



Article

# Exploring the Environmental Practices in Hospitality through Booking Websites and Online Tourist Reviews

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Abstract: The major impact of hotel industry on the environment has become a serious concern for both hoteliers and tourists, with many studies showing that tourists are having more and more expectations from hoteliers to implement environmental practices. Considering the fact that most hotel bookings are now made online through booking websites, it is important for these to show and manifest the same preoccupation with the environment, by promoting environmentally friendly initiatives. The aim of the present study is to emphasize the crossroads between sustainability and digitalization, and to increase the role of digital technologies in encouraging a sustainable development of all tourism sectors, including hospitality. The study provides information and identifies important elements to assess the environmental practices of booking websites. In order to identify the position that booking websites and platforms take towards the environmental practices, the filter section of four booking platforms is analyzed. The present study aims not only to analyze the current position of booking platforms towards the environment, but also to identify methods that improve the way they highlight their implemented environmental practices, based on tourist' reviews. In order to identify the customers' opinion regarding these types of practices, a total of 31,800 tourist reviews posted on Booking.com were analyzed. The results have indicated that the level of awareness related to the need of protecting the environment, in the case of both hoteliers and tourists, must increase aspects that also imply the need for booking websites to highlight and encourage environmental practices. The obtained results are useful for booking websites developers who can adapt and make the website's interface friendlier regarding environmental practices. In addition, hotel managers and entrepreneurs can make use of these results in order to develop new types of business in the hospitality industry, and in the long run the results are useful for increasing the awareness among tourists of the need for environmental practices. Suggestions are made on how booking websites can involve themselves more in environmentally friendly initiatives and in potential future study subject discussions.

**Keywords:** sustainability; environmental practices; booking website; online reviews; hotels; Booking.com

# 1. Introduction

In the current context, during the meeting of the Executive Council of World Tourism Organization (UNWTO) on 17 September 2020, UNWTO Secretary-General Zurab Pololikashvili highlighted the fact "that the restart of tourism must be properly managed and that our sector lives up to its unique potential". He stressed that "this crisis has made clear the important role tourism plays in every

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part of our lives", an aspect that is likely to lay a foundation in order to "work together to build a tourism sector that works for everyone, where sustainability and innovation are part of everything we do" [1]. In the last years, the impact of the hotel industry on the environment has become a major problem [2] because the amount of resources consumed by it is not to be neglected [3]. So-called green hotels have emerged as a solution to this problem and are considered to be a long time trend and a guarantee of success in the hotel industry [4,5]. Due to the fact that tourists are increasingly aware of the environmental problems, they express and manifest intention and desire to buy and consume green products and services [5,6]. Many studies have focused on analyzing the level of satisfaction and loyalty of tourists, but there are too few studies that analyze the impact of green hotels on the level of satisfaction with the intention to repeat the green hotel experience, and on the availability of tourists to generate positive word of mouth regarding green accommodation [7].

Considering that digitalization is one of the increasingly important topics present in tourism studies, literature seems to have overlooked the role of digital technologies in encouraging sustainable development and protecting the environment in the tourism and hospitality industry. Scholars have generated, until now, very little information concerning the intersection between sustainability and digitalization in the tourism and hospitality industry [8], this being one of the reasons for limited research on the link between sustainability and booking platforms. From this point of view, the studies on environmental practices of booking platforms are still in their developmental phase.

To fill in this research gap, the purpose of this study is to provide information and to identify important elements regarding sustainable practices of hotels in order to assess the environmentally friendly practices on booking websites. The objectives of this study are to provide information and to identify the current position of booking platforms towards the environment and to identify methods that improve the way they highlight their implemented environmental practices, based on tourists' reviews.

## 2. Literature Review

The growing concern of people towards global warming is reflected in their decision to stay in a green hotel when they travel [9]. Tourists expect the hotel industry to pay more attention to environmental concerns and to operate more sustainably [4,10]. In this context, hoteliers must be aware of customers' changing behavior and the importance of promoting green products and services as well as consistent management. In order to increase their position in the hospitality market, they must implement environmentally responsible practices [11]. An increasing number of companies are trying to publicly demonstrate their commitment to sustainability and sustainable development, aiming the improvement of competitive advantage, to build their own brand and to distinguish themselves on the market [12].

Sustainable tourism is one of the most important topics in the global industry of tourism, sustainability being often seen as the reason for the competition developed between different tourist destinations [13]. Although tourists are showing more and more interest in sustainable and innovative proposals, the activities in the tourism industry are becoming less and less sustainable, many companies being in a situation where they do not have a clear innovative strategy, much less a strategy for sustainable growth and innovation.

Environmental sustainability brings new challenges along with new opportunities for business. A valid source of innovation, through the enormous amount of generated data, is social media [14], which has been recognized as an important source of information in the tourism industry. Social media has also become a more reliable source of information, with tourists having more confidence in it than in official channels, and because of the fact that the content creators are users themselves. However, the potential of social media to operate in accordance with environment protection rules, is very little known [15].

A multitude of ecological certification standards for sustainable tourism have been developed, of which we mention for sustainable hotels, the following: Green Globe, which has developed its

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criteria on four key topics: sustainable management, the social and economic dimension, cultural heritage, and the environment; Green Key, whose criteria are related to environmental management (for water, energy, waste, cleaning, etc.), social responsibility of corporations, and good sustainable education (of staff, customers, suppliers, etc.); Travelife, which uses a package of tools and resources specially designed to improve the impact of the business on the environment, economy, and on the social pillar of sustainability; and Earth Check. Earth Check is a specialized standard in terms of sustainable development and management of a tourist destination, but also NEPCon their Sustainable Tourism Certification Program, which recognizes the effort made by accommodation units and tour operators who have committed to implementing sustainable practices in their work. Moreover, in 2019, Green Wall, a search engine for green hotels, was developed [16].

The green hotel is defined as an eco-friendly accommodation, which establishes and follows well determined environmental programs and practices (for example, reducing water and energy consumption, reducing solid waste and related costs, etc.), in order to contribute to the global action of protecting the environment [17]. In a more specific way, green hotels are those that show their commitment to the environment by meeting standards related to efficient energy consumption, green products consumption, conservation of water resources, air-quality management, solid waste management, the management and treatment of wastewater, control of noise pollution, the management of toxic and harmful substances, the management of human resources, cooperation with local organizations, and the policies and practices specific to the hotel business [18]. Considering these measures as solutions to the environmental issue, hotel industries can benefit from promoting their environmental performances and more detailed information about their green practices [19,20]. Furthermore, the possession of an ecological certificate represents a major factor in the tourists' decision process when they have to choose an accommodation [21].

Other studies have shown that even though tourists are aware of environmental problems, they do not consider environmental practices as being a priority in choosing where to stay, so they opt for conventional hotels [3,22]. Moreover, it was also argued that tourists, many times, are unaware of the fact that the chosen hotel possesses an ecological certificate [23], or even suspect it at times [24]. For this reason, it is important for hotels to use an efficient communication strategy when they inform tourists about environmental sustainability, so they are able to adopt an environmental behavior. In addition, hotel managers must be focused on increasing the credibility of their messages when it comes to environmental practices [25].

The use of Internet in the decision-making process for buying a tourist product or service is constantly increasing [26,27]. The most valuable shopping experience using the internet, starts from the moment of searching and consulting booking websites [28], which is why booking websites must attract more and more customers by presenting them with relevant and useful information [29].

Online sales related to the tourism industry, including accommodation services, continue to grow worldwide [30,31]. Even at the level of the European Union member countries, the amount of online sales of accommodation and transport services is growing at a high rate. Along with this the average age of European citizens between the ages of 16 to 74 that bought accommodation and transport services increased as well, from 51.5% (2017) to 53.5% (2018) [32,33].

Due to the advancement of Internet and online booking technologies, the demand for more interactive hotel websites has increased [34]. The Internet has changed the behavior of tourists towards tourist products, this fact resulting in a longer than ever searching and informing process in order to make a reservation. This process requires consulting an average of 38 websites [35]. Previously, customers only searched hotel's website for information (provided by hoteliers themselves) about the hotel, but now tourists typically look for reviews from those who have already had the experience of staying in that hotel [34].

Searches on online booking websites are now very important considering the fact that they are becoming more and more complex [29] and complicated to use, especially for those who are not skilled at what technology now requires. Hoteliers must periodically monitor customer trends in website

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usage to identify those attributes which are not being efficiently used. The most popular attributes of websites, such as online reviews section, chat-bots, and high resolution images, must be provided by websites for tourists in order to improve website's utility and to stimulate the intention of booking [36]. Moreover, search engines represent important sources of information for tourists and have great influence over purchase decision [37].

Numerous tourism organizations use e-WOM (electronic-word of mouth) to facilitate the process tourists go through to obtain information about tourist packages, tourist destinations, and websites [38]. WOM is seen as a functional means of information which helps people to assess the quality of services, leading them to the point of a buy or not decision [39]. A more advanced version of WOM is e-WOM, currently being spread through different platforms, due to the fact that it is more useful in tourist services assessment [40]. Furthermore, the researchers discovered that e-WOM is an efficient way of promoting goods and services [41], through which people can obtain information related to their own interests, such as quality of services, brand products, travel experiences, and food [42]. Moreover, e-WOM covers the costs of advertising and promotion, the sale of services being much more efficient this way [43–45].

Currently, the service provider organizations are building a sustainable connection with tourist, providing them the best services. Internet users generate reviews about hotels, services, and tourist destinations that are an essential source of information about tourists [46–48]. Every year, hundreds of tourists consult online reviews [49]. The presence of a reviews section on a booking website is currently a very important debated topic, and one that is to be discussed in the future [50–54].

Gerdt, Wagner, and Schewe found a relationship between sustainability orientation and customer satisfaction, moderated by star classification [55]. Research on customer satisfaction identifies the most relevant features of hotels that have contributed to customer satisfaction: room decorations and amenities (focusing on cleanliness of bedroom and bathroom), hotel environment (pool, decor, and view), staff service skills (friendliness and helpfulness of hotel staff), restaurants with local food, serving breakfast and dinner, and the Internet service (a quality of Internet signal in the hotel) [56]; rooms, value, cleanliness, sleep quality, service, and location [57]; Wi-Fi, facilities, parking, bathroom, noise, swimming pool, and room cleanliness [58]; staff, rooms, services, front desk, cleanliness, bed conditions, room space, view, quietness, and modernity for consumers [59]; tangible factors (room cleanliness, facilities, hotel location) and intangible factors (service and attitude of hotel staffs) [60]. Zhou et al. [61] identified attributes that influence customer satisfaction: satisfiers (public facilities); dissatisfiers (room size, cleanliness, dated quality of facilities, noise level, room price, proximity to attractions, accessibility with public transportation, language skills, efficiency); bidirectional (amenities in the room/bathroom, food quality, dining environment, friendliness of the staff, welcoming extras, food variety, availability of special food service (e.g., room service, vegetarian options)); and neutrals (Wi-Fi services, entertainment facilities, proximity to the airport/railway station, proximity to the city center, other price, and food and beverage price). Abrudan, Pop, and Lazar [62], in a study conducted in Romania, identified the relevant hotel attributes that influence customer ratings: general facilities (food-related facilities, restaurants, and complimentary breakfasts), common facilities (the pool and parking spaces, while for the room—the flat-screen TV), and sustainability facilities (facilities for disabled people and electric vehicle charging stations). The most common environmental measures implemented in the Romanian seaside hotel industry targeted the reduction of energy consumption, followed by water consumption, and waste [63]. Gerdt, Wagner, and Schewe [55] expressed concern about the lack of studies on the effect of sustainability measures in hospitality on customer satisfaction through online assessment and reviews.

This study represents a step forward in the field of research and a starting point in conducting new studies on the environmentally friendly practices of booking platforms. In order to identify the stance of booking websites on environmentally friendly practices, a subject for analysis is the filters section of four booking platforms. Tourists' opinions about environmental practices were discovered by analyzing the reviews displayed on Booking.com, which is a booking platform.

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#### 3. Methods

This research, which evaluated the environmental practices of booking websites, consisted of two parts.

The first part included the analysis on the filters section of four booking platforms, in order to identify their position related to environmental practices. The booking websites and platforms on which the analysis was made, were selected by using the criteria of popularity. Therefore, consulting the analysis and statistics website, SimilarWeb.com, we found that the most popular international booking platforms are Booking.com [64] and TripAdvisor [65]. By entering the following Romanian keywords—"rezervare hotel online"—in the Google search engine, the first results given were the Romanian booking websites, Travelminit.ro [66] and Directbooking.ro [67]. The relation of these four booking websites and platforms with environmental practices were analyzed.

According to the literature, the trend in terms of environmental practices and the efforts of assuring a healthy relationship between mankind and the environment is upward, with many companies promoting their commitment and involvement in achieving these goals. The reason for choosing the filters section as a subject to analyze was the fact that it is a common attribute of all four selected websites (Booking.com, TripAdvisor, Directbooking.ro, and Travelminit.ro). Aside from this aspect, the filters section of websites is used by any person that desires to hasten the reservation process, since only those accommodation units that meet the expectations and preferences of the potential tourist are displayed. From this section of filters, you can extract valuable information about what types of facilities and services currently offer the accommodation units, and therefore, the dedication to environment protection of both accommodation units can be discovered by making these types of services, as well as booking platforms, available to tourists by displaying the offers of the accommodation units.

Considering the specific attributes of environmental practices, the selection of environmental filters was made by using a set of keywords extracted from the international standard of ecological certification of accommodation units, Green Key [68]. This method was chosen because in this way we could find out the extent to which the accommodation units have assumed environmental practices, such as those presented in the ecological certification standard, and because they were displayed on the booking platforms in the reviews section, we could conclude that there is an interest in this regard from both the platforms, and the tourists. The keywords extracted from the ecological certification standard for accommodation units are the following: responsible; environmental; ecological cleaning products; waste; efficient use; environmental policy; sustainability; environmental practices; environmental awareness; energy consumption; water; carbon footprint; carbon emission; local food and beverage; environmental initiative; reuse; towel; bed sheet; sign; information; waste saving; environmentally friendly activities; public transportation; shuttle; alternatives for cycling/walking; local transport (bus, train, subway, boat, etc.); electric car; electric car charging station; charging location; available searching computer; water/energy saving; shower cabin; feedback questionnaire; excessive consumption; water flow; recycling; rainwater; eco-label; eco-friendly face towels and toilet paper; microfiber cloth; greenhouse; disposable glasses; composting systems; heating and air-conditioning; light bulbs; bathroom trash can; waste separation; vending machine; outdoor lighting system; solar panels; wind power; biogas from organic waste; geothermal heat; eco-certified energy; key-card; automatic system; heat recovery system; food waste; vegetarian and/or vegan alternatives; tap water; non-smoking; smart irrigation system; native species; noise; pollution; disabilities; discrimination; sustainable products; local small shops; information about nearby parks; landscape and/or nature conservation areas; borrowing or renting bicycles; nature guided tours; and consumable [68].

In the second part of the research, we analyzed the reviews of tourists related to the environmental practices of the hotels, displayed on Booking.com (the booking platform that has the highest ratio of environmental filters in the total number of filters displayed). The market of Internet users in Romania has some attributes that qualified it to be further examined. The study conducted by Hootsuite and WeAreSocial on the Global Digital Market in 2019 revealed that, out of a total of 7.734 billion people, 4.479 billion use the Internet. Globally, an average of 58% of the population has access to the Internet,

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an increase compared to 2018 by 10 percentage points [69]. Therefore, worldwide, the Internet, as a space of information and communication, is of an increasing interest for all categories of the population. Comparing with the global market, the percentage of penetration of the national digital market in 2019 is very high, with 75.7% of Romanian households having access to the internet from home, the percentage increasing compared with 2018, by 3.3 points [70]. Romania has the fourth fastest fixed Internet connection speed ranking in the world. With an average of 140.25 Mbps download speed, Romania is surpassed in the world top speeds, only by Singapore, Hong Kong, and South Korea [71]. In this context, the amount of online purchases of tourist services is increasing in Romania. However, the share of Romanians between the ages of 16 and 74 who booked accommodation and holidays in 2019, out of the total number of people of the same age who ordered goods or services online in 2019 is 17%, well below the EU average (52%) [72]. This study aims to capture interesting aspects of this topic relevant to tourism.

The selection of the sample of hotels for analysis was made based on the following criteria: number of hotels, classification category, and distribution of hotels by development regions. There are eight development regions in Romania [73]: the north-east region (NE) including the counties of Bacău, Botoșani, Iași, Neamţ, Suceava, and Vaslui; the south-east region (SE) including the counties of Brăila, Buzău, Constanţa, Galaţi, Tulcea, and Vrancea; the south region (S) consisting of the counties of Argeş, Călăraşi, Dâmboviţa, Giurgiu, Ialomiţa, Prahova, and Teleorman; the south-west region (SW) including the counties of Dolj, Gorj, Mehedinţi, Olt, and Vâlcea; the west region (W) including the counties of Arad, Caraş-Severin, Hunedoara, and Timiş; the north-west region (NW) including the counties of Bihor, Bistriţa-Năsăud, Cluj, Maramureş, Satu-Mare, and Sălaj; the center region (C) including the counties Alba, Braşov, Covasna, Harghita, Mureş, and Sibiu; and the Bucharest-Ilfov region (B-IF) including the municipality of Bucharest and Ilfov County. The sizing of the representative sample, corresponding to the number of hotels in each region, was achieved by correlating the data provided by the Institute of Statistics of Romania within the Statistical Brief of Romania for the years 2018 and 2019 and the data provided by the list of classified accommodation units, presented in Table 1.

Development Region	Number of Hotels	1 star	2 star	3 star	4 star	5 star	%
NW	211	5	30	124	45	7	11.95
С	307	8	45	172	79	3	17.38
W	170	3	37	100	28	2	9.62
SW	133	4	16	89	24	0	7.53
S	179	6	38	103	28	4	10.13
B-IF	158	3	18	66	60	11	8.95
SE	468	17	109	248	84	10	26.51
NE	140	2	25	79	33	1	7.93
Total	1766	48	318	981	381	38	100.00

**Table 1.** Distribution of hotels in the development regions of Romania.

Source: Adapted from the 2019 Statistical Brief [72] and the list of classified accomodation units [74].

In Romania, the total number of classified hotels was 1766 (until 20 April 2020), of which 38 were five-star hotels (2.15%), 381 were four-star hotels (21.57%), 981 were three-star hotels (55.55%), 318 were two-star hotels (18.01%), and 48 were one-star hotels (2.72%). The analysis of reviews of tourists related to environmental practices took into account the hotels classified at the 2–5-star category (the opinion of tourists who choose 1- and 2-star hotels are quite similar).

The hotels were selected for the analysis sample as follows: out of the total hotels classified in the 2–5-star category (1718), a percentage of 5.82% was chosen, resulting in a number of 100 hotels. Therefore, the analysis sample included both 2-and 3-star hotels and 4-and 5-star hotels, as follows: 14 hotels from the north-west region, 17 hotels from the center region, 9 hotels from the west region,

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7 hotels from the south-west region, 11 hotels from the south region, 7 hotels from the Bucharest-Ilfov region, 28 hotels from the south-east region, and 7 hotels from the north-east region.

In the analysis of online reviews of tourists related to environmental practices present on the booking platform of Booking.com, how close hotel practices are to the environmental practices was taken into account. This was done by determining the frequency of use of the same previously selected keywords or their synonyms found in the online reviews posted by tourists who lived the experience of accommodation in selected hotels.

#### 4. Results and discussion

# 4.1. Results Obtained by Analyzing Booking Platforms in Relationship with Environmental Practices

The analysis on the selected booking platforms regarding the features of environmental practices, by using the previously presented set of keywords, highlighted the following attributes and environmental filters, according to Table 2.

Environmental Attributes	Environmental Filters	Booking.com	TripAdvisor	Directbooking.ro	Travelminit.ro
Position	Short distance from the main points of attraction	YES	YES	YES	NO
	Short distance from public transport	YES	YES	YES	NO
Transport	Bicycle/boat rental	YES	YES	NO	YES
Transport	Transfer from and to the airport	YES	YES	NO	NO
	Walking tours	YES	NO	NO	YES
Organized	Riding tours	YES	NO	NO	YES
tours/courses	Cooking course	YES	NO	NO	YES
	Culture course	YES	NO	NO	YES
A 1.0	Guest houses	YES	NO	NO	NO
Accomodation	Outdoor accommodation	YES	NO	NO	NO
Disabilities	Facilities for people with disabilities	YES	YES	YES	YES
	Self catering	YES	YES	YES	NO
	Soundproofing	YES	NO	NO	YES
Other facilities	Electric vehicle charging station	YES	NO	NO	NO
	Non-smoking rooms	YES	NO	NO	NO
	Walk-in shower	YES	NO	NO	NO
	Green spaces	NO	NO	NO	YES
	Small local shops	NO	YES	NO	NO

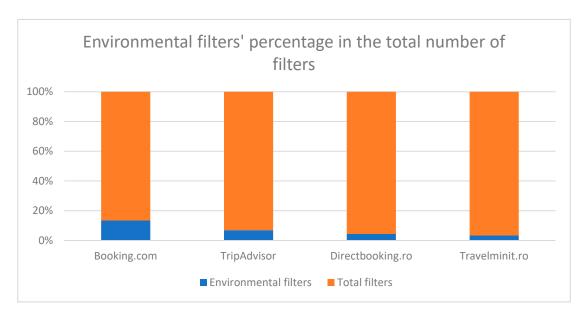
Table 2. Environmental filters of the analyzed booking websites.

Following the analysis of the attributes and filters of the four reservation sites, 18 environmental filters were identified. The previously determined keywords found in the filter section of each website under analysis were related to carbon emissions, public/local transport, bicycle/boat, local food, food waste, electric cars, shower, information about natural landscapes, organized tours, people with disabilities, noise pollution, non-smoking facilities, and small local shops.

The extent to which these booking websites provide tourists with the possibility to filter accommodation units by using environmental filters, is shown in Figure 1.

By determining the number of environmental filters in the total number of filters displayed, by the selected booking platforms (18/116—Booking.com; 8/108—TripAdvisor; 4/89—Directbooking.ro; 9/262—Travelminit.ro), the following percentage results were produced: 15% for Booking.com, 7% for TripAdvisor, 4% for Directbooking.ro, and 3% for Travelminit.ro. Therefore, the booking platform that offers tourists a greater possibility of filtering accommodation by using the environmental filters is Booking.com.

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**Figure 1.** The percentage of environmental filters in the total number of filters owned by the selected platforms.

# 4.2. Results Obtained by Analyzing the Reviews of Tourists Displayed on Booking.com

In order to develop the study and obtain the results presented below, a total of 31,800 reviews were analyzed, of which 18,540 were reviews for 2- and 3-star hotels and 13,260 were reviews for 4- and 5-star hotels.

The reviews were analyzed by following the frequency of the previously selected keywords, dividing the results into two major categories: factors of satisfaction and factors of dissatisfaction. The results were also divided by hotel's rank, as follows: the results obtained by analyzing the reviews of 2–3-star hotels are presented in Table 3, and those of 4–5 star hotels, in Table 4. In order to identify the share of each variable in the total number of analyzed reviews (18,540 reviews for 2- and 3-star hotels and 13,260 reviews for 4- and 5-star hotels), percentages were determined and presented in Table 3 for the 2- and 3- star hotels and for the 4- and 5-star hotels in Table 4.

The short distance to attractions was the most appreciated factor by people who stayed in 2- and 3-star hotels and was in second place in the case of 4- and 5-star hotels. A considerable number of tourists expressed their dissatisfaction with the long distance to the points of interest, both in the case of those staying in 2- and 3-star hotels and in the case of those staying in 4-and 5-star hotels. The location of hotels in the vicinity of major points of interest has implications for the environment, by reducing carbon emissions, due to the use of personal vehicles being unnecessary.

Informing tourists about the main attractions in the area, the tourist routes arranged in nature, and the public transport network is an important attribute in sustainable environmental practices. The number of cases in which tourists were informed about the above does not exceed the number of cases when this information was missing, causing the lack of information to become a factor of dissatisfaction.

**Table 3.** Frequency of selected keywords in the online reviews for 2-and 3-star hotels (N = 66).

Rank Factors of Satisfaction		Factors of Satisfaction Frequency %		Rank Factors of Dissatisfaction		Frequency	%
1	Distance to attractions	1042	5.60	1	Noise pollution	654	3.52
2	View	778	4.20	2	No parking	316	1.70
3	Silence	675	3.60	3	Sewage	298	1.60
4	Parking	484	2.60	4	Disability access	230	1.24
5	Walking	211	1.13	5	Defects	189	1
6	Public transport	190	1	6	A.C.	186	1
7	Thermal comfort	136	0.73	6	Thermal discomfort	186	1
8	A.C.	127	0.68	7	Cleaning service	129	0.69
9	Shops	96	0.50	8	Distance to attractions	117	0.63
10	Cleaning service	64	0.34	9	Lack of temperature control	101	0.54
11	Local culture	59	0.31	10	Water heating system	96	0.51
12	Minibar	58	0.31	11	Balcony	95	0.50
13	Balcony	50	0.30	12	Smell of tobacco	87	0.46
14	Fresh air	47	0.25	13	Lack of minibar	82	0.44
15	Disability Access	34	0.18	14	Lighting system	69	0.37
16	Information	25	0.13	15	View	62	0.33
17	Fresh products	24	0.13	16	Water pressure	45	0.24
18	Water heating system	22	0.12	17	Lack of insulation	43	0.23
19	Vending machine in the hallway	10	0.05	18	Water leaks	28	0.13
20	Vegetarian/vegan option	9	0.04	18	Lack of information	28	0.13
21	Automation	5	0.02	19	Chemical odor	23	0.12
21	Cleanliness	5	0.02	20	Lack of curtains	20	0.10
22	Bathtub	4	0.02	21	Walking	18	0.09
22	Lighting system	4	0.02	21	Lack of shops	18	0.09
23	Temperature control	3	0.01	22	Public transport	17	0.09
23	Shower	3	0.01	23	Lack of vegetarian/vegan option	15	0.08
23	Key-card	3	0.01	24	Untidy	11	0.05
23	Bicycle path	3	0.01	25	Disposable cutlery	10	0.05
24	Soap dispenser	2	0.01	26	Lack of trash can	8	0.04
24	Water pressure	2	0.01	26	Key-card	8	0.04
				27	Lack of bathtub	4	0.02
				27	Lack of fresh products	4	0.02
				28	Discrimination	2	0.01
				28	Lack of local culture	2	0.01
Total	30	4175	22.33	Total	34	3199	17.08

(Note: These variables were extracted/correlated with criteria of the Green Key eco-certification standard [68]).

**Table 4.** The frequency of selected keywords in the online reviews for 4- and 5-star hotels (N = 34).

Rank Factors of Satisfaction  1 View		Factors of Satisfaction Frequency		% Rank	Factors of Dissatisfaction	Frequency	%
		613	4.62	1	Noise pollution	270	2
2	Distance to attractions	392	3	2	Defects	119	0.89
3	Silence	334	2.51	3	No parking	110	0.80
4	Parking	226	1.70	4	Lack of temperature control	84	0.60
5	Walking	143	1	5	Sewage	80	0.60
6	Local culture	57	0.42	6	A.C.	73	0.5
7	Public transport	48	0.36	7	Cleaning service	61	0.4
8	Insulation	27	0.19	8	Distance to attractions	53	0.4
8	Fresh products	27	0.19	9	Disability access	52	0.4
9	Balcony	26	0.19	10	Water heating system	48	0.3
9	Shops	26	0.19	11	Thermal discomfort	43	0.3
10	Cleaning service	24	0.18	12	Water pressure	35	0.2
11	Fresh air	22	0.17	13	Lighting system	27	0.2
12	Information	21	0.16	14	Lack of vegetarian/vegan option	26	0.1
13	Bears	20	0.15	15	Lack of balcony	24	0.1
14	Vegetarian/vegan option	17	0.12	16	Lack of insulation	20	0.1
14	Automation	17	0.12	17	Chemical odor	18	0.1
14	Temperature control	17	0.12				
15	A.C.	15	0.11	18	View	13	0.0
16	Thermal comfort	14	0.10	19	Smell of tobacco	11	0.0
17	Boat rental	13	0.09	20	Lack of information	10	0.0
18	Outdoor activities	7	0.05	21	Untidy	9	0.0
18	Minibar	7	0.05	21	Bears	9	0.0
18	Bathtub	7	0.05	22	Disposable cutlery	6	0.0
19	Bicycle	6	0.05	23	Local culture	6	0.0
20	Water heating system	4	0.03	24	Key-card	5	0.04
20	Disability Access	4	0.03	24	Lack of shower	5	0.0
21	Organic products	3	0.02	25	Lack of minibar	4	0.0
21	Lighting system	3	0.02	25	Public transport	4	0.0
21	Electric vehicle charging	3	0.02	25	Lack of bathtub	4	0.03
21	Curtains	3	0.02	25	Water leaks	4	0.0
22	Shower	2	0.01	26	Lack of waste depository	3	0.02
22	Water pressure	2	0.01	26	Lack of waste depository  Lack of fresh products	3	0.02
	rater pressure	-	0.01	26	Walking	3	0.0
				26	Discrimination	3	0.0
				27	Lack of curtains	2	0.0
Total	33	2164	16.05	Total	35	1247	9.2

(Note: These variables were extracted/correlated with criteria of the Green Key eco-certification standard [68]).

Local shops located in the immediate vicinity of a hotel area way to promote culture, history, and nature using locally sourced materials for their products. In Romania, the most appreciated shops are food and clothing stores. In this case, the local economy and the social dimension are encouraged by providing jobs for locals. The environmental dimension is less encouraged because stores do not fully meet the sustainability requirements.

Local culture is also represented by traditional restaurants that provide live music with local performers in hotels in Romania; this was appreciated by tourists staying at all 2 – 5-star hotels.

The use of public transport by tourists is another way to reduce carbon emissions, creating further benefits for the environment. Opting for public transport was more common in the case of tourists staying at 2-and 3-star hotels.

The study shows that tourists are greatly satisfied with the existence of opportunities to walk within reasonable distances from the hotel, the level of dissatisfaction when these possibilities do not exist being higher in the case of those staying at 2- and 3-star hotels. Given that tourists appreciate walking so much, carbon emissions can be further reduced if reception staff encourage tourists to do so by presenting the various tourist routes in the area where hotels are located.

Bike paths, the rental of bicycles, the rental of boats, and the possibility to charge an electric vehicle were elements present in few hotels and appreciated by few people, although they represent important elements of the environmental practices. The results showing that the electric vehicle charging stations are an element of the environmental practices confirm those of Abrudan, Pop, and Lazar [62].

Parking is an essential facility, the dissatisfaction created by its absence being identified by tourists through the reviews section in greater numbers, than the satisfaction when parking is offered.

Regarding the cleanliness around the hotel, this aspect was identified only in a few reviews of tourists staying in 2- and 3-star hotels, where we found equivalent expressions of appreciation and of dissatisfaction.

The view that tourists had, determined by the location of the hotel, in a natural setting with lots of greenery, was very much appreciated by tourists, in the case of the four types of hotels. On the contrary, tourists were also quite disturbed when the natural setting is missing. In this case, we can consider that the presence of a natural environment near hotels is a tool for enticing tourists to become more interested in the conservation and protection of the natural environment.

The location of a hotel in a quiet area accompanied with the appropriate sound insulation occupied the 3rd position in both categories, in the case of 2-and 3-star hotels, the percentage of mentioned satisfaction being higher. If tourists are satisfied and interested in peace, they may also be interested in reducing noise pollution in the natural environment.

A considerable number of tourists appreciated the air quality, mentioning this in the case of hotels located in the mountain areas or when surrounded by trees. There were more tourists staying at 2- and 3-star hotels who appreciated fresh air compared to those staying at 4- and 5-star hotels.

It is important for hotels to organize outdoor activities while informing tourists about the importance of conserving and protecting the environment. This criterion was only met by 1 single hotel, out of the 100 hotels studied in Romania, and appreciated by only 7 tourists.

Proper insulation of a hotel building is essential to reduce energy losses for heating, but we must also consider sound insulation, for acoustic comfort. The review study showed that 2- and 3-star hotels offer lower sound insulation than 4-and 5-star hotels.

The lack of an elevator in most cases was a factor of dissatisfaction, from which we can conclude that many hotels do not have facilities for people with disabilities. The results showing that the facilities for people with disabilities are relevant confirm those of Abrudan, Pop, and Lazar [62].

The automation of certain processes contributes to the decrease of resource consumption and implicitly of costs. Hotels with a 4-and 5-star rating are the ones that put more of an emphasis into practicing such technologies.

The lighting system must be efficient, without too much energy consumption. For this, it is recommended that the bulbs used in the rooms be of the LED type or with an adequate energy

consumption. While outside the hotel and in the hallways, the bulbs must have motion detection sensors in conjunction with LED or equally efficient bulbs [68]. A considerable number of tourists expressed their dissatisfaction with the lack of adequate lighting in the rooms. Very few commented on the lighting system outside the hotel, which is of particular importance because too much lighting at night, especially in hotels located in the forest, can damage the ecosystem.

Some tourists staying at 2- and 3-star hotels appreciated the thermal comfort in the rooms. They appreciated the high temperature found in the rooms during the cold period, but there were several mentions of dissatisfaction in the case of 2- and 3-star hotels, as well as the room temperature being low in the cold period, causing discomfort to tourists. In the case of 4- and 5-star hotels, a considerable number of tourists expressed their dissatisfaction with the temperature found in the rooms, the thermal discomfort being generated by both the low temperature during the cold season and the high temperature during the hot season. A higher temperature generates additional costs, higher energy consumption, and therefore higher carbon emissions. It is recommended to maintain the accommodation spaces at a minimum temperature of 22 °C during cold periods, and a maximum temperature of 25 °C during hot periods; this is considered as an optimal temperature of comfort of tourists.

The use of air conditioning in rooms must be controlled so that there is no inadequate energy consumption according to carbon reduction policies. In the case of most hotels in Romania, climate control systems are missing or inefficient, both in the case of 2- and 3-star hotels, and similarly in the case of 4- and 5-star hotels. In Romania, most hotels are equipped with air conditioning systems; this was greatly appreciated by a significant number of tourists.

Among the first factors of dissatisfaction was the lack of ability to control the temperature in the rooms. Given that more tourists complained about the cold than the heat, the ability to adjust the temperature could lead to greater energy consumption resulting in a higher cost for the hotel administration.

Tourists were often dissatisfied with the water heating system, often mentioning that they waited about 15–20 min for the water to reach the right temperature to take a shower. This waiting time generates enormous water consumption, the associated costs being commensurate.

The water flow must not exceed a consumption of 6 L in a single toilet flush, and in the case of the shower, the water consumption should not exceed 9 L per minute, as long as it does not come at a cost of discomfort to tourists [68].

A considerable number of tourists expressed dissatisfaction with the water losses caused by the defects of the toilet tanks that resulted in the continuous flow of water in the toilet bowl, and due to faulty taps that did not close. These water leaks were mentioned more often in 2- and 3-star hotels.

The number of those who preferred a bathtub instead of a shower in hotels is approximately equal to the number of those who were dissatisfied with the absence of a bathtub. Replacing the bathtub with a shower cabin reduces water consumption.

The soap dispenser placed in the bathroom is a solution to reduce the amount of plastic used for hygiene items in the bathroom (shampoo, shower gel, etc.). Its existence was mentioned too few times in the online reviews of tourists.

The use of a key-card can be an important aspect, as it can be used not only to open the door, but also to provide electricity in the room, thus eliminating the risk of energy consumption when the tourist is not in. Too few opinions of tourists on this subject were found.

The presence of a minibar proved to be quite appreciated by tourists staying at 2- and 3-star hotels, especially in the case of those at the seaside, its absence being reported by even more tourists. In the case of 4- and 5-star hotels, the number of reviews related to the minibar was insignificant. The Green Key eco-certification standard suggests that the in-room minibar be replaced with a vending machine located in the hallway to reduce energy consumption [68]. The only situations in which aspects related to the presence of a vending machine located in the hotel lobby were mentioned were in the case of 2- and 3-star hotels, these being positive (10 in number).

Tourists referred to the existence or absence of a balcony, considering it an important facility for smoking, drying towels (for seaside hotels), and for admiring the landscape. The Green Key ecological certification standard suggests that hotels and restaurants should not allow tourists to smoke inside, and if the legislation of certain countries allows indoor smoking, 75% of the spaces should be non-smoking [68]. In Romania, the legislation does not allow smoking in enclosed public spaces, but, nevertheless, tourists in a considerable number (mostly in the case of 2- and 3-star hotels), complained about the smell of tobacco in the room, coming either from the walls that were not painted after the publication of the new legislation, or through the ventilation system in the bathroom. This proves that there are many people who still smoke in enclosed public spaces, despite the legal provisions.

In the case of hotels located in a warm and sunny area, it is recommended that there be curtains or other solutions attached to the windows to obscure the sun's rays to reduce the greenhouse effect, and thus the energy consumption associated with cooling and ventilation of the rooms [68]. In the case of 2- and 3-star hotels, there were people who expressed dissatisfaction with the absence of curtains.

The cleaning service was more of a dissatisfaction factor for tourists than of satisfaction, as they complained that no cleaning was done, not replacing used towels or bed linen with fresh ones, with only garbage being taken away. In this case, excessive consumption of energy, water, and detergents is not a risk for hotels in Romania. Only one person expressed dissatisfaction with the fact that his towels were replaced, even though he had requested for it not to be replaced.

Regarding the waste separation and the existence of several trash cans, including in the room, there were some hotels that did not provide any trash cans in the room or around the hotel, dissatisfaction with this being expressed through reviews.

The fresh food products offered to tourists usually come from the area where the hotel is located, therefore, by encouraging this practice carbon emissions can be reduced due to food transport being shortened by not exceeding a distance of 100 km [68]. More tourists staying at 4- and 5-star hotels expressed their satisfaction with the fresh products offered, compared to those staying at 2- and 3-star hotels. Only 3 people expressed their satisfaction with the organic products offered in the case of 4- and 5-star hotels. Their lack of satisfaction was reported by too few tourists.

The vegetarian or vegan option refers to the possibility for tourists to choose products suitable for the food preferences mentioned above. Vegetarian or vegan food has a lower impact on the environment than meat-based food, therefore restaurants should also offer vegetarian or vegan products on their menu [68]. In Romania, this need of tourists is not adequately met, in the reviews of tourists the dissatisfaction being expressed, in this regard, was more frequent than the satisfaction.

Disposable cutlery is recommended to be used only in swimming pools and gyms, not in restaurants or rooms [68]. However, there were cases where disposable cutlery replaced porcelain tableware or other materials, thus generating dissatisfaction among tourists.

In the current epidemiological context, we considered it important to include the criteria of cleanliness and sanitation in the analysis of reviews, the results being as follows: in the case of 2-and 3-star hotels, the frequency of use of the word cleanliness was 2064 times (11% of total reviews analyzed) and the words describing inadequate hygiene, 603 times (3.25%). In the case of 4- and 5-star hotels, the frequency of using the word cleanliness was 1211 times (9.13%), and the words that describe inadequate sanitation, 197 times (1.5%). The analysis found that a considerable number of tourists expressed dissatisfaction with inadequate sanitation in the case of 2- and 3-star hotels, which, if not changed in the near future, could be harmful for those hotels and implicitly for tourism of Romania.

## 5. Conclusions

Following this study, conclusions can be drawn related to the environmentally friendly practices of booking platforms, conclusions on hotel practices and their level of professional training, as well as conclusions based on the opinion of tourists, and their level of information and interest in protecting the environment.

The results of environmental practices analysis made on the four booking platforms, Booking.com, TripAdvisor, Directbooking.ro, and Travelminit.ro, highlighted the presence of 18 environmental filters. Only one environmental filter was identified as present on all four booking platforms analyzed, namely: facilities for people with disabilities. Three environmental filters are present on three of the booking platforms analyzed: short distance from the main points of attraction, short distance from public transport, and bicycle/boat rental. Booking.com has the highest ratio of environmental filters in the total number of filters displayed.

Considering the fact that, internationally, the presence of ecological certificates has an impact on the way tourists choose the hotels in which to stay, the authors emphasize that hotels in Romania must take steps to obtain ecological certification. The results confirm those of Barbulescu, Moraru, and Duhnea [63].

After analyzing the reviews of tourists, including those staying in units of hotel brands that have publicly stated their commitment to sustainability, the authors consider that hotels should significantly improve the way they inform tourists about the environmental practices they apply.

The results of the analysis of tourists' online reviews related to environmental practices present on Booking.com show that distance to attractions, noise level, view, parking, and facilities for people with disabilities are the most relevant. The results indicating that the facilities for people with disabilities are relevant confirm those of Abrudan, Pop, and Lazar [62].

The number of tourists who explicitly referred to environmentally friendly issues in reviews was quite small. The results of this study show that the share of the segment of tourists concerned about environmental practices of hotels is quite low in Romania, which is why the authors consider that informing tourists on this matter, including through national awareness campaigns, is needed.

More and more tourists are informed about tourist offers and book their tourist packages through online booking sites, with the reservation representing the very beginning of their tourist experience. Therefore, it is important that booking platforms provide relevant and useful information for tourists, which could improve their experience, such as those related to the environmental practices of hotels and accommodation units listed on that platform.

In this regard, the authors recommend that companies that manage booking platforms and websites adopt a holistic approach to environmental practices that is visible and allows consumers to access such information at all stages of the booking process: search, information, choice, booking, assistance, exchange of consumer experiences, inspiration of other potential customers, etc. Following this study, booking platform developers can implement and display certain filters, features, or options to improve the user experience on environmental practices. Therefore, displaying the eco-label owned by hotels can be a way to facilitate the search and to shorten the search time of tourists who want to stay in an accommodation unit where environmental practices are implemented. In addition, for accommodation units that do not have an eco-label, providing information on the fact that environmental practices are implemented at some level, possibly the number of measures implemented, can be useful in providing such information to tourists interested in this aspect. Moreover, they can have long-term implications, to become a means of educating tourists on environmental practices, paving the way for awareness of the importance of environmentally friendly behavior of tourists and creating demand in the tourism market for such practices. Most certainly, the implementation of these recommendations will determine action by hoteliers, who will become more interested in implementing environmental practices in accommodation units and possibly, to obtain an eco-label, as well as other aspects that could likely lead to both environment protection and to the sustainable development of hotels, which will generate positive effects, that will lead to a decrease in the consumption of utilities, therefore reducing expenses, and implicitly increasing profit.

The results of the study are conclusive and relevant for the management of booking platforms, for hotel managers, and for companies interested in developing new businesses in the field of hospitality, but also for the effects on tourists' awareness of environmental practices. From an academic point of view, this study helps to strengthen existing studies on digitalization and sustainability in the tourism

and hospitality industry and provides the basis for future research. This study is a small step forward in proposing a framework for the implementation of environmentally friendly attributes at the level of booking websites. This study presents some limitations. The main limitation of this research is generated by the fact that the sampling for analysis was done only on hotels and for a single booking platform. Another limitation is that the research was conducted for hotels in one country, namely Romania, and most tourists are Romanians—culturally different from guests from other countries. Future research could be extended to complete this study. The authors aim to continue research on this topic, including qualitative and quantitative studies, and to investigate the presence of other variables in these studies, such as the relationship between environmentally friendly issues and practices and consumer preferences in other states, and to expand research to other booking websites.

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