Exploring the Online Hotel Reviews on Travelers’ Green Psychological Cognition

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Received: 29 July 2023. Revision received: 12 December 2023. Accepted: 12 January 2024

Abstract
Green hotels prioritize safety, health, and environmental sustainability, promoting eco-conscious practices in operations. As for green hotel operators, affecting travelers’ cognitive reactions to environmentally friendly practices and, ultimately, their booking intentions is important, especially since the impact of online hotel reviews on consumer behavior is significant. Therefore, the purposes of this study are to establish a measurement of online hotel reviews corresponding to source credibility and review characteristics for green hotels as well as to explore how green online hotel reviews relate to travelers’ green psychological cognition and influence their green hotel booking intentions based on a cognitive model and a knowledge-attitude-behavior model. The study design is a two-phase quantitative survey in the Penghu area, Taiwan, and investigates online hotel reviews with green issues that consider the perspectives of source attributes and content characteristics. This study distributed questionnaires for the first and second phases, which yielded 350 and 568 responses, respectively. A structural equation model (SEM) is used to examine the hypothesized relationships between source credibility, review characteristics, conformity, green perceived value and online green hotel booking intention. The results revealed that the source credibility and review characteristics represent valuable information to persuade travelers about choosing green hotels. Both conformity and green perceived value play important roles as mediators. This study also extends the current knowledge on the cognitive model and the knowledge-attitude-behavior model. A new path vision thus emerges to fill existing gaps in the literature.

Key Words: Green hotels; online hotel reviews; cognitive model; green perceived value; online booking intentions

JEL Classification: M16, M20


1. Introduction
Green hotels are defined by their commitment to being environmentally friendly (Green Hotels Association, 2019). There is increasing evidence of a consistent trend towards travelers choosing green hotels (Wang et al., 2018; Han et al., 2019; Merli et al., 2019; Wang et al., 2020). Study reveals that travelers are increasingly cognition of the environmental impact of travels (e.g., Pan et al., 2022; Paul & Roy, 2023; Rafiq et al., 2022). Such green psychological cognition can promote the intention toward and lead to green consumption behavior (Xie et al., 2022), and can be improved by green information interaction (Wang et al., 2022). To date, whether the willingness of travelers to choose green hotels due to the received green information that can enhance travelers’ green cognition and further enhance their intention to visit green hotels has become an important topic for the academic and practical departments.

As for academic, considerable research has been conducted to explore the effect of traveler psychological factors, including attitude and awareness, on intention to visit green hotels (e.g., Faizi et al., 2022; Eid et al., 2020; Demir et al., 2021; Saura et al., 2023). Yet, research efforts to focus on psychological cognition have rarely been made in this topic. Cognition is referred to the mental processes involved in gaining knowledge and comprehension (Oliver, 1980). It only has been indirectly discussed through various conceptual types in related studies of hotel booking intention, such as pay attention to something in the environment (e.g., Jian et al., 2020), learning something new (e.g. Agag & El-Masry, 2016), making decisions (Lien et al., 2015), and perceiving environmental stimuli (e.g., Ahn & Kwon, 2019), and solving problems (e.g., Wang et al., 2020). Discerning cognition through its related concepts mentioned above are understandable because it includes all of the conscious and unconscious processes involved in thinking, perceiving, and reasoning. On the other hand, online hotel reviews have a profound effect on how consumers obtain and evaluate information, as well as make decisions on purchasing hotel services (Browning et al., 2013). In this regard, no studies have used online reviews as a source of information to affect travelers’ green cognition and further predict their intention to book green hotels.

As for green hotel operators, affecting travelers’ cognitions to environmentally friendly practices and ultimately their booking intentions is important (Ahn & Kwon, 2019). Online hotel reviews also can be a good source of consumer information for hotels. Green hotel operators can utilize the online reviews to improve travelers’ green cognition in different ways. For example, through monitoring online reviews, operators can understand guests’ evaluation of green hotels and also analyze customer preferences (Chen et al., 2022). Then they can actively use online reviews as persuasive communication by quickly responding to those opinions or questions (Sparks et al., 2013; Vo et al., 2022). Hotels need to do more in online reviews to communicate what green practices constitute genuinely sustainable travel. More formally, the provision of an online response can enhance travelers’ inferences of trust and concern of green hotels (Sparks et al., 2016). However, it lacks the references for hotel operators to guide them how to use online review to improve consumers’ green psychological cognition.

Greater attention should be given to the issue of online reviews in green hotel research. Numerous studies revealed that online hotel reviews would affect consumer’s purchase intention (Ivan & Kolbe, 2020; Tran, 2020; Zhu et al., 2020). However, few studies focus on establishing the measurement of online review thoroughly. In specific, when searching for information on services through online reviews, source credibility and review characteristics are two crucial perspectives readers can use to navigate through a high volume of online information (Zhao et al., 2015; Gülç & Huseynov, 2021). Source credibility is in terms of information source that the readers consider as credible when the information from it can be trusted, while review characteristics is the inclusion of multiple attributes of reviews’ content (i.e., usefulness, timeliness, volume, valance, and comprehensiveness) (Zhao et al., 2015). Hotels should pay attention to the expertise level of reviewers and the content of online reviews (Lo & Yao, 2019). However, most prior studies that examined the effects of online reviews on hotel booking intentions, only from either the perspective of source credibility (e.g., Chakraborty, 2019;
Chakraborty & Biswal, 2020) or review characteristics (e.g., Danish et al., 2019; El-Said, 2020). Therefore, this study aims to extend the measurement of online hotel reviews by simultaneously considering the perspectives of source credibility and review characteristics (Zhao et al., 2015).

Besides, while anticipating travelers’ green hotel booking intention, the theory of planned behaviour (TPB) is the mostly utilized theory (e.g., Fauzi et al., 2022; Pan et al., 2022). For widely comprehend results, the consolidated theory should be explored while travelers’ pro-environmental behavioral intentions are predicted in a green lodging context (Han, 2015). This study would like to explore whether online hotel reviews will increase tourists’ knowledge of green hotels, which will have an impact on tourists’ green psychological cognition, thereby increasing their willingness to book online for green hotels. In the cognitive model, consumers’ attitudes and perceptions are two important antecedents that influence their behavioral intentions (Oliver, 1980). Along with this path, this study proposes that green psychological cognition towards booking intentions is comprised of two factors: conformity (pertaining to attitude) (Tsao et al., 2015) and green perceived value (pertaining to perception) (Lam et al., 2016). On the other hand, Simanjuntak et al. (2023) found that environmental knowledge does “not” affect the intention to purchase green products, contradicting with the principle of knowledge-attitude-behavior model. Due to the special service properties of green hotels, service knowledge should be more focused on the aspects of reliability, empathy, green communication, green energy reduction, assurance, and tangibles (Lee & Cheng, 2018). Given this, service knowledge gained from online reviews is expected to influence consumers’ attitudes and decisions. Accordingly, a cognitive model and a knowledge-attitude-behavior model are adopted as the major theoretical underpinning in this study to verify the contradict findings of Simanjuntak et al. (2023).

Based on above, this study aims at two main objectives: first, to establish measurement of online hotel reviews corresponding to source credibility and review characteristics for green hotels; second, to explore how online hotel reviews relate to travelers’ green psychological cognition and influence their green hotel booking intentions.

2. Literature Review

2.1 The Cognitive Model: Establishment of Green Psychological Cognition

Oliver (1980) proposed the psychological cognitive model and argued that perceptions of service quality affect customer satisfaction (an attitude) which, in turn, affects purchase intention. This view explains how perception translates into intention (i.e., the path of intention development “perception→attitude→intention”). In this study, green perceived value is a traveler’s own perception of the desirability or merit of green hotels (Lam et al., 2016). Conformity is the act of matching attitudes and beliefs (Cialdini & Goldstein, 2004). Oliver’s (1980) model is the theoretical basis for arguing that conformity and green perceived value represent travelers’ green psychological cognition that influences green hotel booking intentions. Specifically, conformity represents an attitude that is affected by social groups. Green perceived value is travelers’ perception regarding green hotel services. To fill the gap of lacking green psychological cognition research in this topic (Faizi et al., 2022; Eid et al., 2020; Demir et al., 2021), the study explores the influence of online hotel reviews from the perspectives of conformity and green perceived value in a manner that has not yet been covered by previous research. We also identify the path of intention development in the cognitive model by proposing that travelers’ green psychological cognition is influenced by online hotel reviews. This approach positions the main contribution of this study as filling the theoretical gap in understanding the relationship between online hotel reviews and travelers’ intention to make online green hotel reservations.
2.2 Knowledge-Attitude-Behavior Model

The knowledge-attitude-behavior model (Kollmuss & Agyeman, 2002) demonstrates environmental knowledge influences concerns (environmental attitudes) so as to show pro-environmental behavior. When potential travelers are exposed to important information in online reviews, the extent of their distrust toward a target travel-related product will be reduced, thereby inducing them to imitate and follow demonstrated behaviors (Shen et al., 2016). Apart from conformity would affect consumer’s decision, the source credibility (i.e. expertise) can be believability and validity of the message so as to influence purchase intention (Ismagilova et al., 2020). Ching et al. (2017) proposed that online product review refers to internet-mediated communities where experts and consumers exchange and share their experience and opinion about goods and services via online. Therefore, it would online hotel reviews generated by source credibility would affect consumer decision making.

2.3 Online Hotel Reviews

Travelers tend to use information from online reviews to reduce their perceived feelings of uncertainty before booking a hotel. If online reviewers reveal information about their identity, this may affect the perceived credibility of their reviews (Shukla & Anubhav; 2022). Numerous studies explored (Lee et al., 2016; Brazytė et al., 2017) hotel visitors’ awareness of green efforts by online review and indicated that the majority of users feel positive toward green initiatives while other studies mentioned that online reviews of green hotels means users perceive hotel green practices as positive (Yu et al., 2017) and even influence travelers to use information from online reviews in their decision making.

Online reviews, one type of electronic word of mouth (eWOM), enable consumers to propagate an idea that includes their experiences, evaluations and opinions (Oliveira et al., 2022; Yen & Tang, 2019), resulting in enhancing hotel booking intention (Tsao et al., 2015). However, Simanjuntak et al. (2023) indicated that WOM does not significantly affect on not only environmental attitudes but also intention to purchase green products. To to fill this gap of similar concepts but opposite results, this study proposes to include multiple attributes of online reviews to explore the affect of online reviews on online booking intention.

When searching for information on services through online reviews, source credibility and review characteristics are two crucial perspectives readers can use to navigate through a high volume of online information (Zhao et al., 2015; Güler & Huseynov, 2021). Source credibility enhances the believability and validity of the message and has a significant influence on consumers’ purchase intention and related behaviors, such as reviewer’s expertise (Ismagilova et al., 2020). In addition, comprehensive review characteristics significantly affect review helpfulness (Luo et al., 2021), which refers to five attributes of online hotel reviews i.e., usefulness (Xie et al., 2014), valence (Sparks & Browning, 2011), volume (Zhao et al., 2015), timeliness and comprehensiveness (Cheung et al., 2008). Therefore, scholars encourage to simultaneously consider the perspectives of source credibility and review characteristics to extend the measurement of online hotel reviews (Zhao et al., 2015; Güler & Huseynov, 2021). The inclusion of multiple attributes of source credibility (i.e., reviewer expertise) and review characteristics makes online reviews more persuasive (Lo & Yao, 2019; Luo et al., 2021). Based on this advantage, this study underlies a total of six attributes of the two perspectives to develop the measurement of the influence of online hotel reviews.

2.4 The Perspective of Source Credibility

Source credibility implies that source expertise is considered as a main mechanism in reducing uncertainty of using online reviews (González-Rodríguez et al., 2016; Lo & Yao, 2019). Information
from a reviewer with a high level of expertise is assumed to be more credible as the reader of the information has no reasons to doubt the correctness given the knowledge and competence of the reviewer (Chakraborty, 2019; Güler & Huseynov, 2021). It is proposed that an expert source online will be perceived as having greater awareness and knowledge of the discussed products/services (Ismagilova et al., 2020). Therefore, in the online context, people tend to search for travel information from others who engage in similar activities, which in turn causes attitudes and beliefs that reflect general public assumption to emerge.

Conformity refers to an individual’s attitude and outlook towards performing actions in order to satisfy group expectations and achieve recognition from the group (Cialdini & Goldstein, 2004). Although WOM, the essence of online reviews, does not significantly affect environmental attitudes (Simanjuntak et al., 2023), against the backdrop of a lack of information about green hotels, travelers are encouraged to scour the Internet for online reviews; this makes them more likely to follow public green trends and become highly conformist (Hong et al., 2016). Despite the difficulty for information seekers to evaluate the knowledge and competence of a reviewer, a web site takes the duty to evaluate the reviews by rating them (Kim, 2022). Travelers can use those ratings to make booking decisions (Zhang et al., 2022).

The hypothesis is as followed:

**H1a**: Source credibility positively affects conformity regarding green hotels.

The green perceived value in the hotel context defines as travelers’ appraisal of the benefit of hotel products or services in terms of what is received and what is given based on their environmental consciousness (Teng et al., 2018; Cheng et al., 2022). Travelers will be more willing to stay in a green hotel if they perceive that it offers substantial green measures (Han et al., 2018). Such an appraisal would be affected by external information about the benefits of green hotels (Tan, 2022; Teng et al., 2018). Accordingly, relevant information gained from online reviews is expected to affect one’s green perceived value regarding green hotels.

Given that eWOM has a significantly positive effect on customers’ perceived value (Kim & Hyun, 2019), it is argued that online hotel reviews facilitate travelers’ reduction of their negative perceptions of green hotels (e.g., limited services and over-charging). Source credibility is proved effective in changing perceptions of individuals (Ismagilova et al., 2020). Moreover, the information originated by a credible review source has a positive impact on the perceived credibility of online reviews (Güler & Huseynov, 2021). When travelers perceive that the online information reviewer is competent and knowledgeable of the truth, they will have less doubt about the plausibility of the information (Chakraborty, 2019; Güler & Huseynov, 2021). Under such conditions, the higher level of source credibility from which the online hotel information is received, the greater the impact it has on travelers to perceive value of green hotels.

**H1b**: Source credibility positively affects green perceived value regarding green hotels.

Online reviews are important antecedent of travelers’ hotel booking decisions (Chan et al., 2017). When travelers clearly receive and decipher hotel information from online consumer reviews, a certain booking preference emerges, and they evaluate whether to make the reservation (Danish et al., 2019). Source credibility (i.e., reviewer expertise) has been further proved to positively influence the booking intentions of travelers (Tsao et al., 2015; Zhao et al., 2015). Thus, in the context of green hotel, the following hypothesis is proposed:

**H1c**: Source credibility positively affects online green hotel booking intention.

### 2.5 The Perspective of Review Characteristics

Similar with source credibility, review characteristics also shape the public feature for conformity. The content attributes share a common function of lowering the information uncertainty and has frequently been described as a persuasive aspect of online reviews (Güler & Huseynov, 2021). Thus, review characteristics enable consumers believe that the reviews have logical reasons behind the
writings, then they mark such reviews as pervasive and comply with them (Huang et al., 2015). For example, individuals who read a positive-rating review, at least in part, have an increased probability of following a positive-rating review (Kim, 2022). Similarly, the opinions of online product ratings of individuals are positively correlated with those of their friends (Wang et al., 2015). Researchers have empirically revealed that consumers are most likely to comply with reviews when the expected influence of review characteristics is high. Thus, the following hypothesis is formulated:

\( H_{2a} \): Review characteristics positively affect conformity regarding green hotels.

Empirical research also provides evidence for the determinant role of review characteristics on perception (e.g., Kim & Lee, 2015). In the online context, previous positive statement written by former reviewers soothes the uncertainty risks and decreases the potential risks related with the purchase, and empowers the decision-making process (Xie et al., 2014). Readers will seek for wide range of online reviews and unconsciously increase their perception about the issue from which the information focused. This has the effect of increasing travelers’ green perceived value toward green hotels.

\( H_{2b} \): Review characteristics positively affect green perceived value regarding green hotels.

Furthermore, attributes of review characteristics (i.e., usefulness, timeliness, volume, valence and comprehensiveness) can be used to predict the online booking intentions of travelers (Tsao et al., 2015; Zhao et al., 2015). More empirical research has proved that the relevant attributes of review characteristics significantly influence the online hotel booking intention (e.g., Danish et al., 2019; Güler & Huseynov, 2021). Apparently, these attributes play significant roles in manipulating traveler intentions and decisions. However, negative online reviews will negatively influence online hotel bookings (El-Said, 2020; Zhao et al., 2015). Therefore, we propose that attributes of online hotel reviews positively affect travelers’ booking intentions toward green hotels, except when those reviews are negative. The leads to the following hypothesis:

\( H_{2c} \): Review characteristics positively affect online green hotel booking intention.

### 2.6 Mediation Effect of Conformity

Following the cognitive model (Oliver, 1980), consumers’ attitudes towards a service could change based on their perceptions with service. Regarding green hotels, green awareness should be reflected on the aspects of service, including reliability, empathy, green communication, green energy reduction, assurance, and tangibles (Lee & Cheng, 2018). As for green hotel operators may enhance online booking intentions by adopting suitable conformity-related information and ways of communicating in order to stimulate the bandwagon effect of taking part in the environmental protection measures (Yi et al., 2016).

\( H_{3} \): Conformity toward green hotels significantly affects online green hotel booking intention.

Conformity refers to the behaviour of making decisions following the majority voice in online reviews (Ye et al., 2011). Therefore, when travelers make decisions about booking a green hotel, they will check the online hotel reviews and follow the dominant opinions in order to reduce risks. In so doing, travelers are considered as conformist. Moreover, reading credible and positive reviews can have a stronger effect on booking intentions among individuals who are strongly inclined toward conformity (Güler & Huseynov, 2021; Tsao et al., 2015). This study proposes a mediating effect of conformity in order to formulate the following hypotheses:

\( H_{4a} \): Conformity toward green hotels mediates the relationship between source credibility and online green hotel booking intention.

\( H_{4b} \): Conformity toward green hotels mediates the relationship between review characteristics and online green hotel booking intention.

On the other hand, based on the cognitive model, perceived value is widely considered as the antecedent of attitude (Arora & Agarwal, 2019), which in turn leads to intentions to purchase travel
online (Amaro & Duarte, 2015). Moreover, enhancing traveler’s value perception about the eco-travel activity would promote environmentally responsible behavior (Chiu et al., 2014). The formation of travelers’ conformity toward green hotels might be affected by green perceived value, and thus influence travelers’ intention to make an online booking (Tsao et al., 2015). Therefore, travelers who have their own green perceived value regarding green hotels may be more likely to become strong conformists in order to meet the public’s expectations regarding environmental measures. The following hypotheses are developed:

\[ H_{5a}: \text{Green perceived value regarding green hotels positively affects conformity toward green hotels.} \]

\[ H_{5b}: \text{Conformity regarding green hotels mediates the relationship between green perceived value toward green hotels and online green hotel booking intentions.} \]

2.7 Mediation Effect of Green Perceived Value

In the hotel context, green perceived value positively influences travelers’ intention to visit a green hotel (Amin & Tarun, 2019). Travelers will be more willing to book a green hotel if they perceive that it offers substantial environmental protection measures. The following hypothesis is proposed:

\[ H_{6}: \text{Green perceived value toward green hotels positively affects online green hotel booking intention.} \]

Knowledgeable travelers may be able to perceive the environmental protection measures implemented by green hotels from information in online hotel reviews. Through this process, travelers are able to realize the benefits or values of the green hotel (Tan, 2022; Teng et al., 2018). Therefore, it proposes the following hypotheses:

\[ H_{7a}: \text{Green perceived value regarding green hotels mediates the relationship between source credibility and online green hotel booking intention.} \]

\[ H_{7b}: \text{Green perceived value regarding green hotels mediates the relationship between review characteristics and online green hotel booking intention.} \]

Above the research model was proposed in Figure 1.
3. Methods

3.1 Measures and Questionnaire Design

The purposes of this study are to establish measurement of online hotel reviews corresponding to source credibility and review characteristics for green hotels as well as to explore how green online hotel reviews relate to travelers’ green psychological cognition and influence their green hotel booking intentions based on a cognitive model and a knowledge-attitude-behavior model. The design of this study comprises two phases. The questionnaire in the first-phase questionnaire was designed to identify the indicators of online hotel reviews in terms of source credibility and review characteristics. After three professors in the field of tourism and hospitality were invited to inspect content validity and language appropriateness, the source credibility of reviews was defined through a single attribute, i.e., reviewer expertise, while the review characteristics were represented through five attributes: usefulness, timeliness, volume, valence, and comprehensiveness. The result is 30 questions representing 6 attributes (see Table 1).

Table 1. Attributes, Operational Definitions, and Items of Online Hotel Reviews

<table>
<thead>
<tr>
<th>Construct</th>
<th>Attributes</th>
<th>Operational definitions</th>
<th>Items</th>
<th>References</th>
</tr>
</thead>
<tbody>
<tr>
<td>Source credibility</td>
<td>Reviewer expertise (RE)</td>
<td>Whether an online hotel review was posted by a professional reviewer, that is, the background of the reviewer, which represents the extent to which the review is able to provide correct information</td>
<td>5</td>
<td>Brinol &amp; Petty (2009); Zhao et al. (2015)</td>
</tr>
<tr>
<td>Review characteristics</td>
<td>Usefulness (U)</td>
<td>Online hotel reviews are able to promote travelers’ purchase decisions</td>
<td>5</td>
<td>Papathanassis &amp; Knolle (2011)</td>
</tr>
<tr>
<td></td>
<td>Timeliness (T)</td>
<td>Online hotel reviews are able to provide the latest, most recent, and updated information</td>
<td>3</td>
<td>Cheung et al. (2008)</td>
</tr>
<tr>
<td></td>
<td>Volume (Vo)</td>
<td>The total amount of interactions and focused opinions pertaining to hotel information</td>
<td>6</td>
<td>Zhao et al. (2015)</td>
</tr>
<tr>
<td></td>
<td>Valence (V)</td>
<td>Online hotel reviews consist of positive and</td>
<td>3</td>
<td>Sparks &amp; Browning</td>
</tr>
</tbody>
</table>
negative evaluations   Negative  (VN)  4  (2011)
Comprehensiveness  (C)  The extent of detailed and complete the information provided in online hotel reviews  4  Cheung et al.  (2008)

Source: own elaboration

The pre-test participants were 100 Taiwanese university students majoring in tourism and hospitality. In addition to the convenience sampling, there are two reasons to support the use of this sampling method in the examination of this questionnaire. First, these students would display the behavior of checking online reviews under the circumstance of understanding the concept of online reviews. Second, Nowaczek and Smale (2010) revealed that using the homogeneous sample of students would make the results less likely to be confounded. Moreover, an exploratory factor analysis (EFA) was to verify the reliability and validity of the 30 indicator items of online hotel reviews (Table 2).

Table 2. Exploratory Factor Analysis Results of the Items of Online Hotel Reviews

<table>
<thead>
<tr>
<th>Factors (Mean)</th>
<th>Items</th>
<th>Factor loading</th>
<th>Eigenvalue</th>
<th>Explained variation (%)</th>
<th>Cronbach’s α</th>
</tr>
</thead>
<tbody>
<tr>
<td>RE</td>
<td>RE2: Reviewers must have green hotel-related knowledge</td>
<td>0.760</td>
<td>2.606</td>
<td>11.331</td>
<td>0.760</td>
</tr>
<tr>
<td></td>
<td>RE1: Reviewers must be prominent in the field of green hotels</td>
<td>0.752</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>RE3: Reviewers must have a good credit record</td>
<td>0.702</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>RE4: Reviewers must be experienced users of the Internet</td>
<td>0.671</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>RE5: Negative reviews must be posted by professional reviewers</td>
<td>0.560</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>U</td>
<td>U2: The contents of online reviews are genuine</td>
<td>0.854</td>
<td>2.105</td>
<td>9.154</td>
<td>0.779</td>
</tr>
<tr>
<td></td>
<td>U1: The contents of online reviews are reliable</td>
<td>0.791</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>U3: The contents of online reviews are objective</td>
<td>0.757</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>T</td>
<td>T3: Online reviews must be posted instantly</td>
<td>0.798</td>
<td>1.896</td>
<td>8.243</td>
<td>0.690</td>
</tr>
<tr>
<td></td>
<td>T2: Online reviews must be posted recently</td>
<td>0.762</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>T1: Online reviews that were posted most recently can reflect the latest information of green hotels</td>
<td>0.696</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Variable</td>
<td>Statement</td>
<td>Cronbach's Alpha</td>
<td></td>
<td></td>
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<tr>
<td>Vo (4.085)</td>
<td>Vo2: I pay more attention to green hotels with a large volume of online reviews</td>
<td>0.767</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Vo1: The volume of online reviews is related to the attention received by a green hotel</td>
<td>0.753</td>
<td></td>
<td></td>
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</tr>
<tr>
<td></td>
<td>Vo3: The large volume of online reviews of a green hotel reflects that many people are interested in the hotel</td>
<td>0.689</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>V (4.168)</td>
<td>VP3: I pay much more attention to green hotels that have a larger volume of positive online reviews</td>
<td>0.792</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>VP1: I pay more attention to positive online reviews of green hotels</td>
<td>0.788</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>VP2: Positive online reviews of green hotels are more valuable</td>
<td>0.765</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>VN3: Negative online reviews will terminate my booking intention</td>
<td>0.785</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>VN1: The volume of negative online reviews is important</td>
<td>0.757</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>VN4: I will not book a green hotel if I see any negative online reviews about it</td>
<td>0.744</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C (4.160)</td>
<td>C4: Consolidated reviews and detailed online reviews are of equal importance</td>
<td>0.781</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>C3: Detailed online reviews are more valuable</td>
<td>0.736</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>C2: Detailed online reviews will attract more attention</td>
<td>0.687</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Total variance explained: 65.898 %
Reliability: 0.844

Source: own elaboration

### 3.2 Data Collection and Procedure

In 2021, 66 hotels and B&Bs in Taiwan received the Green Hotel standard, of which two (one Gold and one Bronze) are located in Penghu (Environmental Protection Administration, 2021). The two hotels have proactive invested in their environmental management over the last decade. To meet the government’s green hotel regulatory standards, they developed environmental program that provide insight into environmental policy making, employees’ training, implementation planning, and efficiency auditing, to hotel operators in environmental appropriate approaches. Penghu is a particularly popular island tourism destination and famous tourist attraction in Taiwan. Therefore, these two green hotels are representative of tourists staying in green hotels in this study, especially for FOUR POINTS by
Sheraton hotel (a Gold label green hotel) is an international five-star hotel in Penghu, Taiwan. Only by complying with corporate environmental management, water and energy saving measures, pollution prevention and control equipment, etc., and implementing each set standard, can a hotel obtain the Gold level of Taiwanese government's green hotel label (Environmental Protection Administration, 2021). The green hotel label means that it has obtained the credibility by government. Moreover, the participants were travelers who visited Penghu and stayed in both of two green hotels. This study utilized convenience sampling for respondents who referred to use hotel reviews on hotel websites, online travel agent websites or online booking websites. Before assigning the questionnaire, the respondents were asked: “Did you ever read or check online hotel reviews that resulted in your intention to book this hotel?” To ensure participants suitably, only respondents who answered “yes” would recruit this survey.

The two-phase survey was administered between April and August because of the high season in Penghu, Taiwan. The trained research assistants distributed questionnaires in two green hotels and faced to face with respondents. The travelers were asked to fill out the questionnaire. While travelers received answers to any question, they raised from trained research assistants. Incomplete responses were screened for removal. This study distributed questionnaires for the first and second phases, which yielded 350 and 568 responses, respectively. Items of conformity, green perceived value, and online green hotel booking intentions were presented in Appendix.

3.3 Data Analysis

Statistical analysis tools were supported with the use of the software packages SPSS 22.0 and Amos 22.0. The analysis of the descriptive statistics includes the participants’ socioeconomic background and the characteristics of their travel experiences. EFA explored the first phase data set. Structural equation modeling (SEM) is often used for confirmatory factor analysis (CFA), path and causal analyses. It can simultaneously handle multiple dependent variables and can compare and verify different theoretical models (Fornell & Larcker, 1981). After exploring the scale of online hotel reviews, this study adopted a cognitive model and a knowledge-attitude-behavior model to establish the research structure to verify the path relationship among the relevant variables. In this regard, this study then conducted CFA, drawing on the second data set, to test the goodness of fit for each scale, and used SEM to examine the hypothesized relationships in structural model.

4. Results

4.1 Exploratory Factor Analysis

The factor loading of each item is greater than 0.5, and the total variance explained is 65.898% representing a good level of convergent validity. In addition, each factor has a Cronbach’s alpha greater than 0.7, aside from timeliness, indicating that the six factors representing online hotel reviews have a good level of reliability. The correlation coefficient ranges from 0.163 to 0.418, which is below 0.5, meaning our factors have high discriminant validity.

4.2 Descriptive Analysis

Of the 568 respondents, the majority are female (51.5%); most are married (53.0%), The aged was from 30 to 39 (34.7%). Most have a college/university degree (60.8%) and work in the industrial/commerce/service sectors (41.7%) The participants’ monthly salaries are primarily in the ranges of TW$ 20,001 to 40,000 (43.3%). The majority chose to stay in Penghu’s Bronze Label green
hotel (51.0%) and traveled there mainly for a vacation (73.5%) with their family (42.18%). The majority of respondents’ report staying in hotels either two to three times per year (46.9%). Finally, Internet (24.1%) is the main source for hotel information.

4.3 Measurement Model

The first step of SEM is conducting confirmatory factor analysis to examine construct reliability and validity of the measurement model. Table 3 shows, that all standardized factor loadings are in an acceptable range (0.680 to 0.916) thereby supporting convergent validity. The CR of the constructs ranges from 0.787 to 0.896; as this exceeds 0.7, all constructs can be considered to have good internal consistency (Nunnally & Bernstein, 1994). Lastly, all AVE scores are in the range 0.547 to 0.688, exceeding 0.5, and thereby demonstrating adequate convergent validity (Fornell & Larcker, 1981).

<table>
<thead>
<tr>
<th>Constructs</th>
<th>Items</th>
<th>Significance of estimated parameters</th>
<th>Item reliability</th>
<th>Construct reliability</th>
<th>Convergence validity</th>
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<tr>
<td></td>
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<td>Unstd.</td>
<td>S.E.</td>
<td>Unstd./S.E.</td>
<td>p-value</td>
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<td></td>
<td></td>
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<tr>
<td></td>
<td>RE2</td>
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<td>0.061</td>
<td>17.300</td>
<td>0.000</td>
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<td></td>
<td>CO8</td>
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</table>
This study assessed discriminant validity by comparing the square root of the AVE of a given construct with the correlations between the construct and the other constructs (Fornell & Larcker, 1981). In Table 4 shows that the discriminant validity appears to be satisfactory for all constructs.

### Table 4. Correlations between Square Roots of AVE Values and Variables

<table>
<thead>
<tr>
<th></th>
<th>AVE</th>
<th>RE</th>
<th>BI</th>
<th>GP</th>
<th>RC</th>
<th>CO</th>
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<tr>
<td>RE</td>
<td>0.547</td>
<td>0.740</td>
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<td>BI</td>
<td>0.582</td>
<td>0.510</td>
<td>0.763</td>
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<td>GP</td>
<td>0.553</td>
<td>0.474</td>
<td>0.530</td>
<td>0.744</td>
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<tr>
<td>RC</td>
<td>0.591</td>
<td>0.546</td>
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<td>0.588</td>
<td>0.769</td>
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<tr>
<td>CO</td>
<td>0.650</td>
<td>0.447</td>
<td>0.533</td>
<td>0.384</td>
<td>0.545</td>
<td>0.806</td>
</tr>
</tbody>
</table>

Source: own elaboration

### 4.4 Structural Model

This study tested the hypothesized relationships in our model using the maximum likelihood method. The test results ($\chi^2 = 1158.559; \chi^2/d.f. = 1.446; $RMSEA = 0.028; $\text{Std. RMR} = 0.033; $\text{NNFI} = 0.970; $\text{CFI} = 0.972; $GFI = 0.916; $\text{AGFI} = 0.909$) indicate that the proposed model has an acceptable goodness-of-fit.

The two constructs of online hotel reviews: source credibility ($b = 0.152, p = 0.001$) and review characteristics ($b = 0.442, p < 0.001$), have a significant and positive influence on conformity. Thus, $H1a$ and $H2a$ are supported. Source credibility ($b = 0.171, p < 0.001$) and review characteristics ($b = 0.536, p < 0.001$) also have significant and positive influences on green perceived value. Consequently, $H1b$ and $H2b$ are supported. Finally, both source credibility ($b = 0.130, p = 0.007$) and review characteristics ($b = 0.495, p < 0.001$) have a significant and positive influence on online green hotel booking intentions, thereby supporting $H1c$ and $H2c$.

In addition, the path coefficients indicate that conformity ($b = 0.260, p < 0.001$) and green perceived value ($b = 0.205, p = 0.001$) have significant and positive influences on online green hotel booking intentions, which means that $H3$ and $H6$ are supported. However, the hypothesis of green
perceived value’s (b = 0.048, p = 0.432) positive influence on conformity is not significant. H5a is not supported.

This study used bootstrapping to test the mediating effects. First, the total effect of source credibility on online green hotel booking intentions (RE → BI) is supported (the bias-corrected confidence interval (CI) [0.101, 0.324] does not include 0, p < 0.05). Since the bias-corrected CI of the indirect effect of RE → CO → BI does not include 0 ([0.01, 0.092], p < 0.05), H4a is supported. Moreover, the bias-corrected CI of the indirect effect of RC → CO → BI does not include 0 ([0.042, 0.212], p < 0.05) and so H4b is also supported.

Second, the total effect of review characteristics on online green hotel booking intentions (RC → BI) is supported (bias-corrected CI [0.572, 0.89] does not include 0, p < 0.05). Both the bias-corrected CI of the indirect effect of RE → GP → BI and RC → GP → BI do not include 0 ([0.01, 0.075] and [0.046, 0.202], p < 0.05), indicating that green perceived value mediates the relationship between review characteristics and online green hotel booking intentions. Consequently, H7a and H7b are supported.

Finally, the total effect of green perceived value on online green hotel booking intentions (GP → BI) is supported (bias-corrected CI [0.062, 0.351] does not include 0, p < 0.05). Since the bias-corrected CI of the total indirect effect GP → CO → BI includes 0 ([0.023, 0.052], p > 0.05), the total indirect effect of conformity (H5b) is not supported.

Above mentioned, the results revealed that online hotel reviews can influence travelers to adopt more environmentally-friendly behaviors, such as choosing to stay in eco-friendly hotels. This effect is contingent on the perceived credibility of the source and review characteristics of the reviews, which have the power to persuade travellers effectively. Besides, green hotel should shed light on the presence of sustainability matters in online customer reviews. Online reviews have become a fundamental element in the shift of hotel businesses toward sustainability models so as to identify hotel perceptions regarding the role of green hotel practices in achieving environment related SDGs.

5. Discussion

The results revealed that travelers’ conformity and green perceived value are positively influenced by source credibility and review characteristics of reviews, resulting in online green hotel booking intentions. A rationale of these findings is knowledge-attitude-behavior continuum (Kollmuss & Agyeman, 2002). Knowledge-attitude-behavior suggests that the formation of attitude results from gained knowledge that has been evaluated and has a causal influence on subsequent behavior. Similar with attitude denoting the affect for or against a psychological object, perceived value takes functional, social and emotional assessments into consideration. Therefore, the perceived value of a green product or service might also be influenced by relevant knowledge evaluated, and in turn influence the subsequent behavior. The details are as follow.

The online hotel reviews drive conformity in behavior (i.e., online green hotel booking) among travelers (Zhang et al., 2022), assuming that the source credibility and review characteristics represent sufficiently valuable information value to convince travelers. The results of H1a and H2a are the same as Guler and Huseynov (2021) and correspond to Simanjuntak et al.’s (2023) finding that environmental knowledge significantly affects environmental care attitudes. This study implies that green information received from online hotel reviews will enhance conformity (pertaining to attitude) regarding green hotels. However, the results are also in contrast to Simanjuntak et al.’s (2023) another finding that WOM does not significantly affect environmental care attitudes. Comparing with traditional WOM, information transmission of eWOM is easier and more efficient due to the rise and spread of
the Internet (Yen & Tang, 2019). Therefore, presence of reviews coming from WOM and eWOM has different effects on consumer preference (ShabbirHusain & Varshney, 2022). Corresponding to Kim et al. (2018), online reviews, one type of eWOM, would have a stronger effect on consumers’ attitude toward green hotels under each attribute of source credibility and review characteristics.

Also, hotels can establish green value if the information released is useful and affectional for travelers (Tan, 2022; Teng et al., 2018). Transparent delivery of green information can reduce travelers’ doubts regarding the extent to which the hotels actually implement environmental protection measures (Lin et al., 2017). Therefore, “strong” source credibility (H1b) and review characteristics (H2b) are helpful for elevating travelers’ green perceived value, and are consistent with Yi et al. (2016) that asserted using online hotel reviews to improve consumers’ perception of green hotels. Moreover, the results showed that the “positive” attributes of source credibility (H1c) and review characteristics (H2c) increase travelers’ online green hotel booking intention. The results are supported by studies focusing on the effect of online hotel reviews (e.g., Zhao et al., 2015; Danish et al., 2019; Güler and Huseynov, 2021); however, in contrast to Simanjuntak et al. (2023) who found that both WOM and environmental knowledge did not significantly affect the intention to purchase green products. Like mentioned above, eWOM is more powerful than WOM to affect consumers’ purchase decisions (Kim et al., 2018). Thus, green information on online hotel reviews could be more directly for travelers’ accommodation needs than general environmental knowledge received from elsewhere, and further determine their intention to book green hotels online.

On the other hand, the results revealed that while tourist perceived the higher conformity (H3) and green perceived value (H6), they would have higher preferences in booking green hotel. Customers often tend to observe and imitate others when they are unable to decide on their purchase (Shen et al., 2016). For customers, the majority of hotel green practices are perceived as positive (Yi et al., 2016), and travelers will be more likely to comply with the “positive” green hotel booking intention. Moreover, when travelers’ green perceived value increases, they have greater trust in a green hotel’s ability to meet their green needs and thus, have a higher online booking intention (Lam et al., 2016). Therefore, conformity and green perceived value would demonstrate some predictive power with regard to intention of choosing green hotel, which are supported by Tsao et al. (2015) and Teng et al. (2018), respectively.

However, the results in this study indicate that travelers tend to rely on their own green values over complying with others’ expectations about green hotels. This result is inconsistent with the cognitive model (i.e., the path of intention development “perception→attitude→intention”) and value-attitude-behavior hierarchy which assert that attitude is predicted by one’s perception (Homer & Kahle, 1988), implying that when travelers conform to public expectations of green issues (i.e., online green hotel booking), it’s not because their values align with publication perception (H5a, H5b rejected). In other words, although an individual expresses a green attitude that caters to social expectations, it does not mean that it is related to the green perceived value he or she agrees with. This probably because his or her green perceived value cannot fit an individual’s appraisal of social value of green hotel, which indicates that the benefit to society should also be involved in/after the appraisal.

Both conformity (H4) and green perceived value (H7) play important roles as mediator. Knowledge-attitude-behavior model (Kollmuss & Agyeman, 2002) could offer reasonable rationale to explain such findings. Consumers, by obtaining trusted information posted by others, can solve their problems or improve their understanding of a service, thereby changing their attitudes and catering their purchase behaviours to public expectations accordingly. Therefore, “positive” green hotel information from online reviews (in terms of source credibility and review characteristics) will prompt travelers to embrace conformity that will enhance their online booking intention. The mediator finding is different from Tsao et al. (2015), who treated conformity as a moderator and studied on the booking intention of conformist individuals. The model might also explain why this study found that the
mediating effect of perceived green value on the influence of online reviews on green hotel booking intentions. The finding is supported by prior studies that proved green perceived value a significant predictor of hotel booking intention (e.g., Amin & Tarun, 2019; Teng et al., 2018).

6. Conclusion

The findings indicate that source credibility and review characteristics are significant factors in influencing travelers' decisions to select eco-friendly hotels. Additionally, both conformity and the perceived value of green practices serve as crucial mediators in this process. This research contributes to the current understanding of cognitive models and the knowledge-attitude-behavior model with introducing a novel pathway that addresses gaps in existing literature. The results of this research provide valuable and specific insights that can confirm the relevance of academic inquiries concerning online reviews for green hotels. Consequently, the study goes on to explore the theoretical and practical consequences arising from these findings, as outlined below.

6.1 Theoretical Contributions

The findings of this study fill the existing gaps in the literature by offering valuable confirmations for academic investigations into online review for green hotels. First, while many studies emphasize travelers’ green consumption behavior, there is a lack of explicit focus on the influence of both online reviews and green psychological cognition on travelers’ the process by which online green consumption intentions are induced. Against this backdrop, this study proposes a model to explain the influences on travelers’ intentions to book green hotels online. In addition to the predicting role of online hotel reviews, this model also identifies the important mediating effects of travelers’ green psychological cognition. Notably, this study finds that ones’ green perceived value will not positively affect their conformity, which implies that an individual’s evaluation of green value/benefit also needs to fit the social perception and expectation.

Second, questions about a more comprehensive understanding of impacts from online reviews attributes remain (Zhao et al., 2015). This study extends the measurement of online hotel reviews by simultaneously considering two perspectives of source credibility (reviewer expertise) and review characteristics. The aforementioned six attributes of online hotel reviews are explored to examining the causal relationships of our model. As such, the measurement established will help researchers refer this marketing scale more precisely. Third, this study integrates the current knowledge on cognitive model and knowledge-attitude-behavior model to predict travelers’ green behavioural intention in a green lodging context. Two factors, conformity and green perceived value, thus emerge to measure psychological green cognition; then a new path vision is formulated to gain a better understanding of how individual psychological factors influence travelers booking intention toward green hotels. In other words, our findings provide researchers new insights with social and personal perceptions to explain the impact of online information transmission upon consumers’ decision-making.

6.2 Managerial Implications

First, our research offers a theoretical framework for hotels to develop proper market signals to promote their green focus and it provides guidance for effective booking promotion strategies. Online consumer reviews have a direct influence on the online booking intention of potential travelers, while also resulting in green psychological cognition of potential travelers. When customers are more critical of a hotel in reviews on third-party websites (or social media), the hotel’s ability to provide a response can encourage potential travelers to believe in the hotel’s trustworthiness and its empathy with its
customers (Sparks et al., 2016). Therefore, when a large volume of influential reviews of a green hotel are posted online, the hotel should provide rational explanations regarding the customers’ negative consumption experiences, and so enable customers to perceive the hotel’s empathy with its customers (Vo et al., 2022).

Second, the indicators of online hotel reviews explored to help travelers evaluate online hotel reviews will help hotel operators utilize this marketing tool more efficiently. Green hotels should assist travelers to search for green hotel-related information in an efficient and prompt manner, so as to reduce the negative perceptions arising from lengthy search times and a lack of information. According to the attributes of source credibility and review characteristics in online hotel reviews, management should provide: (1) Professional reviews, which can be obtained by inviting experts from hotel-related fields or environmental groups to give professional appraisals of a green hotel, which can then be provided to travelers. (2) Timely reviews that accurately convey the current condition of a green hotel to travelers. (3) Comprehensive reviews, which are pivotal for travelers in booking a green hotel when they are uncertain about the information they have.

Third, regarding the disclosure of service knowledge in online reviews, hotel operators must emphasize how green hotels conduct green services and practices (e.g., stop providing disposable items, implement linen and towel reuse program, guest room garbage sort and recycle) and contribute to environmental protection. This can be achieved by including the review contents of services related to reliability, empathy, green communication, green energy reduction, assurance, and tangibles. (Lee & Cheng, 2018). To this end, source credibility and review characteristics are two important perspectives of online reviews for green hotels to promote themselves as a more reliable brand. Once green service information gained, the perceived value of green hotels can be stimulated and enhanced in travelers’ mind (Teng et al., 2018).

Fourth, it is very important to use online reviews to enhance travelers’ psychological cognition (i.e., the bandwagon effect and green perceived value) of green hotel for raising their booking intention. It could be better for hotel operators to include and highlight the appealing emotional experiences (e.g., figures or pictures) or social interaction opportunities (e.g., online response immediately) for online reviews (Sparks et al., 2016; Vo et al., 2022; Zhang et al., 2022). With this regard, travelers can evaluate green hotels’ emotional and social values, in addition to functional value, when reading online reviews. The extent to which green practices can be clearly visualized, so that travelers become more willing to book rooms even at premium prices. Finally, COVID-19 has shifted travelers’ hotel booking intentions due to healthy and environmental consciousness (Ju & Jang, 2023). It is essential to note that green hotels should address this new awareness with increased cleanliness and safety standards and extend that to green service evaluation systems during post Covid-19. The current study offers a bundle of attributes in online reviews to provide hotel operators for formulation of communication strategies. As such, travelers can access to the acknowledge of public and perceive green hotels’ values and benefits, and will be more likely to book a green hotel, as reported in this study.

6.3 Research Limitations and Suggestions

Every study has its limitations. First, this study targeted travelers staying in green hotels in Penghu as participants without classifying them into domestic and foreign travelers. The differences in consumer profiles may provide valuable clues for hoteliers in marketing strategies (Aksoy et al., 2003). Second, this study conducts questionnaire surveys on green hotels and tourists in Penghu area. Although it is based on rigorous research methods, the generalizability of the results would be arisen due to regional restrictions. Tourists in different tourist areas will have different consumption behaviors, which may cause different studies. Therefore, it is recommended that follow-up studies can compare green hotels and accommodation tourists in different regions as a sample basis. Third, the influence of online consumer reviews can be affected by consumer profiles (such as morality or green
awareness). Accordingly, future studies can analyze individual determinants on online green hotel booking intentions.

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Appendix. Questionnaire Items and Sources

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<tbody>
<tr>
<td>Conformity (CO)</td>
<td>CO1: I rarely book rooms at the newest hotels until I am sure my friends approve of them.</td>
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<td>CO2: It is important that others like the hotels I choose to stay at.</td>
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<td>CO3: When selecting a hotel to stay at, I generally select hotels that I think others will approve.</td>
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<td>CO4: When selecting a hotel to stay at, I generally select hotels recommended by my friends.</td>
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<td></td>
<td>CO5: I like to know what hotels make good impressions on others.</td>
<td>Tsao et al. (2015)</td>
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<td>CO6: I achieve a sense of belonging by staying at the same hotels where others have stayed.</td>
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<td>CO7: If I want to be like someone, I often try to stay at the same hotels that they have.</td>
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<td>CO8: I often identify with other people by staying at the same hotels that they have.</td>
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<td>CO9: To make sure I select the right hotel, I often observe the hotels others have stayed at as well as their lodging experiences.</td>
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<td>CO10: If I have little experience with a hotel, I often ask my friends about it.</td>
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<td>CO11: I often consult other people to help choose the best alternative available from a class of hotel. I frequently gather information from friends or family about a hotel before I stay there.</td>
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<tr>
<td>Green perceived value (GP)</td>
<td>GP1: Stay in a green hotel would make a good impression on other people.</td>
<td>Teng et al. (2018)</td>
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<td>GP2: Stay in a green hotel would improve the way I am perceived.</td>
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<td>GP3: Stay in a green hotel would make me feel good</td>
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<td>GP4: Stay in a green hotel would give me pleasure</td>
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<tr>
<td>Online green hotel booking intentions (BI)</td>
<td>GP5: A green hotel is reasonably priced</td>
<td>BI1: I am willing to book green hotel rooms online</td>
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