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Exploring the Role of Norms and Habit in Explaining Pro-Environmental Behavior Intentions in Situations of Use Robots and AI Agents as Providers in Tourism Sector

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Abstract: In a pandemic situation, with climate change around the world, studies analyzing changes in travel patterns are welcome. This study combines three theories to propose a model on pro-environmental behavior intentions, namely, the theory of planned behavior, value–belief–norm theory and habit theory. This study aims to examine the role of social norms, personal norms and habit strength to explain pro-environmental behavior intentions. The authors collected 316 usable questionnaires from tourists in the well-known touristic Belem location in Lisbon. Personal norms were revealed to have the strongest association with pro-environmental behavior intentions, followed by habit strength. The study also identified different broad challenges to encouraging sustainable behaviors and use these to develop novel theoretical propositions and directions for future research. Finally, the authors outlined how practitioners aiming to encourage sustainable consumer behaviors can use this framework to achieve better results.

Keywords: social norms; personal norms; habit strength; pro-environmental behavior intentions; artificial intelligence



Citation: Sarmento, E.M.; Loureiro, S.M.C. Exploring the Role of Norms and Habit in Explaining Pro-Environmental Behavior Intentions in Situations of Use Robots and AI Agents as Providers in Tourism Sector. *Sustainability* **2021**, *13*, 13928. <https://doi.org/10.3390/su132413928>

Academic Editors: Anna Mazzi and Fabio Carlucci

Received: 26 October 2021
Accepted: 13 December 2021
Published: 16 December 2021

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1. Introduction

We are assisting a growing concern with environmental issues, which is particularly evident since the beginning of the 21st century. As examples, one can point out climate change, biodiversity degradation, deforestation, pollution, scarcity of drinking water, overcrowding, urban development and waste management [1]. All these situations reinforce the need to incorporate technology to overcome these problems in a durable and effective way to make a real-world difference [2,3].

This concern with sustainability is not new, since the discussion of sustainability is not recent. What is new is the main concern with customer (tourist) satisfaction [4] that has been conducted in a new reality, since, nowadays, any emerging companies (specifically in tourism) or any sustainable tourism destinations who want to succeed must be aware of sustainability concerns [5]. Thus, sustainability in the tourism industry—as well as marketing sustainability as a competitive advantage—is undoubtedly a variable to be studied in the question of sustainability [3].

As a result of this situation, it is important to emphasize pro-environmental behavior when discussing environmental issues, since human actions—directly or indirectly—have increasingly contributed to the accelerated degradation of the environment and to the increase in socio-environmental conflicts [6]. The socio-environmental conflicts—especially in the short term—are, generally, not easy to solve and need to rely on a better use of technology and innovation to avoid destroying the planet, or on shifting to more environmentally friendly technologies (e.g., artificial intelligence algorithms and systems), as well as from the resources upon which we all depend [7,8].

The literature suggests that the tourist decision-making process regarding the environment is complex. Intention is a motivational element that influences behavior and demonstrates how much an individual is willing to try and how much effort he/she is putting in to commit to an action [9]. Assuming that a pro-environmental tourist is one for whom all actions result in reductions in the adverse environmental impacts, as well as a reduction in the use of natural resources throughout the entire life cycle of the tourist product [10], tourist purchasing decisions are likely to be influenced by this growing awareness and inclination towards sustainable consumption [11].

Due to this environmental challenge, customers are increasingly aware of this situation and have shown a greater willingness to purchase from companies they consider more environmentally friendly [12]. In this circumstance, those companies who implemented green measures and are eco-friendly have an extra advantage in capitalizing the increased demand for this type of products by their customers [13]. So, not only have several companies adopted different environmental approaches by creating green products that reflect their concern regarding the environment [14], but also, tourists are more aware about environmental responsibility [15]. The “Green” discussion has gained new importance because of consumers’ eco-friendliness [16] and provided companies with a potential new competitive advantage, involving being more active in evaluating the tourist product attributes [17].

Indeed, the various physical attributes of a certain product will undoubtedly affect tourist trust [18] and the final decision of purchase.

Although, historically, the pace of the advancement of artificial intelligence (AI) agents had been overestimated, when predicting the near future, it is expected that AI progresses further and they could even potentially succeed human intelligence [19,20]. As a matter of fact, since 2021, AI has spread its utility into various scenarios, mainly business, tourism and different everyday life contexts [21,22].

In tourism and hospitality, there has been some pioneering evidence of successful AI-facilitated service delivery, such as the implementation of voice-based assistants (e.g., Alexa or Siri), room service and further up to service robots [23]. Whilst no one knows the full impact, particularly in the arena of tourism destination systems or the tourism industry, including hotels, airlines, restaurants and tourism attractions, there are some suggestions that the use of AI might improve the customer experience, as well as the impact on consumer behavior [24]. The most obvious consequences arise from the necessity of offering the best tourism destination experience to achieve the best tourist experience for consumers, knowing that this is a multifaceted and subjective activity, since it incorporates a vast number of motivations, perceptions and attitudes [25].

New technologies in the domain of AI, such as face recognition, virtual reality (VR) and robots, can be highly helpful for the delivery of a novel on-site experience to tourists [26]. However, there is another important field of AI in tourism. The use of AI for marketing in the tourism field is crucial due to the large amount of data available. Dynamic and real-time data mining might facilitate a context-based marketing to bring instant value co-creation [27] and will improve destination competitiveness, because AI can enable managers to automate procedures and simplify business activities. Thus, a positive development of AI can lead to the creation of various opportunities for humankind on a larger scale.

The future of global tourism will be inevitably influenced by the technological advances such as digitization, information and communication technology, machine learning, robotics and AI, which are also driving tourism to face a more automated future [27]. Others claim that destinations must adopt new approaches to enhance tourist experiences, as well as effective marketing strategies to build strong destination brands [1].

Previous studies on AI in the tourism field traditionally focused on two main areas: (i) the design and delivery of useful AI programs by focusing on text recognition [28], decision-making [29], robot automation [30] and image recognition [31,32] and (ii) the evaluation of the impacts of AI to the tourism industry and society (e.g., [1] investigated the impacts

of hotel robotics and how robots influence the behaviors and attitudes of employees in the hospitality industry. Murphy, Gretzel and Pesonen [33] focused on the impact, range and role of anthropomorphic characteristics in automation service experiences while, Choi, Choi, Oh and Kim [34] analyzed the effects of human–robot interaction from the perspective of guests and hoteliers). Yet, to date, no previous research has attempted to combine social norms, personal norms and habit strength to influence pro-environmental behavior intentions, even if for such robots and AI agents are the providers. The research question is how norms and habits influence pro-environmental behavior intentions in situations where robots and AI agents being the providers. In this vein, our main objective is to combine three theories—theory of planned behavior (TPB), value–belief–norm theory (VBN) and habit theory—to analyze pro-environmental behavior intentions in situations where robots and AI agents being the providers.

Following the introduction, Section 2 presents the theoretical background and hypotheses are developed. In Section 3, the material and methods are explained. The results are in Section 4. The discussion and implications come in Section 5 and, finally, conclusions are given in Section 6.

2. Literature Review

The current study proposes a model of drivers of pro-environmental behavior in the tourism context which combine three theories, that is, the theory of planned behavior, value–belief–norm theory and habit theory (see Figure 1).

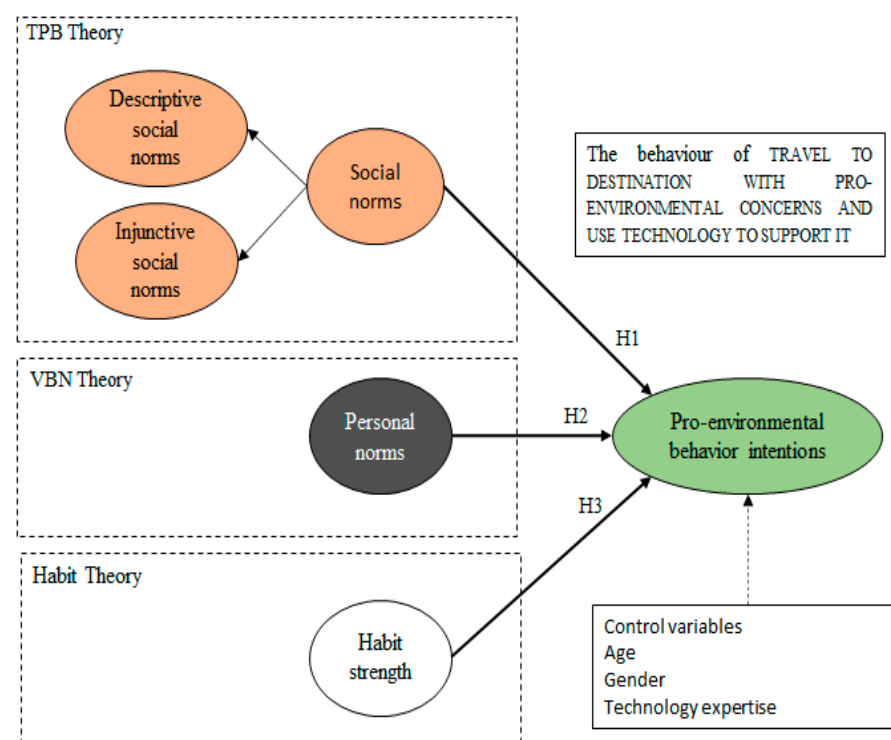


Figure 1. Proposed model.

2.1. Social Norms

The theory of planned behavior (TPB) has been widely used as a model for predicting behavioral intentions and/or behaviors. This theory contributes to identifying where and how direct strategies can change behaviors, assuming that behaviors are under full control and are carried out with intention/will and that there is the power of choice [35]. TPB incorporates the notion of perceived control over the performance of a behavior [35]. TPB considers that external or internal factors can harm or inhibit behavior. This is the case for behavioral beliefs, which translate into a favorable or unfavorable attitudes toward

the behavior; normative beliefs, which influence the individual's subjective norm about behavior performance; and control beliefs, which generate a sense of behavioral control [36]. In this study, we focus on the social norms, which are associated with the normative beliefs and the social pressure. The behavioral intention of a tourist should grow when the social normative beliefs—that is, social norms—increase.

Social norms can be traditionally typified according to three main perspectives: (i) social norms are behavioral regularities because of repeating behaviors; (ii) pluralistic ignorance, where individuals think that their personal beliefs, ideas or feelings are different from others, but that their public behavior should be the same; and (iii) social norms as social beliefs governed by the behavior of other people in a community [37].

Social norms can originate several different learning conclusions, as proposed by Cislighi and Heise [38]. According to them, these conclusions include that social norms and attitudes are different. Social norms and attitudes can coincide. Protective norms can offer important resources for achieving effective social improvement in people's health-related practices and harmful practices are sustained by a matrix of factors that need to be understood in their interactions. It is important to stress that the prevalence of a norm is not necessarily a sign of its strength, since social norms can exert both direct and indirect influence [38]. Taken together, we propose the following hypothesis:

Hypothesis 1. *Social norms are positively associated with pro-environmental behavior intentions.*

2.2. Personal Norms

The value-belief-norm theory (VBN) assumes that behavior is based on the interaction of three factors [39]: (i) acceptance of certain personal values; (ii) the belief that something important to these values is threatened; and (iii) the belief that the individual's actions can reduce this threat, replacing these same values. Stern [39] considers that behaviors are not limited by the context of situations, but by personal values, beliefs and norms, referred to as the feeling of obligation to act in a certain way. Thereby, values, beliefs and personal norms can drive individual choice that leads to pro-environmental behavior. Moral concerns are fundamental in assessing what is right or wrong, and thus, elicit environmentally friendly behavior [6]. Values, beliefs and norms can encourage an individual to be more active when it comes to protecting the environment and, therefore, demonstrate positive, pro-environmental behavior and that selfish feelings have a negative correlation. In the current study, we regard personal norms as affecting pro-environmental behavior intentions.

Personal norms are traditionally attached to the self-concept and experienced as feelings of a moral obligation to perform a certain behavior and may not only affect one's feelings of pride, but also create a willingness to engage in pro-environmental behavior in certain conditions, such as, for example, while being on vacation [40].

In this context, Mehmetoglu [41] finds that feeling a moral obligation to protect the environment is positively related to pro-environmental behavior and that personal norms are a stronger predictor than other psychological variables (e.g., personal values, environmental concern) or socio-demographic characteristics (e.g., age, educational level). Complementary to this research, Brown, Ham and Hughes [42] claim that making personal norms increased the likelihood of people picking up litter while visiting protected areas. Several studies have investigated the relationship between personal norms and willingness to engage in pro-environmental behavior (e.g., [43–45]). In this way, we propose the following hypothesis:

Hypothesis 2. *Personal norms are positively associated with pro-environmental behavior intentions.*

2.3. Habit Strength

The third theory, called habit theory, converge from three key elements: a history of action repetition in a consistent cue context causes the formation of a cue-response association in memory. Then, this cue-response association in memory is automatically

activated by the context, so that action becomes cue-contingent [46]. Habits are fundamental in predicting sustainable behaviors, as they are behaviors that persist due to the repetition and are automatic over time, without any effort or control [47]. Thus, changing people's habits is a critical factor to achieve behavioral change [48,49]. The best way to create habits is through repetition. However, if there is a high level of complexity, it is unlikely that habits will be created [50]. This question of complexity leads to the second main factor for creating habits: automatism. A habitual behavior is characterized by having a low cognitive level, that is, it does not require much thinking. Habits should also be stable, that is, behaviors that always take place at the same time and place and that tend to become habitual [51,52].

According to White et al. [10], actions that encourage repetition can strengthen the creation of positive habits. Many sustainable behaviors involve repeated actions and this requires the formation of a new habit. However, diverse common habits do not follow a sustainable line and this makes changing habits crucial for the shift to more sustainable behaviors [52–54]. Therefore, habit strength represented by the frequency, automation, routine and thinking about pro-environmental concerns associated with tourism and destinations can exercise a favorable effect on pro-environmental behavior intentions. In this vein, the following hypothesis is suggested:

Hypothesis 3. *Habit strength is positively associated with pro-environmental behavior intentions.*

2.4. Control Variables

As in other studies, this study considers control variables due to their potential influence on the results. In this case, age, gender and technology expertise are considered as control variables. In fact, prior research claims that age and gender may affect behaviors (e.g., Mittal and Kamakura [55]). In the same way, the level of knowledge and use of technology can change the way tourist view the use of technology for sustainable purposes.

3. Materials and Methods

3.1. Data Collection and Sample Profile

Data were collected at one of the most popular locations in Lisbon, Belem, during July of 2021. Potential participants were approached and asked if they did not mind participating in the study. The aim of the study was explained by the team of researchers. Those who agreed to participate fulfilled a questionnaire composed by the items that measured the constructs and a set of socio-demographic variables. A pre-test was conducted with five tourists before the survey was launched. The reason for that was to verify the content analysis of the questionnaire in order to avoid the common method bias. After very few adjustments, the questionnaire layout presented a simple, concrete sentences and the items that belong a certain construct were not placed next to each other to ensure they were read before ticking the answer.

We obtained 316 valid responses from a total of 400 received (79% of the initial sample) and after eliminated inconsistencies and incomplete answers, which represented a convenience sample of tourists. The questionnaire was prepared in English and only tourists from U.K. and U.S.A. fulfilled the questionnaire. Table 1 provides an overview of the participants. The sample has slightly more women than men and the most representative age group is 18–24 years. Most of the participants had a bachelor' degree. Most of them had experience in dealing with technology.

Table 1. Sample profile.

	(n = 316)	Percentage (%)
Gender		
Female	193	61
Male	123	39
Age		
<18	9	3
18–24	153	48
25–29	35	11
30–39	22	7
40–49	47	15
50–59	41	13
>=60	9	3
Education Level		
Less than high school	16	5
High school graduate	92	29
Professional degree	28	9
Bachelor degree	142	45
Post-graduation	28	9
Master’s degree	10	3
Civil state/family composition		
Single living alone	22	7
Single living with family	149	47
Single, sharing the house with others	25	8
Living with partners	44	14
Living with partners and children	76	24
Professional situation		
Student	89	28
Working student	41	13
Working for another	139	44
Working for him-self	28	9
Unemployed	13	4
Retired	6	2
Technology Expertise		
Very Experienced	76	24
Experienced	136	43
Average User	98	31
Not Experienced	6	2
Incoming		
None	95	30
<650 EUR	32	10
651 EUR–800 EUR	38	12
801 EUR–1100 EUR	44	14
1101 EUR–1500 EUR	60	19
1501 EUR–2000 EUR	22	7
>2001 EUR	25	8

3.2. Measures

The constructs were measured with items adapted from previous studies. Social norms and pro-environmental behavior intentions were based on Doran and Larsen [40]. Personal norms were adapted from [43]. Habit strengths were assessed based on Verplanken and Orbell [56]. All the items were measured using a 7-point Likert-type scale (1—completely disagree to 7—completely agree).

4. Results

Data Analysis

The partial least squares-structural equation modelling approach was used to analyze the proposed model. Regarding the measurement model, all the factor loadings are higher than 0.7, all Cronbach's alpha and all composite reliability are above 0.9, meaning that all constructs are reliable. We can also see that the constructs have convergent validity, since all the average variance extracted (AVE) are above 0.5 (see Table 2). The descriptive statistics are provided in Table A1 in Appendix A.

Table 2. Measurement model.

Construct	Factor Loading	Cronbach's Alpha	Rho_A	Composite Reliability	Average Variance Extracted (AVE)
Habit Strength		0.974	0.976	0.977	0.783
The behavior of travel to destination with pro-environmental concerns and use technology to support it (environmental concerns) is something I do frequently.	0.907				
I do automatically.	0.933				
I do without having to consciously remember.	0.838				
that makes me feel weird if I do not do it.	0.875				
I do without thinking.	0.921				
that would require effort not to do it.	0.774				
that belongs to my (daily, weekly, monthly) routine.	0.936				
I start doing before I realize I'm doing it.	0.895				
I would find hard not to do.	0.900				
I have no need to think about doing.	0.817				
that's typically "me".	0.903				
I have been doing for a long time.	0.906				
Injunctive social norms		0.966	0.968	0.974	0.882
Most people who are important to me think that one ought to pay more for a trip if this helps to protect the environment	0.898				
to make an effort to stay at environmentally friendly accommodation when travelling (even if providers are robots and use AI algorithms)	0.954				
to purchase environmentally friendly tourism products although this might be more expensive	0.930				
to use environmentally friendly means of transportation although this might take more time	0.947				
to use environmentally friendly means of transportation although this might be more expensive and use AI algorithms to attend and conduct tourists	0.965				

Table 2. Cont.

Construct	Factor Loading	Cronbach's Alpha	Rho_A	Composite Reliability	Average Variance Extracted (AVE)
Descriptive social norms		0.955	0.957	0.965	0.848
How many of the people who are important to you pay more for a trip if this helps to protect the environment	0.857				
make an effort to stay at environmentally friendly accommodation when travelling (even if providers are robots and use AI algorithms)	0.941				
purchase environmentally friendly tourism products although this might be more expensive	0.894				
use environmentally friendly means of transportation although this might take more time	0.949				
use environmentally friendly means of transportation although this might be more expensive and use AI algorithms to attend and conduct tourists	0.960				
Personal norms		0.960	0.963	0.969	0.864
I do feel a moral obligation to pay more for a trip if this helps to protect the environment	0.856				
to make an effort to stay at environmentally friendly accommodation when travelling	0.956				
to purchase environmentally friendly tourism products although this might be more expensive	0.924				
to use environmentally friendly means of transportation although this might take more time	0.947				
to use environmentally friendly means of transportation although this might be more expensive	0.960				
Pro-environmental behavior intentions		0.963	0.964	0.972	0.872
How likely is it that you would pay more for a trip if this helps to protect the environmental	0.928				
make an effort to stay at environmentally friendly accommodation when travelling	0.929				
purchase environmentally friendly tourism products although this might be more expensive	0.921				
use environmentally friendly means of transportation although this might take more time	0.930				
use environmentally friendly means of transportation although this might be more expensive	0.962				

The two criteria used to analyze discriminant validity Fornell—Larcker and Heterotrait—Monotrait ratio (HTMT) matrix-reveal that the constructs are discriminated (see Table 3) [57].

Table 3. Discriminant validity.

Fornell-Larcker Criterion	1	2	3	4	5
1. Habit strength	0.885				
2. Descriptive social norms	0.285	0.921			
3. Personal norms	0.318	0.524	0.929		
4. Pro-environmental behavior intentions	0.371	0.490	0.762	0.934	
5. Injunctive social norms	0.208	0.802	0.532	0.493	0.939
Heterotrait–Monotrait Ratio (HTMT)	1	2	3	4	5
1. Habit strength					
2. Descriptive social norms	0.296				
3. Personal norms	0.328	0.546			
4. Pro-environmental behavior intentions	0.381	0.511	0.792		
5. Injunctive social norms	0.215	0.835	0.551	0.510	

Table 4 shows the three proposed hypotheses are supported. VIF (variance inflation factor) scores are lower than 3.33, showing that there are no inner collinearity issues [58]. The model has a good predictive power, with R^2 of 60.5% for pro-environment behavior intentions and a good predictive power. The model also has good fit since the SRMR is lower than 0.08 [59].

Table 4. Structural results.

Relationship	Path Coefficient	T Statistics (O/STDEV)	p Value	Bias Corrected Confidence Interval		f²	VIF
				Lower Bound	Upper Bound		
Habit strength → Pro-environment behavior intentions	0.132	2.914 **	0.004	0.044	0.225	0.039	1.125
Personal norms → Pro-environment behavior intentions	0.652	13.977 ***	0.000	0.546	0.734	0.713	1.528
Social norms → Pro-environment behavior intentions	0.121	2.497 *	0.013	0.024	0.222	0.025	1.473
Model fit	R ² Pro-environment behavior intentions = 0.605	SRMR 0.048		Q ² Pro-environment behavior intentions = 0.527			
Control variable				Bias Corrected Lower Bound	Confidence Interval Lower Bound		
				Upper Bound	Upper Bound		
Age → Pro-environment behavior intentions	−0.067	2.182	0.030	−0.129	−0.006		
Multi-group analysis for Gender	Path Coefficients-diff (female-male)	p Value					
Habit strength → Pro-environment behavior intentions	0.022	0.806					
Personal norms → Pro-environment behavior intentions	−0.056	0.565					
Social norms → Pro-environment behavior intentions	0.009	0.921					

Note: * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$.

Considering the control variables, age reveals to exercise a slightly significant effect on pro-environment behavior intentions. Young people tend to be more environmentally friendly, at least in terms of intention, than older people. The multi-group analysis (MGA) to find the differences among the groups of age does not show any difference (see Table 4). Finally, we also do not find any difference regarding the technology expertise (see Table 4).

5. Discussion

We have assisted, in recent years, a progressive change in the habits of tourists and the emergence of new types of tourism. This, in terms of cultural and nature tourism, forms of development and exploration that favor a slower and more attentive visit, as it happens with slow tourism [60]. This situation has led to a process of change and innovation in tourist trends, demanding that tourist destinations and tourist companies need to implement constant adaptations to be competitive and succeed with this strategy [61].

This trend appears as an opposition to traditional mass approaches generated by tourism development and promotes the immersion of tourists in a more authentic type of tourism in harmony between visitors, the environment and residents [62], the practice of activities with no emission of gases and pollution [63]—together with the search for solutions to alleviate as much as possible all tourist activities that imply saturation—and negative impact on the destination, preventing disturbance in the wildlife, flora, fauna [64] and population. Therefore, we can argue that pro-environmental behavior in tourism and hospitality has had growing importance over the past few years and has even become a hot topic among scholars and tourism managers [6]. Concepts such as sustainability/greenness have become among the most critical topics in the global tourism industry [65].

The findings of the current study deserve further discussion in light of previous studies. First, social norms positively affect pro-environmental behavior intentions. Norms are an important factor influencing behavioral intentions, as expressed through the TPB [35]. As Cislighi and Heise [38] claim, social norms can operate in the tourists' mind, changing behaviors. Humans are social beings, that is, enjoying living in a society and tending to give relevance to what their peers, family and friends communicate and how they behave in relation to a certain subject. Therefore, social norms play an important role in behavioral change.

Second, social norms are formed by the descriptive and the injunctive norms. The first focuses on observing the actual behavior of others, while the second is associated with what tourists think about how others will behave [40]. Thus, our study confirms that both dimensions of social norms are relevant to encourage changing behavior to be more pro-environmental.

Third, personal norms favorably affect pro-environmental behavior intentions. According to VBN, personal norms are an important factor in changing behavior [39]. Personal norms are connected to the tourists' moral obligation. Moral is formed based on the formal (at schools) and informal (e.g., social media, at home) education. Thus, education plays a relevant role in shaping tourists' behavior.

Fourth, habit strength exercises a significant influence on pro-environment behavior intentions. The habit theory explains that habits are paramount to acting automatically over time [47–49]. Therefore, tourists who usually act taking into consideration environmental issues will be more open to continuing such pro-environmental behavior.

Finally, our results demonstrate that personal norms are the most relevant factor influencing tourists' pro-environmental behavior, when compared to social norms and habit strength. This finding is quite relevant because it opens the doors to see how the young children and adolescents have been educated, formally and informally. Schools and colleges have an important role in the courses that they offer, mainly those connected to hospitality and tourism themes. These institutions can and should make a greater effort to raise awareness and change the behavior of their students. On the other hand, families must play an active role in demonstrating why behavior should change. Social media and social networks are also relevant. Yet, these latter factors can create contradictory

communication, particularly in the very young minds of consumers. Thus, educators and parents should be alert and properly explain the information to their children.

6. Conclusions

The present research provides a theoretical framework that encompasses the influence of personal norms, social norms and habits on pro-environmental behavior. Theoretically, this study has revised new advances in the current literature on the subject and, from the questionnaires, it was possible to identify the main areas of action. The results of this study allow destination managers and policy makers to find research that helps them to have better options regarding some of their main priorities. Overall, the findings of the present study not only provide a meaningful insight into the comparative relationships of the defined variables in the tourism industry, but also provide a practical and theoretical contribution both for academics and practitioners.

From the theoretical perspective, we claim that the role of social norms, personal norms and habit strength are important contributors to explain pro-environmental behavior intentions. Environmental issues have become one key driver of intention for conservation behaviors and, consequently, green behavior in daily life, which also turned out to be a crucial moderator in development tourists' green behavioral intentions [17]. The structural results of this empirical study demonstrate that the paths from pro-environmental behavior intentions, habit strength, personal norms and social influence are all important variables. The strength of the relationships was significantly greater for the personal norms followed by habit strength and social influence, respectively. Thus, the moral obligation created by formal and family education are quite important in changing behavior to be more pro-environmental.

Regarding practical implications, managers or any player operating in the tourism activity around the world, to have success, depend on their capability to adjust to innovation. Therefore, it is critical to not only keep track of the latest technology trends in the tourism industry, but also to move with the times and adapt to new restraints, COVID-19 included, since this industry is highly competitive and those who do not have the skills and capacity to adapt are left behind [66].

Nowadays, hotel, hospitality and travel industry managers face various alternative options concerning new technologies trends that can not only be used as a solution to the coronavirus pandemic, but also to answer associated shifts in consumer behavior, such as voice search and voice control, contactless payments; robots in hotels and restaurants, chatbots; virtual reality; mobile check-in; recognition technology: artificial intelligence (AI), Internet of Things (IoT): augmented reality; cybersecurity and big data [66–68].

Managers and other key players must pay attention to the advantages brought by all these new modern technologies to strengthen the use of technology and achieve a better consumer experience and destination sustainability. There is no doubt that the Internet and cloud technology, for example, may display and provide virtual experiences of traditional tourist destinations. So, we find, nowadays, that the use of network data technology and big data should be a valid option to maximize tourist experiences in a sustainable path.

Additionally, local governments and other relevant departments should actively mobilize supporting resources, more widely publicize local tourism characteristics and guide and manage tourist demand to achieve better tourism experiences to consumers [25].

The findings of this study give—to policymakers, managers and practitioners—some valuable managerial advice to better administrate and improve of tourist destinations. Taking into consideration the prior discussion, we found that personal norms arise as the main inductor to achieve pro-environment behavior intentions, followed by habit strength and social influence. This is an important achievement for community planners, managers and practitioners to improve their actions, as well as policies that may stimulate this tourist's pro-environment behavior intention satisfactory. Thus, community planners and destination managers should mainly focus on improving tourists' personal norms.

Ours finding reveal that tourists may gradually accept the incorporation of robots and AI agents as providers due to their positive effect on environmental issues, since AI can contribute to reducing waste and more efficiently controlling the tourism ecosystems. The current paper offers some practical reflections, considering the divers of pro-environmental behavior in the tourism context by combining three theories, that is, the theory of planned behavior, value–belief–norm theory and habit theory, for those designing interventions addressing social norms.

In sum, the present study will benefit managers and practitioners in deepening their understanding of the complexity of factors that may impact on tourists' motivations towards a pro-environment behavior, as well as for managers to achieve better sustainable decisions for tourist destinations.

The future of tourism worldwide, in several activities, depends on the quality purpose incorporating innovation and new communication in the industry and overcoming the new world restraints. The acceleration of digitization and the use of new technological instruments to better communicate with consumers/tourists has led to new development opportunities.

Despite the authors' efforts to conduct a rigorous research structure, an appropriate methodology, as well as data collection, the present research entailed certain limitations that can extend to new opportunities for consideration in future studies.

First, this study mainly focused on the constructs measured with items adapted from previous studies: social norms and pro-environmental behavior intentions were based on Doran and Larsen [40], personal norms were adapted from Dolnicar [43] and habit strength was assessed based on Verplanken and Orbell [56]. However, there are other important factors related to this subject and future research could improve the prediction ability of the proposed theoretical framework by incorporating other variables, such as obligation, moral and ethical issues.

Second, the present research was specifically designed for the tourism context and it would be interesting to analyze, adapt and generalize this model to other consumer behavior sectors, or even different sectors, because final conclusions may differ.

Third, future research could also focus on further establishing the validity of the proposed variables through other statistical methods, as well as looking for other possible relationships between emotions, memories and engagement. Finally, future research should also broaden the sample size to other markets/countries, seeking cross-cultural and trans-regional studies with other matured destinations to further validate the external validity of the results.

Author Contributions: Conceptualization, S.M.C.L. and E.M.S.; methodology, S.M.C.L.; software, S.M.C.L.; validation, S.M.C.L. and E.M.S.; formal analysis, S.M.C.L.; investigation, E.M.S.; resources, E.M.S.; data curation, S.M.C.L.; writing—original draft preparation, E.M.S.; writing—review and editing, S.M.C.L.; visualization, E.M.S.; supervision, E.M.S.; project administration, S.M.C.L. All authors have read and agreed to the published version of the manuscript.

Funding: This research received no external funding.

Institutional Review Board Statement: The study was conducted according to the guidelines of the Declaration of Helsinki and approved by the Institutional Review Board (or Ethics Committee) of Lusófona University.

Informed Consent Statement: Informed consent was obtained from all subjects involved in the study.

Data Availability Statement: Not applicable.

Conflicts of Interest: The authors declare no conflict of interest.

Appendix A

Table A1. Descriptive Statistics.

Item	Mean	Median	Min	Max	Standard Deviation	Kurtosis	Skewness
How many of the people who are important to you pay more for a trip if this helps to protect the environment	3.902	4.000	1.000	7.000	1.676	−0.977	0.083
make an effort to stay at environmentally friendly accommodation when travelling	3.250	3.000	1.000	7.000	1.596	−0.636	0.439
purchase environmentally friendly tourism products although this might be more expensive	3.522	3.000	1.000	7.000	1.537	−0.677	0.252
use environmentally friendly means of transportation although this might take more time	3.063	3.000	1.000	7.000	1.556	−0.384	0.594
use environmentally friendly means of transportation although this might be more expensive and use AI algorithms to attend and conduct tourists	3.070	3.000	1.000	7.000	1.592	−0.506	0.553
Most people who are important to me think that one ought to pay more for a trip if this helps to protect the environment	3.655	4.000	1.000	7.000	1.604	−0.771	0.278
to make an effort to stay at environmentally friendly accommodation when travelling	3.462	3.000	1.000	7.000	1.588	−0.693	0.382
to purchase environmentally friendly tourism products although this might be more expensive	3.642	3.000	1.000	7.000	1.568	−0.814	0.274
to use environmentally friendly means of transportation although this might take more time	3.411	3.000	1.000	7.000	1.625	−0.558	0.459
to use environmentally friendly means of transportation although this might be more expensive and use AI algorithms to attend and conduct tourists	3.342	3.000	1.000	7.000	1.566	−0.648	0.355
The behavior travel to destination with pro-environmental concerns and use technology to support it is something I do frequently.	4.282	4.000	1.000	7.000	1.878	−1.046	−0.220
I do automatically.	4.199	4.000	1.000	7.000	1.806	−1.009	−0.067
I do without having to consciously remember.	4.437	5.000	1.000	7.000	2.025	−1.197	−0.299
that makes me feel weird if I do not do it.	4.297	4.000	1.000	7.000	1.928	−1.144	−0.198
I do without thinking.	4.133	4.000	1.000	7.000	1.847	−1.062	−0.057
that would require effort not to do it.	4.095	4.000	1.000	7.000	1.890	−1.073	−0.030
that belongs to my (daily, weekly, monthly) routine.	4.231	4.000	1.000	7.000	1.923	−1.080	−0.173
I start doing before I realize I'm doing it.	4.142	4.000	1.000	7.000	1.835	−1.036	−0.063
I would find hard not to do.	4.180	4.000	1.000	7.000	1.905	−1.067	−0.175
I have no need to think about doing.	4.149	4.000	1.000	7.000	1.921	−1.095	−0.121
that's typically "me".	4.085	4.000	1.000	7.000	1.897	−1.125	0.005
I have been doing for a long time.	4.231	4.000	1.000	7.000	1.997	−1.211	−0.132
I do feel a moral obligation to pay more for a trip if this helps to protect the environment	3.975	4.000	1.000	7.000	1.710	−1.015	0.028
to make an effort to stay at environmentally friendly accommodation when travelling (even if providers are robots and use AI algorithms)	3.883	4.000	1.000	7.000	1.751	−0.971	0.148
to purchase environmentally friendly tourism products although this might be more expensive	4.041	4.000	1.000	7.000	1.747	−1.054	−0.010
to use environmentally friendly means of transportation although this might take more time	3.892	4.000	1.000	7.000	1.788	−1.030	0.093

Table A1. Cont.

Item	Mean	Median	Min	Max	Standard Deviation	Kurtosis	Skewness
to use environmentally friendly means of transportation although this might be more expensive	3.807	4.000	1.000	7.000	1.775	−1.000	0.134
How likely is it that you would pay more for a trip if this helps to protect the environmental	4.557	5.000	1.000	7.000	1.717	−1.014	−0.269
make an effort to stay at environmentally friendly accommodation when travelling (even if providers are robots and use AI algorithms)	4.443	5.000	1.000	7.000	1.766	−1.029	−0.200
purchase environmentally friendly tourism products although this might be more expensive	4.563	5.000	1.000	7.000	1.761	−1.040	−0.275
use environmentally friendly means of transportation although this might take more time	4.383	5.000	1.000	7.000	1.836	−1.139	−0.165
use environmentally friendly means of transportation although this might be more expensive	4.288	4.000	1.000	7.000	1.788	−1.086	−0.132

References

- Li, J.; Robinson, P.; Oriade, A. Destination marketing: The use of technology since the millennium. *J. Destin. Mark. Manag.* **2017**, *6*, 95–102. [\[CrossRef\]](#)
- World Wildlife Fund [WWF]. *WWF-US 2018 Annual Report*; WWF: Washington, DC, USA, 2018.
- Sharmin, F.; Sultan, M.T.; Badulescu, D.; Badulescu, A.; Borma, A.; Li, B. Sustainable Destination Marketing Ecosystem through Smartphone-Based Social Media: The Consumers' Acceptance Perspective. *Sustainability* **2021**, *13*, 2308. [\[CrossRef\]](#)
- Gerdt, S.; Wagner, E.; Schewe, G. The relationship between sustainability and customer satisfaction in hospitality: An explorative investigation using eWOM as a data source. *Tour. Manag.* **2019**, *74*, 155–172. [\[CrossRef\]](#)
- Wang, H.; Ko, E.; Woodside, A.; Yu, J. SNS Marketing activities as a sustainable competitive advantage and traditional market equity. *J. Bus. Res.* **2020**, *130*, 378–383. [\[CrossRef\]](#)
- Loureiro, S.M.C.; Guerreiro, J.; Han, H. Past, present, and future of pro-environmental behavior in tourism and hospitality: A text-mining approach. *J. Sustain. Tour.* **2021**. [\[CrossRef\]](#)
- Lange, F.; Dewitte, S. Cognitive Flexibility and Pro-Environmental Behaviour: A Multimethod Approach. *Eur. J. Pers.* **2019**, *33*, 488–505. [\[CrossRef\]](#)
- Qu, Y.; Xu, F.; Lyu, X. Motivational place attachment dimensions and the pro-environmental behaviour intention of mass tourists: A moderated mediation model. *Curr. Issues Tour.* **2019**, *22*, 197–217. [\[CrossRef\]](#)
- Yan, L.; Keh, H.; Wang, X. Customer perceptions of frontline employees' extra-role helping behaviors. *J. Serv. Mark.* **2019**, *34*, 869–883.
- White, K.; Habib, R.; Hardisty, D. How to SHIFT consumer behaviors to be more sustainable: A literature review and guiding framework. *J. Mark.* **2019**, *83*, 22–49. [\[CrossRef\]](#)
- Yadav, M.; Singh, S.; Singh, M.; Mishra, S.; Singh, A.; Tripathi, J.; Tripathi, Y. Comparative acute and sub-acute toxicity study of hydro-alcoholic extracts of centella asiatica and evolvulus alsinoides in swiss albino mice. *Intern. J. Pharm. Sci. Res.* **2019**, *10*, 4694–4699.
- Muduli, K.; Luthra, S.; Kumar Mangla, S.; Jabbour, C.; Aich, S.; de Guimarães, J. Environmental management and the "soft side" of organisations: Discovering the most relevant behavioural factors in green supply chains. *Bus. Strat. Environ.* **2020**, *29*, 1647–1665. [\[CrossRef\]](#)
- Yadav, R.; Pathak, G. Determinants of consumers' green purchase behavior in a developing nation: Applying and extending the theory of planned behavior. *Ecol. Econ.* **2017**, *134*, 114–122. [\[CrossRef\]](#)
- Wang, H.; Ma, B.; Bai, R. How does green product knowledge effectively promote green purchase intention? *Sustainability* **2019**, *11*, 1193. [\[CrossRef\]](#)
- Groening, C.; Sarkis, J.; Zhu, Q. Green marketing consumer-level theory review: A compendium of applied theories and further research directions. *J. Clean. Prod.* **2018**, *172*, 1848–1866. [\[CrossRef\]](#)
- Sharma, A.; Foropon, C. Green product attributes and green purchase behavior: A theory of planned behavior perspective with implications for circular economy. *Manag. Decis.* **2019**, *57*, 1018–1042. [\[CrossRef\]](#)
- Mothersbaugh, D.; Hawkins, D.; Kleiser, S.; Mothersbaugh, L.; Watson, C. *Consumer Behavior: Building Marketing Strategy*; McGraw-Hill Education: New York, NY, USA, 2020.
- Aburumman, N.; Nieto, A. The Effect of products attributes customer satisfaction on brand loyalty in the electronic appliances industry: Case of Jordan. *Oradea J. Bus. Econ.* **2019**, *4*, 39–51. [\[CrossRef\]](#)

19. Loureiro, S.M.C.; Guerreiro, J.; Tussyadiah, I. Artificial Intelligence in Business: State of the Art and Future Research Agenda. *J. Bus. Res.* **2020**, *129*, 911–926. [[CrossRef](#)]
20. Grundner, L.; Neuhofer, B. The bright and dark sides of artificial intelligence: A futures perspective on tourist destination experiences. *J. Destin. Mark. Manag.* **2021**, *19*, 100511. [[CrossRef](#)]
21. Tussyadiah, I.; Li, S.; Miller, G. Privacy protection in tourism: Where we are and where we should be heading for. In *Information and Communication Technologies in Tourism 2019*; Pesonen, J., Neidhardt, J., Eds.; Springer: Cham, Switzerland, 2019; pp. 278–290.
22. Ashfaq, M.; Yun, J.; Yu, S.; Loureiro, S.M.C. Modeling the Determinants of Users' Satisfaction and Continuance Intention of Text-based Conversational Agents. *Telemat. Inform.* **2020**, *13*, 7625.
23. Ivanov, S.; Gretzel, U.; Berezina, K.; Sigala, M.; Webster, C. Progress on robotics in hospitality and tourism: A review of the literature. *J. Hosp. Tour. Technol.* **2019**, *10*, 489–521. [[CrossRef](#)]
24. Van Doorn, J.; Mende, M.; Nobble, S.; Hulland, J.; Ostrom, A.; Grewald, D.; Petersen, J. Domo arigato Mr. roboto: Emergence of automated social presence in organizational frontlines and customers' service experience. *J. Serv. Res.* **2017**, *20*, 43–58. [[CrossRef](#)]
25. Li, X.; Xie, C.; Morrison, A.M.; Nguyen, T.H.H. Experiences, Motivations, Perceptions, and Attitudes Regarding Ethnic Minority Village Tourism. *Sustainability* **2021**, *13*, 2364. [[CrossRef](#)]
26. Wang, R.; Luo, J.; Huang, S. Developing an artificial intelligence framework for online destination image photos identification. *J. Destin. Mark. Manag.* **2020**, *18*, 100512. [[CrossRef](#)]
27. Buhalis, D.; Sinarta, Y. Real time co-creation and nowness service: Lessons from tourism and hospitality. *J. Travel Tour. Mark.* **2019**, *36*, 536–582. [[CrossRef](#)]
28. Ma, Y.; Xiang, Z.; Du, Q.; Fan, W. Effects of user-provided photos on hotel review helpfulness: An analytical approach with deep learning. *Int. J. Hosp. Manag.* **2018**, *71*, 120–131. [[CrossRef](#)]
29. Law, R.; Li, G.; Fong, D.; Han, X. Tourism demand forecasting: A deep learning approach. *Ann. Tour. Res.* **2019**, *75*, 410–423. [[CrossRef](#)]
30. Ivanov, S.; Webster, C. Robots in tourism: A research agenda for tourism economics. *Tour. Econ.* **2020**, *26*, 1065–1085. [[CrossRef](#)]
31. Ren, M.; Vu, H.; Li, G.; Law, R. Large scale comparative analyses of hotel photo content posted by managers and costumers to review platforms based on deep learning: Implications for hospitality marketers. *J. Hosp. Mark. Manag.* **2020**, *30*, 96–119.
32. Zhang, K.; Chen, Y.; Li, C. Discovering the tourists' behaviors and perceptions in a tourism destination by analyzing photos' visual content with a computer deep learning model: The case of Beijing. *Tour. Manag.* **2019**, *75*, 595–608. [[CrossRef](#)]
33. Murphy, J.; Gretzel, U.; Pesonen, J. Marketing robot services in hospitality and tourism: The role of anthropomorphism. *J. Travel Tour. Mark.* **2019**, *36*, 784–795. [[CrossRef](#)]
34. Choi, Y.; Choi, M.; Oh, M.; Kim, S. Service robots in hotels: Understanding the service quality perceptions of human-robot interaction. *J. Hosp. Mark. Manag.* **2020**, *29*, 613–635. [[CrossRef](#)]
35. Madden, T.; Ellen, P.; Ajzen, I. A comparison of the theory of planned behavior and the theory of reasoned action. *Pers. Soc. Psychol. Bull.* **1992**, *18*, 3–9. [[CrossRef](#)]
36. Moutinho, K.; Roazzi, A. As teorias da ação racional e da ação planejada. Relações entre intenções e comportamentos. *Aval. Psicol.* **2010**, *9*, 279–287.
37. Bukuluki, P.; Kisaakye, P.; Hoiunato, M.; Ndiele, A.; Letiyo, E.; Bazira, D. Social norms, attitudes and access to modern contraception for adolescent girls in six districts in Uganda. *BMC Health Serv. Res.* **2021**, *21*, 1040. [[CrossRef](#)] [[PubMed](#)]
38. Cislighi, B.; Heise, L. Theory and practice of social norms interventions: Eight common pitfalls. *Glob. Health* **2018**, *14*, 83. [[CrossRef](#)] [[PubMed](#)]
39. Stern, P. New Environmental Theories: Toward a Coherent Theory of Environmentally Significant Behavior. *J. Soc. Issues* **2000**, *56*, 407–424. [[CrossRef](#)]
40. Doran, R.; Larsen, S. The Relative Importance of Social and Personal Norms in Explaining Intentions to Choose Eco-Friendly Travel Options. *Intern. J. Tour. Res.* **2014**, *18*, 159–166. [[CrossRef](#)]
41. Mehmetoglu, M. Factors influencing the willingness to behave environmentally friendly at home and holiday settings. *Scand. J. Hosp. Tour.* **2010**, *10*, 430–447. [[CrossRef](#)]
42. Brown, T.; Ham, S.; Hughes, M. Picking up Litter: An application of theory-based communication to influence tourist behaviour in protected areas. *J. Sustain. Tour.* **2010**, *18*, 879–900. [[CrossRef](#)]
43. Dolnicar, S. Identifying Tourists with Smaller Environmental Footprints. *J. Sustain. Tour.* **2010**, *18*, 717–734. [[CrossRef](#)]
44. Ong, T.; Musa, G. An examination of recreational divers' underwater behaviour by attitude-behaviour theories. *Curr. Issues Tour.* **2011**, *14*, 779–795. [[CrossRef](#)]
45. Han, H.; Yu, J.; Kim, H.; Kim, W. Impact of social/personal norms and willingness to sacrifice on young vacationers' pro-environmental intentions for waste reduction and recycling. *J. Sustain. Tour.* **2018**, *26*, 2117–2133. [[CrossRef](#)]
46. Wood, W.; Rünger, D. Psychology of habit. *Annu. Rev. Psychol.* **2016**, *67*, 289–314. [[CrossRef](#)]
47. Kurz, C.; Wu, X.; Wand, M.; Thormahlen, T.; Kohli, P.; Seidel, H. Symmetry-aware template deformation and fitting. *Comput. Graph. Forum* **2014**, *33*, 205–219. [[CrossRef](#)]
48. Verplanken, B.; Sato, A. The Psychology of Impulse Buying: An Integrative Self-Regulation Approach. *J. Consum. Policy* **2011**, *34*, 197–210. [[CrossRef](#)]
49. Yue, P.; Wu, Y.; Zhang, Y.; Chen, Y.; Li, J.; Xu, Y.; Liu, Y. Contemplation-action-maintenance model of behaviour change for persons with coronary heart disease: A qualitative study. *J. Clin. Nurs.* **2021**, *30*, 1464–1478. [[CrossRef](#)]

50. White, K.; Habib, R. SHIFT—A review and framework for encouraging environmentally sustainable consumer behaviour. *Sitra Stud.* **2018**, *132*, 23.
51. Verplanken, B.; Roy, D.; Whitmarsh, L. Cracks in the wall: Habit discontinuities as vehicles for behavior change. In *The Psychology of Habit: Theory, Mechanisms, Change, and Contexts*; Verplanken, B., Ed.; Springer: Cham, Switzerland, 2018; Chapter 11; pp. 189–205.
52. Gardner, B.; Rebar, A. Habit formation and behavior change. In *Oxford Research Encyclopedia of Psychology*; Braddick, O., Ed.; Oxford University Press: New York, NY, USA, 2019.
53. Adriaanse, M.; Verhoeven, A. Breaking habits using implementation intentions. In *The Psychology of Habit*; Verplanken, B., Ed.; Springer Nature: Cham, Switzerland, 2018; pp. 169–188.
54. Orbell, S.; Verplanken, B. Progress and prospects in habit research. In *The Psychology of Habit*; Verplanken, B., Ed.; Springer Nature: Cham, Switzerland, 2018; pp. 397–410.
55. Mittal, V.; Kamakura, W. Satisfaction, repurchase intent, and repurchase behavior: Investigating the moderating effect of customer characteristics. *J. Mark. Res.* **2001**, *38*, 131–142. [[CrossRef](#)]
56. Verplanken, B.; Orbell, S. Reflections on past behavior: A self-report index of habit strength. *J. Appl. Soc. Psychol.* **2003**, *33*, 1313–1330. [[CrossRef](#)]
57. Hair, J.; Sarstedt, M.; Ringle, C.; Gudergan, S. *Advanced Issues in Partial Least Squares Structural Equation Modeling (PLS-SEM)*; Sage: Thousand Oaks, CA, USA, 2018.
58. Diamantopoulos, A.; Siguaw, J. Formative versus reflective indicators in organizational measure development: A comparison and empirical illustration. *Br. J. Manag.* **2006**, *17*, 263–282. [[CrossRef](#)]
59. Hu, L.T.; Bentler, P.M. Cutoff Criteria for Fit Indexes in Covariance Structure Analysis: Conventional Criteria versus New Alternatives. *Struct. Equ. Model. Multidiscip. J.* **1999**, *6*, 1–55. [[CrossRef](#)]
60. Raisi, H.; Baggio, R.; Barratt-Pugh, L.; Willson, G. A network perspective of knowledge transfer in tourism. *Ann. Tour. Res.* **2020**, *80*, 102817. [[CrossRef](#)]
61. Partelow, S.; Nelson, K. Social networks, collective action and the evolution of governance for sustainable tourism on the Gili Islands, Indonesia. *Mar. Policy* **2020**, *112*, 103220. [[CrossRef](#)]
62. Oh, H.; Assaf, A.; Baloglu, S. Motivations and Goals of Slow Tourism. *J. Travel Res.* **2016**, *55*, 205–219. [[CrossRef](#)]
63. Asongu, S.; Odhiambo, N. The sustainability of tourism: Global comparative evidence. *Afr. J. Hosp. Tour. Leis.* **2020**, *9*, 1–14. [[CrossRef](#)]
64. Su, L.; Swanson, S.R. The effect of destination social responsibility on tourist environmentally responsible behavior: Compared analysis of first-time and repeat tourists. *Tour. Manag.* **2017**, *60*, 308–321. [[CrossRef](#)]
65. Han, H.; Lee, S.; Al-Ansi, A.; Kim, H.; Ryu, B.; Kim, J.; Kim, W. Convention Tourism and Sustainability: Exploring Influencing Factors on Delegate Green Behavior that Reduce Environmental Impacts. *Sustainability* **2019**, *11*, 3903. [[CrossRef](#)]
66. Ivasciuc, I. Augmented reality and facial recognition technologies building bridges between the hospitality industry and tourists during pandemic. *Bull. Transilv. Univ. Braşov* **2020**, *13*, 75–92. [[CrossRef](#)]
67. Loureiro, S.M.C.; Japutra, A.; Molinillo, S.; Bilro, R.G. Stand by me: Analyzing the tourist–intelligent voice assistant relationship quality. *Intern. J. Contemp. Hosp. Manag.* **2021**. [[CrossRef](#)]
68. Romero, J.; Ruiz-Equihua, D.; Loureiro, S.M.C.; Casaló, L.V. Smart Speaker Recommendations: Impact of Gender Congruence and Amount of Information on Users’ Engagement and Choice. *Front. Psychol.* **2021**, *12*, 659994. [[CrossRef](#)] [[PubMed](#)]