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Vinzenz, Friederike

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DOI: <https://doi.org/10.1016/j.tmp.2018.10.006>

Posted at the Zurich Open Repository and Archive, University of Zurich

ZORA URL: <https://doi.org/10.5167/uzh-161676>

Journal Article

Accepted Version

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Originally published at:

Vinzenz, Friederike (2019). The added value of rating pictograms for sustainable hotels in classified ads. *Tourism Management*, 29:56-65.

DOI: <https://doi.org/10.1016/j.tmp.2018.10.006>

The added value of rating pictograms for sustainable hotels in classified ads

Friederike Vinzenz

Department of Mass Communication and Media Research, University of Zurich, Zurich,
Switzerland

Corresponding author:

Friederike Vinzenz (f.vinzenz@ikmz.uzh.ch) is a doctoral candidate at the Division of Media Psychology and Effects at the University of Zurich, +49 (0)44 635 20 74, Andreasstrasse 15, 8050 Zurich, Switzerland.

Acknowledgements:

This research has not been funded by any organization. The experiment was part of the doctoral thesis of Friederike Vinzenz, under supervision of Prof. Dr. Werner Wirth from the University of Zurich. Prof. Dr. Juliana Priskin from the Lucerne University of Applied Sciences and Arts was consulted for proof reading.

Declarations of interest: none

This research did not received any specific grant from funding agencies in the public, commercial, or non-for-profit sector.

Abstract

In making online hotel booking decisions, people use consumer ratings as a cue to evaluate previous customers' experiences with the promoted hotel. Currently, hotels' sustainability efforts are an important additional criterion that factors into customers' booking behavior. However, the effectiveness of certifying such efforts with sustainability labels is questionable. An experiment was conducted with 684 participants to examine the effectiveness of two different certification systems beyond the persuasive power of customer ratings. To analyze these effects, a 3 (customer rating: poor vs. mediocre vs. good) x 3 (sustainability level: one vs. two vs. three) x 2 (certification system: label vs. rating pictogram) mixed design was used. The results showed that consumers must be able to understand the informational cues that indicate the level of sustainability if they are to use this information in addition to the valence of the overall customer rating as a decision-making criterion.

Keywords: online reviews; customer rating; sustainability certification; sustainability level; decision-making; information seeking; trustworthiness

1 Introduction

Due to increased hotel bookings through online platforms (Buhalis & Law, 2008), the effectiveness of short and easily interpreted information has become increasingly important. Many factors, such as location, hotel size, room quality, price, and cleanliness, influence consumers' booking decisions (Radojevic, Stanisic, & Stanic, 2015; Ramanathan & Ramanathan, 2011). Therefore, consumers are constantly confronted with various types of product and service information on different webpages. To reduce the amount of information, customers usually use search engines or online travel agencies to receive a preselection of hotel offers (Murphy, Chen & Cossutta, 2016). When booking a hotel online, customers select key attributes first and then, on the basis of classified ads, select an offer that might be of interest for further consideration (Booking.com; TripAdvisor.com). The proposed hotel selection meets the determined criteria but remains extensive, whereby classified ads include only a few informational cues that set the basis for the consideration choice. Hence, during this selection phase, quality signals such as brands, labels, hotel classifications, and customer ratings are an important persuasive tool that helps consumers to select (Decrop & Boembeke, 2017; Hu, Chen, & Chou, 2017; Lien, Wen, Huang, & Wu, 2015; Sparks, Perkins, & Buckley, 2013).

Consumer-generated reviews and the recommendations of friends are found to be the most important factors that influence hotel bookings (Dickinger & Mazanec, 2008; Ye, Law, Gu, & Chen, 2011). These information sources provide cues about whether previous customers had positive or negative experiences with a hotel (Filieri & McLeay, 2014). Therefore, such sources represent an evaluation of all tangible and intangible aspects of the hotel. Due to the persuasive power of such recommendations, an increasing number of online sellers include consumer reviews and ratings on their websites (Chen & Xie, 2008). Beyond written online reviews,

suppliers such as Tripadvisor.com provide classified ads, which include numerical customer ratings that summarize all consumer evaluations of the promoted hotel. Thus, the customer rating represents the evaluation of various hotel attributes, made by several previous consumers, and serve as quality signals during the early stage of the decision-making process.

In addition to customer ratings, which are a well-established persuasive tool, selected quality attributes can be certified and highlighted in an advertisement. Because sustainability is an important attribute for the tourism and hospitality sector, advertisements increasingly use labels to certify the social, environmental and ecological responsibility of a hotel (Bickart & Ruth, 2012). Following the United Nations Brundtland Report in 1987, numerous guidelines, agreements, and alliances were established to implement sustainability. Several public, private and nonprofit players developed a large number of certification programs with different criteria, content, implementation regulations, and scopes (Buckley, 2002; Font, 2002). Some certify only environmental sustainability, while others certify all three dimensions of sustainability (environmental, social, and economic) (Tepelus & Córdoba, 2005). The variety of certification programs and associated sustainability labels together with the nontransparent diversity of the criteria cause customer confusion (Font, 2002; Lübbert, 2001). To obtain details about the scope of the certification program and to learn about the criteria, customers must search for further information. The label symbol itself does not provide information on the certification criteria. Hence, customers cannot identify the different scopes of several labels. Moreover, the label does not visualize the compliance rate. The label is a sign for a whole certification program, including various criteria for which the hotel must fulfill a certain amount to be certified. Thus, labels have no gradation displayed, and the only reference point is ‘no label’. In contrast, rating scales provide a point of reference, which allows differentiation and quality rankings. Rating scales are

a well-established tool in the consumer product industry to show qualitative differences (Chen & Xie, 2008; Clemons, Gao, & Hitt, 2006; Sparks & Browning, 2011; Willemsen, Neijens, Bronner, & de Ridder, 2011). Such rating scales might be a good alternative to labels to identify the sustainability of a hotel in a way that is quick and easy to interpret. A symbol in the form of sustainability rating pictogram could be included in classified ads together with an overall quality cue, such as a customer rating, to influence consumers' interest in obtaining further hotel information.

As online viewers usually have only limited capacity and time to handle a large amount of information (Hu, Chen, & Chou, 2017), product and service qualities as well as other hotel attributes should be, in the early stage of an online booking decision, communicated by short and easy-to-interpret informational cues to attract consumers' attention and to be persuasive. The current paper focuses on the effect of such short informational cues and investigates how informational cues that are included in classified ads influence consumers' interest in obtaining further hotel information. Do people prefer hotels with a positive consumer rating? How useful to the decision process are certifications for sustainability? An experimental study on the impact of customer ratings and different sustainability certifications on consumers' interest in obtaining further information was conducted to explore these questions. The persuasiveness of consumer reviews is well documented in the previous research (Dickinger & Mazanec, 2008; Filieri & McLeay, 2014; Sparks & Browning, 2011; Vermeulen & Seegers, 2009; Zhao, Wang, Guo, & Law, 2015); however, to date only a small number of researchers have empirically analyzed the impact of the overall numerical customer rating summarizing all online reviews on consumer interest (Gavilan, Avello, & Martinez-Navarro, 2018). Therefore, the study examines how customer ratings influence interest in obtaining detailed information on the promoted hotel

during an early stage of the decision-making process. In addition to consumer reviews that influence decision-making, sustainability is an important quality attribute (Bickart & Ruth, 2012; Chen, 2015; Fairweather, Maslin, & Simmons, 2005; Sparks & Browning, 2011). The sustainability aspects of a hotel might influence consumers' decisions in addition to the customer rating if the certification of these aspects is included in the classified ads and designed in a comprehensible manner. Therefore, the current study compares the effectiveness and trustworthiness of two different sustainability certification systems. The benefits of a sustainability certification that displays different levels of sustainability are presented as well as the interaction between customer rating pictograms and sustainability rating pictograms will be explored.

2 Theoretical background

2.1 Online booking

For decades, the hotel and hospitality research has investigated the question of the factors that influence the decision to book an accommodation (Dickinger & Mazanec, 2008; Ögüt & Onur Taş, 2012; Radojevic, Stanisic, & Stanic, 2015; Ramanathan & Ramanathan, 2011; Rhee & Yang, 2015; Yang, Mueller, & Croes, 2016). It was found that the intangible service elements and tangible physical features of a hotel are evaluated and judged by the customer to estimate the hotel quality. Thus, the customer needs information about the hotel's attributes and descriptions of the consumer experience of the hotel. If customers lack first-hand experience, they use online travel agencies (e.g., Booking.com), online travel communities (e.g., TripAdvisor.com) and various forms of consumer-generated content (e.g., travel blogs) as a primary means of determining the quality attributes of a hotel (Guillet & Law, 2010; Sun, Law, Luk, & Fong, 2017). Such booking webpages usually provide a choice of hotels presented by classified ads,

after the customer selects key attributes based on personal preferences. Because online viewers usually have limited capacity to handle a large amount of information (Hu, Chen, & Chou, 2017), these classified ads provide only a limited amount of information about the hotel's attributes, and quality signals are significant influencing informational cues during the early decision stage (Decrop & Boembeke, 2017).

2.2 Customer ratings

Electronic word-of-mouth, such as online reviews and online recommendations, are an important tool for increasing the demand of a hotel (Dickinger & Mazanec, 2008; Filieri & McLeay, 2014; Litvin, Goldsmith, & Pan, 2008; Ye, Law, & Gu, 2009). Customers base their decisions to book an accommodation on the valence and number of online reviews (Gavilan et al., 2018). Positive or negative word-of-mouth can play a decisive role in convincing a potential customer to either book or not book a promoted hotel. For example, Dickinger and Mazanec (2008) showed that the experiences of previous customers expressed through online reviews are the most important factor for online booking decisions. Sparks and Browning (2011) investigated how different aspects of online reviews influence the effect of such reviews. They found that positive online reviews lead to a higher booking intention than negative reviews. This relationship was also shown in several other studies (Lee, Park, & Han, 2008; Mauri & Minazzi, 2013; Tan, Lv, Liu, & Gursoy, 2018; Vermeulen & Seegers, 2009; Zhao et al., 2015). Vermeulen and Seegers (2009) argue that both positive and negative reviews increase consumers' awareness of a hotel; however, positive reviews positively influence the consideration of an offer. Thus, if a consumer is looking for supporting information to form a booking intention, he or she would rather choose hotels with highly positive reviews, whereas negative reviews strengthen the intention not to book the hotel (Ladhari & Michaud, 2015; Serra Cantallops & Salvi, 2014).

In the early stage of the decision-making process, consumers must choose which offer they will consider to receive additional information: Which offer or hotel is interesting enough to warrant a closer evaluation that involves reading the reviews? On platforms such as TripAdvisor, a summary of all hotel guests' online reviews is shown as a single overall rating on the first page. This numerical rating represents an aggregation of all online reviews (Sparks, Kam Fung So, & Bradley, 2016; Willemsen et al., 2011). More precisely, it is the average of all numerical consumer evaluations, not including the written responses. Because classified ads usually include only a few informational cues, such as a picture of the hotel or a hotel room, the price and name of the hotel, occasionally hotel highlights, the distance to the city center, and a customer rating. The customer rating as a global quality signal is an important persuasive tool. It is one of the first units of information that help consumers decide which hotel might be interesting to book. As Gavilan, Avello and Martinez-Navarro (2018) showed, a good rating encourages tourists to include a hotel in their consideration set. Hence, a summarized numerical representation of consumer reviews, such as a customer rating, presumably has an effect on consumers' interest in receiving further information.

H1. The higher the hotel is rated by the customer rating, the stronger the potential the guest's interest will be to obtain further information on the associated hotel offer.

2.3 Sustainability certifications

Because concerns about sustainability have become more relevant, cues that provide information on the environmental and social impacts of products have been increasingly integrated into advertisements (Bickart & Ruth, 2012). In addition to advertising statements about sustainability, the tourist and hospitality sector uses labels to certify sustainable tourism. Compared to the absence of a certification, a label helps guests verify advertising messages and improves their

attitudes regarding a hotel (Casaló, Flavián, Guinalú, & Ekinici, 2015; Sparks et al., 2013). Because of the demand for sustainability and on the basis of several politically and private-economic guidelines, several certification programs have been founded. The number of such programs has increased over the past decade, and currently there are many different types of labels that certify the sustainability of hotels (Frydendal, Hansen, & Bonou, 2018; Kozak & Nield, 2004; Park & Millar, 2016; Pröbstl & Müller, 2012). Each year, new labels are created, and other labels disappear. Some certification programs are international, and others are national or regional. These programs have been developed by nonprofit groups, consumer advocacy groups, government agencies and for-profit groups. Due to the absence of effective legal or political rules, these actors determine their own policies. As a result, the voluntary codes, awards, and accreditation and certification schemes of the labels vary considerably (Buckley, 2002).

This multitude of labeling systems adds to customer confusion (Lübbert, 2001) regarding, on the one hand, the scope of a particular program and, on the other hand, the practical implementation of the hotel. First, although the definition of sustainable tourism implies that ecological, social and economic goals are pursued simultaneously and equally (UNEP & UNWTO, 2005), some certification programs verify only the environmental aspects of hotels, while other programs certify the environmental, social and economic aspects. Programs that certify only the environmental dimension are not necessarily based on fewer criteria than the other programs, but they monitor and certify just one dimension out of three possible sustainability dimensions. However, because certification programs are neither coordinated nor standardized, and they have no uniform labeling rules, it is impossible for customers to determine the scope of a program by just seeing the label symbol in the advertising. Customers need more information about a certification program to understand what the label stands for. For

example, the well-known certification program *Green Globe* assigns one symbol to certify sustainable hotels, but the label does not include information about the scope of the program. If a customer wishes to learn more about a label's criteria, they must visit the website of the certification program. Second, certification guidelines are not always entirely published, and the degree of compliance cannot be reviewed (Graci & Dodds, 2015). Hotels might fulfill 70% or 90% of the criteria. Generally, an advertisement will include a particular label without informing the consumer about the compliance rate. Although there are a few certification programs, such as the *ibex fairstay*, that award hotels with different types of labels depending on the achieved performance (e.g., ibex bronze, ibex silver, ibex gold, ibex platinum), the individual symbol itself does not provide a gradation. If consumers see the label, they do not know if, for example, silver is the second or third highest award. They must search for information to obtain further details; however, the label does not show how many of the potential criteria are met by a hotel.

In sum, although labels are commonplace and are used to persuade consumers, the actual effectiveness and efficiency of their impact has been questioned (Dendler, 2014; Fairweather et al., 2005; Font, 2002; Horne, 2009; Rex & Baumann, 2007). There are numerous certification programs with different scopes and various criteria (Buckley, 2002; Font, 2002); however, the symbols that are used by these programs to certify hotels do not include any information about those scopes or criteria. Hence, differences among certification programs are often difficult to determine. Consumers cannot distinguish the different information that is represented by the different labels. For example, Grössling and Buckley (2016) found that labels suffer from a lack of persuasive communication. They showed that tourists largely ignored carbon labels in tourism because they did not understand the information provided by the label. Consumers found the label to be of no importance, too abstract, or lacking an opportunity for comparison. Comparably,

Grunert, Hieke and Wills (2014) analyzed the relationships among consumers' motivations and their understanding of and reliance on sustainability labels on food products. Their results showed that consumers have a low understanding of certifications and consider them to have little utility. As a consequence of the understanding and differentiation problem, labels suffer from a lack of persuasive power, and customers do not consider the different labels in their consideration set.

H2. Labels that represent different sustainability scopes do not influence guests' interest in obtaining further information about the associated hotel offer.

However, visual elements and additional information partly improve the ability of consumers to understand and process sustainability claims. For example, traffic light color systems and further information about a label increases consumers' understanding and orientation (Emberger-Klein & Menrad, 2018). One advantage of a traffic light color system is that consumers are familiar with this schema. Therefore, they can easily apply it. Customer rating is another scale that is familiar to consumers. In contrast to the traffic light system, customer ratings provide more gradations, and a product evaluation encompasses a positive range. The traffic light system has three gradations: red, yellow, and green. By contrast, customer ratings usually have five to ten gradations, from 'low' or 'poor quality' to 'excellent quality'. Hence, rating pictograms can represent the level of sustainability in a more differentiated way that is not limited to displaying whether a hotel is 'not meeting sustainability standards' (red), 'meeting standards' (yellow) or 'performing well on sustainability' (green).

On popular online shopping websites, Amazon.com in particular, customer ratings have been used as quality signals for decades (Chen & Xie, 2008; Willemsen et al., 2011). As such rating scales provide a reference point, potential consumers can identify the evaluations of other

consumers. They can estimate the relative satisfaction of people with a product simply by viewing the rating pictogram without even reading all the corresponding customer recommendations that contribute to the overall rating. Although it is not common that sustainability certifications are included in classified ads, to include such a rating pictogram to represent the level of sustainability performance could be very useful. As such a symbol shows in an easy-to-interpret way how sustainable a hotel is, this rating pictogram might have an effect on the booking behavior. In other words, a sustainability rating pictogram provides a reference point and therefore shows the compliance rate of a hotel's sustainability performance and could be useful during the early stage of the decision-making process in determining which hotel might be of interest for further consideration.

H3. If the level of sustainability is represented by a rating pictogram, a higher sustainability performance increases guests' interest.

For two reasons, this study proposes that customers also trust sustainability ratings more than sustainability labels: Consumers' familiarity and experience with ratings (Gefen, 2000) together with the perception that the rating is provided by a noncommercial source (Ha, 2002) lead to high perceived credibility. First, the increase in information available on products through several distribution channels has also increased the utility of informational shortcuts for reference purposes. Websites have integrated rating systems that display reviewers' assessments of products and services. Therefore, consumers are familiar with rating scales, which are often shown in the form of five-point star recommendations. The more familiar a person is with a certain type of information, the more he or she trusts the information received. The tendency to trust in messages based solely on repeated exposure is widely supported by research on the 'truth effect' (Hasher, Goldstein, & Toppino, 1977; Unkelbach, 2007). Second, the increase in the

number of sustainability labels has also increased the concern of greenwashing. Based on the growing importance of sustainability and the ability to use this aspect to increase company value, companies occasionally use green advertising as a tool to overstate their ecological engagement (Naderer, Schmuck, & Matthes, 2017). As consequence, consumers might assume commercial interest and mistrust advertised sustainability claims. As information about certification programs is not readily available, the consumer does not know who might have a financial interest in the certification and who stands behind the label. In contrast, it is generally expected that a noncommercial community (e.g., customers) generates the ratings. The tendency to place more trust in a third-party certification is widely supported (Jiang, Jones, & Javie, 2008; M. K. O. Lee & Turban, 2001). To summarize, consumers might place more trust in sustainability rating pictograms because of their familiarity with them (truth effect) and because they perceive that a noncommercial community produces the ratings (third-party effect).

H4. Consumers will place more trust in sustainability rating pictograms than in sustainability labels.

2.4 Additional information

Today, numerous informational cues such as ratings and labels have become established in the tourism industry. During the early stage of the online decision-making process, potential guests must decide on the basis of classified ads which offer might be worth considering further. As consumer reviews are the most important predictor of online booking decisions (Dickinger & Mazanec, 2008), the summarized version of customer ratings may be very influential in this early phase of the selection process. Generally, customer ratings provide information on various aspects of an offer. Hotel guests evaluate intangible service elements and tangible, physical features. Therefore, ratings are considered to be an overall evaluation of all the quality attributes

of a hotel, whereas if a particular quality attribute is certified, only one of many aspects is considered. Sustainability certifications specifically consider the environmental, social and economic attributes of a hotel. Sustainability as an additional quality attribute might also influence the decision-making process (Millar & Baloglu, 2011), if an easy-to-interpret symbol is integrated into classified ads. Therefore, the study proposes that consumers' interest in additional information is mainly affected by the overall evaluation of an offer (customer rating); however, a certification of particular quality attributes, such as the sustainability of the hotel, can additionally increase interest in obtaining further information if the tourist finds the certification understandable (rating pictogram).

H5. Consumers' interest in obtaining more information is mainly influenced by the customer rating, and, in addition, this interest depends on the level of sustainability if the sustainability performance is certified by a rating pictogram.

3 Method

3.1 Overview

To investigate the proposed hypotheses, a 3 x 3 x 2 experimental design, with two within factors and one between factor, was conducted. Based on actual advertisements, hotel classified ads were created that included, among other things, a customer rating (rated: poor vs. mediocre vs. good) and a sustainability certification (level: one vs. two vs. three). One experimental group viewed ads with the sustainability certification shown as a label. The other experimental group viewed the advertisements with the sustainability certification shown as a rating pictogram. Other elements of the ads were held constant between the within conditions and between the experimental groups. To summarize, the experiment was a 3 (customer rating: poor vs. mediocre vs. good) x 3 (sustainability level: one vs. two vs. three) x 2 (certification system: label vs. rating

pictogram) mixed design; the first two factors were within factors, and the last was a between factor.

3.2 Stimuli

Based on actual classified ads, hotel ads were created for this experiment that included a picture, a hotel name, the location of the hotel, information and map pictograms, a manipulated customer rating and a sustainability certification (see appendix A). The consumer rating varied depending on three conditions. In the first condition, where the hotel was rated low, one out of five circles was highlighted yellow (similar to TripAdvisor.com). Three circles were highlighted in yellow in the middle condition, and four and a half circles were highlighted in the high condition. This gradation created variation within the different customer ratings, without generating unrealistically high customer ratings. The sustainability certification was indicated by either a label or by a fictional sustainability rating. First, commercial studies and studies from several organizations investigating different sustainability labels used in the tourism sector (Barth, Weber, & Güntensperger, 2011; Labelinfo.ch, 2018; Niederberger, 2017; Plüss, Zötz, Monshausen, & Kühhas, 2016) set the basis for categorizing the labels used in the stimulus. For instance, if a label certifies only the environmental aspects of a hotel's sustainability, that label represents the sustainability level one. In contrast, if a label certifies all three dimensions of sustainability (ecological, social and economic), the level of sustainability is three. Thus, the sustainability level indicates whether all three dimensions of sustainability were taken under consideration or if the label certifies the hotel effort of just one or two dimensions of sustainability. The scope of the certification program should not be seen as equal to the amount of criteria represented by the label. However, all labels used in this study were internationally recognized certification programs that certify either one, two or three dimensions

of sustainability. To ensure that the consumers' awareness of and familiarity with the labels did not differ, twenty different labels were pretested. In addition, the pretest ensured that consumer trust did not differ among the labels. Based on the results of this pretest, three labels were chosen that did not differ with regard to awareness, familiarity, and trust; however, these labels varied in their sustainability scope: Green Key (environmental), Viabono (environmental and economic) and Travelife (environmental, social and economic). All three labels included an on-site third-party evaluation and published their criteria (Plüss et al., 2016). Second, a sustainability rating similar to other rating pictograms was created, showing different levels of sustainability using green lotus flowers. This symbol was used because sustainability is commonly symbolized using leaf- and flower-shaped icons and the color green is widely used in the industrial sector to indicate sustainability actions. Thus, one and a half out of five lotus flowers highlighted green symbolized the sustainability level one. Three highlighted flowers symbolized the second level of sustainability, and five highlighted flowers indicated sustainability level three.

To prevent other factors from interfering with the manipulation, this study controlled for informational cues that refer to personal preferences. Before the participants received the advertisements, they were presented with a booking screen (comparable to booking webpages such as Booking.com) with the task of choosing a city or area in Europe they wished to visit, a preferred date of travel and the price they were willing to pay. Hotel price is an influential factor affecting booking intention (Chiang & Jang, 2007). Therefore, no price cue was included in the ad; however, during the task, the participants could select a price range representing what they were willing to spend per night and per person for the hotel. The selected price range reappeared in the stimuli's introductory text but not in the advertisements themselves. The dates that the participants selected for their vacation were not explicitly mentioned in the introductory text.

However, the introductory text mentioned that the following hotels would be available during the selected time. The destination is another significant predictor in regard to booking decisions (Kozak & Rimmington, 1999). The city or area chosen by the participants during the selection task appeared under the hotel name and was identical for all nine hotels. Hence, all advertisements contained the same area name. Consequently, regardless of the location, price or dates selected, the participants received hotel ads with nine room pictures and nine hotel names. For each city, 162 hotel ads were created. Thus, each picture and hotel was randomly assigned to the given manipulated conditions. To ensure that the included pictures and names did not differ in terms of attractiveness, familiarity or associations, twenty pictures and twenty names were pretested. The pictures of the hotel rooms were very similar to one another and did not include any location cues. All names were fictitious and not associated with any specific brand. For the experiment, the pictures and names with the best results were used. In addition to the customer rating, the sustainability certification, the picture of the room, the hotel name and its location, each advertisement showed information and map pictograms. The information and map pictograms were identical for all hotels. All ads included a pictogram in the right-hand corner that represented the possibility of obtaining further information on the exact location of the hotel. Similarly, all nine hotels included a pictogram that represented the possibility of obtaining more information about the hotel offer.

3.3 Procedure

The guidelines of the university ethics committee were followed, and all participants were provided information regarding the experiment and consented to participation. As a cover story, all participants were informed that the purpose of the study was to develop and improve an algorithm for an online hotel search engine. The participants were asked to imagine a scenario in

which they were looking for an accommodation. Therefore, the participants selected a city or area in Europe, a date for traveling and the price they were willing to pay per night and per person for the hotel. After they made their choices, the participants were randomly assigned to an experimental group with either a label certification or a rating pictogram certification. Before the stimuli, the participants were provided introductory text that included the price range the participant had selected. Next, the participants viewed nine hotel advertisements, with variations in the customer rating (rated: poor vs. mediocre vs. good) and the sustainability certification (level: one vs. two vs. three). The hotel classified ads appeared in random order. The participants were first asked to rank the hotel offers and then to rate their interest in obtaining more information about each hotel offer based on the perceived attractiveness of the offer. Afterwards, they completed a questionnaire that included a manipulation check and questions regarding trust, sustainable behavior and a few other control items. At the end of the experiment, the participants were debriefed and dismissed.

3.4 Participants

A professional company that provides online access panels was hired to recruit a representative Swiss sample for this investigation. Switzerland is considered to be a very sustainable destination (Robecosam, 2018; WEF, 2017), and the Swiss people are a high-potential target group (BFS, 2018; STV FST, 2017). For the final sample, 13% of the participants had to be excluded from the panel because they did not seriously participate in the study: People were excluded if they stated that they did not intend to participate seriously, if they did not finish the questionnaire, if their answers showed a set response, or if they did not choose one night for their vacation and their remaining response pattern identified them as straight-liners. The final sample comprised 684 participants from Switzerland (German-speaking regions), comprising 52% females and 48%

males. The participants were aged between 18 and 70 ($M = 43.72$, $SD = 14.67$). Approximately half of the sample had a medium level of education (49%), 19% had a lower level of education, and 32% had a higher level of education. These sociodemographic variables were included in the analysis.

3.5 Measurement

To test the validity of the manipulations, a manipulation check was included in the questionnaire, wherein the participants were asked to rate the valence of the customer rating on an eleven-point scale using a vertical slider (1 = *positive* to 6 = *balanced* to 11 = *negative*). Separately from the advertisements, the participants were shown all three customer ratings (rated poor vs. mediocre vs. good) side by side to judge the valence of each customer rating. In addition, the participants were asked to rate the level of the certified sustainability on an eleven-point scale using a vertical slider (1 = *strong (in all dimensions very much)* to 11 = *weak (only in a few dimensions)*). To make it possible for the participants to differentiate the levels of sustainability certification, the questionnaire provided a short introduction to the dimensions of sustainability, including information on the indicators of strong and weak engagement in sustainability. Depending on the experimental group, the participants had to evaluate either the three different sustainability labels or the three different sustainability rating pictograms. Separately from the advertisements, the participants were shown all three sustainability certifications (level one vs. two vs. three) side by side to judge the sustainability certification level (see appendix B).

To measure the *interest in obtaining further information* about the offer, Matthes's (2006) scale was used with adjustments. Interest was measured on a seven-point Likert scale by three items (e.g., *I would like to learn more about the products and services of this hotel*. 1 = *strongly disagree* to 7 = *strongly agree*, see appendix B). This interest in further information was

measured for each hotel, and the associated Cronbach's alphas were between .951 and .973. Therefore, nine indices (for each within experimental cell one) were created and used as dependent variables for the analysis of variance.

Trust in the sustainability certification was measured by three items (e.g., *I trust this sustainability certification*, see appendix B) similar to those used in Ruparelia, White and Hughes (2010). These items were also measured on a seven-point Likert scale (1 = *strongly disagree* to 7 = *strongly agree*, $\alpha = .94$, $M = 4.29$, $SD = 1.42$).

4 Results

4.1 Manipulation checks

The participants evaluated the diverse customer ratings as significantly different ($F(1.35, 915.91) = 138.06$, $p < .001$, partial $\eta^2 = .169$). Mauchly's test indicated that the assumption of sphericity had been violated ($\chi^2(2) = 450.40$, $p < .001$); therefore, the results of Greenhouse-Geisser correction tests are reported ($\varepsilon = .67$). The more circles that were highlighted, the more positive the customer rating was estimated to be by the participants ($M_{\text{four and a half circles}} = 2.61$, $SD = 1.50$, $M_{\text{three circles}} = 5.10$, $SD = 1.30$, $M_{\text{one circle}} = 8.47$, $SD = 2.36$). The results revealed that the high customer rating condition was evaluated as significantly more positive than the middle condition ($F(1, 680) = 100.18$, $p < .001$, partial $\eta^2 = .128$), and the low customer rating condition was evaluated as significantly more negative than the middle condition ($F(1, 680) = 109.45$, $p < .001$, partial $\eta^2 = .139$). These results indicated that the manipulation of the customer rating was successful.

To verify if the three different labels were indistinguishable to the participants, an equivalence test (Frick, 1996; Weber & Popova, 2012) was conducted. The results indicated that the manipulation was successful. The participants in the condition Green Key (environmental)

($M = 5.14$, $SD = 1.93$) did not indicate that this label certifies fewer sustainability dimensions than Viabono (environmental and economic) ($M = 5.40$, $SD = 1.68$, $t(345) = -2.42$, $\Delta = .20$, $p_{eq} = .033$ (two-tailed)) or Travelife (environmental, social and economic) ($M = 4.96$, $SD = 1.79$, $t(345) = 1.53$, $\Delta = .20$, $p_{eq} = .003$ (two-tailed)). Additionally, there was no observed difference between the results for Viabono (environmental and economic) and Travelife (environmental, social and economic) ($t(345) = 4.67$, $\Delta = .30$, $p_{eq} = .035$ (two-tailed)). These results indicated that although the participants viewed different labels, they could not estimate the level of sustainability (one vs. two vs. three) certified by the labels.

The participants evaluated the diverse sustainability rating pictograms as significantly different ($F(1.25, 418.07) = 72.79$, $p < .001$, partial $\eta^2 = .179$). The results of the Greenhouse-Geisser correction tests are reported ($\epsilon = .63$) because the Mauchly's test indicated that the assumption of sphericity had been violated ($\chi^2(2) = 303.30$, $p < .001$). The more lotus flowers that were highlighted, the higher the perceived sustainability level ($M_{\text{five flowers}} = 2.11$, $SD = 1.66$, $M_{\text{three flowers}} = 5.31$, $SD = 1.17$, $M_{\text{one and a half flowers}} = 8.37$, $SD = 1.95$). The results indicated that the sustainability rating condition three was significantly evaluated as showing a higher level of sustainability than the condition two ($F(1, 334) = 74.15$, $p < .001$, partial $\eta^2 = .182$), and the sustainability rating condition one was significantly evaluated as showing a lower level of sustainability than the condition two ($F(1, 334) = 46.64$, $p < .001$, partial $\eta^2 = .123$). These results indicated that the manipulation of the rating pictogram regarding the level of sustainability (one vs. two vs. three) was successful.

4.2 Effect of customer rating

The influence of the customer ratings (H1) and sustainability certification (H2 and H3) as well as the additive effect of both informational cues (H5) on consumers' interest were tested by

a repeated measures analysis of variance (ANOVA). The customer ratings (poor vs. mediocre vs. good) and sustainability levels (one vs. two vs. three) were included as within factors, and the certification system (label vs. rating pictogram) was included as a between factor. The interest in obtaining further information about the offer served as the dependent variable, and sociodemographic variables (gender, age and education) were used as controls.

A significant main effect of customer rating (H1) was found ($F(1.40, 953.69) = 28.70, p < .001$, partial $\eta^2 = .041$). The assumption of sphericity had been violated ($\chi^2(2) = 373.94, p < .001$); therefore, the Greenhouse-Geisser correction tests are reported ($\varepsilon = .70$). The better a hotel was evaluated by a customer rating, the higher the need for information ($M_{\text{one circle}} = 3.03, SD = 1.24, M_{\text{three circles}} = 4.48, SD = 1.05, M_{\text{four and a half circles}} = 5.47, SD = 1.12$). The results showed that high customer ratings led to a stronger interest in further information than the middle customer rating condition ($F(1, 679) = 30.89, p < .001$, partial $\eta^2 = .044$). Similarly, the middle customer rating condition led to a stronger interest in further information than the low customer rating condition ($F(1, 679) = 10.42, p = .001$, partial $\eta^2 = .015$). Therefore, the results confirmed the first hypothesis, which proposed that higher customer ratings lead to a higher interest in the offer.

4.3 Effect of sustainability certifications

The conducted repeated measures ANOVA showed a significant interaction effect of the level of sustainability and the certification system (H2 and H3) on the interest in further information ($F(1.77, 1202.54) = 91.39, p < .001$, partial $\eta^2 = .119$). This interaction effect indicates that the influence of the level of sustainability on the interest in information depends on the certification system. To break down this interaction, each level of sustainability certification was compared across the two experimental groups (label vs. rating pictogram). This comparison

revealed a significant difference in the scores of participants who viewed labels and those who viewed rating pictograms for level three and two of sustainability ($F(1, 679) = 51.16, p < .001$, partial $\eta^2 = .070$). Similarly, the difference in the level of interest of the two experimental groups varied between the conditions two and one ($F(1, 679) = 60.09, p < .001$, partial $\eta^2 = .081$). The interaction graph shows (see Fig. 1) that different labels did not influence the interest in obtaining further information ($M_{\text{Key}} = 4.25, SD = 0.99, M_{\text{Viabono}} = 4.29, SD = 0.98, M_{\text{Travelife}} = 4.27, SD = 1.02$). Furthermore, the graph shows that when the level of sustainability is three and the level is certified by a sustainability rating pictogram, the interest in information about the offer was higher than condition two, and this condition did lead to a higher interest than the sustainability level one ($M_{\text{one and a half flowers}} = 3.90, SD = 0.99, M_{\text{three flowers}} = 4.38, SD = 0.98, M_{\text{five flowers}} = 4.87, SD = 1.02$). Therefore, the results confirmed hypothesis two and three: First, the participants did not show different amounts of interest if the sustainability level was certified by labels (H2). Second, the participants showed an increased interest in obtaining further information if the sustainability level was higher and if it was certified by rating pictograms (H3).

Fig. 1 Interaction effect of sustainability level and certification system

To test if sustainability rating pictograms resulted in higher consumer trust than sustainability labels (H4), a one-way ANOVA was conducted. The between factor (label vs. rating pictogram) served as the independent variable, trust in the sustainability certification was the dependent variable, and sociodemographic variables (gender, age and education) were control items. The results confirmed the fourth hypothesis, that the participants who viewed rating pictograms had significantly stronger trust in the sustainability certification ($M = 4.50$, $SD = 1.28$) than the participants who viewed the labels ($M = 4.16$, $SD = 1.29$), $F(1, 679) = 10.90$, $p = .001$, partial $\eta^2 = .016$. Thus, the fourth hypothesis was confirmed.

4.4 The additive effect

The three-way interactive effect of the repeated measure ANOVA was not significant ($F(3.91, 2654.61) = 1.31$, $p = .263$, partial $\eta^2 = .002$). However, in this study, an additive effect for participants who viewed rating pictograms as the sustainability certification and not for participants who viewed labels as the sustainability certification was expected (H5). Therefore, a

data split was conducted (certification system: label vs. rating pictogram). Then, a repeated ANOVA with the customer ratings (poor vs. mediocre vs. good) and sustainability level (one vs. two vs. three) as within factors implemented. The interest in obtaining further information about the offer served as the dependent variable, and sociodemographic variables (gender, age and education) were used as controls. The results of this ANOVA confirmed the fifth hypothesis: In addition to the main effect of the customer rating ($F(1.36, 456.07) = 26.62, p < .001$, partial $\eta^2 = .074$), the main effect of the sustainability level was significant if the levels were illustrated by rating pictograms ($F(1.63, 544.09) = 6.54, p = .003$, partial $\eta^2 = .019$). The interaction graph (see Fig. 2) shows that the level of sustainability certified by a rating pictogram influences the interest in information in addition to the customer ratings. Hence, the better a hotel is evaluated by consumers (customer rating), the higher the interest in obtaining further information, and this interest can be increased by a higher level of sustainability if it is illustrated by a rating pictogram. However, if the participants viewed different labels that certified the sustainability of the product, interest in further information was influenced exclusively by the customer rating ($F(1.45, 494.71) = 6.82, p = .004$, partial $\eta^2 = .020$), not by the level of sustainability. Consequently, the fifth hypothesis was also confirmed.

521 Fig. 2 Interaction effect of customer rating and sustainability level shown as rating pictogram

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5 Discussion

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The current study clarifies that rating pictograms are a preferred method as opposed to common sustainable hotel labels to foster customer interest. Since the idea of sustainable tourism began in the 1980s, the use of labels has increased to certify this type of tourism and hotels that implement sustainability initiatives, particularly taking off in the mid-1990s (Fairweather et al., 2005; Graci & Dodds, 2015). However, the effectiveness of sustainability labels has been contested (Dendler, 2014; Fairweather et al., 2005; Font, 2002; Horne, 2009; Rex & Baumann, 2007). Consumers have difficulties verifying the truthfulness and meaning of these labels. Consumers have suspicions that hotels do not operate in a sustainable way but rather use the labels to increase the value of their companies. Therefore, they have a certain amount of mistrust in labels. They perceive labels as commercial, while they consider rating scales to be noncommercial (De Langhe, Fernbach, & Lichtenstein, 2016; Ha, 2002).

In addition to this trust component, rating pictograms provide information that is not included in labels. Therefore, a rating pictogram is understandable for the customer, and customers include the information provided by this cue in their consideration. A label can certify a hotel's sustainability efforts; however, it does not show a compliance rate or scope. The different certification programs include a diversity of criteria, and a hotel must fulfill a certain amount of such criteria to obtain a label as a certification award. Hence, the label symbol does not visualize how many from all potential reachable criteria are covered by the hotel. In addition to identifying the compliance rate, theoretically it would be simpler to identify the scope of the certification program represented by the label. However, consumers cannot differentiate among the numerous different labels or determine which dimensions of sustainability are certified. A hotel can show that it focuses on specific sustainability aspects only by purchasing more than one label; however, consumers still do not understand the meaning behind each and every label. They do not understand if the label represents a certification program with a scope that includes only environmental sustainability or a broader scope that considers all three dimensions of sustainability. Consequently, they do not consider different labels when deciding about the attractiveness of several hotel offers.

In contrast, sustainability rating pictograms readily show the level of sustainability because consumers have a reference point. It is easier to discern the highest and lowest levels of sustainability or the amount of sustainability dimensions. Hence, a standardized catalogue of sustainability criteria could be used, for example, the criteria of the *Global Sustainable Tourism Council* (GSTC, 2017), to measure the compliance rate of each hotel. Then, these compliance rates can be visualized by a uniform rating pictogram that is similar to the one used in this experiment. In this way, every hotel is certified by the same symbol, and therefore, hotels'

sustainability efforts are comparable to one another. Finally, if sustainability is an important aspect for consumers, they use this informational cue and base their decisions on it.

Furthermore, the results of this experiment confirm the significant impact of consumer-generated reviews, particularly the effect of summarized customer ratings during the early phase of the decision-making process. Consistent with Gavilan and colleagues' (2018) findings, positive customer ratings increase the demand for additional information about the offer. The driving force of consumers' interest in receiving more details and the perceived attractiveness of a hotel is based on a summarized numerical customer rating. Any other specific quality attribute increases the demand if the corresponding informational cue is presented in a comprehensible way. Consumers base their decisions regarding whether a hotel offer is attractive first on the valence of the overall customer rating and second on the extent of additional quality attributes, such as sustainability. However, the consumer must be able to comprehend the informational cue that represents the level of sustainability.

In sum, to reduce informational overload and to be able to quickly select a hotel from several offers on diverse websites, people respond to quality signs. Customer ratings are a well-established and effective informational cue, which is used in classified ads. The better a hotel is evaluated, the higher its perceived attractiveness will be. Furthermore, sustainability attributes are increasingly important to consumers and affect their booking decisions. Hence, it is indispensable to use sustainability rating pictograms as a persuasive cue that is provided along with the initial information presented to a potential consumer, which could be presented as abbreviated information that briefly describes the offer.

6 Limitations and practical implementations

This study offers new insights into the effectiveness of sustainability certifications. Therefore, three labels were categorized according to the scope of the associated certification program. Considering the complexity of certification programs, such simplified categorization is insufficient. In this experiment, the levels of sustainability certified by labels and by rating pictograms were not directly comparable. Labels vary in terms of the number of the sustainability dimensions they certify, whereas rating pictograms more generally show a compliance rate for sustainability. However, this experiment shows that the rating pictogram is a more useful symbol to the customer. Practically stated, pictograms are versatile: Such informational cues can be used to show the compliance rate based on a comprehensive sustainability criteria catalogue, to represent the number of sustainability dimensions that are covered by the hotel, or to visualize the compliance rate for each of the three sustainability dimensions. However, this type of informational cue makes it possible for the customer to differentiate among hotels' sustainability efforts, and therefore, it is used during the selection phase. Further, a sustainability label is a symbol that does not include any information for comparison and therefore is not used as information during the early stage of the decision-making process.

Although the experiment confirmed that consumers trust sustainability rating pictograms more than sustainability labels, whether the participants were more familiar with rating scales or whether they perceived rating scales as more noncommercial was not explicitly measured. However, their familiarity with rating scales was derived from the evidence of general practice, because every booking page and most online shopping websites integrate consumer-generated customer ratings as a standard. The noncommercial character of the sustainability rating

pictogram was incorporated into the stimuli as ‘Sustainability certified; independent on-site verification’ was written under each sustainability rating pictogram. Consequently, the statements about familiarity and perceived commerciality are correctly deducted, even if these constructs are not measured.

Because this investigation focused on the effects of two informational cues (customer ratings and sustainability certifications), other factors influencing the decision-making process were measured and not manipulated within this research. Several hotel attributes, such as location, size, room quality, price, and cleanliness, affect consumers’ booking behavior (Radojevic, Stanistic, & Stanic, 2015; Ramanathan & Ramanathan, 2011). This study did not examine the effect of every factor but did investigate the influence of the overall customer rating that includes most aspects because it is a total evaluation of the hotel. Additionally, such summarized customer ratings are usually presented to tourists in an early stage of the decision-making process and are considered to be important influential factors in online booking behavior (Dickinger & Mazanec, 2008; Gavilan, Avello, & Martinez-Navarro, 2018). To summarize, the customer rating is an informational cue that includes all the tangible and intangible aspects of the hotel that influence the booking decision, and it is therefore a very persuasive factor in the early stage of the selection process. Furthermore, other factors that massively influence the decision to obtain further information were integrated within the experiment. The experimental setting was therefore very realistic, and key attributes were included to measure the actual effect of such informational cues (customer ratings and sustainability certifications). Hence, practitioners can use the results of this study to create classified ads that are persuasive to the customer. First, they must be aware of the high impact of an overall customer rating. Second, they now know that sustainability is a hotel attribute that affects booking behavior when other, necessary hotel

attributes are fulfilled and when the sustainability level is communicated in an easy-to-interpret way.

7 Conclusion

The current experiment is the first empirical study in the field of sustainable tourism marketing that has a remarkably high level of external and internal validity. Since the advent of sustainable tourism, the question of how to best market this type of tourism has persisted. The problem is that the price (Chiang & Jang, 2007), location (Kozak & Rimmington, 1999), rooms (Zhang, Ye, & Law, 2011), and brand (Chiang & Jang, 2007) of the hotel are always overwhelming predictors in the decision-making process, regardless of whether the hotel is sustainable. However, on booking websites, tourists usually preselect a price range, a travel date, and a destination to obtain a selection of hotels that meet these criteria. The current study included a selection task that replicated this real booking scenario (external validity) with the advantage of controlling for these personal preference predictors (internal validity). After this first selection process, consumers make their next selection. Tourists choose hotel offers for further consideration based on advertisements containing a limited amount of information such as a picture of the hotel, the hotel name, the location, information and map pictograms, customer rating, and sustainability certification. By rebuilding these classified hotel ads, it was possible to ensure high external validity. Because the pictures and names were pretested and assigned randomly to the manipulated conditions, it was also possible to ensure high internal validity. Therefore, the influence of customer ratings and sustainability certifications can be confidently traced back to the manipulation. If a hotel is certified with regard to its sustainability by a rating pictogram, the level of sustainability will influence consumers' choice in addition to the customer rating. Further studies and practical implementations should therefore consider

648 favoring rating pictograms for inclusion in advertisements for sustainable products and services.
649 This sustainability certification should be based on a defined number of criteria that vary among
650 countries and types of offers. A global body must be created to monitor compliance and
651 communicate these criteria.

8 References

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Appendix A

Notes. Two examples of the stimulus material with the manipulated condition customer rating 'mediocre' and sustainability level 'middle'. Above the experimental group with the certification type 'label' and below the experimental group with the certification type 'rating pictogram'.

Appendix B

Table 1

Relevant items measured by the questionnaire

Variables	Item	<i>M (SD)</i>	skew	kurtosis
Sex	Are you...? • female // male	0.48 (0.50)	0.08	−2.00
Age	How old are you?	43.72 (14.67)	0.02	−1.13
Education	Please tick off your highest educational level achieved. • Compulsory education or 1-year pre-apprenticeship, 10th school year; Preparatory vocational education or diploma school (up to 2 years); Apprenticeship or full-time vocational school // Secondary school for adults; Diploma middle school (3 years) or teaching; basic vocational training; Teacher seminar (e.g., kindergarten, subject teachers); Higher technical/vocational training (e.g., Swiss Federal Certificate, Swiss Federal Diploma) // Higher technical school (for example HTL, HWV); University of Applied Sciences; University or university degree	2.14 (0.70)	−0.20	−0.96
Manipulation check (customer rating)	How do you rate this overall customer rating? Are the corresponding reviews of the hotel guests either negative or positive? • negative/balanced/positive	5.39 (0.93)	−1.02	1.36
Manipulation check (sustainability level)	What do you think indicates this sustainability certification? Is the hotel more or less committed to sustainability? This means that the hotel engages itself more extensively in all three areas (environment, society and economy) of sustainability or rather less/only in one dimension. • weak (only in one dimension)/strong (in all three dimensions)	5.22 (1.18)	0.57	4.04
Interest in obtaining further information	Would you like to know more about the offer? • I would like to learn more about the products and services of this hotel. • I would like to get details of the offer. • More detailed information about this hotel would interest me.	4.35 (0.93) 4.26 (0.90) 4.36 (0.92)	0.20 0.90 0.92	0.77 0.93 0.53
Trust in the sustainability certification	How much do you trust in the sustainability certification of the hotel ad? • I trust this sustainability certification. • I rely on the sustainability of the hotel being checked. • I believe this sustainability certification is a credible award and a promising sign.	4.13 (1.47) 4.49 (1.57) 4.25 (1.49)	−0.22 −0.36 −0.36	−0.45 −0.52 −0.47

Notes. For the whole questionnaire please refer to https://unipark.de/uc/hotel_uzh/?a=&b=. All items were mandatory questions ($N = 684$) and original in German. For sex, 0 = *female*, 1 = *male*. Age was asked by an open question. Education had three levels, 1 = *low*, 2 = *middle*, 3 = *high*. The manipulation checks were rated on an eleven-point scale using a vertical slider, 1 = *negative* or *weak* to 11 = *positive* or *strong*. All other items were measured on a seven-point Likert scale, 1 = *strongly disagree* to 7 = *strongly agree*. To compare the effects of the different sustainability certifications, both experimental groups (label vs. rating pictogram) received the same questions.