
Smart Island and Sustainable Tourist Development with the Example of Madeira. Part 2: Analysis of Expectations of Local Community and Tourists

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Abstract:

Purpose: The main objective of the analysis was to investigate the attitudes of the local community towards tourists and tourism in Madeira, and their opinions on sustainability, smart city concept and the impact of tourism on the island. The survey also explored the expectations of both groups towards further development of tourism on the island and sought suggestions for solutions and opportunities for sustainable tourism development.

Design/Methodology/Approach: The research presented in this paper was conducted in April 2021. It was addressed to both permanent residents of Madeira and tourists visiting the island. A total of 391 people participated in the survey (diagnostic survey, questionnaire). Based on the collected opinions, the preferences observed in the surveyed groups were analyzed and an extensive list of recommendations was proposed. These recommendations have broad implementation potential, both in relation to Madeira and other tourist locations with similar social, economic, and environmental conditions.

Findings: The catalogue of problem areas is very extensive and includes phenomena of various character and intensity. The concept of sustainable tourism, which is the key reference point for the presented research, can be perceived as a certain ideal, being a source of inspiration and a tool for searching for optimal (taking into consideration interests of various groups) development paths for a given area.

Practical implications: Based on the collected data, the preferences observed among the respondents were analyzed and an extensive list of recommendations was proposed. These recommendations have broad implementation potential, both in relation to Madeira and other tourist locations with similar social, economic, and environmental conditions.

Keywords: Tourism, sustainable development, group of interests, smart city.

JEL Classification: O10, O11.

Paper type: Research paper.

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1. Introduction

Areas of strong tourist reception are usually a common ground for actions of various institutions, environments, and people representing different and sometimes conflicting interests (Piłatowicz *et al.*, 2018; Majdak, 2020). The Portuguese Island of Madeira described in the paper is a perfect example, in a relatively small area, one can find both areas that require protection due to the valuable natural and cultural assets, areas of agricultural and industrial character (on a small scale), and places with strongly developed tourism and tourism-related infrastructure (Jankowska *et al.*, 2014). Ongoing discussions on the future of Madeira indicate that the economy based on sustainable tourism and smart city concept will play a key role.

Own research made visible that the catalogue of problem areas is very extensive and includes phenomena of various character and intensity. The concepts of sustainable tourism and smart city, which are the key reference point for the presented research, can be perceived as a certain ideal, being a source of inspiration and a tool for searching for optimal (taking into consideration interests of various groups) development paths for a given area (Coccosis and Parpairis, 2000; Majdak, 2019; Mosz, 2018; Ostrowska-Tryzno and Pawlikowska-Piechotka, 2021).

The research presented in this paper was conducted in April 2021. It was addressed to both permanent residents of Madeira and tourists visiting the island. A total of 391 people participated in the survey (diagnostic survey, questionnaire). The main objective of the analysis was to investigate the attitudes of the local community towards tourists and tourism in Madeira, and their opinions on sustainability and the impact of tourism on the island. The survey also explored the expectations of both groups towards further development of tourism on the island and sought suggestions for solutions and opportunities for sustainable tourism development. Based on the collected opinions, the preferences observed in the surveyed groups were analyzed and an extensive list of recommendations was proposed. These recommendations have broad implementation potential, both in relation to Madeira and other tourist locations with similar social, economic, and environmental conditions.

Detailed historical, political, economic and geographic-natural aspects are presented in detail in the first part of the article *Smart Island and sustainable tourist development with the example of Madeira. Part 1: theoretical contexts and development conditions.*

2. Methodological Issues

2.1 Aim of the Study

The main objective of the study was to investigate the attitudes of the local community towards tourists and tourism in Madeira, and their opinions on sustainability and the impact of tourism on the island. The survey also explored the expectations of both groups towards further development of tourism on the island while the solutions and opportunities to develop tourism in a sustainable manner were sought.

2.2 Research Hypotheses

The research hypotheses were as follows:

- H1. The residents believe that tourism in Madeira is developing too fast and in a way that is neither controlled nor sustainable.
- H2. The large number of hotels and private tourist accommodations being built threatens the island and its residents, causing an unprecedented rise in prices and making property rental unaffordable to residents.
- H3. Residents would like to limit tourist traffic on the island.
- H4. Tourists speak highly of both Madeira as a tourist destination and the residents as hospitable hosts.
- H5. Tourists coming to Madeira tend to be well-educated, aware of their impact on the destination, and willing to make responsible choices.
- H6. Madeira's development should be submitted to the principles of sustainable development, while using the solutions proposed within the smart city concept.

2.3 Research Questions

The survey included a few questions, regarding aspects such as respondents' socio-demographic background, attitudes towards tourism development, opinions on sustainability, and access to information. The data collected allows for answering the following questions:

- 1. Is tourism in Madeira developing in the right direction?
- 2. What are the needs and perceptions of the local community and tourists?
- 3. Do residents perceive a beneficial/negative impact of tourism on the island and their daily lives? What kind of impact is it?
- 4. Do residents and tourists know what sustainable tourism and smart city concept is and do they think Madeira is a sustainable tourist destination?
- 5. Do tourists on the island behave responsibly and make informed sustainable choices?
- 6. Is Madeira a well-managed tourist destination?

2.4 Methods and Organization of the Research

The research was carried out in April 2021. The method used was a diagnostic survey, the methodological approach was quantitative in nature, and a questionnaire technique was employed. The survey consisted of two parts: (A) the first part was addressed to the residents of the island, (B) whereas the second part concerned the opinions of tourists. The questions in both parts focused on the same problems and, where possible, were written in a similar manner based on the same items and topics. The survey was conducted online via the Google Forms portal. The respondents were invited to participate through social groups dedicated to fans and residents of Madeira on Facebook.

The questionnaire was distributed in three languages: Polish, English, and Portuguese. In each version, both closed and open-ended questions and items are identical. To get an overview of the data, we computed basic statistics such as frequencies and means. To identify causal relationships between some variables of interest and respondents' background, travel arrangements, and opinions and behaviors, we applied a number of econometric approaches such as t-tests and simple regression methods (e.g., Poisson model). The data were processed with the Software Package for Social Sciences (SPSS), version 28, and STATA software, version 17.

2.5 Characteristics of Groups Participating in the Survey

A total of 391 respondents participated in the present study. They were both residents of Madeira (Portuguese and foreigners staying on the island permanently /more than a year/) and tourists, i.e., people who visited the island for tourist purposes for less than a year. The study group included 207 residents and 184 tourists of different ages and nationalities. 68.03% were female, and 31.97% were male. Almost half of the respondents (45.27%) were adults between the ages of 40 and 59 years. A slightly smaller group (29.41%) were adults aged 27-39 years. People over 60 years of age accounted for 17.14%. Students (aged 19-26 years, 8.18%) were the least numerous groups. The mean age of tourists was 62.6 years. Most of the respondents had a university degree (67.01%) or secondary education (28.64%).

More than half of the respondents (51.92%) worked full-time. A large group was entrepreneurs (19.69%), unemployed, and retired people (16.11%). About 8.44% of the respondents were working part-time jobs, whereas the answer *student* was indicated by 3.84% of the respondents. About 50.38% earned more than 1,100 EUR per month, whereas 16.88% earned between 880 and 1,100 EUR per month. The same number of people answered *330-660 EUR* and *660-880 EUR* (13.30% each). Ca. 6.14% earned less than 330 EUR.

As for nationalities, the Portuguese nationality (Portuguese and Madeiran residents) (40.92%) was the most prevalent, followed by the respondents who were British nationals (16.11%), and Poles (14.32%). The study group also included citizens of Germany (4.60%), South Africa (2.81%), Czech Republic (2.56%), Canada (2.30%), Italy and the United States (1.79% each), Belgium and Sweden (1.53% each), Scotland (1.28%), Lithuania (1.02%), Estonia, France, Ireland, Romania (0.77% each), Denmark, the Netherlands, Norway, Russia, Slovakia, Spain, Ukraine (0.51% each), and a few people from Austria, Brazil, Finland, Georgia, Latvia, Malta, Slovenia, Switzerland, Venezuela, and of Romani nationality.

Among the residents, the group of Portuguese origin was most numerous, accounting for 68.12% of the respondents. Nevertheless, the numbers of citizens of other countries were also quite high, including British (accounting for 10.63% of the sample), Poles and South Africans (3.38%), Germans (2.41%), and Italians (1.93%). Among the tourists, the largest group were British (28.80%), Poles (26.63%), but also Portuguese (8.15%), and Germans (7.61%). Less numerous groups were citizens of Canada (4.89%), the Czech Republic (4.35%), the United States (3.26%), South Africa (2.71%), and Lithuania (2.17%) (Table 1).

Table 1. Country of Origin Chart

Nationality		
Polish	Dicothomous variable (0;1)	28,30%
British	Dicothomous variable (0;1)	22,80%
German	Dicothomous variable (0;1)	7,10%
Portuguese	Dicothomous variable (0;1)	8,20%
Other nationality	Dicothomous variable (0;1)	33,70%

Source: Own study.

3. Results of Own Research

This subsection presents the results of our research organized according to the following topics:

- a) Nature and length of stay of respondents in Madeira,
- b) Consumer behavior,
- c) Knowledge of local products and traditions,
- d) Assessment of the volume of tourist traffic,
- e) Assessment of the impact of tourism on the social, economic, and natural environment of Madeira,
- f) Respondents' attitudes towards the principles of sustainable development and solutions offered within the framework of the smart city concept.

3.1 Nature and Length of Stay of Respondents in Madeira

The first question in the residents' group asked how long they had lived on the island. In this context, length of stay is basic information about the respondent and

indicates his or her knowledge about the issues discussed. It is natural that a resident who has stayed on the island for two years may have a slightly different approach to tourism development than the natives who have watched it develop over the last 20-30 years.

Among the study participants, the highest proportion was observed in those who had lived on the island since birth (43.48%). This was followed by those living on the island for more than 15 years (23.19%). One or two years of residence on the island was reported by 11.59% of the survey participants. The others had resided in Madeira for 3 to 5 years (9.18%), 6 to 10 years (9.66%), or 11 to 15 years (about 3%).

A question about working in the tourism sector provides interesting information about the residents participating in the survey. It was aimed to verify whether the residents surveyed work in the tourism sector, i.e. they are directly involved in providing services for tourists. The positive answer to this question was given by 44.93% of the respondents. These were mainly people who had lived on the island since birth or more than 15 years.

Similarly, tourists were asked about the details of their stay. The first question was about the length of stay on the island. The question aimed to identify people who had come to Madeira relatively recently (including during the COVID-19 pandemic, which may have influenced different perceptions of e.g., the concentration of tourism on the island) and to relate the perceptions of respondents to a particular year. It was found that 58.70% of those surveyed were in Madeira in 2020-2021. The next largest group (28.26%) visited the island in 2018-2019.

Another question in the tourist group examined how long the tourists stayed on the island. The length of stay can affect how visitors perceive a tourist destination - a person after a week's holiday will probably have a different perception and view on many issues than someone else after several months of staying in a place. According to the survey, respondents mostly visited the island for 8 to 14 days (37.50%) or for a week or less (21.74%). A large group spent 15-30 days on the island (16.85%), and 1 to 3 months (10.33%). They were usually foreigners, mostly British, but also Germans, Czechs, and Portuguese.

The next two questions addressed to tourists were to determine where they were staying in Madeira. This is important because the island's capital Funchal is distinguished by a high concentration of hotels in a peripheral area in the western part of the city, in a hotel district named Lido, with a concentration of facilities of this type, and modern apartments and higher real estate prices. It is a very different place from "ordinary" areas in Funchal and other places where the residents live. After the pandemic, when many hotels were put out of business, the number of private accommodation places has increased throughout Funchal, causing a greater diversity in the accommodation offered. This can also be observed in the following

survey results, the Lido district was indicated by 29.35% of the survey participants, but the largest percentage of tourists were accommodated in other districts of Funchal (40.76%). Excluding the capital, most visitors stayed in the south of the island (13.59%) and on the east coast (7.07%). Few people chose the west coast (3.80%), whereas the north side of the island was the least chosen. In addition to Funchal, the most popular destination was Calheta, followed by Câmara de Lobos, and Santa Cruz.

Another question tourists were asked concerned the type of accommodation they used during their stay. There were 31.52% of tourists staying in hotels, but the largest group of respondents (47.83%) stayed in private accommodations/Airbnb. A local, smaller, boutique hotel or so-called *Quinta* was the choice of 15.76% of respondents.

The next problem raised related to the ways in which the tourists surveyed organized their trips. Almost 80% of the respondents planned and organized the trip on their own, while only 20.65% used the services of a travel agency. The next question continued the issues of trip organization and examined whether tourists used the services of a tour guide, and, if so, a local or foreign one. It is important to support working residents and learn directly from them about the region, history, and culture of a place. Most of the respondents (61.96%) did not use the services of a guide. Among those who used tour guide services, 36.96% established a relationship with a local guide.

3.2 Consumer Behavior

The next group of questions aimed to find out selected behaviors of tourists and residents of Madeira, concerning their daily choices that could contribute to the idea of sustainable development of the island. The opening question in this section was the same for both groups and asked about daily shopping habits in the case of residents, and the most common place to shop for groceries during a trip in the case of tourists. *Large supermarkets* were indicated by 65.22% of the residents and 61.96% of the tourists, whereas 34.78% and 38.04% of them, respectively, shopped in smaller local shops.

The next question continued to explore consumer choices and looked at what products visitors had purchased during their stay and what they had brought home from Madeira. This question becomes particularly relevant when juxtaposed with questions about knowledge of local traditions and support for the local economy and small enterprises. Tourists who make decisions during shopping also have an impact on the sustainability of a destination, e.g. by choosing local, authentic, locally grown products, and supporting the local economy rather than buying imported and mass-produced products or souvenirs that are inexpensive but have little to do with the destination.

The most common purchase among the tourists surveyed was Madeira wine and small souvenirs such as magnets and postcards (65.76%). This was followed by traditional *Bolo do mel* (honey cake) (60.87%) and other alcohols (45.11%). Frequently purchased products were tropical fruit (33.15%), cuttings and seeds of flowers and other plants (28.8%), natural cork products (27.72%), aguardiente, ceramics, and azulejos (26.09%), and handmade, embroidered fabrics (25.54%). Traditional items of clothing/headwear were the least frequently bought (18.48%). A few people indicated their own answers individually, among which were food: fish, cheese, *broas de mel* cookies, but also paintings, antiques, or poncha glasses.

3.3 Knowledge of Local Products and Traditions

Another group of questions related to the knowledge of Madeiran traditions among tourists. The group of tourists was asked to choose from a list of eleven Madeiran traditions, asking them to indicate those with which the respondents are familiar. Out of eleven items, only five scored more than 50%. *Traditional cuisine* received the most indications (92.39%), followed by *traditional liquors* (89.13%) and *levadas* (84.78%). *Traditional regional costumes* were recognized by 52.72% of respondents, whereas the Flower Festival held in May was indicated by 51.09%. This was followed by the *New Year's firework show* (45.65%). Less well-known traditions were religious ceremonies (38.04%), Christmas nativity scenes (36.96%), carnival parades (35.33%), the autumn Wine Festival (32.07%), and Christmas market night (*Noite do Mercado*) with 31.52%.

The information obtained in this question was also compared with the type of accommodation used by the tourists. The knowledge of the highest number of traditions was found in tourists staying in hostels (mean: 7.56, median: 8), followed by tourists staying in private accommodation/Airbnb (mean: 6.38, median: 6). Visitors using large hotels had the least knowledge of the traditions (mean: 5.22, median: 5).

In general, as expected, the total number of traditions identified by respondents was determined by time, budget, cultural affinity, and easy access to information. Respondents staying longer (up to one year) identified on average 7.82 traditions (7.82 vs 5.77; $t=-2.635$; $\text{sig}=0.022$). Visitors staying just for a few days (up to 7) identified on average 4.68 traditions (4.48 vs 6.24; $t=3.479$; $\text{sig}=0.0019$). Visitors opting for a travel agency (a proxy for a preference for less demanding information environments and higher degree of ICT illiteracy) indicated 4,87 “traditions” versus 6,16 for those ones choosing more independently means of making travel arrangements ($t=2,762$; $\text{sig}=0,004$). Visitors opting for private accommodation, which implies lower accommodation costs, are entitled to pursue a higher number of activities, because they save a great deal of money in accommodation costs compared to those ones staying in hotels (6.78 vs 5.46, $t=-2.329$; $\text{sig}=0.021$). Income did not differentiate high achievers from low profile visitors, while nationality was

statistically significant ($Z=5.77$; $\text{sig}=0.01$; Portuguese: on average 7.2 traditions; British: on average 6.74 traditions).

A question addressed to the residents corresponded to the above issues: *Are Madeiran traditions sufficiently promoted among tourists?* Among the residents, 152 people (73.43%) answered in the affirmative, and 55 people (26.57%) indicated *no* answer.

3.4 Assessment of the Volume of Tourist Traffic

Another group of questions addressed issues related to the subjective assessment of tourist traffic generated by large cruise ships and aircraft arriving on the island. It is worth mentioning that a few years ago, a large port was built in Madeira, capable of receiving huge cruise ships. Consequently, a significant increase in tourist traffic has been observed on the island, accompanied by the threat of coastal water pollution and noise nuisance.

Among residents, the most common option selected by residents was *very favorable* (34.78%). Next, most indications were found for the answer *rather favorable* (25.60%) and for *neutral* (21.26%). Negative answers were given by 38 people (about 20% of indications).

In the group of tourists, the largest number of indications was received for the answer *neutral* (38.59%). 22.28% of the votes were cast for the answer *rather favorable*, 18.48%. answer, *very favorable*. The negative assessment of this phenomenon (1: *very negative* and 2: *negative*), was made by about 20% of the respondents. Regarding air traffic, residents were asked whether there should be a reduction in tourist flights to Madeira. An overwhelming majority of residents surveyed (80.68%) believed that tourist arrivals should not be restricted on the island, whereas 19.32% of the respondents were for a limitation.

Furthermore, tourists were asked to rate the impact of air traffic on the island on a scale of 1 to 5. Opinions were divided: the most frequently chosen answer was *rather favorable* (39.67%), followed by *neutral* (30.98%), and *very favorable* (24.46%). Only about 5% of respondents chose the answer *rather negative*.

3.5 Assessment of the Impact of Tourism on the Social, Economic, and Natural Environment of Madeira

Another group of questions aimed to find out what the attitudes of residents towards tourism and tourists were and to examine the impact of the tourism sector on various aspects of life among the residents of Madeira. Residents were also asked if they observed any negative impact of tourism on the island. This question was answered in the affirmative by 62.80% of the respondents. Furthermore, 37.20% did not notice any negative impact.

Among those who noted the negative impact of tourism, the largest number of people were those who had lived on the island since birth. However, based on percentages, this result may have simply been influenced by the largest size of this group. As for the percentage, it ranged from 60-65% in each group. Responses were also compared to the place of residence to see if city residents felt the negative impact of tourism more than e.g., rural residents. Indeed, those who chose an affirmative answer accounted for 55.32% residents of rural areas, and nearly ca. 70-75% of those living in urban areas.

The next question was the same in both study groups: *Did you notice the following problems/negative impacts of tourism during your stay on the island?* A list of seven responses was provided, with the most frequently selected response among residents being *high prices* (40.10%), followed by *environmental pollution* (25.60%), and *garbage* (19.81%). A slightly smaller number of residents indicated *overcrowding* (17.87%). This was followed by *traffic jams* (10.63%) and *the disappearance of Madeiran culture* (9.66%), whereas about 8% of respondents indicated *noise*.

Many people exchanged their own observations. Among them were statements of the *destruction of nature, the overuse of summer labor, the way animals are treated, or even tourism, which does not produce any benefits to the island*. Repeated statements were those of *overly concentrated tourism, substantial pollution from cruise ships, and residents cannot afford homes*. The problems that were most frequently mentioned by residents in terms of negative impacts of tourism were related to two phenomena: the pandemic (*the spread of the coronavirus on the island and failure to follow the rules, especially wearing of masks*) and the construction of new buildings and hotels (*too many huge multi-story hotels built everywhere, too many construction sites, unnecessary and excessive construction of real estate, extensive construction*). The last aspect was most often emphasized by the Portuguese.

Tourists answered the same question slightly differently. The most common response among residents was *I have not noticed any problems* (40.22%). *Homelessness* came next (32.61%), followed by *garbage* (20.65%), *traffic jams* and *noise* with the same number of responses (15.76%), and *high prices* (15.22%). In the last places, with the least number of indications, were *pollution* and *overcrowding* (about 12% of indications each) (Table 2).

Table 2. Poisson model: Total number of problems as dependent variable

q9sum	Coefficient	Std. err.	z	P>z	[95% conf. interval]	
income	.1702977	.089378	1.91	0.057	-.00488	.3454754
profe	-.5184204	.2998534	-1.73	0.084	-1.106122	.0692814
profd	-.5831206	.293288	-1.99	0.047	-1.157954	-.0082868
profc	-.6276772	.2527655	-2.48	0.013	-1.123088	-.132266
FunchalLido	.665838	.2934429	2.27	0.023	.0907005	1.240976
FunchalOther	.7389896	.2509543	2.94	0.003	.2471283	1.230851
q7	-.4506743	.0989938	-4.55	0.000	-.6446985	-.2566501

q10	.4347585	.2085188	2.08	0.037	.0260692	.8434477
Very large hotel	-.3524221	.2135503	-1.65	0.099	-.7709729	.0661287
_cons	1.082981	.5055692	2.14	0.032	.0920837	2.073878

Source: Own study.

3.6 Respondents' Attitudes Towards the Principles of Sustainable Development and Elements of the Smart City Concept

The last group of questions addressed sustainable tourism and the perception of Madeira by residents and tourists. It was examined how the respondents define this term and what associations they have with the concept, and how, in their opinion, Madeira is perceived as a tourist destination.

The starting point was the question *Please indicate 3 statements which, in your opinion, best characterize the concept of sustainable tourism* addressed to both tourists and residents. Of the list of seven responses, residents most frequently selected *it helps preserve natural resources* (59.42%), while tourists selected *it protects local culture* (60.33%). The second most frequent answer among residents was that *it supports the development of local businesses* (47.83%), and among tourists, *it has little impact on the natural environment* (49.46%). This answer was the third most frequently indicated in the group of residents (46.38%), while in the group of tourists, the third most frequently indicated answer was *it means the respect for local communities* (47.83%). The least frequently indicated statement in both groups was *it involves local people* (28.99% in the group of residents and 23.37% in the group of tourists).

The next question on sustainable tourism was *to what extent do you think tourism in Madeira is sustainable?* Tourists rated this aspect slightly better than residents. Most indications were found for 4 (*rather good*), with 40.58% in the group of residents and 46.74% in the group of tourists. Madeira was rated 5 (*very good*) by 13.53% of residents surveyed and 23.91% of tourists. Rating 3 (*neutral*) was chosen by 26.57% of residents and 23.37% of tourists. Furthermore, 2 (*rather bad*) was found in 16.43% of residents and 5.98% of tourists.

Given the overall importance of this question, we explore further the reasons behind respondents' scores. Based on a t-test applied just to a few selected variables, we identified the following variables as significant in differentiating between those with a clearly positive view of the degree of sustainability of the industry in Madeira and those less convinced about it. Visitors staying up to 7 days reported a higher degree of agreement (4.18 vs 3.81; $t=-2.773$; $\text{sig}=0.007$). On the contrary, those staying longer (up to one year) were less convinced (3.18 vs 3.93; $t=3.890$; $\text{sig}=0.002$). Students were similarly less optimistic compared to other professional backgrounds (3.30 vs 3.97; $t=2.299$; $\text{sig}=0.023$). Similarly, those traveling in an independent manner were less enthusiastic compared to tourists opting for a travel agency or other kind of travel arrangements (3.69 vs 4.08; $t=3.174$; $\text{sig}=0.002$).

It is interesting to observe that tourists reporting higher levels of agreement with the image of Madeira as a sustainable destination also shared positive views about the degree of development of the tourist infrastructure on the island ($\sigma=0,312$; sig=0,001). The positive (although rather weak) association was found for the impact of the cruise industry ($\sigma=0.323$; sig=0.001), air traffic ($\sigma=0.463$; sig=0.001), and degree of cleanliness of the seawater and local beaches ($\sigma=0.332$; sig=0.001). Therefore, respondents' opinions on the degree of sustainability of the local industry were related to their views on several practical issues (e.g., degree of pollution of seawater) (Table 3).

Table 3. Pearson correlations

		Sustainab ility	Infrastruc ture	Cruisers	Air traffic	Water pollution
Sustainab ility	Pearson correlation	1	,312**	,323**	,463**	,332**
	Sig.		<,001	<,001	<,001	<,001
	N of obs	184	184	184	184	184
Infrastruc ture	Pearson correlation	,312**	1	,140	,264**	,102
	Sig.	<,001		,057	<,001	,167
	N of obs	184	184	184	184	184
Cruisers	Pearson correlation	,323**	,140	1	,453**	,279**
	Sig.	<,001	,057		<,001	<,001
	N of obs	184	184	184	184	184
Air traffic	Pearson correlation	,463**	,264**	,453**	1	,254**
	Sig.	<,001	<,001	<,001		<,001
	N of obs	184	184	184	184	184
Water pollution	Pearson correlation	,332**	,102	,279**	,254**	1
	Sig.	<,001	,167	<,001	<,001	
	N of obs	184	184	184	184	184

** Correlation statistically significant at 0,01 (both extremities)

Source: Own research.

A simple OLS regression with the variable “tourist’s opinion about the region’s degree of sustainability” as a dependent variable and a number of variables identified as explanatory variables via stepwise approach, allows us to identify the following variables of interest: to be either a Polish or a British national leads to higher scores; more positive views on the topic of the impact of the cruise industry, air traffic and water pollution leads to a more optimistic stance regarding the degree of sustainability of the tourism industry; on the contrary, the higher the number of problems identified the lower the degree of confidence on the ability of the sector to get a positive assessment in terms of sustainability.

4. Discussion

The results obtained in the present study led to a number of conclusions and recommendations. One of the key hypotheses (H1) formulated at the conceptual stage of the research was that residents believe that tourism in Madeira is developing at too fast a pace and in a way that is not sufficiently controlled or sustainable.

Indeed, respondents expressed their concerns in this context and pointed to this problem many times in their responses. The most frequent rating for sustainable tourism in Madeira was 4 (rather good, 40.6%) or 3 (neutral, 26.6%), but only 36.23% thought that further development of tourism infrastructure was needed on the island.

It can also be noted that for the residents, sustainable tourism meant above all helping preserve natural resources and supporting the development of local businesses, but tourists most often understood the concept as protecting local culture and having little impact on the natural environment.

However, hypothesis (H3) that Madeiran residents would like to reduce tourism on the island was not confirmed. Despite the many negative statements, residents understand that they need the tourists, especially after more than a year of travel and sector restrictions due to the COVID-19 pandemic. The vast majority (over 80%) would not want to restrict tourist flights to the island, and almost 70% did not think there were too many tourists on the island (even before 2020).

The hypothesis that native residents are the most skeptical of visitors was also not confirmed (H2). On the contrary, residents residing on the island for 6 to 10 years had the most negative image of tourists, followed by those living for more than 15 years and those living for 1 to 2 years, but these percentage differences were small. The group who also most often indicated that they noticed a negative impact of tourism on their place of residence were those residing on the island for 6 to 10 years (75%, while for the rest, the proportion ranged from 57 to 66%). Therefore, it can be concluded that there is no relationship between the length of stay on the island and the attitudes towards tourists. Perhaps such results are indicative of the most drastic changes in tourism on the island in the last decade.

Residents surveyed expressed quite negative opinions about the government's actions, with almost 66% believing that the government was not doing enough to address sustainable tourism on the island, and 69% that the government was not allocating enough funds for this purpose. Some residents pointed out that they had no information on that topic. At the same time, the huge expenditure (half a million EUR) on a new logo and image campaign for the island in 2021 was widely criticized. Perhaps the actions and motivations of local authorities behind them should be more clearly signaled.

A much higher percentage of Madeira residents noted the more negative impact of tourism in urban compared to rural areas (ratio of about 70-75% to 55%). When asked what problems they perceived, residents most often indicated high prices (40%) and environmental pollution, while tourists emphasized the problem of homelessness (32%) and garbage observed in the streets.

The biggest problems resulting from uncontrolled tourist traffic on the island include too high real estate prices and the allocation of many apartments in the island's capital for rent to tourists. This means that residents simply cannot afford to live in their city. Not only is the island's area limited and there is not enough housing for young people to move out of the family homes and start families (often several generations of Maderians live together in the same houses), but the housing that is available for rent is very expensive, with prices artificially raised for tourists who can afford to pay more. As a result, Funchal residents are forced to move further and further away to the outskirts of the city or beyond, where property prices are much lower, and the capital's center is teeming with modern and spacious Airbnb's for short-term rentals for foreign visitors. This problem, already publicized for several years in Barcelona and Lisbon, seems to irritate the residents the most. It was also repeatedly indicated in the present study.

Furthermore, the residents also pointed out the ignorance of tourists and some inappropriate behavior while staying on the island, especially not following sanitary regulations introduced during the COVID-19 pandemic and contributing to the spread of the coronavirus and increasing the number of infections. There have also been reservations among residents that the profile of the tourist visiting Madeira has changed and these days it is increasingly a mass tourist, uninterested in exploring their culture, respecting nature, or caring about the impact of their behavior on the island. It was even stated that sustainable tourism is only of interest to wealthy and well-educated people and that it is kind of a niche.

Unfortunately, mass tourism usually results in a number of negative consequences. In addition to the already mentioned price increase, it might lead to pollution and "trampling" the destination, destroying the culture and traditions of the region, commercialization of local products, and simply cause inconvenience to residents due to overcrowding and noise. If the respondents are right, Madeira may very quickly begin to feel these impacts. Although now it seems that the island is still far from the predicament of Venice or Barcelona, the opinions of the residents should not be underestimated as it is primarily them, not tourists, who should live comfortably in their own region.

Respondents often indicated that they were fed up with the construction of huge hotels on the island and that they seem to be the source of the greatest concern for the residents of Madeira. Respondents often linked the negatively perceived effects of mass tourism specifically to all-inclusive luxury resorts. This was the topic most frequently addressed in the last question of the questionnaire, which left room for comments and respondents' opinions. Although exact figures for the number of such buildings on the island are not available, it is worth noting that the average number of rooms/apartments per hotel is 100 (more are found only in Algarve, with an average of 102 units), and several new hotels open every year. Furthermore, nearly 75 percent of residents surveyed disagreed with the statement that hotels should be away from the parts of the city where the island's residents live.

As for the tourists, their opinions were usually more positive. They rated Madeira higher as a sustainable tourist destination. Regarding the level of cleanliness of the beaches and the ocean, it was good (4) or very good (5) according to 78% of visitors. As many as 95% of respondents felt that the tourist infrastructure on the island (including the number of hotels) was good (4) or very good (5). Only 10% stated that industrial infrastructure was inadequately distributed. Almost 60% found public transport on the island well developed, although there were many comments on this in the open questions.

Tourists' responses (in the question on perceived negative impacts of tourism) were also compared with the place where they were accommodated during their stay. It turned out that the enumerated problems were most frequently perceived by tourists staying in hostels, followed by those staying in private accommodations (Airbnb/Alojamento Local). Compared to them, the percentage of the statements of the negative impact of tourism among visitors accommodated in large hotels was more than twice smaller. Tourists were also slightly more likely to shop in smaller local shops (38% versus 35% among residents) rather than in large supermarkets, although this question should also have been phrased slightly differently as it did not consider whether these were Portuguese or foreign chain stores. On the other hand, when it came to the use of guides and tour operators, respondents almost unanimously indicated that they used local service providers during their holidays.

The study also compared the opinions of both groups on tourist traffic due to large cruise ships and air traffic on the island. The positive impact of cruise ships was perceived by almost 41% of tourists (half as many as negative). In the case of residents, it was as high as 60% of the respondents. It remains to be argued whether tourists were more perceptive of the negative consequences of this type of transport (including massive pollution) or residents saw it as an opportunity to rebuild the economy after the pandemic that had been disastrous for tourism. It is worth noting that in 2020, much of cruise ship traffic was stopped, and the only one that shuttled from the port of Funchal was a small ferry to nearby Porto Santo. In terms of air traffic, 64% of tourists rated its impact as favorable (4) or very favorable (5), while residents would mostly (81%) not want to reduce tourist flights to Madeira.

In conclusion, the respondents' answers show that tourists (according to hypothesis H4) rated Madeira highly as a tourist destination and were mostly satisfied with the tourist infrastructure and that they considered the residents as open and hospitable hosts. They also had a relatively high level of self-awareness in relation to their impact on the island (which supports hypothesis H5). Residents did not tend to show negative attitudes towards visitors, with the vast majority believing that tourists were needed in Madeira and willing to host them on the island, provided that the tourists show understanding and empathy. However, compared to the previously cited 2018 study by D. Teixeira and J. Ribeiro, this time they rated further development of tourism on the island as less needed. In the context of the above conclusions, the hypothesis that the development of Madeira should be submitted to the principles of

sustainable development and smart city concept (H6) should be considered as a principle.

5. Conclusion

Regarding the difficulties encountered during the research, and, in fact, already during the elaboration of the results, there were several details that should have been addressed earlier, during the preparation of the forms. Firstly, as respondents themselves pointed out, some questions were too general and should be made more specific. Secondly, the survey should be standardized to allow a more detailed comparison of the responses of the two groups. Also not included were born in Madeira but emigrated from the island many years ago. These study participants, indicating that they were residents, were not sure of the correctness of their assignment to the study group. Furthermore, respondents also suggested that it would be worthwhile to conduct similar surveys among executives in the sector (especially hoteliers) and see what their knowledge of sustainable tourism is and what is being done in major tourist destinations to promote sustainable development of the island.

It would be worthwhile to conduct such surveys more often and on a larger scale among tourists, residents, industry employees, or even local authorities. Only in this way, through dialogue and searching for a compromise, is it possible to achieve the objectives of sustainable development, which, after all, involves achieving a balance between producing benefits for the environment, the economy, and the local community.

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