

Article

# Pinpointing the Barriers to Recycling at Destination

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**Abstract:** This paper aims to gain further understanding of the barriers that prevent tourists at tourist destinations from recycling. Methodologically, a survey was carried out with a questionnaire, reaching 371 units through a convenience sampling procedure on the island of Gran Canaria. The measuring instruments consisted of a Likert ‘beliefs’ scale, comprising statements related to a wide range of recycling barriers, as well as both sociodemographic and situational information. Firstly, we performed an exploratory factor analysis on the barriers scale, and several obstacles to recycling were identified, such as a lack of knowledge and familiarity, blaming of the system of collection, assumed incompatibility with a relaxing holiday, erroneous beliefs about environmental usefulness, disregard towards the place being visited and a certain sense of detachment, the non-existence of incentives, and an unwillingness to comply with perceived demands. Secondly, by means of ANOVA tests, we measured the causal relationship between these barriers to recycling and the tourists’ sociodemographic and situational profiles. The practical implications shed light on how to overcome the difficulties that occur for the tourist at the destination with regards to recycling, by considering the tourists’ beliefs and their sociodemographic and situational background.

**Keywords:** tourist recycling behaviour; environmental barriers; sociodemographic; situational

## 1. Introduction

Deepening our understanding of the barriers that affect tourists’ recycling behaviour at a destination is a key topic in need of research, for multiple reasons. Firstly, recycling at home and at holiday destinations are different. Nevertheless, while the former has received quite a lot of attention, further research needs to be done with regards to the latter [1–3]. Secondly, barriers play a role in affecting this environmentally friendly behaviour when one is away from home, insofar as there is a marked change in the situation, lifestyle and perceptions. No doubt, recycling on holiday requires an extra effort and it is more inconvenient [4–8]. Therefore, the ability of the social marketer to overcome the barriers by helping the tourist to come to grips with the new circumstances is crucial. Thirdly, as ecological awareness and climate change concerns are becoming more important for tourists, the destination’s environmental quality must live up to the new tourists’ ecological demands and, in turn, their recycling desires [7,9–13]. Destination sustainability has become a key competitive edge, mainly for mass-tourism destinations [14–18]. Fourthly, with these research gaps in mind, this work raises the issue of recycling at particular destinations, like Gran Canaria, where the predominant type of accommodation is apartment-based and, hence, the need for tourist collaboration is more unavoidable than in hotel-based accommodation. What is more, not only is there a lack of research on the issue of tourist recycling behaviour, but also where the collaboration matters most, and the circumstances show a high degree of vulnerability, that is, mass-tourism, in apartment-based holidays in a small, insular and, thus, fragile oversea European territory.

In this context, this paper aims to gain a further understanding of the barriers affecting tourist recycling behaviour. We agree with Mee and Clewes [19], in acknowledging that most tourists are open to recycling, and the gap between attitudes and behaviour mainly stems from perceived barriers, as well as with their assertion that this topic requires further research.

Besides, this research work explores the sociodemographic profile of destination tourists to overcome the existing contradictory empirical evidence that the recycling literature faces, with regards to how gender [20], age [21] and education [22] affect environmentally friendly behaviours. While there are research works demonstrating the relationship between recycling behaviour and gender [23–25], age [23–25] and education [26], there are also those who do not verify this in the field of tourism [1,7,27]. Similarly, McKenzie-Mohr [28] recommends that researchers pay attention to cultural diversity to enhance recycling. Hence, nationality is a key variable to consider if recycling at tourism destinations matters [10,11]. Furthermore, the situational variables related to location and time are critical in tourism, insofar as tourists, by definition, are those who arrive for a limited period at a sustainable destination [29]. While the most influential variable to incite recycling behaviour is situational, that is, facilities and convenience, it is under-researched, seeing that we need to further understand how barriers exert a negative influence on recycling [30].

What is more, from a practical point of view, the sociodemographic and situational differences of tourists are accredited as the most visible, accessible and manageable characteristics, when one deals with such a volatile population for any destination. The vast majority of people only spend a limited amount of time and, hence, any social marketing plan should focus on profiling these quickly approachable variables, for example, sociodemographic and situational, rather than delving into other types of more time-consuming study object characteristics, for instance, psychographics.

With this research and practical aims in mind, this work is divided into four sections. First, the review of the literature in which the theoretical framework is developed. Second, the methodology, giving an account of the survey and measuring instruments. Third, the analysis of the results, which presents the obtained empirical evidence. Fourth, the conclusions, where we discuss the theoretical and practical outcomes of the paper, by acknowledging limitations and proposing future lines of research.

## 2. Review of the Literature

Schultz [31] defines a barrier as any factor that reduces the probability of the target engaging in a behaviour, for example, structural difficulties to access and costs associated with the campaign. It makes sense that any social marketing programme seeks to decrease barriers and increase the benefits and, hence, the analysis of recycling restraints and constraints becomes crucial.

As far as environmentally-friendly behaviour is concerned, there are two types of barrier. On the one hand, there are subjective restraints, such as perceived behavioural barriers and responsibility. These stem from learning and socialisation processes, and we say barrier when we mean perception, beliefs and motivation. On the other hand, there are objective constraints, such as place of residence, time limitations and infrastructure factors.

Of the two barriers, Tanner [32] demonstrates that perceived behavioural barriers represent the most significant restraint. In this vein, to gain insight into this absence of the recycling response, we can resort to the Ipsative theory to refer to circumstances in which individuals are forced to make up their minds between two desirable options. For example, recycling or desirable reasons for not recycling such as relaxing, saving time and space, and avoiding certain nuisances derived from producing insufficient waste and other miscellanea of minor motives. Some tourists overlook recycling even though they recycle at home, are favourable towards recycling and manifest ecological awareness. Following this, the reason for neglecting to recycle is a low degree of motivation, rather than a particular motive [32]. People do not recycle seeing that it demands an effort, and they choose another battle to fight. What is more, provided that curbside recycling facilities are continuously available in the neighbourhood, it denotes a sort of laziness, a lack of interest and a low degree of commitment to recycling [33]. It does not mean that they do not believe in recycling, it just means that they do not

have enough information, interest and volitive resources to bridge the gap between what they think and what they do [34]. In this case, there is an attitude behaviour gap, undermining the possibility of shaping into action people's beliefs. This inconsistency might be due to several factors. First, the lack of information and skills [35–37]. Second, external locus of control, low level of self-efficacy and weak social support [3–43]. Third, an underdeveloped recycling habit, caused by a weak environmental concern [44]. Fourth, methodological shortcomings related to an incorrect interpretation of the 'no response' and 'bad measures' dimensions [37,45].

Juvan and Dolnicar [46] gained an understanding of why people engage in environmentally-friendly behaviour at home, yet decline to recycle on holiday, by resorting to cognitive dissonance theory, attribution theory, and the value-belief norm theory. To be precise, these authors explain that people want to recycle, but they cannot, and it makes feel them bad and under pressure, due to a heartfelt inconsistency. To avoid these feelings, they develop cognitive schemes, such as underestimating the supposed harm, considering vacation as being exceptional, and taking lightly the actual damage in comparison to the potential response. All of these represent a set of beliefs used to re-establish cognitive consonance and account for a low level of involvement and motivation. As it is easy to fault this personal incoherency and unethical response, people point to how others engage in recycling, argue a lack of time, and express defeatist sentiments. No doubt, it leads to a sort of tragedy of the commons, in which contradictory beliefs and sentiments might attack one's self-efficacy, and even produce feelings of hopelessness [47].

Nevertheless, the problem does not always lay in a mere lack of involvement seeing that reluctance exists. In fact, not wishing to recycle, people make excuses by neglecting their responsibilities, adducing external constraints and even blaming others. Thus, it may be the case that not only might there be a contradiction in beliefs that diminishes the will and causes recycling to be overlooked, but there may also be tourists who are opposed to recycling. Those who oppose recycling are infused with reluctant beliefs and an unfavourable attitude towards contributing. For instance, there could be those who base their stance on a belief that climate change does not exist and therefore show a general mistrust towards the presumed benefits of recycling [48]. Besides, some deny awareness of the environmental consequences related to their inaction and, arguably, they defer responsibility to technological solutions and even argue for the benefits associated with employment and carbonisation [46]. In any case, it is the type of motivation that causes people to reject recycling; there is a particular negative motive to be opposed to contributing and a sort of opinion against performing the desired conduct [49]. Be that as it may, people opposed to recycling are those who adduce more inhibitors, hindrances and barriers [50].

To deepen our understanding of this posture, the classic theory of attitude points out the existence of four dysfunctional arguments [51]. First, there could be the failure of a knowledge function, since recycling could be meaningless and does not provide enough certainty about its presumed sustainable quality, because either there exists a lack of evidence, or logical arguments to uphold its beneficial effects. Second, recycling could be associated with a negative image and its expression of value and purpose could be wrongly communicated. Third, people could decline to recycle, because they believe it hurts their own lives. For example, people could feel exploited and unfairly treated by private companies making money at the expense of those, like themselves, who volunteer their own time and get nothing tangible in return. Four, people could refuse to recycle, due to its inconveniences and nuisances. In this case, the community and the system of the waste collection would be maladaptive, insofar as it might produce discomfort and not meet people's needs [52].

On this basis, and considering that barriers to recycling are subjectively perceived by the tourists to a destination, we put forward hypothesis 1.

**Hypothesis 1 (H1).** *There is a wide variety of subjective restraints and barriers to recycling at the destination.*

Barriers for recycling are personal because, even though this desired conduct is carried out within a household, whether or not the individual collaborates, it is subject to their will and liberty, and

their decision-making processes. Individuals cope with recycling barriers differently depending on their gender, age, education and nationality. The literature on recycling points out that females [37, 53–59], youngsters [53,60–63] and the highly educated [36,53,58–60,64–71] are more likely to recycle. Nevertheless, notwithstanding that sociodemographics matter less because the desired conduct is widely shared in society [72], it might make a difference by recovering its explanatory strength, only when the most favourable profiles can develop the desired response in such an adverse circumstance as being abroad on holiday [23–26].

The literature on recycling asserts different theoretical explanations related to why sociodemographics influence recycling. Concerning gender, McStay and Dunlap [73] claim that women are more prone to recycling and any other environmentally friendly responses due to cultural factors. To be specific, the male stereotype is one that is seen as being closer to instrumental values and the exploitation of resources, while women are more related to nature and care. Moreover, women tend to play a more significant role in the household in which recycling is performed.

Regarding age, one might argue that when the ecological paradigm was born in the seventies and during its early development in eighties, youngsters looked to be more inclined towards recycling than older people [62,74,75]. Nevertheless, once recycling became a widely shared value in society and no longer a novelty, it started to be performed predominantly by older people, owing to the natural process of ageing of those who used to be young and now have become more mature. Likewise, it seems that recycling is suitable for fully responsible and integrated citizens, as older people tend to be [59]. Finally, Dietz et al. [71] adduce that the elderly got used to being frugal and following the more simplistic lifestyle that recycling implies.

To find ground about the relationship between education and recycling, we might resort to a couple of arguments. First, the existing positive correlation between education and income and, in turn, the better facilities for recycling associated with holiday accommodation when tourists belong to a higher class. Second, the richer cognitive resources in terms of information about how, where and what to recycle when one shows a higher level of education. In this sense, we assume that highly educated tourists are more inclined to immediate environmental responses than those who are lowly educated and less knowledgeable.

What is more, nationality might play a role in explaining recycling at the destination. The reasons for not recycling are diverse and vary in function of the kind of system. Tourists come from different countries and in their respective countries, the recycling collection system is dissimilar [34]. From a kerbside scheme to a wide range of sites reached on foot, by car or located at supermarkets, tourists show quite a diverse background of experiences that condition how familiar they are with the recycling collection systems that they find at the destination. In this sense, it seems that northern European citizens are more prone to recycling [76], since environmental concern and recycling rates are higher in these countries.

In addition to arguing mobility from the accustomed recovery system, another explanation for the recycling barriers on holiday might refer to a sort of alienation. In other words, recycling at home but not at a destination generates an asymmetry that the ‘tragedy of the commons’ might give account for. This theory refers to communities in which people do not care about shared resources and express a sense of lack of belonging. In this context, there is a tendency to feel a lack of accountability because it is hard to see a tangible benefit related to the advocated environmental action and, in turn, this leads to being convinced that inaction does not cause damage. When this irresponsibility is questioned, it gives rise to quite paradoxical beliefs, such as that others do not do their part or that others will solve the problem. What is more, the tragedy of the commons instigates a sort of free-riding effect, whose consequences are to diminish one’s contribution, because individuals can feel as though they are obtaining less than they are giving. Therefore, doing nothing turns out to be beneficial, since one gains without contributing, and this passive response maximises one’s utility [47].

Finally, nationality might exert a significant influence through social norms, since not only is what others are doing important, but what they consider acceptable is also important (Cialdini et al.,

1990). Moreover, the principles of imitation [77] and reciprocity [78] are always underlying collective responses with regards to recycling [79].

Therefore, it is evident that there are personal restraints derived from the tourist's sociodemographic profile that might explain the probability of adopting the recycling behaviour at the destination. On this basis, we put forward hypotheses 2 as follows:

**Hypothesis 2 (H2).** *The recycling barriers are different depending on the tourist's sociodemographic profile.*

**Hypothesis 2a (H2a).** *The recycling barriers are different depending on the tourist's gender.*

**Hypothesis 2b (H2b).** *The recycling barriers are different depending on the tourist's age.*

**Hypothesis 2c (H2c).** *The recycling barriers are different depending on the tourist's education.*

**Hypothesis 2d (H2d).** *The recycling barriers are different depending on the tourist's nationality.*

In psychology, situationism emphasizes the existence of external variables that determine more the conduct than personality traits [30]. For this reason, a key line of research in environmental psychology focuses on analysing the gap between ecological values and environmental action, by ascribing to external factors the inexistence of realisation [33]. Therefore, the situational variables are highly relevant to understanding the barriers to recycling [80–82]. Of the barriers to recycling, the most significant is convenience [83], in which there are multiple facets [69,84,85].

First, the distance to the recycling kerb site plays a role in inhibiting the desired conduct. No doubt, the perception of convenience is chiefly determined by the distance to where people recycle and represents the most important factor to discourage recycling [22,65,86–88]. It stands to reason that distance and the number of recycling kerb sites are strongly associated [36,89]. Miafodzyeva and Brandt [90], after carrying out a meta-analysis, point out that lack of convenience is the most influential inhibitor to recycling. The cost of participation soars, especially when the distance to the recycling facility is not adequate.

Second, the availability of domestic space turns out to be relevant insofar as the recycling bin might affect the kitchen and the utility room. Robinson and Read [34] and Oskamp et al. [40] point out that space constraint is a key barrier. Similarly, Berger [91] demonstrates that recycling is more likely in spacious detached houses than in cramped apartments. Likewise, Miafodzyeva and Brandt [90] stress that space constraints are more of a determining factor if there are multiple types of materials and the storage conditions are short of space. Furthermore, the lack of private and public space availability plays a role in inhibiting the desired conduct [92]. For this reason, recycling is more likely in uni-family houses than in little flats [40,89,91,93], and in big rooms than in small [94].

Third, the service quality of the recycling recovery systems might influence how convenient recycling is. Vining and Ebreo [84], Oskamp et al. [40] and Dahle and Neumayer [92] point out that recyclers and non-recyclers differ in the degree of relevance the latter ascribes to the absence of facilities and convenience. The reasons for not recycling are always related to poor service [34] and the lack of facilities [95].

On the one hand, people tend to attribute all the responsibility to others, mostly by blaming the authorities for their negligence [46]. On the other hand, the lack of facilities weakens the relationship between intention and self-efficacy and strengthens the importance of social norms that give rise to environmentally friendly conduct [96]. Similarly, another situational dimension is the frequency of selective recovery [22] and the moment the rubbish is gathered, since if it takes place when the recycling practice is visible, people can learn how and where they can recycle [88]. Finally, the better the conditions of the recycling points, the higher the probability of encouraging recycling [36,97,98].

It is worth saying that urban neighbourhoods recycle more than rural [60,69,91,99], due to the fact cities offer more facilities (Berger, 1997) and give more exposure to environmental problems [62]. The recycling campaigns carried out in cities are more successful than those in the countryside [100].

In summary, while the most significant determining factors in recycling are attitudinal, the most important barriers are situational—that is, distance and lack of time, insufficient space, and complications stemming from the programme, for example, an underdeveloped kerbside scheme [101]. Therefore, we put forward hypotheses 3 as follows:

**Hypothesis 3 (H3).** *The recycling barriers are different depending on the tourist's accommodation situation.*

**Hypothesis 3a (H3a).** *The recycling barriers are different depending on the tourist's accommodation category.*

**Hypothesis 3b (H3b).** *The recycling barriers are different depending on the tourist's accommodation location.*

**Hypothesis 3c (H3c).** *The recycling barriers are different depending on the tourist's accommodation brand type.*

Similarly, time as a barrier to recycling is also multidimensional. First, the most frequent excuse for neglecting to recycle is being too busy [83]. The reasons for not recycling are always related to lack of time [34]. Therefore, some have not thought of recycling, insofar as no time is mentioned as the main obstacle to recycling [102]. For this reason, Nixon and Saphores [33] acknowledge removing the barriers related to how time-consuming it is to recycle as a priority. In this sense, in addition to distance, space and convenience, time is the main deterrent to recycling [103]. Equally, Timlett and Williams [104] demonstrated that a transient population is less likely to recycle than a settled population, due to specific situational obstacles related to convenience, time and information. As a consequence, they adduce how busy they are, they uphold their right to have a break, and promise to offset the minimal output when they come back home [46]. Therefore, barriers to recycling are shaped by time availability [93].

From a theoretical perspective, it may be the case that when tourists arrive at a destination for the first time, they are in the contemplation stage: believing in recycling, but not necessarily being prepared to take action. Similarly, when tourists have been at a destination previously, they must logically have overcome the preliminary stages and might be placed somewhere in between the action and maintenance stages, depending on their experience and destination loyalty. Therefore, the Transtheoretical model of Prochaska and Marcus [105] might be used to explain how tourists adopt the desired conduct at a destination and move forward, since they acquire familiarity and overcome difficulties.

The second time dimension is the short length logic of holidays and, hence, the difficulty associated with a period whose fleeting nature can neither cause a habit to form, nor gain the subject a great deal of experience. According to Crosby et al. [44], people recycle by following a habit loosely based on ecological concern. In this vein, Pieters [106] and Pieters et al. [79] point out that any environmentally-friendly conduct is performed because people acquire the necessary knowledge and skills from which the habit stems, once they become accustomed to doing it. In this vein, the lack of knowledge and the absence of experience impede recycling [103]. Hence, the absence of experience is a significant inhibitor to recycling [101].

From a theoretical point of view, the discrepancy between home and holiday might come down to a mere temporal circumstance, whose difference might be overcome once the tourist finds their feet at the destination. Going by Kollmuss and Agyeman [107], the provisional gaps between attitude and behaviour are due to practical barriers, such as lack of time and information. Recycling is more behavioural than knowledge-based, since it is a simple task and only requires learning by doing. For this reason, while recycling might be explained by the models of responsible environmental behaviour and prosocial behaviour, non-recycling responses should be regarded as a practicality barrier. Without any doubt, many factors are competing in the daily decision-making process when one has just arrived,

irrespective of one's constellation of environmental knowledge, values and attitudes. There are still those who state that recycling has not crossed their minds [102]. Therefore, it is not a responsibility that matters most, but rather other priorities in a system that is too complex.

Third, the absence of any sense of community and thus the ineffectiveness of the social influence and the collectivist spirit in the neighbourhood might shed light on why there is a low level of recycling at the destination. In this sense, it is worth noting that the sense of community correlates positively with recycling [90] and it stands to reason that, at a tourist destination, every so often there is not enough time to build it.

For a theoretical approach, the sense of community plays a role in bringing about recycling by considering self-utility. For example, McCarty and Shrum [95] claim that, while most environmentally friendly behaviours may not seem rewarding in the short term, they gain benefit in the long term. Thøgersen [108] explains that the consumer appraisals about recycling are processed from a subjective utility perspective, by considering how to maximise value for their household. Therefore, the sense of neighbourhood matters if people are future-oriented [95], and thus neighbourhood sustainability affects one own life and wellness.

On this basis, we acknowledge that the importance of time is multifold and put forward hypotheses 4 as follows:

**Hypothesis 4 (H4).** *The recycling barriers are different depending on the tourist's time situation.*

**Hypothesis 4a (H4a).** *The recycling barriers are different depending on the visit frequency.*

**Hypothesis 4b (H4b).** *The recycling barriers are different depending on the duration of stay.*

### 3. Materials and Methods

A survey was conducted with a structured questionnaire following a non-probabilistic sampling procedure. To be specific, we followed a snowball method by meeting tourists that were spending their holiday in apartments during May 2019. The survey took place in the south of Gran Canaria. This more urban than rural destination attracted 4.19 million tourists, with an average trip length of 9 days and average spending of 1174 euros per tourist and per trip in 2019 [109–111]. During the last decade, the number of tourists in the year-round destination has increased by 44.50 %. 85.01 % of tourists in 2019 were international tourists, with a majority of tourists residing in Germany (20.36%), United Kingdom (18.13%), and Nordic countries (22.46%) [109]. In 2019, apartments were the prevailing type of accommodation at the destination. It is worth noting that 6491 apartments had a capacity of 97,375 bed spaces, while 208 hotels on the island were able to accommodate 63,795 tourists per day [110]. The most important factors determining the choice of destination are climate, safety, sea, tranquility, and beaches [112]. The most favourable activities of tourists in Gran Canaria include beaches, walks, wanders, swimming pools, facilities of hotels, exploration of the island on their own, and tasting local gastronomy [112]. Gran Canaria is a mature destination with an advanced system of waste collection, loosely based on kerbside bins, in which people are supposed to volunteer their recycling. Participation in the survey was voluntary. We ensured the anonymity of the research participants, as well. The survey takers were 100 students of the market research course, most of whom received exhaustive instructions about how to effectively administer the questionnaire. Not only did these students work in teams so that the burden was relatively small, but this interactive atmosphere also guaranteed social control.

The measuring instruments consisted of 35 items with a seven-point Likert 'beliefs' scale, comprising statements related to a wide range of recycling barriers, inhibitions, hindrances and reluctances, as well as both sociodemographic and situational information. While the barriers scale was inspired by a wide range of research works [47,90,107,113,114], the sociodemographic and situational scales followed an undetermined source.

The final sample reached 371 sampling units. Out of 371 responses, 308 were valid. Therefore, the subsequent analysis included only these cases. Of 308 survey respondents, a total of 152 participants were male (49.4%) and 156 participants were female (50.6%). When asked about education, 41.23% indicated graduate education, and 38.64% reported secondary education. The most substantial proportion of respondents were Spanish (47.79%), followed by British (15.58%), Germans (12.34%) and Italians (5.19%). A full description of the sample can be seen in Table 1.

**Table 1.** The description of the sample.

<b>Gender</b>	<b>F</b>	<b>%</b>	<b>Age</b>	<b>F</b>	<b>%</b>	<b>Education</b>	<b>F</b>	<b>%</b>
Male	152	49.4	18–24	52	16.9	None	3	1.0
Female	156	50.6	25–34	74	24.0	Primary	25	8.1
			35–49	92	29.9	Secondary	119	38.6
			50–64	76	24.7	Graduate	127	41.2
			>65	14	4.5	Postgraduate	23	7.5
						No answer	11	3.6
<b>Place of residence</b>	<b>F</b>	<b>%</b>	<b>Place of residence</b>	<b>F</b>	<b>%</b>	<b>Place of residence</b>	<b>F</b>	<b>%</b>
Spanish from GC	36	11.7	Norwegian	14	4.5	Italian	16	5.2
Spanish	111	36.0	Finish	3	1.0	French	8	2.6
German	38	12.3	Danish	2	0.6	Polish	9	2.9
British	48	15.6	Dutch	5	1.6	Other	8	2.6
Swedish	6	1.9	Belgium	4	1.3			
<b>Visits</b>	<b>F</b>	<b>%</b>	<b>Length of stay</b>	<b>F</b>	<b>%</b>	<b>Category</b>	<b>F</b>	<b>%</b>
Once	83	26.9	Less than a week	65	21.1	1	22	7.1
Twice	86	27.9	One week	141	45.8	2	91	29.5
Three times	69	22.4	Two weeks	64	20.8	3	148	48.1
Four times	24	7.8	Three weeks	15	4.9	4	26	8.4
Five times	46	14.9	More than three weeks	23	7.5	5	307	99.7
						No answer	21	6.8
<b>Location</b>	<b>F</b>	<b>%</b>	<b>Brand</b>	<b>F</b>	<b>%</b>			
Beach	253	82.1	Independent	234	76.0			
Urban	30	9.7	Chain	74	24.0			
Rural	14	4.5						
Airport	1	0.3						
Others	10	3.2						

IBM SPSS Statistics 20 software was used for the data analysis. Once the database was built, statistical tests were performed to maximise the quality control of the information gathered.

#### 4. Results

To test the first hypothesis, an exploratory factor analysis was carried out. The reliability of the barriers scale was tested through an Alpha Cronbach test. As shown in Table 2, the exploratory factor analysis with Varimax rotation identified five different components and explained over 60% of the variance. The first factor is labelled as “demands of relaxing and rest as excuses for not recycling” since not only does it refer to the motives of being on holiday and having a break, but it also expresses mistrust and disbelief about recycling (F1). The second factor is named “reluctances and oppositions”, because there are climate change denials and some assertions about the futility of recycling. For example, according to some tourists, climate change does not exist and recycling is not as environmentally friendly as it is assumed (F2). The third factor is called “lack of information about how to do it” and refers to those who claimed a lack of information or felt misguided (F3). The fourth factor is termed “extrinsically driven”, insofar as it gathers a set of demands related to those who argue that they do not have enough rewards and do not receive anything in return for recycling (F4). The fifth factor is designated “inconvenience and nuisance”, given that the distance between the apartment and the kerbside system, as well as not having enough space, are indicated as the hindrances to recycling (F5).



On this basis, as five distinctive kinds of inhibitors to recycling have been identified, Hypothesis 1 is confirmed.

**Table 2.** Exploratory factor analysis on motivational barriers to recycling.

Rotated Component Matrix						
Communality	Items	Components				
		1	2	3	4	5
0.780	I am on holiday here and thinking about recycling makes me feel unrelaxed	<b>0.833</b>	0.149	0.190	0.131	0.100
0.770	Recycling interferes with the lifestyle of my holiday	<b>0.801</b>	0.288	0.161	0.092	0.105
0.725	I am not on duty here	<b>0.793</b>	0.202	0.144	0.154	0.107
0.683	Recycling here makes me feel stressed	<b>0.768</b>	0.176	0.131	0.191	0.093
0.721	Please, give me a break from being too strict on my recycling behaviours	<b>0.762</b>	0.255	0.199	0.149	0.114
0.745	I do not like recycling	<b>0.739</b>	0.387	0.176	0.118	0.066
0.494	I do not have any support from those who share the apartment	<b>0.670</b>	0.067	0.046	0.151	0.126
0.576	As nobody controls me here, I do not recycle	<b>0.669</b>	0.325	0.127	0.082	0.021
0.599	It is because recycling is messy and dirty that I do not recycle	<b>0.640</b>	0.398	0.069	0.126	0.099
0.564	I do not believe in recycling	<b>0.555</b>	0.426	0.134	0.224	0.074
0.697	Climate Change does not exist	0.254	<b>0.786</b>	0.072	0.080	0.047
0.646	Recycling might damage the environment	0.166	<b>0.779</b>	0.066	0.085	−0.026
0.663	Recycling is not environmentally friendly	0.362	<b>0.714</b>	0.132	0.072	0.024
0.684	I do not recycle given that it does not make any difference to environmental protection	0.466	<b>0.652</b>	0.063	0.186	0.057
0.704	Recycling does not make any sense to me	0.507	<b>0.648</b>	0.068	0.149	0.023
0.563	I do not recycle because I am a foreigner and hence I do not belong to Gran Canaria	0.465	<b>0.570</b>	0.122	−0.019	0.081
0.774	I need more information to recycle here	0.046	−0.059	<b>0.858</b>	0.161	0.073
0.738	I have no idea about what material I can recycle here	0.169	0.073	<b>0.825</b>	0.079	0.129
0.697	I have no information about it	0.130	0.113	<b>0.780</b>	0.023	0.242
0.687	I do not know how to do it here	0.155	0.130	<b>0.764</b>	0.111	0.225
0.423	I do not understand the colours associated with the recycling bins	0.219	0.156	<b>0.585</b>	−0.028	0.093
0.718	Recycling companies should pay people to recycle	0.182	0.202	0.097	<b>0.795</b>	0.050
0.553	There is not any monetary incentive to recycle	0.123	−0.114	0.061	<b>0.702</b>	0.167
0.603	Recycling companies take advantage of people	0.315	0.259	0.031	<b>0.659</b>	0.035
0.524	This task should be performed by the authorities rather by the citizens	0.289	0.306	0.333	<b>0.485</b>	0.033
0.689	The Green points are far away from my apartment	0.222	−0.102	0.101	−0.056	<b>0.785</b>
0.625	I do not have any facility at my accommodation to perform it	0.071	−0.073	0.274	0.045	<b>0.733</b>
0.519	The recycling system here is inconvenient	0.014	0.254	0.119	0.154	<b>0.646</b>
0.431	I do not have enough space at my apartment to recycle	0.173	0.082	0.272	0.232	<b>0.517</b>

KMO: 0.932; Bartlett: 5409.689, df:406, sig:0.000; Explained variance:64.122%

In order to contrast the second hypotheses, a student test and several ANOVA tests were carried out. As shown in Table 3, recycling barriers are different depending on the tourist's sociodemographic profile. To be specific, the mean difference test on barriers indicated that gender has a significant influence on the first and second factors. In this sense, it is clear that the motives of "demands to relax and rest as excuses for not recycling" and "reluctances and oppositions" lead male tourists to avoid recycling. Therefore, Hypothesis 2a is verified.

Conversely, the ANOVA Test demonstrates that the relationship between age and recycling does not exist at the tourist destination. Therefore, hypothesis 2b, which states that the recycling barriers are different depending on the tourists' age, is rejected.

An ANOVA Test considering education levels was performed. As reported in Table 4, there exists a relationship between this sociodemographic variable and the first and third factors. Consequently, this empirical evidence shows that the reason labelled "demands of relaxing and rest as excuses for not recycling" is not argued by tourists without formal education and with graduate-level, but is

argued by those who hold primary, secondary and postgraduate education. What is more, if post-hoc results are examined, one can state that there is a glaring difference between those with graduate and primary education. Similarly, a “lack of information about how to do it” is mainly perceived by tourists with primary and secondary education, rather than those with none or with a university education. Moreover, the post-hoc analysis points out that there is a significant difference between those who hold primary and postgraduate education. Consequently, Hypothesis 2c is confirmed, insofar as the recycling barriers are different depending on the tourist’s level of education.

**Table 3.** Mean difference test on barriers by distinguishing gender groups.

Descriptives					
	Sex	N	Mean	Standard Deviation	Standard Error Mean
F1	Male	152	0.135	1.0744	0.087
	Female	156	−0.132	0.9059	0.073
F2	Male	152	0.110	1.0904	0.088
	Female	156	−0.107	0.8940	0.072
Levene’s Test for Equality of Variances					
		F	Sig.	t	df
F1	Equal variances	9.455	0.002	2.360	306
	Not Equal			2.355	294.829
F2	Equal variances	6.162	0.014	1.905	306
	Not Equal			1.901	291.683

**Table 4.** ANOVA analysis of barriers by distinguishing education groups.

		N	Mean	Standard Deviation	Standard Error	
F1	Non Response	11	−0.668	0.7465	0.225	
	None	3	−0.141	0.3863	0.223	
	Primary	25	0.459	1.1252	0.225	
	Secondary	119	0.131	1.0468	0.096	
	Graduate	127	−0.166	0.9242	0.082	
	Postgraduate	23	0.081	0.9025	0.188	
	Total	308	0.000	1.0000	0.057	
F3	Non Response	11	0.357	1.2439	0.375	
	None	3	−0.265	0.9453	0.546	
	Primary	25	0.446	1.1099	0.222	
	Secondary	119	0.045	0.9656	0.089	
	Graduate	127	−0.083	1.0037	0.089	
	Postgraduate	23	−0.396	0.7361	0.153	
	Total	308	0.000	1.0000	0.057	
	Postgraduate	23	0.206	0.8700	0.181	
	Total	308	0.000	1.0000	0.0570	
ANOVA						
		Sum of Squares	df	Mean Square	F	Sig.
F1	Between Groups	15.902	5	3.180	3.299	0.006
	Within Groups	291.098	302	0.964		
	Total	307.000	307			
F3	Between Groups	11.306	5	2.261	2.309	0.044
	Within Groups	295.694	302	0.979		
	Total	307.000	307			
POSTHOC						
	Tukey HSD	I	J	M. Difference	SD	Sig.
F1		Primary	Graduate	0.624	0.214	0.045
F3		Primary	Postgraduate	0.841	0.285	0.040

The proposed impact of nationality on recycling barriers was tested. The respondents were split into 14 groups according to their nationality. As can be seen in Table 5, the ANOVA Test confirms that the recycling barriers are different depending on the tourist’s nationality and, hence, Hypothesis 2d is accepted. To be precise, the first two barriers, namely, “demands of relaxing and rest as excuses for

not recycling” and “reluctances and oppositions” are refuted by Spaniards from Gran Canaria and German tourists, as well as Scandinavian tourists, but contended by the rest of nationalities, including mainland Spanish. Be that as it may, examining the post-hoc results one can state that the most glaring difference exists between those who live in France and Belgium and the main other nationalities.

**Table 5.** ANOVA analysis of barriers by distinguishing nationality groups.

	Place of Residence	N	Mean	Standard Deviation	Standard Error	
F1	Spanish from Gran Canaria	36	−0.435	0.6785	0.113	
	Spanish	111	0.029	1.0107	0.096	
	German	38	−0.422	0.6980	0.113	
	British	48	0.143	0.9092	0.131	
	Swedish	6	0.216	1.2612	0.515	
	Norwegian	14	−0.017	1.1086	0.296	
	Finish	3	−0.231	0.6942	0.401	
	Danish	2	−1.225	0.4731	0.335	
	Dutch	5	0.145	0.7021	0.314	
	Belgium	4	0.718	1.3195	0.660	
	Italian	16	0.347	1.0853	0.271	
	French	8	1.414	1.4345	0.507	
	Polish	9	0.225	1.0754	0.358	
	Other	8	0.149	1.1451	0.405	
	Total	308	0.000	1.0000	0.057	
	F2	Spanish from Gran Canaria	36	−0.141	0.8614	0.144
Spanish		111	−0.100	0.8431	0.080	
German		38	0.113	0.9174	0.149	
British		48	0.039	1.1979	0.173	
Swedish		6	−0.465	0.9745	0.398	
Norwegian		14	0.105	1.0115	0.270	
Finish		3	0.155	0.2924	0.169	
Danish		2	−0.199	0.1374	0.097	
Dutch		5	0.098	0.8588	0.384	
Belgium		4	1.568	1.2799	0.640	
Italian		16	−0.020	0.8731	0.218	
French		8	−0.476	1.4756	0.522	
Polish		9	0.999	1.6734	0.558	
Other		8	−0.050	0.7909	0.280	
Total		308	0.000	1.0000	0.057	
<b>ANOVA</b>						
	<b>Sum of Squares</b>	<b>df</b>	<b>Mean Square</b>	<b>F</b>	<b>Sig.</b>	
F1	Between Groups	38.831	13	2.987	3.275	
	Within Groups	268.169	294	0.912		
	Total	307.000	307			
F2	Between Groups	24.685	13	1.899	1.977	
	Within Groups	282.315	294	0.960	0.022	
	Total	307.000	307			
<b>POST-HOC</b>						
F1	Tukey HSD	<b>I</b>	<b>J</b>	<b>M. Difference</b>	<b>Sd</b>	<b>Sig</b>
		GC	France	−1.849	0.373	0.000
		Spain	France	−1.385	0.349	0.007
		German	France	−1.386	0.371	0.000
		British	France	−1.271	0.364	0.036
		Norwegian	France	−1.431	0.423	0.050
		Danish	France	−2.639	0.755	0.035
F2	Tukey HSD	Spain	Belgium	−1.677	0.498	0.056
		Belgium	France	2.044	0.600	0.046

Following the results obtained from the ANOVA, it can be said that the barriers differ depending on the apartment category (Table 6). If the apartment has one, two or four keys, tourists claim a lack of information, while if it holds three, they do not. Consequently, we can accept hypothesis3a and state that the recycling barriers are different depending on the tourist’s accommodation category. Nevertheless, the post-hoc analysis does not prove any significant difference at the group levels.

**Table 6.** ANOVA analysis on barriers by distinguishing apartment category.

		N	Mean	Standard Deviation	Standard Error	
F3	I do not know	20	−0.395	1.0108	0.226	
	1 key	22	0.220	1.0465	0.223	
	2 keys	91	0.152	1.0971	0.115	
	3 keys	148	−0.129	0.9145	0.075	
	4 keys	26	0.289	0.9276	0.182	
	Total	307	−0.003	1.0002	0.057	
<b>ANOVA</b>						
		<b>Sum of Squares</b>	<b>df</b>	<b>Mean Square</b>	<b>F</b>	<b>Sig.</b>
F3	Between Groups	10.925	4	2.731	2.794	0.026
	Within Groups	295.205	302	0.977		
	Total	306.130	306			

In contrast, as the ANOVA test does not show statistically significant differences in terms of the apartment location, we reject Hypothesis 3b and state that the recycling barriers are not different depending on the tourist's accommodation location.

Similarly, Hypothesis 3c is rejected, because the recycling barriers are not different depending on the tourists' accommodation brand type.

In addition, an ANOVA analysis was established to test whether the frequency of visits matters and the obtained results lead us to state that there are two types of barriers, namely, "demands of relaxing and rest as excuses for not recycling" and "reluctances and oppositions" with statistically significant differences (Table 7). To be precise, when tourists come twice and four times, they are prone to arguing the former and when they come once, twice and four times, they are likely to claim the latter. On this basis, Hypothesis 4a is verified. To confirm this, the post-hoc analysis indicates significant differences between those who visit once and five times of more, with regards to the first factor, that is, "demands of relaxing and rest as excuses for not recycling".

**Table 7.** ANOVA analysis on barriers by considering the frequency of visits.

		Frequency	N	Mean	Standard Deviation	Standard Error
F1		Once	83	0.222	1.0190	0.112
		Twice	86	0.054	0.9599	0.104
		Three times	69	−0.133	1.0030	0.121
		Four times	24	0.195	1.0457	0.213
		Five times	46	−0.405	0.8938	0.132
		Total	308	0.000	1.0000	0.057
F2		Once	83	−0.188	0.9756	0.107
		Twice	86	0.159	1.1097	0.120
		Three times	69	0.138	1.0234	0.123
		Four times	24	−0.341	0.7657	0.156
		Five times	46	0.013	0.8210	0.121
		Total	308	0.000	1.0000	0.057
<b>ANOVA</b>						
		<b>Sum of Squares</b>	<b>df</b>	<b>Mean Square</b>	<b>F</b>	<b>Sig.</b>
F1	Between Groups	14.027	4	3.507	3.627	0.007
	Within Groups	292.973	303	0.967		
	Total	307.000	307			
F2	Between Groups	9.234	4	2.309	2.349	0.054
	Within Groups	297.766	303	0.983		
	Total	307.000	307			
<b>POSTHOC</b>						
F1	<b>Tukey HSD</b>	<b>I</b>	<b>J</b>	<b>M Difference</b>	<b>SD</b>	<b>Sig.</b>
		Once	Five times	0.627	0.180	0.005

In contrast, in the absence of evidence to the contrary, the length of the stay is not associated with any particular barrier and, therefore, Hypothesis 4b is rejected, by stating that the recycling barriers are not different depending on the duration of stay.

## 5. Discussion

The results of the present research confirmed that there is a broad range of barriers to recycling at the destination. On the one hand, subjective restraints stemming from a low level of motivation that might be explained by placing the tourists in a dilemma between two favourable choices—that is, recycling or having a relaxed holiday. In addition to this Ipsative sentiment, tourists might neglect recycling when there is a lack of information about how to do it and, in this case, they might suffer from cognitive dissonance [46]. Moreover, tourists might feel unmotivated by perceiving a lack of reward for making the effort. Therefore, some are extrinsically motivated [50]. Finally, perceived inconvenience and nuisances derived from the distance and time-consuming nature of recycling may discourage the desirable conduct. Following the literature, those subjects exhibit a low level of motivation, and this is the reason they demand some form of compensation [92]. On the other hand, some do not recycle because they are reluctant, or even opposed; they believe in neither climate change, nor the presumed benefits associated with recycling and, hence, they reject recycling without regret. In rejecting recycling, paraphrasing the Katz's theory of attitudes, there might be the failure to acquire knowledge and harness the benefits of taking part in the common effort, along with an attempt to self-protect against a feeling of exploitation and, all in all, some dysfunctional arguments [49,115]. In summary, this evidence is consistent with the literature on recycling, in that the inhibitors to recycling are always diverse and subjective by nature [30,89,93,96].

What is more, this diversity is also personal and, in turn, greater, insofar as all the hindrances and deterrents depend on the tourist's sociodemographic profile in terms of gender, education and nationality. It is worth noting that age does not show any significant relationship with recycling and the connection between education and recycling is not linear. However, women, locals, and German and Scandinavian tourists are prone to making an effort for recycling's sake at the destination. These findings might imply that being on holiday challenges the probability of recycling and only the most likely sociodemographic profiles show a significant resilience against the adverse circumstances that represent the maintenance of recycling away from home. The literature on recycling points out that those who perceive more barriers to recycling are also more demanding about external compensations, as well as being more sensitive about any potential deterrent [92,115].

Finally, of the situational factors affecting the variety of recycling barriers at the destination, the most important is the apartment category and the frequency of visits, in that the lower the former and the higher the latter, the stronger the barrier is perceived by the tourist. In this respect, it stands to reason that familiarity with the destination, insofar as it might enhance the sense of community and lead to the acquisition of the practical knowledge needed to recycle [90,107], as well as the much better conditions of the mid-class neighbourhood [89], might explain the greater success of recycling initiatives and how tourists overcome the tragedy of the commons [47]. These important findings are in line with the previous research works in the extant recycling behaviour literature, which points out the critical role of space and time situations as barriers [34].

## 6. Conclusions

Encouraging tourists to recycle is arguably as important a task as encouraging people to recycle at home. Nevertheless, researchers have paid little attention to the former topic when the much greater extent of literature stemming from the latter is considered. For this reason, this study has raised important issues regarding the barriers to recycling at destination in Maspalomas, Gran Canaria. Most significantly, the research has questioned the excuses and barriers to recycling and how they differ between specific groups that differ in sociodemographic and situational characteristics. The survey concluded that the main obstacles to recycling fall into five categories: demands of relaxing (1), reluctances and oppositions (2), lack of information (3), lack of external benefits (4), inconvenience and nuisance (5). The findings indicate that gender, education, nationality, apartment category and frequency of visits play a significant role in recycling intentions. The results of this research have

contributed to a more comprehensive understanding of what should be considered to achieve a greater rate of recycling among tourists; to make recycling a tourist's personal lifestyle choice.

Nevertheless, of the five barriers, the most relevant are “relaxation”, “reluctance” and “lack of information”. Therefore, in order to ensure that there is a sufficient level of information about recycling at tourist destinations, it is advisable for the institutions that are responsible for the control of recycling to create a mobile application, pinpointing the benefits of recycling and providing useful tips on how to do it at a specific tourist destination. A negotiable alternative would be the accession to the scope of WasteApp, which already functions in 11 European cities [116,117]. Providing information about recycling to current and potential tourists through a convenient channel can be a meaningful solution for the increase of concern for recycling.

In addition, our results revealed that gender is a significant factor in explaining recycling behaviour at a tourist destination. Male tourists were found to refrain from recycling, due to “demands of relaxing” and “rest as excuses for not recycling”, and “reluctances and oppositions”. Therefore, tourism researchers and practitioners need to recognise the crucial role of gender in understanding the barriers to recycling at a tourist destination. In order to stimulate male tourists into exhibiting a pro-recycling behaviour, it is essential to pose recycling as an ease task fully compatible with relaxation, as well as implement special social marketing techniques suitable for reluctant target audiences, for example, the foot in the door, the face in the door and even the retirement of positive reinforcements. Similarly, it seems logical to provide the lower educated with more information about how to recycle, insofar as this represents the key inhibitor for this group.

Likewise, as locals, Germans and Scandinavians show a strong drive to recycle; one might suggest that social marketers think of recruiting them as volunteers and block leaders to set an example, and thus encourage the other national groups to contribute. Needless to say, there is no point in arguing that recycling at the destination is only a top-down concern for the tourist's sake since the tourists strongly demand sustainable destinations.

Equally, while tourists argue a certain lack of information when their loyalty to the destination is low, they adduce a demand to relax and an expression of reluctance if their apartment category is either low or high but not mid-level. On this basis, the authorities should be aware that more effort is needed to facilitate recycling behaviour for less loyal tourists and those who spend their holidays in premium and low rate apartments.

In summary, the results of the research confirmed that there exist differences in recycling barriers depending on the sociodemographic and situational background of tourists. Given that the kerbside system is fully developed and well equipped in Gran Canaria, all the tourists' arguments are grounded in their beliefs and perceptions.

Finally, let us acknowledge the existence of a few limitations. First of all, this research was conducted among tourists in Maspalomas, Gran Canaria. Therefore, the sample does not perfectly represent all tourists to Gran Canaria, Canary Islands, or Spain as a whole. It means that there exists a concern related to the generalisation of the results. Therefore, future research should cover samples from more destinations. Secondly, despite there being a high level of homogeneity in terms of the recycling recovery infrastructure at this destination, there must be a wide range of different circumstances affecting how easy it is to recycle for those who form the target audience. Therefore, we are far from a quasi-experiment setting in which the researcher can be aware of the external variables that potentially might be causing some biases in the questionnaire respondents. Thirdly, preliminary analyses consisting of normal tests; let us assume that the ANOVA groups do not follow a normal distribution, not even show a similar number of cases, and hence the obtained results are more representative of this particular destination than if they were potentially extrapolated to other places.

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