

The framing effect and sustainable hotel booking behaviour: A nudge marketing study

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Abstract

This study examines whether message framing affects visitors' propensity to adopt more sustainable choices by emphasising the possible gains or losses associated with certain behaviours. The research seeks to assess the efficacy of gain-and-loss framing in motivating individuals to book sustainable hotel accommodations while travelling. This article utilises the theoretical frameworks of prospect theory and framing effects. We studied 116 people who booked hotels online in a randomised, controlled study. The three groups consisted of a control group, a gain-frame group informed about the benefits of sustainable hotels, and a loss-frame group informed about the disadvantages of non-sustainable hotels. The significant difference among the three scenarios was evident; the gain-frame effect was more pronounced. Implementing gain-frames may influence consumers' decision-making about more sustainable hotel bookings. This report provides actionable insights for marketers, including successful tactics to communicate hotel companies' sustainable practices and business values. It enhances the existing knowledge by using nudge marketing and framing effects to demonstrate their potential use in encouraging sustainable habits in hotel bookings.

Keywords: Nudge Marketing, Behavioural Economics, Message Framing, Sustainable Consumption Behaviour, Hotel Booking Behaviour, Gain-frame vs Loss-frame

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1. Introduction

Sustainable consumption behaviour has received considerable interest from tourism and hospitality professionals and researchers. Sustainable consumption may be defined as consuming products and services that fulfil fundamental requirements and enhance the quality of life while safeguarding future generations' needs and interests (Pete, 2014). Since tourism contributes to climate change, it is vital to shift attitudes and behaviours toward sustainable travel practices (Olya, 2024). Integrating sustainability into marketing strategies can facilitate the attainment of firms' objectives for sustainable development in the long run (Belz & Peattie, 2012). Therefore, hotels must effectively communicate sustainability practices to consumers, demonstrating how these services meet their needs and ultimately fostering pro-sustainable behaviour (Tölkes, 2018). Moreover, the relevance of goal 12 of the Global Sustainable Development Goals to the tourist industry is noteworthy since it calls for preserving sustainable consumption and production methods (Dolnicar, 2022). This study used nudge marketing to evaluate its efficiency in guiding individuals toward favourable behaviours. It primarily focuses on message framing as an effective nudge strategy tool presenting information highlighting a particular activity's possible benefits or drawbacks.

Recently, the decision-making process in hotel bookings has received particular attention, focusing on factors such as online reviews, price sensitivity, and customer loyalty programs (Chen et al., 2021; Petricek et al., 2020; Xu, 2020). Even though these studies have yielded insightful information, sustainability considerations are still not given enough attention throughout the booking phase. Research has shown that sustainable certifications, eco-labels, and sustainable badges affect consumers' behavioural intention and decision-making for hotel booking, indicating a rising awareness towards sustainable options (Crespi et al., 2020; Filimonau et al., 2017; Godovykh et al., 2024). However, the effect of sustainability-related information on booking platforms on consumer decision-making has not been thoroughly investigated. To close this gap, this study looks at how consumer behaviour is impacted when sustainability cues are included in communication messages during the hotel booking process. Focusing on this critical decision-making phase, our research contributes to the growing literature on sustainable tourism and hospitality practices by offering insights into how hotels can effectively communicate and market their sustainable initiatives to prospective guests.

This study examines how nudge marketing can be used to promote sustainable hotel bookings among Generation Z and Millennial participants. It also investigates how gain-and-loss appeals can influence visitors' intentions to book sustainable hotels. Objectives of this study are achieved by integrating the nudge with the theoretical foundations of the framing effect (Kahneman & Tversky, 1984) and prospect theory (Kahneman & Tversky, 1979). Marketing experiments offer the most favourable opportunity to uncover causal relationships. In them, researchers purposefully alter or manipulate an independent variable hypothesised to influence a dependent variable. Based on the outcomes of the preliminary inquiry, scholars can logically propose a hypothesis for experimentation and then conduct an experiment to either validate or refuse it (Vercruyssen & Hendrick, 2011).

This study investigates how nudge interventions promote particular behaviours. The intervention and customer behavioural intention will be compared to understand the message framing and nudge efficiency in sustainable hotel bookings. Moreover, this study offers marketers and hotel managers insights for effectively conveying sustainability goals to prospective consumers. The findings illustrate how little adjustments may profoundly impact consumer behaviour, enabling hotels to formulate more effective marketing strategies that fit with the sustainable development goals.

2. Literature review and research background

2.1. Sustainability practices in the hotel industry

The hotel industry emphasises sustainability, adopting environmentally friendly practices to address ecological, social, and economic issues (Jones *et al.*, 2016). Jones *et al.* (2016) highlighted the importance of sustainability components in terms of business efficacy and competitive advantage in the hospitality industry. Sustainable practices are taken by enterprises to promote social welfare, economic development, and environmental conservation. These activities may be undertaken for altruistic or competitive motives (López-Gamero *et al.*, 2024). Previous studies have concentrated on executing practices like energy conservation, water-saving measures, and waste reduction (Franco *et al.*, 2021; Olya *et al.*, 2020), primarily highlighting their operational advantages rather than their influence on consumer behaviour during the hotel booking process.

Franco *et al.* (2021) suggest that visitors who are more aware of sustainability, are willing to pay higher hotel costs. However, this willingness does not consistently manifest in real booking behaviour, underscoring a difference between expressed intentions and behaviours (Juvan & Dolnicar, 2014). This gap suggests that while awareness increases, effective communication strategies are required to convert sustainable intentions into real booking decisions. In addition, as Han *et al.* (2019) state, when hotels engage in sustainable practices, it positively influences the hotel guests' perceptions and cognitive assessment of its service.

Moreover, prior studies have often overlooked how customers are educated about sustainability throughout the booking process, opting for post-booking behavioural changes such as recycling or towel reuse (Goldstein *et al.*, 2008; Grazzini *et al.*, 2018). Designing effective marketing strategies that promote sustainable hotel selections necessitates understanding customer responses to sustainability information before booking decisions.

2.2. Sustainable Consumption Behaviour

Sustainable consumption entails purchase decisions that emphasise long-term environmental, social, and economic sustainability. While several studies have investigated sustainable consumption in the tourist industry (Buhalis, 2022; Nekmahmud *et al.*, 2022), a significant quantity of these studies are just descriptive and fail to explore the cognitive mechanisms underlying these decisions.

A key objective of every hotel is to strengthen guests' favourable intentions or behaviours towards its operations. Moreover, individuals' perceptions of alternative options influence their intentions or behaviours within the highly competitive hospitality sector (Han, 2015). Most research in this field has examined techniques to affect behavioural intentions or analysed the persistent gap between attitudes and behaviours (Cui *et al.*, 2019). Public policy, destination management, and hospitality marketing must authorise interventions to tackle this issue and develop behavioural change that results in more sustainable and ecologically conscious behaviour.

Juvan and Dolnicar (2014) claim that effective behavioural change interventions must largely focus on the individuals' cognitive biases. Han *et al.* (2010) argue that, even though there is research on environmental management, green strategies, and customer preferences in the hospitality industry, there aren't many studies that look specifically at how hotel customers choose sustainable accommodations. The analysis of cognitive biases shown by consumers throughout the decision-making process is considered fundamental for developing efficient marketing strategies; therefore, it is the primary focus of this research. Recognising the cognitive biases that influence decision-making may enable hotel marketers to successfully convey messages and communicate sustainable practices, encouraging consumers to adopt sustainable purchasing behaviours.

The primary concern for sustainability marketers is developing cost-effective marketing techniques that may successfully promote environmental attitudes, consequently driving sales for hotels with sustainable branding. According to Kim and Kim (2013), communication and marketing academics assert that message frames, which are commonly shown as gains or losses or as positive or negative outcomes, play a crucial role in predicting the influence of advertising on consumer behaviour. Therefore, the objective of this study is to suggest an efficient marketing method termed "nudge marketing" for sustainable hotel bookings. This method entails using cognitive biases normally displayed by customers in the decision-making process. The study seeks to utilise these biases to create an effective marketing strategy that influences customer behaviour, presenting a viable opportunity for encouraging sustainable hotel bookings.

2.3. Nudge concept in decision-making

Based on behavioural economics, nudge theory suggests that little alterations in the presentation of choices can significantly affect behaviour (Thaler & Sunstein, 2012). Thaler and Sunstein (2012) describe a nudge as an element of choice architecture that makes predictable alterations in individual behaviour without restricting accessible alternatives or significantly modifying an individual's economic incentives. To qualify as a simple nudge, the intervention must have the characteristics of being both easily implementable and cost-effective to apply.

According to Sunstein (2014), nudging involves employing strategies that guide individuals toward confident choices while allowing them to make their own decisions. Nudges are intentionally crafted to uphold complete transparency in decision-making. Nudging tactics have several benefits, such as cost-effectiveness, the ability to uphold autonomy, and the potential to achieve desired outcomes without necessitating substantial alterations to existing systems.

Nudging has been extensively employed in health and energy conservation (Momsen & Stoerk, 2014), while its application in promoting sustainable hotel bookings remains sufficiently unstudied. Prior research demonstrates that nudging involves structuring individuals' choice architecture, namely the decision-making environment, using cognitive biases frequently emerging throughout the decision-making process (Dianoux et al., 2019).

Humans with cognitive limitations often experience emotional reactions and biased evaluations, which can lead to consistent errors in their decision-making processes. Tourists frequently face overwhelming information during their search, which may lead to cognitive overload (Wattanacharoensil & La-ornual, 2019). Behavioural decision theorists claim that customers frequently make imperfect choices, and the non-rational dimension of decision-making is a central concern in marketing, which has garnered considerable academic engagement in behavioural choice theory in recent decades.

2.4. Prospect Theory and Framing Effect

According to Kahneman and Tversky (1979), behavioural economists challenge classical economic assumptions by including psychological and cognitive characteristics and analysing how human behaviour deviates from these assumptions. The core principles of psychology assert that individuals' decisions are not solely driven by rationality but may also be influenced by emotions and cognitive biases. Individuals have cognitive limitations and are subject to cognitive restrictions during information processing and decision-making, a phenomenon known as bounded rationality.

Kahneman and Tversky (1979) presented the prospect theory, a descriptive model of utility theory, to provide a realistic picture of decision-making processes observed in real individuals. The framing effect is a cognitive bias extensively studied in cognitive psychology. It states that people's attitudes toward

making decisions are influenced by how information is presented, particularly when presented as a gain or a loss (Zhang et al., 2018). Kahneman and Tversky (1984) examined the influence of information framing on cognitive processing, behavioural tendencies, and decision-making processes of individuals (Zhang et al., 2018). Thus, the present study investigates the message framing in the marketing literature to understand better its impact on human responses.

The current research evaluates the effectiveness of the framing effect in loss and gain appeals as a nudging method to promote sustainable hotel booking behaviours among guests. This strategy communicates hotels' sustainability objectives and messaging to prospective guests, motivating them to select sustainable lodgings. Studies in several disciplines demonstrate that gain-frame messages often outperform loss-frame messages in promoting positive behaviours (Rahman et al., 2018; Zhang et al., 2018). The findings of Rahman et al. (2018) indicate that individuals react more favourably to messages highlighting positive outcomes. However, this effect has not been consistently demonstrated in the context of sustainable hotel booking behaviours. There is a lack of thorough comprehension of the successful promotion of sustainable booking practices using behavioural interventions such as nudging and framing.

This study builds upon prior research, specifically assessing the impact of framing on sustainable hotel booking behaviour. Therefore, we will use an experimental design that includes two treatment groups and one control group. Based on the theoretical background, this study posits the following hypotheses:

H1: Message framing would make readers perceive the marketing ad as having either a Gain or Loss focus.

H2: Message framing in loss or gain appeals would impact the tourists' sustainable hotel booking behaviour.

3. Methodology

3.1. Research design

This study uses randomised controlled trials. In terms of group equality, applicants are randomly allocated to a treatment or control group. This research's independent variable is message framing, and the dependent variable is the behaviour. The study utilised two experimental groups and one control group, in which each treatment group was exposed to a particular message-framing situation, either a gain or loss appeal. The control group received no framing as a nudging intervention. The participants were presented with scenarios in the form of JPG files (see Appendix 2). The content for the scenarios was created based on a hypothetical hotel marketing campaign and prepared with the Canva platform, ensuring high quality and visual appeal. Participants in the control group were unaware of the consequences of implementing sustainable decision-making. Conversely, the analysis of the gain condition focused on the beneficial results linked to the desired behaviour, namely the intention to book a room at a sustainable hotel, while regarding the loss condition, it is essential that the message framing effectively portrays the adverse consequences and negative externalities associated with a lack of commitment to the sustainable practices.

3.2. Survey

Qualtrics was used to create the online survey in this study (see Appendix 1). The questions in each segment were randomised to reduce systematic effects. To address the research hypothesis, participants were administered questionnaires after their exposure to the experimental conditions. Participants were not told the study's goal, which might have impacted their response. Participants were notified about a hotel marketing campaign, a scenario designed to simulate real-world decision-making, and told to imagine needing lodging for a trip. They were encouraged to thoroughly study the ad and choose the best response based on their ideas.

3.3. Measurement and Scale Development

All three scenarios' dependent variables were analysed consistently to assess participants' responses to the messages. The measurement has the following components: a manipulation check, attitude toward behaviour, frequency of past behaviour, behavioural intention, and respondents' attribute questions. The survey questionnaire used multi-item scales to assess all variables except sample characteristics.

The manipulation check determines if message framing elicited the desired response. The study used scales from Kim et al. (2012): "The ad is oriented in gaining something," "I am feeling ... when I read the ad", and "The ad makes me feel ..." anchored with Positive/Negative and Hopeful/Unhopeful, respectively. The manipulation was assessed on a 7-point Likert scale from 1 to 7. To assess attitudes towards the behaviour, we used a 7-point scale (1 = strongly disagree to 7 = strongly agree), adopting Ajzen (1991) and Han (2015) scales, participants were asked to rate their idea of staying at a sustainable hotel using the adjectives "Foolish/Wise," "Unpleasant/Pleasant," and "Harmful/Beneficial." Regarding the frequency of past behaviours, participants were asked if they had stayed at a sustainable hotel in the past three years. The variable was measured through a 7-point Likert scale (1 = *strongly disagree* to 7 = *strongly agree*), adopted from the study by Lam and Hsu (2004).

Concerning the behavioural intention variable, a 7-point Likert-type scale was implemented and anchored by 1 = *strongly disagree* to 7 = *strongly agree* to understand the participants' probability to stay at the hotel (adopted from Ajzen, 1991; Han, 2015) and stated the questions as follows: "I am willing to stay at a sustainable hotel when traveling", "I plan to stay at a sustainable hotel when traveling," and "I will make an effort to stay at a sustainable hotel when traveling." In the sample characteristics section, survey participants were asked about their age, gender, and employment status. Two age groups were offered: 18–26 and 27–42. And "Female," "Male," and "Prefer not to respond" for gender section. Finally, participants were assessed based on "Employed full-time," "Employed part-time," "Self-employed," "Unemployed," "I am a student," and "Prefer not to respond."

3.4. Scale reliability: Cronbach's Alpha test

A Cronbach's alpha test was conducted to assess the manipulation questions' reliability using a 7-point Likert scale. The findings reveal that Cronbach's alpha coefficient for the questions related to Gain-Frame messages is 0.831, whereas, for the questions related to Loss-Frame messages is 0.866. Hence, given that Cronbach's alpha value is above the acceptable threshold of 0.7, we may claim that the questions used for the manipulation check were deemed credible (Table 1).

Table 1. Cronbach's Alpha test

Variable	Cronbach's Alpha
Manipulation (Gain frame condition)	0.83
Manipulation (Loss frame condition)	0.86
Attitude toward behaviour	0.89
Past behaviour frequency	0.81
Behavioural intention	0.92

3.5. Data Collection and Sampling

The current research largely focused on visitors who booked hotel accommodations upon arrival at their location, particularly highlighting Generation Z and Millennial participants. This selection was deliberate and intended to analyse these two generations' unique characteristics and actions. Due to the study's limitations and financial constraints, a convenience sampling method was employed, which involved intentionally selecting participants based on their availability for data collection by the

researcher. The convenience sample comprises individuals who are available to participate in the study or can be conveniently recruited (Johnson & Christensen, 2024).

This study collected primary data using an online survey and leveraged social media platforms, including Instagram and LinkedIn. Additionally, there was an option to survey students at the University of Bologna. The data were gathered during one month, from March to April 2023. The whole sample size consisted of 154 people. To mitigate selection bias and provide a representative sample of the target group, 38 respondents were eliminated for providing incomplete survey responses; hence, the study is based on 116 participants.

4. Data Analysis and Results

4.1. Participant characteristics

This section used age, gender, and employment status scales. The poll was gender-balanced with 48.3% male and 50.9% female participants. Only 0.9% opted not to disclose their gender. The sample above provides a comprehensive view of the age distribution, with 26.7% of individuals falling in the 18–26 age group and 73.3% in the 27–42 age group. In particular, the series means replacing the single missing data point. Students had the greatest rate (47.4%), full-time workers 31.0%, and self-employed 3.4% (Table 2).

Table 2. *Characteristics of the Respondents*

Characteristics	Description	Frequency	Percent
Gender	Female	59	50.9
	Male	56	48.3
	Prefer not to respond	1	0.9
	<i>Total</i>	<i>116</i>	<i>100.0</i>
Age Group	18–26	31	26.7
	27–42	85	73.3
	<i>Total</i>	<i>116</i>	<i>100.0</i>
Employment Status	Employed full-time	36	31.0
	Employed part-time	13	11.2
	Self-employed	4	3.4
	Unemployed	8	6.9
	I am a student	55	47.4
	<i>Total</i>	<i>116</i>	<i>100.0</i>

4.2. GLM Univariate Test

Before assessing the substantial impact of message frames on booking intentions, a test was conducted to analyse the manipulation check of all messages using a 7-point Likert scale, with three questions dedicated to the loss frame condition and three items dedicated to the gain frame condition. The GLM (General Linear Model) univariate analysis was employed. The mean score for the gain-frame messages ($M = 5.26$, $SD = 1.41$) is statistically distinct from the mean score for the loss-frame messages ($M = 3.35$, $SD = 1.72$, $p < 0.001$). In other words, individuals in the gain frame condition had a much higher perception of the advertisement's emphasis on gains. Consequently, the first hypothesis (H_1) has been supported (see Table 3 and Table 4).

Table 3. *Descriptive Statistics*

Conditions	Mean	Std. Deviation	N
Gain Frame ad	5.2624	1.41068	47
Loss Frame ad	3.3535	1.72791	33
Control ad	4.1019	1.36816	36
Total	4.3592	1.68549	116

Dependent Variable: Manipulation Check

Table 4. *GLM Univariate Analysis*

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	74.101 [*]	2	37.051	16.575	< 0.001	0.227
Intercept	2038.151	1	2038.151	911.766	< 0.001	0.890
Conditions	74.101	2	37.051	16.575	< 0.001	0.227
Error	252.599	113	2.235			
Total	2531.000	116				
Corrected Total	326.700	115				

Dependent Variable: Manipulation Check * R Squared = 0.227 (Adjusted R Squared = 0.213)

4.3. One-way between-subjects ANOVA Test

To evaluate the second hypothesis, an ANOVA (Analysis of Variance) was tested for three independent variables, categorised as conditions: control ad, gain-frame ad, and loss-frame ad. The dependent variable in this study is behavioural intention, specifically booking intention. The one-way ANOVA analysis will produce a significant value indicating the presence of statistically significant differences among the comparisons made. The one-way ANOVA incorporates one dependent variable (such as behavioural intention) and one independent variable (such as message framing) with three values: a gain-frame ad, a loss-frame ad, and a control ad. A one-way between-subjects ANOVA was utilised to evaluate the effect of different ads on individuals' intentions to book sustainable hotels. The results show a significant effect of conditions on behavioural intention, with statistical significance at the $p < 0.001$ level for all three conditions [$F(2, 113) = 12.890$, $p < 0.001$].

4.4. Post-hoc Test

An important thing about doing a post-hoc test is that it lets you compare means, find significant differences between means, and figure out which means are statistically different. Multiple post-hoc tests were employed in the present investigation, with the least significant difference (LSD) being the specific test used. According to George and Mallery (2019), the LSD tests involve multiple t-tests for every possible combination of the independent variables across each dependent variable. The post-hoc comparison, conducted using the Least Significant Difference (LSD) test, demonstrated a considerable difference in the mean scores between the gain-frame ad ($M = 5.42$) and both the loss-frame ad ($M = 4.02$, $p < 0.001$) and the control condition ($M = 4.13$, $p < 0.001$). Nevertheless, no significant difference was seen between the loss-frame and control ads ($p = 0.726$) (see Table 5 and Table 6).

Table 5. *Summary of Means for Behavioural Intention Dependent Variable*

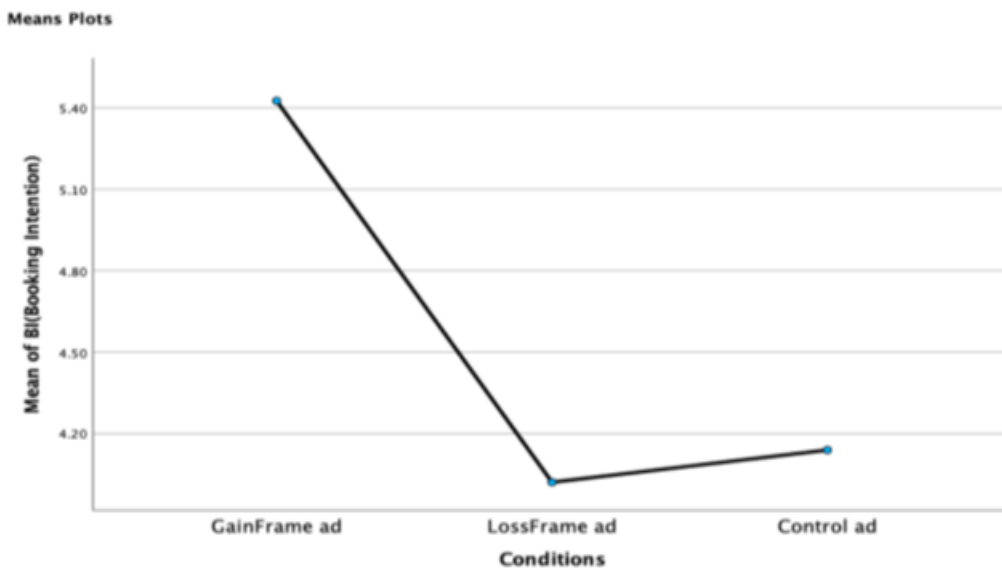
Conditions	N	Means	Std. Deviation
Gain Frame ad	47	5.4255	1.41028
Loss Frame ad	33	4.0202	1.53419
Control ad	36	4.1389	1.25831
Total	116	4.6264	1.54053

Table 6. *Post-hoc Tests (LSD Multiple Comparisons)*

(I)Conditions	(J)Conditions	Mean Differen ce (I-J)	Std. Error	Sig.	95% Confidenc e Interval (Lower Bound)	Upper Bound
Gain Frame ad	Loss Frame ad	1.40533	0.31849	< 0.001	0.7743	2.0363
	Control ad	1.28664	0.31060	< 0.001	0.6713	1.9020
Loss Frame ad	Gain Frame ad	-1.40533	0.31849	< 0.001	-2.0363	-0.7743
	Control ad	-0.11869	0.33797	0.726	-0.7883	0.5509
Control ad	Gain Frame ad	-1.28664	0.31060	< 0.001	-1.9020	-0.6713
	Loss Frame ad	0.11869	0.33797	0.726	-0.5509	0.7883

Dependent Variable: Behavioural Intention (Booking Intention)

The findings might support the second hypothesis (H2) and verify that the conditions under study substantially influenced behavioural intentions. The post-hoc test results indicate a significant difference between the gain-frame ad and the other conditions; which implies that the gain-frame ad significantly impacts individuals' intention to book when marketing messages are framed using gain appeals. Furthermore, the means plot graph (Figure 1) suggests that the loss frame condition outperforms the control condition. This finding confirms the efficacy of message framing as a nudge intervention in marketing advertisements, validating the second hypothesis, the influence of the gain-frame ad, the superiority of the loss-frame condition over the control scenario, and the overall effectiveness of message framing.

Figure 1. *Means Plot*

5. Discussion and concluding remarks

Currently, consumers and businesses are placing an increasing emphasis on sustainable consumption (Nelson et al., 2021). Nudge marketing techniques appear to be useful in aligning brand values, particularly concerning sustainable practices, and pave the way for promoting consumer engagement in more sustainable consumption behaviour (Dolnicar, 2022). Effective communication of the

advantages of sustainable products and services is essential for successfully managing sustainable hotels (Han et al., 2011). This study examined the efficacy of message framing as an intervention technique in nudge marketing.

This research explains the significant influence of message framing on readers' perceptions of a marketing ad, specifically emphasising profits or loss appeals on travellers' intentions to book sustainable lodgings. The results, consistent with Rahman et al. (2018), uncovered an important insight that the gain-frame, which highlights the advantages of sustainable hotels, was more successful than the loss-frame in encouraging sustainable booking behaviours.

This research provides empirical information, highlighting the need for more advanced and psychologically aware tactics to promote sustainable behaviour. According to Olya et al. (2024), the need for this commitment is underscored by the significant environmental concerns we currently face. This study validates the framing effect concept introduced by Kahneman and Tversky (1984), demonstrating that the presentation of information significantly influences individuals more than the information itself. The findings accredit the first hypothesis, indicating that consumers' perceptions of marketing communications are significantly affected by message framing, regardless of whether it highlights possible benefits or drawbacks. The data analysis verified the second hypothesis, demonstrating the impact of message framing on the behavioural intentions of visitors who pursue sustainable hotel reservations.

This study demonstrated that employing a gain-frame approach to nudge marketing might significantly enhance consumer engagement and the adoption of sustainable behaviours by emphasising favourable results. The research indicates that personalised marketing techniques tailored to the characteristics of the target audience might enhance the effectiveness of nudge-based approaches. It emphasises the necessity of further research on the widespread application and enhancement of these strategies across various enterprises and communities to promote sustainability goals.

6. Research implications and future directions

This research enhances behavioural economics findings that significantly affect consumer decision-making, consistent with the nudge theory, which promotes the subtle navigation of human behaviour towards advantageous results while maintaining freedom of choice (Oe & Yamaoka, 2021). This study provides empirical evidence for prospect theory, demonstrating that gain-frame messages are more effective at promoting sustainable behaviour since consumers are more motivated by potential positive outcomes than by avoiding losses. Accordingly, managers can employ persuasive campaigns to urge visitors to adopt sustainable consumption behaviours by implementing message-framing strategies in their communication plan (Nelson et al., 2021). Moreover, policymakers may use these findings to promote sustainable tourism, encouraging visitors to engage in ecologically responsible consumption.

Considering the research limitation, the study implemented a convenience sampling method. Therefore, future research would better replicate the study with a bigger sample size to ensure the research's generalisability. Furthermore, the current study was conducted, and data were collected in Italy. To ensure wider application, further research would better consider developing novel studies in various geographical locations. In addition, the study was focused on behavioural intention, which in some cases might not be generalisable to the actual behaviour; therefore, future research might investigate the long-term efficiency of the nudging intervention on tourists' sustainable hotel booking behaviour. In addition, extending the scope of the research to include other areas of the tourism industry, such as transportation services, might provide useful insights into the broader significance of framing effects.

AI use declaration

In preparing the paper, generative AI tools, namely Quillbot and Grammarly, were used to improve and refine the text. The authors confirm that all analyses, findings, and data interpretations result from their original research.

Appendix 1.

Questionnaire:

Manipulation check:

(Measured by disagree-agree, 7-point scale)

1. The ad is oriented in gaining something.
2. I am feeling positive (good/happy/satisfied/calm) when I read the ad.
3. I am feeling negative (bad/sad/angry/irritated) when I read the ad.
4. The ad makes me feel hopeful.
5. The ad makes me feel unhelpful.

Attitude toward the behaviour:

(Measured by 7-point scale)

For me, staying in a sustainable hotel when travelling is:

Foolish/wise

Unpleasant/pleasant

Beneficial/harmful

Frequency of past behaviour:

(Measured by disagree-agree, 7-point scale)

I have frequently stayed in a sustainable hotel in the past three years.

Behavioural Intention:

(Measured by disagree-agree, 7-point scale)

1. I am willing to stay in a sustainable hotel when travelling.
2. I plan to stay in a sustainable hotel when travelling.
3. I will make an effort to stay in a sustainable hotel when travelling.

Socio-demographic:

1. Age group

18-26

27-42

2. Gender

Female

Male

Prefer not to respond

3. How would you describe your current employment status?

Employed full-time

Employed part-time

Self-employed

Unemployed

I am a student

Prefer not to respond

Appendix 2.

Experimental Scenarios:

Treatment Group 1:

Experience the comfort stay at our hotel. Our hotel is not only offering the unbeatable location, but also you would enjoy sustainable services. Book now and treat yourself for best time. Stay sustainable and contribute recovery on the environment and local community.

Treatment Group 2:

Experience the comfort stay at our hotel. Our hotel is not only offering the unbeatable location, but also you would enjoy sustainable services. Book now and treat yourself for best time. Not sustainable staying, more damage on the environment and local community.

Control Group:

Experience the comfort stay at our hotel. Our hotel is not only offering the unbeatable location, but also you would enjoy sustainable services. Book now and treat yourself for best time.

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