice for the environment **WSE1** **WSE2** **WSE3** **WSE4** **WSE5**	 **0.93** **0.94** **0.91** **0.88** **0.95**	**0.93**	**2.042**	**0.91**	**0.87**	**0.72**	**0.273**	**0.218**
Awareness of consequences **AWC1** **AWC2** **AWC3**	 **0.93** **0.90** **0.95**	**0.95**	**2.133**	**0.92**	**0.89**	**0.59**	**0.202**	**0.029**
Egoistic value **EGV1** **EGV2** **EGV3**	 **0.97** **0.93** **0.94**	**0.96**	**2.032**	**0.94**	**0.93**	**0.74**	**0.273**	**0.243**
Altruistic value **TRV1** **TRV2** **TRV3** **TRV4**	 **0.91** **0.89** **0.94** **0.92**	**0.94**	**1.340**	**0.91**	**0.91**	**0.58**	**0.234**	**0.173**

Biospheric value orientation **BSV1** **BSV2** **BSV3**	**0.93** **0.91** **0.94**	**0.93**	**1.032**	**0.91**	**0.93**	**0.62**	**0.290**	**0.131**

Notes:

ACT= Actual booking**; INT**= Intentions to book; **ATT=** Attitude towards green P2P accommodation; **PBC** = Perceived behavioural control; **SOB** = Sense of obligation; **ENC**= Environment concerns; **SUB=** Subjective norms; **AOC =** Awareness of consequences; **EGV =** Egoistic value orientation**; BSV =** Biospheric value orientation; **TRV** = Altruistic value orientation; **WPM=** willingness to pay more; **WSE**= Willingness to sacrifice for the environment; **WSP**= Willingness to sacrifice for P2P accommodation; **VIF** = Variance Inflation Factor; **MSV**= Maximum Shared Squared Variance; **ASV**= Average Shared Squared Variance.

Table 2. Discriminant Validity of the Correlations between Constructs

Construct			Correlations and square roots of AVE											
	ACT	INT	ATT	PBC	SOB	WPM	WSP	WSE	ENC	SUB	AOC	EGV	BSV	TRV
ACT	0.816a	0.408c	0.348	0.271	0.304	0.273	0.389	0.274	0.238	0.118	0.217	0.438	0.289	0.124
INT	0.690b	0.807	0.289	0.379	0.182	0.196	0.323	0.153	0.129	0.320	0.178	0.128	0.173	0.337
ATT	0.428	0.432	0.816	0.468	0.290	0.403	0.227	0.440	0.216	0.217	0.437	0.492	0.228	0.290
PBC	0.662	0.678	0.630	0.832	0.102	0.237	0.182	0.210	0.403	0.189	0.226	0.227	0.472	0.479
SOB	0.328	0.690	0.439	0.438	0.795	0.443	0.403	0.207	0.227	0.409	0.198	0.320	0.293	0.372
WPM	0.289	0.532	0.236	0.378	0.443	0.785	0.128	0.438	0.187	0.221	0.321	0.178	0.428	0.602
WSP	0.320	0.620	0.367	0.521	0.663	0.538	0.788	0.364	0.372	0.492	0.118	0.132	0.127	0.364
WSE	0.526	0.336	0.680	0.523	0.473	0.548	0.439	0.810	0.178	0.217	0.327	0.403	0.327	0.384
ENC	0.319	0.493	0.489	0.330	0.602	0.569	0.543	0.574	0.765	0.189	0.119	0.267	0.443	0.178
SUB	0.472	0.327	0.639	0.549	0.329	0.650	0.534	0.374	0.376	0.808	0.402	0.502	0.128	0.438
AOC	0.626	0.523	0.276	0.643	0.532	0.387	0.489	0.474	0.593	0.630	0.840	0.618	0.417	0.187
EGV	0.463	0.328	0.389	0.480	0.609	0.459	0.447	0.343	0.473	0.478	0.478	0.770	0.287	0.340
BSV	0.290	0.478	0.577	0.590	0.437	0.356	0.439	0.498	0.532	0.490	0.503	0.568	0.793	0.279
REV	0.536	0.639	0.298	0.437	0.629	0.630	0.438	0.343	0.438	0.637	0.437	0.590	0.487	0.781

Note: a Composite reliabilities are along the diagonal, **b** Correlations, **c** Squared correlations

Table 3. Results of the structural-model comparisons

Goodness-of-fit Statistics & R square	VBN theory	Environmental commitment theory	TPB	Proposed Model	Final Model
Fit indices					
χ^2	718.032	226.372	1236.490	1248.386	1456.320
df	168	64	502	526	608
χ^2/df	3.403	3.473	2.327	2.128	2.129
RMSEA	0.096	0.098	0.094	0.089	0.087
CFI	0.931	0.873	0.960	0.962	0.962
IFI	0. 940	0.894	0.962	0.963	0.965
TLI	0.932	0.876	0.951	0.953	0.954
NFI	0.817	0.793	0.847	0.850	0.857
PGFI	0.742	0.718	0.783	0.786	0.796
R^2 (Adjusted):					
Actual booking	0.483	0.306	0.436	0.510	0.691
Intention to book	0.596	0.406	0.502	0.694	0.732
Attitude	0.201	0.192	0.219	0.27	0.39
Perceived behavioral control	0.143	0.206	0.208	0.22	0.17
Sense of obligation	0.417	0.439	0.438	0.59	0.58
Willingness to pay more	0.362	0.416	0.437	0.58	0.61
Willingness to sacrifice	0.503	0.371	0.304	0.47	0.49

Note:

1- **Chi-square difference test between the final model and the VBN Theory: $\Delta\chi^2 = 368.439$, $p < .001$.**

2- **Chi-square difference test between the final model and the environmental commitment theory: $\Delta\chi^2 = 473.471$, $p < .001$.**

3- **Chi-square difference test between the final model and the TPB: $\Delta\chi^2 = 862.240$, $p < .001$.**

Table 4. Direct and indirect impact assessment

Paths	Specific indirect effects	Direct effect	Total effect	Types of Mediation
ENC→ATT→INT	0.2560***	0.0237NS	0.2797***	Full mediation
SUB→ATT→INT	0.2938***	0.00820NS	0.4038***	Full mediation
AWC→ATT→INT	0.3204***	0.0061NS	0.3465***	Full mediation
AWC→PBC→INT	0.4136***	0.0263NS	0.4399***	Full mediation
AWC →SOB→INT	0.3921***	0.0024NS	0.4945***	Full mediation
EGV →SOB→INT	0.2890***	0.0037NS	0.2893***	Full mediation
BSV→SOB→INT	0.2180***	0.4320***	0.6481***	Partial mediation
TRV→SOB→INT	0.2037***	0.2475***	0.4512***	Partial mediation
WSE→ WPM→INT	0.3301***	0.0065NS	0.3366***	Full mediation
WSE→ WSP→INT	0.2135***	0.0041NS	0.2180***	Full mediation

Table 5. Statistical Comparison of Paths.

Paths	Older (R2 = 0.39) Standardized path coefficient	T value	Younger (R2= 0.31) Standardized path coefficient	T value	Statistical comparison of paths
Attitude → intention	0.12	4.37***	0.23	3.19***	5.206***
Behavioral control → intention	0.05	1.78	0.03	1.68	1.215
Sense of obligation → intention	0.08	0.84	0.06	1.17	2.103
Willingness to pay → intention	0.21	4.82***	0.39	3.54***	4.905***
Willingness to sacrifice → intention	0.19	3.89***	0.37	5.18***	5.870***

Paths	High- income (R2 = 0.43) Standardized path coefficient	T value	Low-income (R2= 0.36) Standardized path coefficient	T value	Statistical comparison of paths
Attitude → intention	0.09	1.14	0.04	0.76	1.493
Behavioral control → intention	0.05	0.91	0.05	0.83	0.94
Sense of obligation → intention	0.06	0.84	0.04	0.76	1.04
Willingness to pay → intention	0.08	1.04	0.07	0.75	1.27
Willingness to sacrifice → intention	0.04	0.79	0.04	0.76	0.79

Paths	Female (R2 = 0.47) Standardized path coefficient	T value	Male (R2= 0.31) Standardized path coefficient	T value	Statistical comparison of paths
Attitude → intention	0.19	3.48***	0.14	3.04***	4.734***
Behavioral control → intention	0.13	3.17***	0.03	0.74	1.84
Sense of obligation → intention	0.31	3.87***	0.27	3.46***	4.617***
Willingness to pay → intention	0.42	5.19***	0.36	4.57***	6.701***
Willingness to sacrifice → intention	0.38	4.12***	0.19	2.53***	3.41***

Appendix A: Descriptive statistics and normality tests of the constructs in the model

Statistics	Skewness	Kurtosis	Mean	S.D	Corrected item-total correlation	Supporting literature
Actual booking (ACT)						**Ajzen (1991), Lam and Hsu (2006), Laroche et al, (2001), Le et al, (2010), Han et al (2010), Line and Hanks (2016), and Ko et al (2013). Kanchanapibul et al (2014).**
I feel that I have played a great part in helping the environment when I use green P2P accommodation (ACT1)	-0.438	0.280	3.8	0.70	0.58	
I feel more comfortable when I use green P2P accommodation rather than normal ones (ACT2)	-0.237	-0.403	2.3	1.84	0.66	
There is not much I can do about the environment, and my experience of green P2P accommodation does not change my belief (ACT3)	-0.219	0.289	4.1	0.69	0.78	
I aim to book a green P2P accommodation again after my first booking (ACT4)	-0.520	0.127	2.5	1.74	0.51	
Intention to book green P2P accommodation (INT)						**Ajzen (1991), Lam and Hsu (2006), Laroche et al, (2001), Le et al, (2010), Han et al (2010), Line and Hanks (2016), and Ko et al (2013). Kanchanapibul et al (2014).**
I am willing to book green P2P accommodation when traveling in the future (INT1)	-0.863	0.306	2.7	1.79	0.61	
I will consider booking green P2P accommodation because they are less polluting in coming times (INT2)	-0.674	0.028	3.4	0.84	0.57	
I will make an effort to book green P2P accommodation when traveling in the future (INT3)	-0.390	0.342	3.8	0.98	0.64	
I definitely want to book green P2P accommodation in near future (INT4)	-0.802	-0.639	4.1	0.75	0.58	
I avoid booking P2P accommodation which are potentially harmful to the environment (INT5)	-0.347	-0.548	4.3	0.76	0.61	
I will not consider environmental issues when making a booking (INT6)	-0.430	-0.654	2.5	1.23	0.53	
Attitude toward green P2P accommodation (ATT)						
For me, booking green P2P accommodation when traveling is Extremely bad (1)/Extremely good (5) (ATT1)	-0.403	0.437	3.4	0.94	0.53	
For me, booking green P2P accommodation when traveling is Extremely undesirable (1)/Extremely desirable (5) (ATT2).	-0.653	0.270	3.9	0.74	0.70	**Han et al (2011) and Line and Hanks (2016).**
For me, booking green P2P accommodation when traveling is Extremely unpleasant (1)/Extremely pleasant (5) (ATT3).	-0.297	0.349	2.5	1.77	0.55	
For me, booking green P2P accommodation when traveling is Extremely foolish (1)/Extremely wise (5) (ATT4)	-0.830	0.437	3.2	0.80	0.73	
For me, booking green P2P accommodation when traveling is Extremely unfavourable (1)/Extremely favourable (5) (ATT5).	-0.476	-0.344	2.6	1.83	0.69	
Perceived behaviour control (PBC)						**Ajzen (1991) and Ajzen and Fishbein (1980) and Han et al (2010) and Chen and Tung (2014).**
Whether or not I book green P2P accommodation when traveling is completely up to me (PBC1).	-0.537	0.038	3.3	0.92	0.403	
I am confident that if I want, I can book green P2P accommodation when traveling (PBC2).	-0.639	0.309	4.1	0.83	0.602	
I have resources, time, and opportunities to book green P2P accommodation when traveling (PBC3).	-0.239	0.439	3.9	0.79	0.470	
Sense of obligation to book green P2P accommodation **(SOB)**						**De Groot et al (2007) and Onwezen et al (2013).**
I feel morally obliged to book green P2P accommodation instead of conventional P2P accommodation when traveling (SOB1).	-0.594	0.703	3.6	0.91	0.627	
I feel personally obliged to travel in an environmentally sound way, such as by booking green P2P accommodation (SOB2).	-0.629	0.947	2.3	1.82	0.732	
I feel a moral obligation to take the environmental problems caused by green P2P accommodation into account when making book green P2P accommodation choices (SOB3).	-0.738	0.309	2.7	1.79	0.428	
Subjective norm (SUB)						**Dean et al. (2012), Chen and Peng (2012), and Arvola et al. (2008).**
Most people who are important to me think I should book green P2P accommodation when travelling in the future (SUB1)	-0.687	0.374	3.4	0.89	0.48	
Most people who are important to me would want me to book green P2P accommodation when going for booking (SUB2)	-0.489	0.640	2.5	1.87	0.50	
People whose opinions I value would prefer that I book green P2P accommodation (SUB3)	-0.897	-0.743	3.3	0.95	0.63	

My friend's positive opinion influences me to book green P2P accommodation (SUB4)	-0.613	-0.549	3.6	0.84	0.51	
Willingness to pay more (WPM)						**Lee et al. (2010) and Rahman and Reynolds (2016).**
It is acceptable to pay more for a green P2P accommodation that engages in green practices (WPM1)	-0.643	0.264	3.3	0.87	0.58	
I am willing to pay more for a green P2P accommodation (WPM2)	-0.739	0.382	2.7	0.84	0.70	
I am willing to spend extra in order to stay at an environmentally friendly P2P accommodation (WPM3)	-0.680	0.679	3.9	0.87	0.57	
Willingness to sacrifice for green P2P accommodation (WSP)						**Rahman and Reynolds (2016).**
I am willing to sacrifice quality by staying at a green P2P accommodation (WSP1)	-0.490	0.820	4.2	0.87	0.63	
I am willing to sacrifice convenience by staying at a green P2P accommodation (WSP2)	-0.719	0.493	4.0	0.83	0.59	
I am willing to sacrifice luxury by staying at a green P2P accommodation (WSP3)	-0.567	0.649	2.4	1.86	0.63	
Willingness to sacrifice for the environment (WSE)						**Davis and Coy's (2011) and Rahman and Reynolds (2016).**
I am willing to give things up that I like doing if they harm the natural environment (WSE1)	-0.648	-0.967	3.3	0.83	0.58	
I am willing to take on responsibilities that will help conserve the natural environment (WSE2)	-0.702	0.203	2.7	1.85	0.63	
I am willing to do things for the environment, even if I'm not thanked for my efforts (WSE3)	-0.662	0.639	4.5	0.79	0.59	
Even when it is inconvenient to me, I am willing to do what I think is best for the environment (WSE4)	-0.489	0.490	3.8	0.87	0.60	
I am willing to go out of my way to do what is best for the environment (WSE5)	-0.890	0.318	2.7	1.78	0.56	
Environmental Concerns (ENC)						**Schuhwerk and Lefkoff-Hagius (1995) and Line and Hanks (2016) and Matthes et al. (2014).**
I am concerned about the environment (ENC1).	-0.683	0.349	3.2	0.89	0.71	
The condition of the environment affects the quality of my life (ENC2).	-0.589	0.124	3.7	0.86	0.69	
I am willing to make sacrifices to protect the environment (ENC3).	-0.327	0.498	2.3	183	0.63	
My actions affect the environment (ENC4).	-0.543	0.252	2.8	1.87	0.54	
Awareness of consequences (AOC)						**Ajzen (2006) and Zhang et al (2017).**
Green P2P accommodation help to reduce the harms of pollution on people's health (AOC1).	-0.638	0.730	3.3	0.86	0.48	
Green P2P accommodation help to avoid the exhaustion of natural resources and extinction of thousands of species (AOC2).	-0.730	0.702	2.8	1.86	0.52	
Green P2P accommodation help to minimize environmental degradation (AOC3)	-0.618	0.536	3.2	0.87	0.63	
Egoistic value orientation (EGV)						**Schwartz (1994) and Stern et al (1999).**
… successful (achieving goals) (EGV1)	-0.493	0.426	2.7	1.89	0.63	
… wealth (material possessions, money) (EGV2)	-0.730	0.518	2.3	1.83	0.47	
… authority (the right to lead or command)(EGV3)	-0.698	0.603	4.2	0.77	0.69	
Altruistic value orientation (TRV)						**Schwartz (1994) and Stern et al (1999).**
How important or unimportant is equality (equal opportunity for all) as a guiding principle in your life (opposed to my values/of supreme importance (TRV1)	-0.621	0.475	2.8	1.78	0.47	
… helpful (working for the welfare of others) (TRV2).	-0.793	0.582	3.3	0.84	0.56	
… social justice (correcting injustice, care for the weak) (TRV3).	-0.549	-0.398	2.6	1.82	0.60	
… a world at peace (free of war and conflict) (TRV4).	-0.947	0.671	3.1	0.86	0.65	
Biospheric value orientation (BSV)						**Schwartz (1994) and Stern et al (1999).**
… unity with nature (fitting into nature) (BSV1).	-0.480	0.668	2.3	1.27	0.54	
… protecting the environment (preserving nature) (BSV2)	-0.673	0.376	3.7	0.79	0.72	
… respecting earth (harmony with other species) (BSV3).	-0.239	0.840	3.2	0.88	0.59	

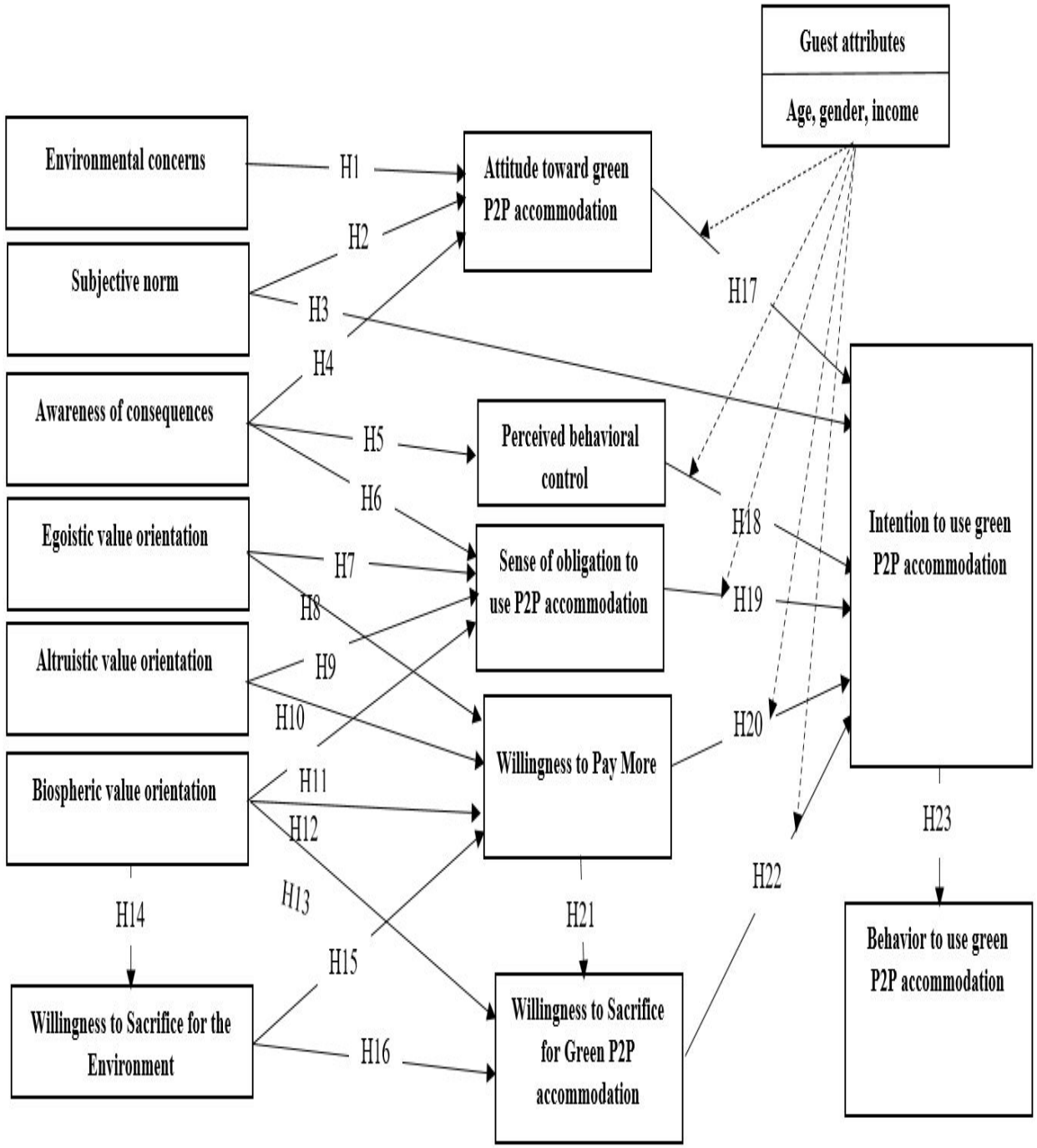

Fig.1. the Conceptual Framework

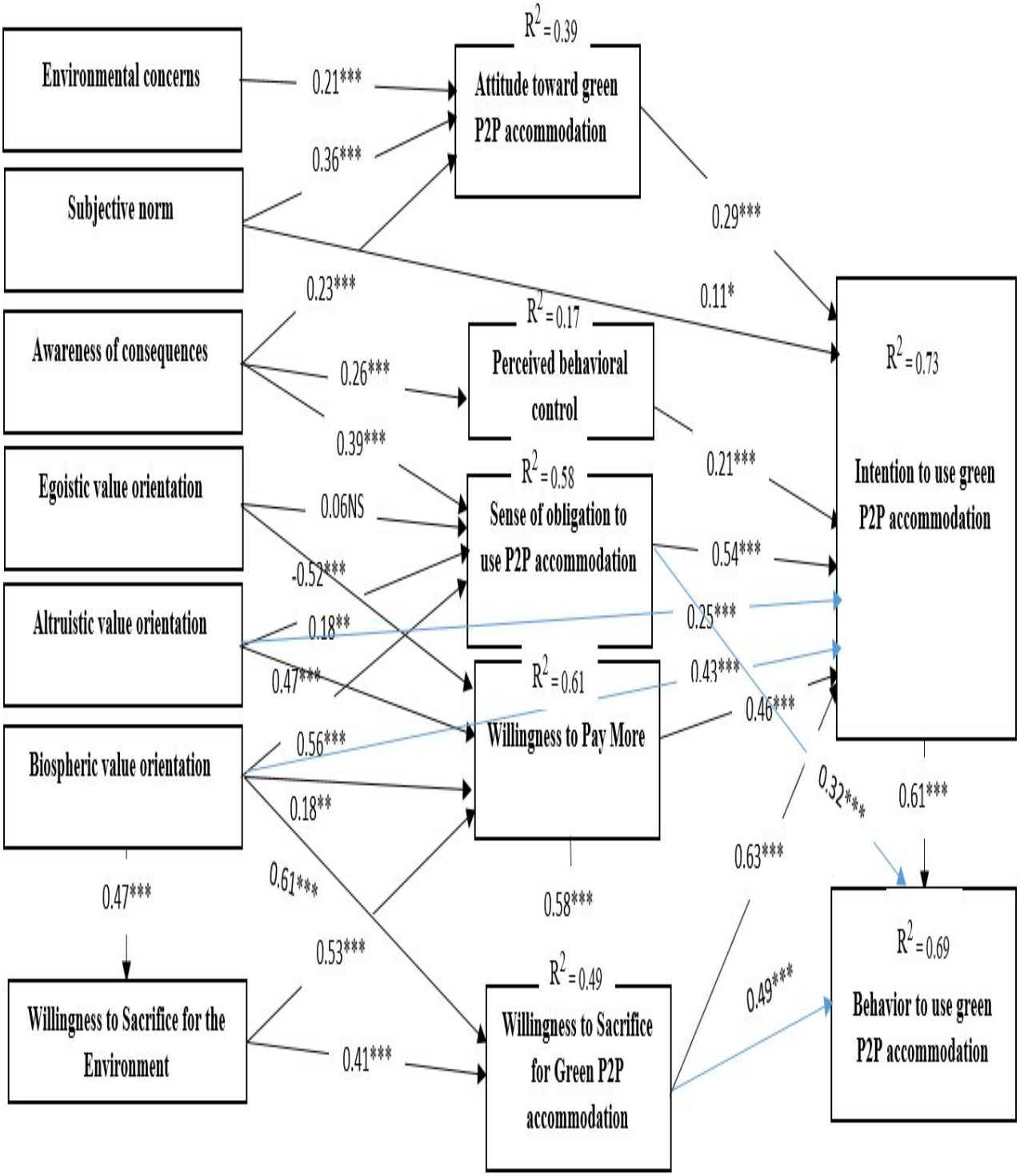

Fig. 2. PLS results of research model of main test.

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