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Decoding behavioural responses of green hotel guests: A deeper insight into the application of the theory of planned behaviour

Abstract

Purpose
This study presents a unique perspective on the application of the theory of planned behaviour (TPB) in the context of the green lodging industry via configurational modelling of three TPB dimensions in formulating hotel visitors' behavioural responses. Attitudes toward behaviour, subjective norms, and perceived behavioural control are the three indicators of TPB used to predict guests' continued intention to use and recommend green hotels on Cyprus, a Mediterranean island with a fragile ecological system.

Design/methodology/approach
A questionnaire-based survey is used to evaluate the study's objectives. A total of 320 guests of green hotels were approached between June and July 2017 and invited to participate. Among them, 260 valid cases were obtained and used for data analysis. The structural model was tested using structural equation modelling (SEM), the configurational model was assessed using the fuzzy-set qualitative comparative analysis (fsQCA), and the necessary predictor was evaluated using the necessary condition analysis (NCA).

Findings
The SEM results revealed that attitudes regarding behaviour increased the continued intention to visit and recommend green hotels. Similarly, subjective norms enhanced the guests' desired behavioural responses. Perceived behavioural control boosted their continued intention to visit, but this was insufficient for predicting green hotel guests' intention to recommend. The fsQCA results indicated that two causal models explain the conditions of both high and low levels of behavioural responses. The NCA results showed that attitudes toward behaviour were the only necessary condition of the two expected behavioural responses.

Originality/value

Several previous studies have tried to modify, decompose, or merge the TPB to provide theoretical support for proposed conceptual models indicating visitors' behaviours. Beyond such attempts, pragmatic analytical approaches (e.g., set-theoretic method) should be applied to present a comprehensive perspective on the association of TPB indicators in decoding the complexity of customers' behaviours. To the best of our knowledge, this study is among the first in hospitality research to use three TPB indicators and three analytical approaches to extend our knowledge of guests' behaviours related to green hotels.

Keywords: Theory of planned behaviour, green hotel, ethical consumption, configurational model, moral customer, necessary condition

Introduction

Desired behavioural responses from guests are among the major drivers of success for green hotels, as they contribute to the hotels' performances (Gil *et al*., 2001). Some scholars have identified guest loyalty as one of the ultimate objectives of green hotel hoteliers (e.g., Teng *et al*., 2018; Wu *et al.*, 2018; Yusof *et al.*, 2017). To formulate individuals' behavioural intentions, researchers must apply a solid scientific theory to sufficiently explain the proposed conceptual model (Olya & Gavilyan, 2017). The theory of planned behaviour (TPB) is frequently used to model green hotel guests' behaviours (e.g., Line & Hanks, 2016; Teng *et al.*, 2018). Specifically, Teng *et al.* (2018, p. 1138) stated, "TPB provide[s] green hotel practitioners with an important implication that investigating consumers' behavioural intention and attitude towards the green hotel would be the first step to predict whether consumers would actually choose green hotels to stay."

Many researchers believe that TPB needs to be decomposed, merged, or extended to support conceptual models for indicating customers' behavioural intentions (e.g., Dahiya & Gayatri, 2017; Han, 2015; Hsu & Huang, 2012; Kiatkawsin & Han, 2017; López-Mosquera &

Sánchez, 2012). These studies have indicated that the investigation of the net effects of three TPB indicators—namely, attitude toward the behaviour, subjective norms, and perceived behavioural control—is insufficient for predicting the expected behavioural intentions of moral customers.

In line with studies that have tried to apply dissected, merged, or extended versions of the TPB, this study intends to offer a deeper insight into the TPB for modelling the behavioural intentions of green hotel guests using the set-theoretic analytical approach of fuzzy-set qualitative comparative analysis (fsQCA). In other words, a sufficient combination of the three TPB variables is explored to predict the expected behavioural intentions of green hotel guests. Along with noting the sufficient net effect and combination of the three TPB variables, this is, to our knowledge, the first attempt in the literature to identify the necessary factors of TPB for achieving desired behavioural intentions among green hotel guests.

A green hotel is defined as "an environmental friendly lodging property that institutes and follows ecologically sound programs/practices (e.g., water and energy savings, reduction of solid waste, and cost saving) to help protect our planet" (Han *et al.*, 2010, p. 325). According to the Cyprus Tourism Organization, green hotels are responsible for minimizing their negative impact on the environment and maximizing their benefits through reinforcing sustainable development policies and pro-environmental actions. Specifically, green hotels are committed to satisfy standards for energy efficiency, consumption of green products, water conservation, air quality management, solid waste management, wastewater management and treatment, noise pollution control, toxic and harmful substance disposal management, human resource management, cooperation with local organizations, and environmental policies and practices for hotel operation.

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This study aims to evaluate the sufficient effects of three TPB variables on intention to recommend and continue to use green hotels using structural equation modelling (SEM). This empirical study uses SEM to explore the sufficient combination of the three TPB variables to explain conditions leading to the guests' desired behavioural intentions. Although SEM and configurational modelling investigate a sufficient net effect and combinations of three TPB variables (i.e., causal recipes), we use the necessary condition analysis to identify which TPB factor(s) are necessary to achieve the desired behavioural responses from green hotel guests. To the best of our knowledge, this is the first empirical study to model TPB using three analytical approaches (i.e., SEM, fsQCA, and NCA), which provide a deeper insight of the behaviour of green hotel guests.

Theoretical background

The theory of planned behaviour (TPB)

The TPB, which is an extended version of the theory of reasoned action through its inclusion of perceived behavioural control, explains how individuals intend to take action (Fishbein & Ajzen, 1975). Ajzen (1991, p. 181) described behavioural intention as "an indication of how hard people are willing to try, of how much of an effort they are planning to exert, in order to perform the behavior." The TPB suggests individuals' beliefs, attitudes, and intentions are involved in shaping their behaviours. Specifically, subjective norms, attitudes toward the behaviour, and perceived behavioural control are major predictors of an individual's behavioural intent. According to Ajzen (1991, p. 188), subjective norms refer to "the perceived social pressure to perform or not to perform the behaviour" and indicates "the degree to which a person has a favorable or unfavorable evaluation or appraisal of the behavior in question." Perceived behavioural control is described as "the perceived ease or difficulty of performing the behaviour."

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The TPB is commonly used to elucidate customers' behavioural intentions in the green consumption context, which is a complex social phenomenon. This complexity is caused by the non-linear, fuzzy, and dynamic processes of human decision-making and the complication of behaviours toward environmental issues (Lezak & Thibodeau, 2016; Olya & Akhshik, 2018). According to Lucas et al. (2008, p. 458), "Socio-psychological models of individual behavior reveal environment-related behaviors to be complex and non-linear, shaped by multiple antecedent factors applying in different sequences and with different weighting to determine the end behavior."

To tackle the complexity of green consumption, scholars have worked to break down, extend, modify, and/or merge the TPB to offer a sensible, theoretical justification for their proposed conceptual models (e.g., Han, 2014, 2015; Hsu & Huang, 2012; Kiatkawsin & Han, 2017; Kim & Han, 2010; López-Mosquera & Sánchez, 2012; Ryu & Jang, 2006). For example, Goh *et al*. (2017) extended the TPB with pro-environmental values to describe the behaviours of national park visitors. Similarly, Hsu and Huang (2012) modified the TPB with the inclusion of tourists' motivation to visit a destination and their actual behaviour. They advised that the association of tourists' motivation with their pro-environmental behaviour was not tenable.

Han et al. (2010) extended the TPB by adding environmentally friendly activities into the model to predict consumers' intention to visit a green hotel. They administrated an online survey among potential American customers and found that attitude toward the behaviour, subjective norm, and perceived behavioural control positively affected visit intention. They found the level of consumer engagement in pro-environmental behaviour did not moderate the associations of the three TPB elements with visit intention. However, Han *et al.*'s (2010) study was limited to the intention to visit a green hotel and did not include the behavioural intention of guests who already stayed in a green hotel.

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A recent study extended the TPB by adding moral reflectiveness and conscientiousness to the proposed structural model using SEM with Indian lodging data (Verma & Chandra 2018). They found that three elements of TPB plus two added factors improved young consumers' visit intention of Indian green hotels. Similarly, Chen and Tung (2014) extended the TPB model with perceived moral obligation and environmental concern to formulate consumers' intention to visit Taiwanese green hotels. Using SEM, they found environmental concern positively improved three TPB dimensions. They also found perceived moral obligation and three TPB elements enhanced consumers' visit intention. Botetzagias *et al*. (2015) extended TPB with moral norms to predict the recycling intention of Greek people. The SEM results showed that the moral norm, attitude, and perceived behavioural control increased the recycling intention of individuals. They found the subjective norm and demographic variables did not influence an individual's recycling intention.

López-Mosquera and Sánchez (2012) merged the TPB with the value-belief-norm (VBN) theory to elucidate visitors' intention to pay for the conservation of a suburban park. Similarly, Olya and Akhshik (2018) merged the TPB and VBN theories to model the pro-environmental behaviours of participants attending marine turtle tours. In the lodging industry, Han (2015) merged the TPB with VBN to predict the behaviours of green hotel guests. Kim and Han (2010) added a number of predictors (e.g., behaviour, normative, and control beliefs and environmental concessions behaviours) to the TPB model to predict guests' intention to pay conventional hotel prices. Several other studies have used a stripped down version of the TPB to explain models indicating customers' behavioural intentions (e.g., Lin *et al*., 2010; Sahli & Legohérel, 2015). In the decomposed version of the TPB, attitude is formed by the three indicators of relative advantage, compatibility, and complexity; perceived behavioural control is measured by two indicators—efficacy and facilitating conditions; and subjective norms are represented by normative influences.

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Against this backdrop, recent studies have called for the application of a pragmatic approach for advancing theories and methods to enlighten the black-box process of tourists' pro-environmental behaviours (Juvan & Dolnicar, 2017; Kiatkawsin & Han 2017; Olya & Akhshik, 2018). As an alternative solution for the extension, decomposition, and merging of the TPB, this empirical study proposes a configurational model, along with a structural model, to explore the configuration of three TPB elements in formulating the behavioural intentions of green hotel guests. This study also extends the current knowledge of ethical consumption by conducting an analysis of the necessary conditions to achieve the desired behavioural intentions of green hotel guests.

Figure 1 illustrates the proposed configurational model. The model includes the TPB configuration—composed of attitude toward the behaviour, subjective norms, and perceived behavioural control—to predict two desired behavioural intentions of green hotel guests, continued use and recommendations. Configurational modelling enables researchers to explore the causal recipes for the negation of an outcome (the low score of a variable). This study explores the combination of three TPB elements that lead to low scores of continued intention to use and intention to recommend (i.e., undesired behavioural intentions) from the perspective of green hotel guests.

Place Figure 1 here

Methodology

Instrument development

A scale of items for two behavioural intentions and three TPB variables was adapted from the extant studies. Continued intention to use green hotels was measured with three items extracted from Ajzen (1991), Ajzen and Fishbein (1980), and Han (2015). Three items from Prud'homme and Raymond (2013) were used to gauge guests' intention to recommend green hotels. Four

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items regarding attitude toward the behaviour, three items related to perceived behavioural control, and three items for subjective norms were adapted from Ajzen (1991), Ajzen and Fishbein (1980), and Han (2015). All study variables except attitude toward the behaviour were measured using a 7-point Likert scale that ranged from "1" (strongly disagree) to "7" (strongly agree). Four items for attitude toward the behaviour were measured using a 7-point Likert scale ranging from "1" (bad/foolish/unpleasant/harmful) to "7" (good/wise/pleasant/beneficial). Using different anchor labels for measuring the scale items is one procedural remedy that Podsakoff *et al.* (2003) recommend for controlling the potential threat of common method bias.

The questionnaire consists of three sections: an introduction, scale items for the five study variables, and guests' demographics. The purpose of the survey, statement on data confidentiality, voluntary participation, and anonymity of all respondents are outlined in the introduction. Two experts from the hospitality industry and two academics from the tourism and hospitality discipline evaluated the questionnaire prior to its use, and a pilot study with 15 hotel guests was conducted to ensure that all items were comprehensible to the respondents. The results of the pilot study confirmed that respondents had no difficulty understanding and responding to the questions.

Data

Data were obtained from Cyprus, where tourism and hospitality are main drivers of the economy. The fragile ecosystem of this small Mediterranean island is under pressure related to tourism development (Olya & Alipour, 2015). This study used a questionnaire-based survey to collect data from the guests of green hotels that operated under established mandatory sustainability standards for hotel establishments approved by the Cyprus Tourism Organization. To conduct the study, we first obtained permission for data collection from four green hotels before directly approaching guests and inviting them to participate in the survey.

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In all, 297 guests agreed to complete the survey. The field administration of the survey spanned from June 7 through July 28, 2017. Questionnaires with more than 20% of data missing were dropped from the study sample (Hair *et al.*, 2014). The response rate was 87%, with 260 valid cases used for data analysis.

The respondents' profiles are presented in Table 1. Forty (15.4%) respondents were between the ages of 18 and 27, 47 (18.1%) were 28–37 years old, 61 (23.5%) were 38–47 years old, 41 (15.8%) were 48–57 years old, and 71 (27.2%) were 58 years or older. The sample included 111 (42.7%) male and 149 (57.3%) female respondents. In terms of education level, 7 (2.7%) respondents had not completed high school, 56 (21.5%) held only a high school diploma, 66 (25.4%) had some college experience, 63 (24.2%) held a bachelor's degree, and 68 (26.2%) held graduate degrees. The annual income level of 43 (16.6%) respondents was under US$19,000; 57 (21.9%) respondents earned between $19,000 and $24,999 annually; 78 (30%) respondents earned between $25,000 and $49,999 per year; 44 (16.9%) earned between $50,000 and $69,999; and 38 (14.6%) respondents had an annual income of $70,000 or more. Respondents were asked about their experiences staying at a green hotel: 174 (66.9%) had no prior experience, whereas 86 (33.1%) respondents had stayed at a green hotel previously.

Place Table 1 here

Analytical approaches

The reliability and validity of the study measures were evaluated, and the internal consistency of the scale items was checked using Cronbach's alpha (α) and composite reliability (CR). Harman's single-factor analysis was performed to check the potential common method bias using SPSS. No general factor with a high R^2 emerged, which indicates the study measures were not seriously threatened by common method bias. A confirmatory factor analysis (CFA) was conducted to assess fit and construct validity.

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After testing the psychometric properties of the study measures, both symmetrical and asymmetrical analyses were applied to test proposed structural and configurational models, respectively. Symmetrical (e.g., regression, SEM) and asymmetrical techniques (e.g., fsQCA) differ mainly in their assumed association between the predictor (X) and outcome (Y). In the present study, three TPB elements are considered predictors (X) and two behavioural intentions are the outcomes (Y). The assumption in symmetrical thinking is that high or low scores of predictor (X) link with high or low scores of outcome (Y), whereas in an asymmetrical relationship, high/low scores of X do not necessarily connect with those of Y. Recent studies in hospitality and tourism support latent rational (Hsiao *et al*., 2015; Olya *et al.*, 2018; Pappas, 2017), as they recognize that a combination of the predictors must be considered a casual model (X) to predict a given outcome (Y). In this vein, Olya and Al-ansi (2018) argue that individuals make decisions while simultaneously considering several influential criteria. Therefore, a symmetrical pattern is less likely to emerge when a combination of X is used to predict Y.

Symmetrical analyses show the net effect of X on Y, whereas asymmetrical approaches reveal a combination of the factors, called causal recipes, that explain the model that indicate the outcome. We believe both symmetrical and asymmetrical techniques are helpful, as they offer different insights of the social phenomena. This study used SEM, or a symmetrical analysis, to test the net effect of three TPB dimensions on continued intention to use and recommend green hotels. The CFA and SEM were conducted using AMOS V25.0. This study applied an fsQCA, or an asymmetrical approach, to explore the combination of the three TPB dimensions for predicting both high and low scores of the two behavioural outcomes. The configurational model was tested using the fsQCA V3.0 (Ragin, 2008).

The fsQCA includes three stages of calibration, generating truth tables, and a counterfactual analysis. In the calibration stage, Likert scale data (e.g., ranging from 1: strongly

disagree to 7: strongly agree) is transformed to fuzzy data (ranging from 0: non-full membership to 1: full membership). In next step, all possible conditions, called truth tables, leading to the expected outcome are calculated based on a Boolean algebra function and set theory. The truth table is refined according to the two probabilistic measures of coverage and consistency. In the counterfactual analysis step, conditions are minimized based on the existent knowledge (Ragin, 2008). This study follows Olya and Gavilyan's (2017) suggestion to conduct an fsQCA for travel and hospitality research using a questionnaire-based survey. This study also conducted an analysis of the necessary conditions for achieving a high level of continuing intention to use and intention to recommend green hotels (Dul, 2016).

Results and discussion

Results of the psychometric analyses

The results of the measurement model testing are provided in Table 2. The alpha values and CR for five factors were greater than the commonly accepted level of reliability (>.7) (Bagozzi & Yi, 1988; Cortina, 1993). According to the CFA results, all items were significantly and sufficiently loaded under their respective variables (standardized factor loading>.4, $p<.05$). To check construct validity, the average variance extracted (AVE) was calculated for each construct. As shown in Table 2, the AVE of each variable is greater than the recommended level of .5 and less than the CR value of the corresponding variable. Such results provide evidence for convergent validity of the study measures (Hair *et al.,* 1998). In terms of discriminate validity, AVE was larger than the respective average shared square variance (ASV) and maximum shared squared variance (MSV). As reported at the bottom of Table 1, the results indicated that the proposed model fit well with the empirical data (Anderson & Gerbing, 1988; Fornell & Larcker, 1981).

Place Table 2 here

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Results of symmetrical analysis

The SEM results for investigating the net effect of the three TPB elements are demonstrated in Figure 2. The attitude toward behaviours significantly and positively associated with continued intention to use at β=.348, *p*<.001, and intention to recommend was β=.326, *p*<.001. Similarly, subjective norms have significant and positive effects on continued intention to use (β=.491, *p*<.001) and intention to recommend (β=.458, *p*<.001). Perceived behavioural control had a significant and positive effect on continued intention to use (β=.190, *p*<.01), but no significant effect on intention to recommend (β=.008, *not significant*). These results are similar to findings by Goh *et al.* (2017), who noted that the behavioural intentions of national park visitors were significantly and positively influenced by attitudes toward behaviours and subjective norms, but not associated with perceived behavioural control.

Place Figure 2 here

Asymmetrical modelling results

The results of the configurational modelling for predicting high and low scores of the behavioural intentions of green hotel guests are presented in Table 3. The fsQCA results offer two causal recipes that describe conditions for high scores on continued intention to use green hotels (coverage: .948, consistency: .814). Model 1 indicates that the attitudes toward the behaviour are sufficient for achieving continued intention to use green hotels. Similarly, Han *et al.* (2010) found "that attitude toward a behavior had a greater level of influence on visit intention [of potential customers of green hotels] than subjective norm and perceived behavioral control." Alternatively, a high level of perceived behavioural control and low level of subjective norms describe those conditions in which guests intend to continue staying at green hotels (Model 2).

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Unlike the TPB's symmetrical modelling, in asymmetrical modelling, causal models leading to low scores of behavioural outcomes are not mirror opposites of casual models of high scores of behavioural outcomes (Olya *et al.*, 2018). In accordance with Olya and Akhshik's (2018) findings, two causal models for the negation of an outcome (i.e., a low score for continued intention to use) are unique and different from the mirror opposite of causal models for high scores of the outcome (coverage: .773, consistency: .797). Model 1 indicates that low perceived behavioural control and high attitude toward the behaviour lead to low levels of continued intention to use green hotels. According to Model 2, low levels of continued intention to use green hotels occur when levels of attitudes toward the behaviour, subjective norms are low and perceived behavioural control is high (Table 3).

Place Table 3 here

The causal model for the high score of intention to recommend (coverage: .947, consistency: .804) is similar to causal models leading to high continued intention to use (c.f., Tables 3 and 4). These results indicate that to attain high intentions to recommend and continue to use green hotels, managers need to follow similar recipes. In other words, satisfying conditions for two causal recipes, obtained from the fsQCA, lead to both desired behavioural outcomes. These results are straightforward in comparison with the conditions in which causal recipes of intention to recommend differ from those of continued intention to use. If the causal recipes for two expected outcomes are unique and different, managers should consider more than two complex conditions to reach a high intention to recommend and continue to use green hotels. Causal models of low intention to recommend (coverage: .744, consistency: .810) are different from those of low continued intention to use green hotels (c.f., Tables 3 and 4). Model 1 recommends that low intention to recommend stems from low levels of attitude toward the

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behaviour. According to Model 2, low subjective norms and perceived behavioural control result in low intention to recommend green hotels to others (Table 4).

Place Table 4 here

The predictive validity of causal recipes obtained from configurational modelling was checked by splitting the original sample into two subsamples and testing models that emerged from subsample 1 using subsample 2 (Olya & Altinay, 2016). We first tested the model of subsample 1 to predict guests' intention to continue to use and recommend using subsample 2 (Figure 3). A high level of consistency illustrated in both plots indicate that the causal recipe has predictive validity using separate/future data.

Place Figure 3 here

Results of necessary condition analyses

The results of the necessary condition analyses indicated the necessary condition to attain continued intention to use and intention to recommend; these are provided in Table 5. Of the three TPB variables, attitude toward the behaviour appeared as a necessary condition for achieving both desired behavioural outcomes (consistency >.9). This means that, without an attitude toward the behaviour, guests' intention to recommend and continue to use green hotels will not be achieved. Values of consistency for subjective norms and perceived behavioural control were close to the recommended level for necessary conditions. Results from the fsQCA offered two recipes (M1: atb and M2: ~sn*pbc). An NCA was conducted to identify the causal recipe necessary to attain high levels of continued intention to use and recommendation intention. The results of the NCA showed that these two recipes are not necessary, but sufficient, to achieve the desired behavioural intentions of green hotel guests in Cyprus (Table 5).

Place Table 5 here

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Conclusion

Theoretical Implications

This study extended the current knowledge of green hotel guests' behaviours using a novel application of the TPB. This study suggests that TPB configurational modelling can serve as a powerful solution for tackling the complexity of guests' behaviours in the green hotel industry. We believe that asymmetrical TPB modelling is pragmatic as an extension, modification, and decomposition of the TPB for predicting green consumption. This study revealed that the net effects of attitude to behaviour, subjective norms, and perceived behavioural control on guests' continued intention to use green hotels are significant and positive. Intention to recommend a green hotel to others is influenced by attitude to behaviour and subjective norms, but not affected by perceived behavioural control.

This study argues that, although investigating the distinct effect of TPB variables on the behavioural intentions of green hotel guests is significant, it is insufficient. In other words, causal models that indicate this combination of three TPB variables must be explored to describe conditions in which the desired behavioural intentions of guest can be achieved. Specifically, SEM results showed that perceived behavioural control, singly, is not associated with intention to recommend, whereas the results of the configurational modelling showed that perceived behavioural control, in combination with subjective norms, could contribute in predicting intention to recommend.

This study applied fsQCA to explore causal recipes from a combination of TPB variables in formulating the behavioural intentions of green hotel guests in Cyprus. Attitude to behaviour offers a sufficient condition for achieving a high level of intent to continue using and recommending green hotels to others. These desired behavioural intentions result from high levels of perceived behavioural control and low subjective norms. This study is the first

empirical study to suggest that causal recipes for undesired behavioural intentions (low scores of continued intention to use and intention to recommend) are unique and different from the opposite mirror of causal recipes for desired behavioural intentions of green hotel guests.

Green hotel managers need to be vigilant about causal recipes that lead to undesired behavioural intentions among their guests. The present study's findings from the configurational modelling indicate that guests with low levels of perceived behavioural control and high attitudes toward behaviour are less likely to continue using green hotels. Therefore, the marketing department of green hotels may wish to adjust strategies by excluding customers with a low level of perceived behavioural control, although they might have an appropriate attitude toward behaviour, from marketing practices. Odedina *et al.* (2010) found that young and less educated males have a low level of perceived behavioural control. Nonetheless, we must acknowledge that it is not straightforward to recognize who has a low level of perceived behavioural control and further studies on green consumption need to address this research question. In the case of current customers who have a low level of perceived behavioural control and high level of attitude, green hotels can help improve their perception about control over behaviour through organized activities and campaigns that demonstrate to this group that they have control of their intentions and actions. As this group displays a high attitude toward behaviour, they are likely to participate in safe, interpretative, and fun activities.

A low score for continued intention to use also may be the result of low levels of guests' attitudes toward behaviour and subjective norms and high levels of perceived behavioural control. Combinations of TPB factors for low levels of intention to recommend are dissimilar to causal models for high levels of continued intention to use green hotels. Guests with low levels of attitudes toward behaviour may not recommend green hotels to others. Low levels of

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intention to recommend are caused by low levels of subjective norms and perceived behavioural control.

This study contributes to the extant literature on hospitality management by identifying necessary TPB variables for attaining desired behavioural outcomes among green hotel guests. Findings from the analyses of necessary conditions suggest that attitude toward behaviour is necessary to obtain high levels of continued intention to use and recommendation intention. In terms of the practicality of the necessary condition results, an impactful plan is needed to improve attitudes toward behaviour among green hotel guests. One practice that improves attitude toward behaviour is taking action with a purpose.

Practical Implications

The TPB is frequently used for predicting hotel guests' behaviours. Most of the research in this area is focused on the net effect of TPB indicators in explaining behavioural responses. Although the investigation of sufficient TPB indicators is significant, managers of green hotels need to know how three specific TPB indicators can be combined to describe complex conditions leading to high and low levels of their guests' expected behaviours. Importantly, hoteliers must be vigilant to satisfy the necessary conditions that lead to guests' high intention to recommend and continue to use green hotels.

Attitude toward behaviour plays a critical role in guests recommending and continuing to use green hotels as a net effect of this factor, showed by SEM results (Figure 2). According to the fsQCA results, attitude toward behaviour as a single factor appeared as a causal recipe that is sufficient and consistent to predict two desired behavioural outcomes (Table 4 and 5). Furthermore, the NCA results revealed that attitude toward behaviour is a necessary factor to attain favourable behaviours among guests of green hotels in Cyprus. Therefore, green hotel managers should invest in promoting the attitude toward behaviour of their guests. Specifically,

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social media can be used as an influential tool to increase the environmental concerns of guests or potential customers, which may improve their attitude toward behaviour. The marketing department can reinforce environmental policies and share eco-friendly practices through direct marketing via email.

Green hotels can support loyalty programs that demonstrate appreciation of the knowledge, concern, and attitude of guests toward behaviours. They can encourage guests who engage in eco-friendly activities by offering incentives and awards. Training programs may provide opportunities for guests to learn about the purpose of green consumption. Policy makers in Cyprus need to support green hotels as a priority in destination management by cooperating in pro-environmental actions because green consumption can contribute to the sustainable management of this small Mediterranean island's fragile ecosystem. The government can also provide technical and financial support for energy efficiency, water and energy conservation, and the air quality of green hotels. Such policies enhance awareness and attitude of all stakeholders including guests of green hotels toward sustainable management of hospitality and tourism in the small island of Cyprus. In addition, the government can establish electric charge stations near the green hotels to encourage using electrical vehicles by both guests and employees.

Limitations and Future Research

This empirical study advances the theory and methods on ethical consumption in the hospitality industry by assessing the net effect of TPB indicators on the structural model's outcomes using SEM, investigating a complex combination of TPB indicators on the guests' behavioural responses using fsQCA, and identifying the necessary TPB indicators for predicting outcomes using NCA. Modelling the behaviours of green hotel guests using cross-sectional data from only one island (i.e., Cyprus) should be considered a limitation of this study, as Cypriot context

might be a hindrance to the generalization of the study's findings. Future scholars are encouraged to conduct longitudinal studies in different locations. Furthermore, data of this study is limited to the guests who chose to stay at green hotels. Hence, the results cannot be applied to other types of hotels. We recommend modelling the TPB using the three analytical approaches proposed in this study and comparing the outcomes between green and non-green hotels.

This empirical study used three TPB variables as a configuration for predicting two behavioural intentions of green hotel guests; we recommend the application of a decomposed version of the TPB that generates three configurations for predicting given behavioural intentions of green hotel guests. The prediction of willingness to pay more as an outcome of a configurational model designed based on the TPB is recommended as one direction for further studies. The proposed model of this study is limited to the views of guests (i.e., demand side); therefore, the inclusion of the supply side perspective (i.e., managers and employees) in configurational models would enrich our understanding of green consumption in the hospitality industry. Green consumption is an evolving trend in the hotel industry as governments reinforce pro-environmental policies and responsible institutions certify the eco-friendly practices of hotels. Therefore, it will remain a topic of interest to stakeholders and academics should continue to study the many aspects of green consumption to provide helpful recommendations in other subsectors of the hospitality industry such as restaurants, bars, nightclubs, resorts, tour operators, and leisure centres.

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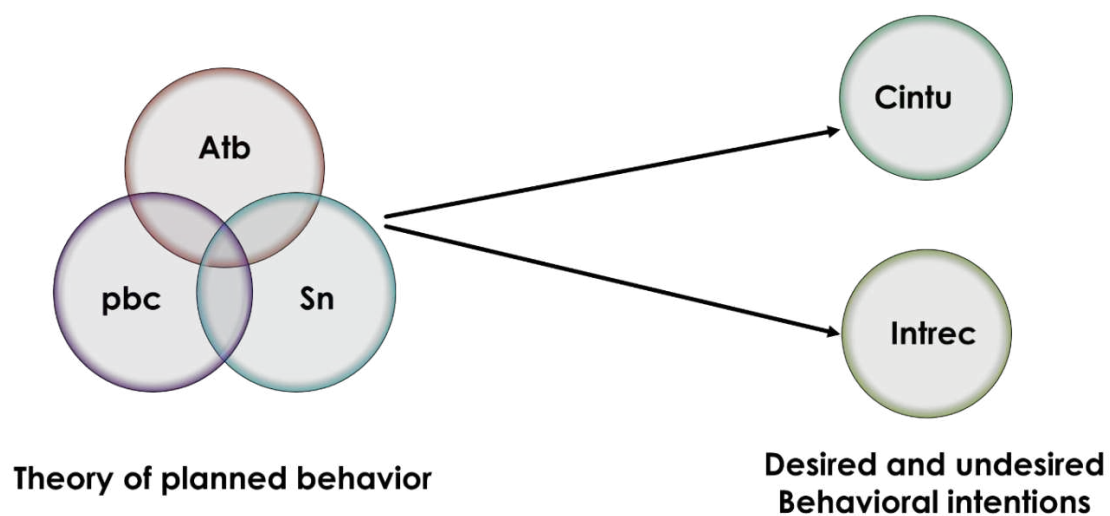
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Note: Atb: attitude toward the behavior, sn: subjective norm, pbc: perceived behavioral control. cintu: continued intention to use, intrec: intention to recommend.

Figure 1. Proposed configurational model
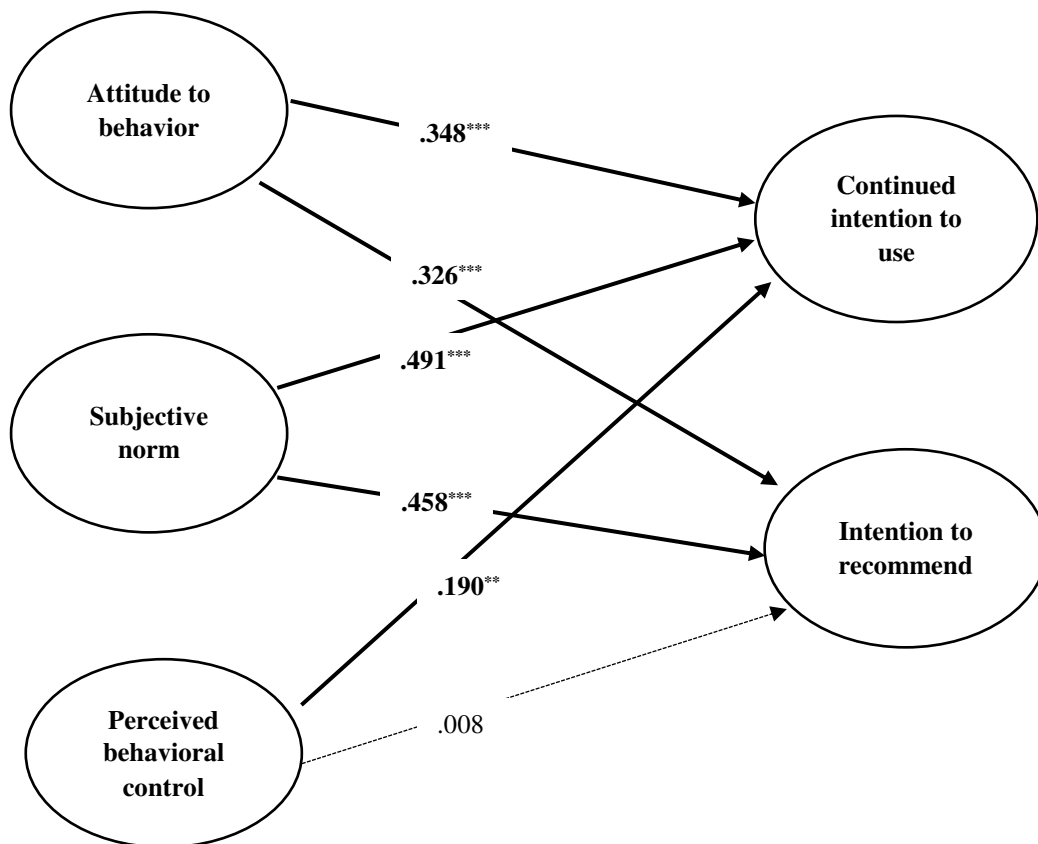
Note: Fit statistics: X^2 = 459.098, df = 198, X^2/df = 2.318; IFI = .826; PCFI = .673; RMSEA = .079. ***: $p < .001$; **: $p < .01$.

Figure 2. Results of structural equation modeling

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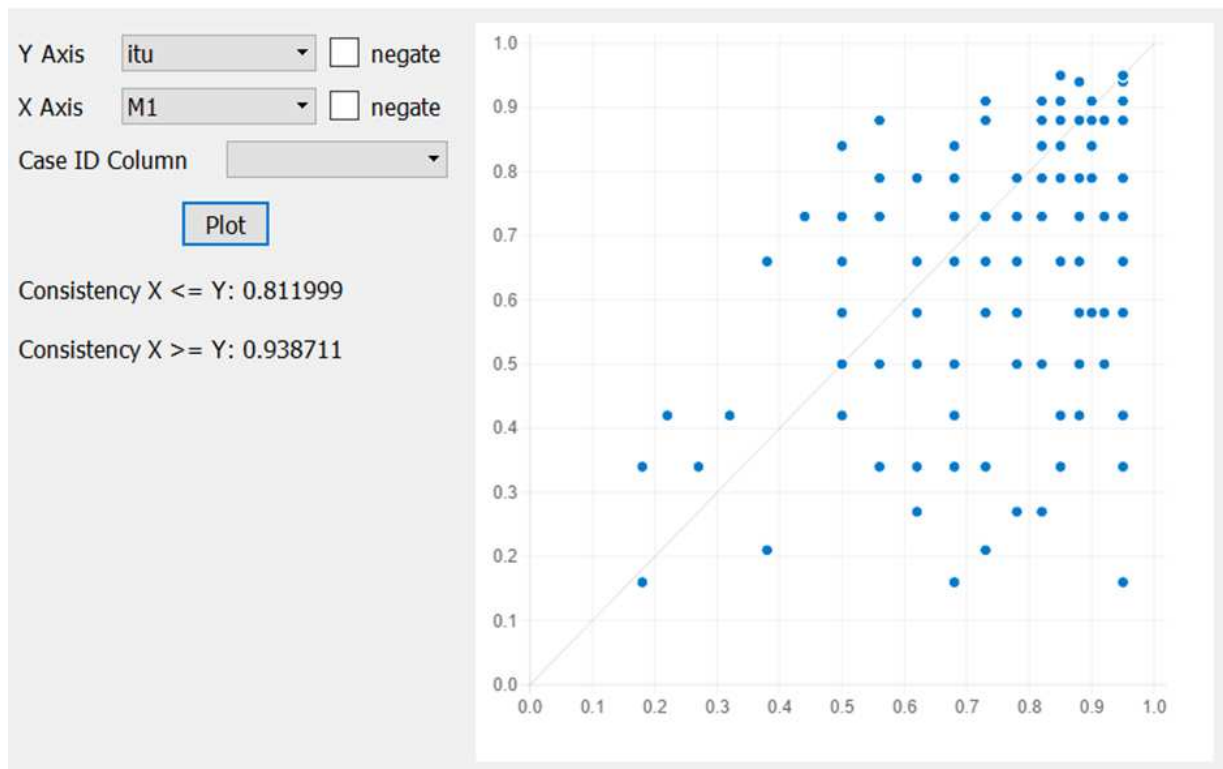
(a): Testing Model 1 using subsample 2 calculated from subsample 1 to predict continuance intention to use
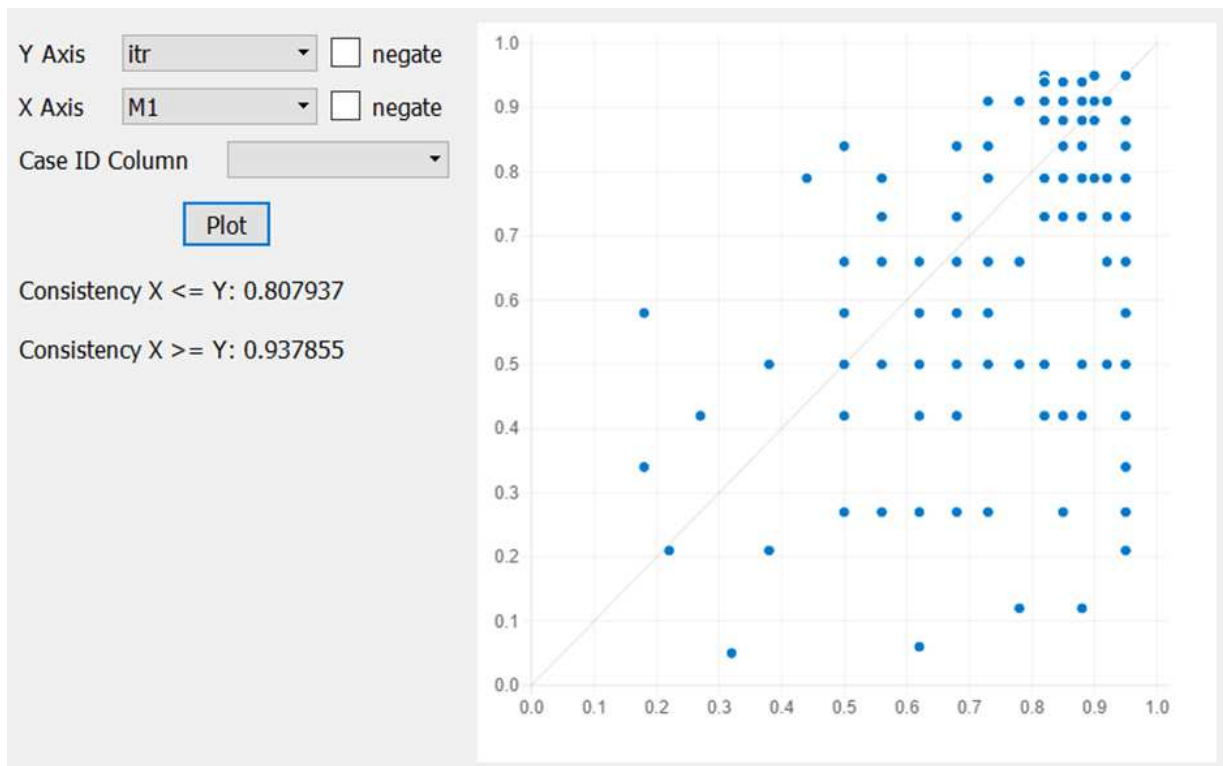
(b): Testing Model 1 using subsample 2 calculated from subsample 1 to predict intention to recommend

Figure 3. Evidence of predictive validity

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Table 1. Respondents' demographics

Age	N	%	Education level	N	%
18–27 years	40	15.4	Not completed high school	7	2.7
28–37 years	47	18.1	High school diploma	56	21.5
38–47 years	61	23.5	Some college	66	25.4
48–57 years	41	15.8	Bachelor's degree	63	24.2
≥58	71	27.2	Graduate degree	68	26.2
Total	260	100.0	Total	260	100.0
Gender			*Income level*		
Male	111	42.7	Under $19,000	43	16.6
Female	149	57.3	$19,000–$24,999	57	21.9
Total	260	100.0	$25,000–$49,999	78	30.0
Prior experience staying at a green hotel			$50,000– $69,999	44	16.9
No	174	66.9	$70,000 or more	38	14.6
Yes	86	33.1	Total	260	100.0
Total	260	100.0			

Note: N = frequency.

Table 2. Results of measurement model testing

Scale items	SFL (ASV)	AVE (MSV)	CR (α)	Mean	Std. Dev
Continued intention to use (*Ajzen, 1991; Ajzen & Fishbein, 1980; Han, 2015*)	(.268)	.522 (.508)	.727 (.757)		
I am willing to stay at a green hotel when traveling in the future.	.609[**]			4.992	1.291
I plan to stay at a green hotel, instead of a conventional hotel, when traveling in the future.	.808[**]			4.569	1.217
I will expend effort to stay at a green hotel, instead of a conventional hotel, when traveling in the future.	.737[**]			4.565	1.221
Intention to recommend (*Prud'homme & Raymond, 2013*)	(.313)	.593 (.510)	.744 (.814)		
I will recommend a green hotel to my friends when they are travelling.	.790[**]			4.658	1.319
I will say positive things about green hotels.	.747[**]			4.873	1.371
I encourage my relatives to select green hotels for their travels.	.772[**]			4.669	1.378
Attitude toward the behavior (*Ajzen, 1991; Ajzen & Fishbein, 1980; Han, 2015*)	(.307)	.639 (.444)	.782 (.873)		
For me, staying at a green hotel when traveling is bad ~ good.	.848[**]			5.292	1.353
For me, staying at a green hotel when traveling is foolish ~ wise.	.799[**]			5.265	1.253
For me, staying at a green hotel when traveling is unpleasant ~ pleasant.	.867[**]			5.288	1.260
For me, staying at a green hotel when traveling is harmful ~ beneficial.	.668[**]			5.200	1.233
Subjective norms (*Ajzen, 1991; Ajzen & Fishbein, 1980; Han, 2015*)	(.115)	.711 (.440)	.773 (.879)		
Most people who are important to me think I should stay at a green hotel when traveling.	.860[**]			4.512	1.269
Most people who are important to me would want me to stay at a green hotel when traveling.	.869[**]			4.481	1.244
People whose opinions I value would prefer that I stay at a green hotel when traveling.	.798[**]			4.615	1.242
Perceived behavioral control (*Ajzen, 1991; Ajzen & Fishbein, 1980; Han, 2015*)	(.107)	.622 (.230)	.768 (.694)		
Whether or not I stay at a green hotel when traveling is completely up to me.	.782[**]			5.131	1.392
I am confident that, if I want, I can stay at a green hotel when traveling.	.691[**]			4.965	1.376
I have the resources, time, and opportunities to stay at a green hotel when traveling.	.881[**]			4.673	1.254

Model fit statistics: X^2 = 253.462, (df = 94, *p* < .01); X^2/df = 2.696; IFI = .923; PCFI = .722; RMSEA = .081.

Note: SFL: standardized factor loading; AVE: average variance extracted; MSV: maximum shared squared variance; ASV: average shared square variance; CR: composite reliability; α Cronbach's alpha, representing internal consistency; IFI: incremental fit index; PCFI: parsimony comparative fit index; RMSEA: root mean square error of approximation. [**]: SFL is significant at the .001 level. Sources for scale items are provided in parenthesis. Items were gauged using 7-point Likert scales.

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Table 3. fsQCA models for formulating high and low scores on continued intention to use

Models for predicting high score outcomes	RC	UC	C	Models for predicting the outcome negation	RC	UC	C
Cintu = f(atb, sn, pbc)				*~ Cintu = f(atb, sn, pbc)*			
M1: atb	.941	.422	.827	*M1*: atb*~pbc	.672	.185	.792
M2: ~sn*pbc	.526	.006	.916	*M2:* ~atb*~sn*pbc	.587	.101	.913
Solution coverage:.948				*Solution coverage: .773*			
consistency: .814				*Solution consistency:.797*			

Note: M: model, RC: raw coverage; UC: unique coverage; C: consistency; Cintu: continued intention to use; atb: attitude toward the behavior; sn: subjective norm; pbc: perceived behavioral control.

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Table 4. fsQCA models for formulating high and low scores of intentions to recommend

Models for predicting high score outcomes	RC	UC	C	Models for predicting the outcome negation	RC	UC	C
Intrec = f(atb, sn, pbc)				*~Intrec = f(atb, sn, pbc)*			
M1: atb	.938	.425	.814	*M1*: ~atb	.637	.135	.859
M2: ~sn*pbc	.521	.008	.987	*M2:* ~sn*~pbc	.608	.106	.833
Solution coverage: .947				*Solution coverage: .744*			
Solution consistency: .804				*Solution consistency: .810*			

Note: M: model; RC: raw coverage; UC: unique coverage; C: consistency; Intrec: intention to recommend; atb: attitude toward the behavior; sn: subjective norm; pbc: perceived behavioral control.

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Table 5. Necessary condition analysis results

Condition	Continued intention to use		Intention to recommend	
	Consistency	Coverage	Consistency	Coverage
atb	**.942**	.828	**.939**	.815
~atb	.391	.905	.392	.896
sn	.841	.894	.840	.882
~sn	.552	.877	.551	.866
pbc	.886	.838	.870	.813
~pbc	.467	.910	.478	.921
~sn*pbc	.384	.946	.402	.668

Note: atb: attitude toward the behavior; sn: subjective norm; pbc: perceived behavioral control. Necessary antecedent (consistency > .9) is highlighted in bold.