



**Tourist satisfaction with the Municipality of Ponta Delgada (Açores)**  
**Satisfação dos turistas com o Concelho de Ponta Delgada (Açores)**

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**Abstract**

The combination of unique and differentiating aspects and the concentration of a substantial proportion of accommodation and tourism-related companies has made Ponta Delgada the most developed tourism destination in the Azores. A questionnaire was structured to evaluate tourist satisfaction with the municipality as a tourism destination. The data was analyzed using measures of descriptive statistics, nonparametric hypothesis tests, algorithms of Ascendant Hierarchical Cluster Analysis and the Nonlinear Principal Component Analysis. It reveals that Ponta Delgada has earned competitive tourist satisfaction, has competitive attractions and attracts different tourist profiles, with cruise passengers being more satisfied and more likely to stay in the city and engage in softly activities while tourists travelling by airplane, who are more critical, tend to engage in more dynamic, nature-based activities. This paper contributes to research on destination competitiveness, tourism performance and strategic tourism planning at the local level through statistical analysis of tourism data.

**Keywords:** Azores. Tourism. Tourist. Satisfaction. Strategic. Planning. Ponta Delgada

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## Resumo

A combinação de aspetos únicos e diferenciadores e a concentração de uma proporção substancial de estabelecimentos de alojamento e empresas relacionadas com o turismo tornou Ponta Delgada no destino turístico mais desenvolvido dos Açores. Um questionário foi estruturado para avaliar a satisfação dos turistas com o concelho enquanto destino turístico. Os dados foram analisados com o recurso a estatísticas descritivas, testes de hipóteses não paramétricos, algoritmos da Análise de Clusters Hierárquica Ascendente e a Análise de Componentes Principais Não Linear. Revelou-se que Ponta Delgada ganhou uma satisfação turística competitiva, tem atrações competitivas e atrai diferentes perfis de turistas, com os turistas de cruzeiros a estarem mais satisfeitos e a permanecerem no centro da cidade, realizando atividades mais *soft*, enquanto os turistas que viajam de avião, que são mais críticos, tendem a realizar em atividades mais dinâmicas e relacionadas com a natureza. Este *paper* contribui para o estudo da competitividade de destinos turísticos, desempenho do setor turístico e planeamento turístico estratégico a nível local através da análise de dados do turismo.

**Palavras-chave:** Açores. Planeamento estratégico. Ponta Delgada Satisfação turística. Turismo.

## Introduction

The Azores, comprising the outermost region of the European Union, is inherently dependent on an efficient transport system, namely on the tourism sector. In the past, the strict and limiting air transport system granted the local public company, SATA Air Açores, a duopoly on air travel along the main Portuguese airline, Tap Portugal. As of 29 March 2015, a new system was deployed allowing the operation of low cost carriers (LCCs). This improved the accessibility of Azores with cheaper airfares made available through multiple channels and facilitated greater exposure to international markets through the promotional efforts of the LCCs. Therefore, touristic demand has been increasing significantly with impact on the local economy.

In 2016, the Azores Regional Government published the Strategic and Marketing Plan of the Azores Tourism. It established a new strategy for local tourism development and identified both anchor and relevant products for each of the nine islands of the archipelago. Nature Tourism was identified as the destination's priority product, embracing in its scope activities including hiking, trekking, mountain biking, canoeing, and climbing, which are internationally regarded as adventure activities.

Resulting from this new positioning and the new air transport model, the Azores has increasingly gained recognition as an adventure destination, as demonstrated by many press reports and articles such as Presser (2016) or Kay (2016). According to Silva and Almeida (2013) tourism activity in the Azores is strongly related with natural beauty and the

potential for peaceful, active, and exotic holidays. Furthermore, the authors state that it differentiates the region as an excellent destination for active nature, wellness and adventure tourism.

Altogether, the nine islands of the archipelago are divided into 19 municipalities, six of which are located in the island of São Miguel, the biggest and more developed island in the region, which accounts for around 55% of its population and economic activity. The largest municipality of this island and of the region is Ponta Delgada, which leads in terms of economic development and tourism activity. For example, in 2015, tourism accommodation establishments in Ponta Delgada hosted more than half of the total guests that stayed in tourism accommodation establishments in the entire archipelago (specifically 224,455 of 444,140 guests excluding small scale accommodation such as B&B and guesthouses).

Arising from the new paradigm in the tourism sector, Ponta Delgada's City Hall identified a need to outline a strategic plan for its tourism development. On one hand, it was necessary to maximize tourist satisfaction and to increase the ability to create tourism value based on its endogenous resources. On the other hand, it was essential to avoid unbearable pressures on the local resources and community, which could, ultimately, lead to an unpleasant tourism experience, unhappiness among locals, and the destruction or degradation of local heritage and natural resources. Given the demanding nature of this work and the mandatory need for neutrality and technical know-how, a team of tourism experts was involved in the strategic planning process.

The framework that was used to develop the strategic plan for tourism development in Ponta Delgada is an upgraded version of the approach by Couto et al.(2017). Nevertheless, given the lack of available data on local tourism, a questionnaire aimed at tourists was developed and responses were gathered from August to September 2016, which are the high season months in the Azores. The survey results revealed the demand satisfaction with the destination and allowed the identification of areas of improvement to increase tourist satisfaction as well as the strengths and weaknesses of the local tourism supply.

This paper aims to contribute to the research on adventure destination competitiveness and strategic tourism planning at the local level. Lorenzini et al.(2011) note that the analysis of destination competitiveness has been significantly more developed at the national level than at the local level, despite the latter being more determinant of a country's tourism competitiveness. Suriñach et al.(2017) state that, at the local level, there has been a large lack of quantitative and statistical information, contrary to what happens at the national level. Phillips and Moutinho (2014) sustain the criticality of strategic planning in tourism, as it

enables the ability to shape opportunities for competitive advantages and provides direction for stakeholders.

Ultimately, as Vieira et al.(2014)state, to achieve success, destinations must ensure customer satisfaction by catering to their needs, which will lead to larger amounts of expenditures made by tourists (Disegna and Osti, 2016) and to higher levels of destination tourist competitiveness and social welfare(Hanafiah et al., 2016). For these reasons, the case of Ponta Delgada is shared, since it sheds light on the importance of demand analysis in a destination's strategic planning process at a local level and also provides relevant information about tourist profiles in an emergent adventure tourism destination.

### **Literature Review**

Theoretical studies about tourism strategic plan process at the local level are not been much developed, despite that, at this level, there are much more difficulties when developing a strategic plan than the national or regional level. One of the most problematic issues is the scarce of information about the tourism sector performance and tourist satisfaction, which are essential inputs to understand and assess the destination competitiveness and to design a strategic plan to develop the tourism sector in a municipality. In this way, it is necessary to gather and analyse information from primary sources.

As highlighted by Santos et al.(2012), tourism is a sector where quality plays a crucial role as destinations are constantly compared as a result of the globalization process that led to increased competition worldwide. Meanwhile, Mihalič (2000) emphasizes that a carefully selected and well executed destination management program can improve the tourism competitiveness of a destination.Hanafiah et al.(2016), based in literature, state that a competitive destination will be more attractive, which will lead to a greater tourist demand and spending. Furthermore, it has the potential to increase economy growth, with positives effects on the welfare of the local population.

Buckley(2006, 2007) broadly defines adventure tourism as guided commercial tours where the principal attraction is an outdoor activity, which relies on features of the natural terrain, generally requires specialized sporting or similar equipment, and is exciting for tour clients. In turn, Steynberg and Grundling(2005) suggest that, besides appropriate changes in economic activity structures and improvements in the distribution of income and wealth, adventure tourism's economic development should include the following dimensions:

- Striking the right balance between investment in adventure tourism infrastructure and consumption of adventure tourism (activities and events);

- Striking the right balance between adventure tourism offerings and the price paid for these offerings; and
- Ensuring continuous improvements (productivity) in the methods employed to foresee the needs of the adventure tourist.

Tseng (2012) considers that customer satisfaction with travelling services has been a valuable concept to understand the strengths and weaknesses of tourism destinations. The author builds on literature to recall that high tourist satisfaction levels may encourage revisit (i.e. to repeat consumption of the destination although with a different purpose) and positive word of mouth, and, as such, becomes a key to business success. Hui et al.(2007) state that retaining existing customers usually has significantly lower costs associated that winning new ones.

Tourists' satisfaction is often evaluated through somewhat complex questionnaires, which are often based on questions with Likert scale measurements, as in the case of Tseng (2012) and Sukiman et al.(2013). However, Hui et al.(2007) claim that merely having satisfied customers is not enough since the relationship between high levels of satisfaction and customer retention doesn't always exist. The authors recall Solomon's (2002) work on consumer behavior to remind that customer indifference, availability of competitive substitutes, and low switching costs may result in a situation where customers are satisfied and, yet, select other offerings.

For Sukiman et al.(2013), failure to deliver expected quality frequently leads to poor performance in the tourism industry. Hence, gathering information about tourists' expectations of the destination and measuring whether the destination performance lives up to these expectations is very important to meet the dynamic needs of targeted segments. It will thereby potentially increase the destination's performance and competitiveness.

Furthermore, highlighting that customer satisfaction reflects service quality, the same authors state that the motivation to travel to a specific region impacts destination satisfaction. The motivation generated by individual needs and/or values constitutes a major parameter in expectation formation and performance perceptions. To evaluate tourist satisfaction with their holidays in Pahang, the authors developed and applied the HOLSAT (holiday satisfaction) model, based on data collected through a questionnaire with three sections: demographic background, travel pattern, and expectation versus experience.

Buhalis (2000) also elaborates on tourist expectations and presents various related literature references. The author builds on the idea that before visiting a destination, tourists develop an image as well as a set of expectations of that destination based on previous

experiences, word of mouth, press reports, advertising, and common beliefs. Mihalič (2000) completes this perspective by asserting that it is essential to communicate proper and true information in order to create realistic expectations: in case of a difference between the real environmental quality and the environmental image, the destination will find itself less competitive in the market.

Baker and Fulford (2016) quote numerous studies to identify perceived value as one of the most important measures to gain a competitive edge and the most important indicator of repurchase intentions. Chen and Chen (2010) revealed that experience quality has a positive effect on perceived value. They state that service quality refers to service performance at the attribute level while experience quality refers to the psychological outcome resulting from customer participation in tourism activities. While the evaluation of service quality is objective and attribute-based, evaluation of experience quality is more holistic and strongly affected by individual subjectivity.

Chen and Chen (2010) also state that favorable behavioral intentions frequently represent consumer's conative loyalty and is an important goal for marketers, being a key component for long-term viability or sustainability. Loyal customers are a great source of word-of-mouth advertising (Shoemaker and Lewis, 1999), beyond having lower associated costs as compared to the acquisition of new customers. Chen and Chen (2010) also highlight the claim by various authors that destination loyalty is frequently reflected in tourists' intentions to revisit the destination and in their willingness to recommend it.

To increase tourists' positive behavioral intentions, managers should provide high quality and satisfying experiences that tourists perceive to be of good value. Disegna and Osti (2016) refers that there is a direct link between tourist satisfaction with different attributes of the destination and the willingness to pay and the amount of money spent in different product categories related to these attributes. For Lee et al. (2007), managers should focus on dimensions that have the strongest effects on perceived value. In their research, service quality was the most important dimension to increase perceived value.

According to Suriñach et al. (2017), gathering detailed and up-to-date information about visitors has become essential for policymakers. Nevertheless, although there are many analyses to tourism numbers at a national level, a lack of relevant statistical information was revealed when it is referred to the local level. To overcome this constraint, Couto et al. (2017) structured a questionnaire to gather more detailed information on the touristic demand in the municipality of Ribeira Grande (a neighbouring municipality of Ponta

Delgada) in the diagnostic phase of the framework that was implemented to develop a tourism strategic plan at the local level.

Analyzing the survey results, those authors could gather specific information on tourist intentions regarding their stay in the municipality. Specifically, it was gathered which factors caused more versus less satisfaction, which activities and attractions were more sought-out/visited by the tourists, whether there were intentions to revisit, and what they would want to see improved in the destination on a future visit. The statistical analysis of this data along with the inputs collected from specialized players of the local market led to a very robust destination planning process.

The analysis of tourist satisfaction with Ponta Delgada considers all these references and builds on the fact that the municipality is the economic center of an emergent adventure tourism archipelago. For these reasons, this study can contribute to the understanding of tourists' needs and expectations with respect to their experience in small remote islands.

### **Method**

Information about tourism demand in Azores and Ponta Delgada is relatively scarce. Although there are publications and databases from the Azores Statistical Office (SREA) that contain quantitative indicators of the demand and supply in the Azores, data on each specific municipality of the Azores is lacking. In the case of the Municipality of Ponta Delgada, data on the satisfaction, intentions, expectations, and thoughts of its visitors is unavailable. To overcome the lack of information on touristic demand, a long and thorough questionnaire was administered to a sample of tourists that visited the Municipality of Ponta Delgada between August and September 2016, which forms the high season in the Azores.

#### **3.1 Sample**

The survey was conducted on a sample of 400 tourists (60% male and 40% female), who visited the Municipality of Ponta Delgada (Azores). From these, 27% live in the UK, 18.8% live in Portugal, 11.3% live in Germany and 42.9% lived in other countries. The majority (95.9%) said that the main purpose of the trip were holidays. It is also important to highlight that the majority (68.1%) was in the Azores for the first time.

#### **3.2 Instruments**

The data collection was done through a survey, that, beyond other variables (some of which were sociodemographic), included a scale for the measurement of the latent variable

“Visitor Satisfaction”. The questionnaire was divided into four main groups and had a total of 19 questions.

The first group of questions was about tourist demographics. The second group was focused on trip information and inquired about the means of transportation to the Azores, travelling companions, total package price, purpose of the trip, how many islands were visited during the trip, number of days of stay in the Azores, and information about the accommodation. The third group was about the activities undertaken and the attractions visited. The fourth and last group comprised the tourists’ satisfaction with the visit to Ponta Delgada. Additionally, there were questions on their intention to return to the Azores and to Ponta Delgada, as well as their suggestions to improve Ponta Delgada as a tourism destination.

It is relevant to state that this tool was structured based on five studies: 1) survey on the satisfaction of tourists that visited Portugal (developed by Intercampus for Turismo de Portugal); 2) survey on the quality of the Azores as a tourist destination (Santos et al. 2012); 3) survey on the satisfaction of the tourists that visit the Azores (Observatório Regional do Turismo dos Açores); 4) survey of the tourists that visited Vila Real de Santo António (a Portuguese municipality); 5) and according to Couto et al. (2017), survey on the quality of Ribeira Grande as a tourist destination.

Concerning the scale for the measurement of the latent variable “Visitor Satisfaction”, according to the value obtained for the Cronbach’s Alpha Coefficient (0.78), the internal consistency of the 25 scale items is satisfactory.

### 3.3 Data analysis methods

The total scores obtained in the scale that evaluates visitor’s satisfaction were calculated (sum of the scores of the 25 scale items). The data was analyzed using several statistical methods. Among them, we highlight some summary measures in the scope of Descriptive Statistics, some nonparametric hypothesis tests (Chi-Square test of independence, Mann Whitney U Test), the Nonlinear Principal Component Analysis (NLPCA), and some algorithms of Ascendant Hierarchical Cluster Analysis (AHCA).

The goal of NLPCA is equivalent to that of PCA (to reduce the data size). However, as stated by Linting and Van der Kooij (2012), while traditional Principal Component Analysis (PCA) assumes linear relationships between (quantitative) variables, NLPCA is an alternative to PCA that can in addition reveal nonlinear relationships among variables and does not require the assumption of normality of the variables. NLPCA is mainly useful when we deal



with datasets containing variables with different measurement levels (nominal, ordinal, or numeric) that might be nonlinearly related to each other.

The component structure of the 25 items of the satisfaction scale was investigated using NLPCA, taking into account the ordinal nature of the items. In this context, we applied the Categorical Principal Component Analysis (CATPCA), using the optimal scaling approach to NLPCA, available in the IBM SPSS Statistics 24. The variables are transformed by assigning optimal scale values to the categories (in the present study, we selected the ordinal scaling level).

Cluster analysis usually concerns a set of algorithms for grouping either statistical data units or variables into clusters of similar elements. In this context, there are two main types of clustering methods, namely hierarchic and non-hierarchic methods. In this paper, we applied hierarchical agglomerative methods, which provide fuller information about a set of elements to classify by obtaining a hierarchically-nested set of partitions (Gordon, 1999).

The Ascendant Hierarchical Cluster Analysis (AHCA) of the 25 items that evaluate the tourists' satisfaction was performed based on the Spearman's rank correlation coefficient and on three classical aggregation criteria (Average Linkage, Single Linkage and Complete Linkage). The AHCA was carried out in order to identify clusters of items whose responses (satisfaction levels) are relatively similar.

## Results

### 4.1 The main attractions in the Municipality of Ponta Delgada

Regarding the attractions that are considered of interest by tourists that visit the Municipality of Ponta Delgada, the following should be highlighted: "Portas da Cidade" was picked by 86.6% of the respondents (valid cases) and represents 11.9% of the given responses; "Portas do Mar" was picked by 84.6% of the respondents and represents 11.6% of the total of responses; "Town Center/Historic Area" was picked by 72.2% of the respondents and represents 9.9% of the responses; "Lagoa Azul e Verde (Sete Cidades)" was picked by 57.8% of the respondents and represents 7.9% of the given responses; "Miradouro da Vista do Rei (viewpoint)" was picked by 40.9% of the respondents and represents 5.6% of the total of responses.

According to the Chi-square independence test, there are statistically significant associations between the means of transport to travel to the Azores and all the mentioned tourist attractions, except for "Portas da Cidade", as Table 1 shows.

Table 1

**Variables with statistically significant association with the variable “Means of transport”**

<i>Tourist attractions</i>	$\chi^2$	<i>p</i>
Town Center/Historic Area (TC/HA)	16.272	0.000
Portas do Mar (PM)	6.396	0.011
Gruta do Carvão (GC)	26.440	0.000
Mercado da Graça (MG)	14.075	0.000
Praia das Milícias	26.702	0.000
Praia do Pópulo	44.429	0.000
Praia dos Mosteiros	49.197	0.000
Piscinas de São Pedro/Pesqueiro	9.684	0.002
Forte de São Brás	7.895	0.005
Museu Militar dos Açores	10.555	0.001
Museu Carlos Machado	11.105	0.001
Coliseu Micaelense	15.133	0.000
Jardim António Borges	25.635	0.000
Pinhal da Paz	24.163	0.000
Pineapple greenhouses	18.346	0.000
Lagoa Azul e Verde (Sete Cidades)	12.212	0.000
Miradouro Vista do Rei	12.538	0.000
Parque do Canário	3.931	0.047
Lagoa das Empadas	6.470	0.011
Mosteiros	25.551	0.000
Ferraria	33.569	0.000
Rocha da Relva	14.192	0.000
Moinho do Pico Vermelho	20.738	0.000
Bars and restaurants	7.383	0.007
Summer Nights (event)	13.785	0.000
Sports competitions	15.527	0.000

The analysis of the residuals (difference between the observed values and the expected values) shows that the category “Yes, I visited or intend to visit” is associated to the category

“Boat” regarding the item “Portas do Mar”, while the same category is closer to the category “Airplane” regarding the other tourist attractions presented in Table 3.

The vast majority of tourists that travelled by boat to the Azores picked “Town center/Historic area” (81.1%), “Portas da Cidade” (89.1%) and “Portas do Mar” (89.1%). These tourist attractions have also been selected by the majority of tourists that travelled by airplane, although the corresponding percentages are somewhat lower (respectively, 62.8%, 84.0% and 79.8%). Nevertheless, it should be highlighted that the majority of the tourists that travelled by airplane also picked “Lagoa Azul e Verde” (67%) and half (50%) picked “Miradouro Vista do Rei”.

#### 4.2. Visitors satisfaction

In the answers that measure the visitors’ satisfaction of the total sample, mode and median values tend to be equal to 6, except on the following items: “Entertainment and nightlife” (median=5.50; mode=6); “Health Services” (median=5; mode=5); “Landscapes and environmental conservation” (median=7; mode=7); “Street cleanliness and lighting” (median=6; mode=7); “Friendliness of the local population/professionals” (median=7; mode=7); and “Accessibility for people with reduced mobility” (median=5; mode=6). Therefore, the features with higher satisfaction levels were “Landscapes and environmental conservation” and “Friendliness of the local people”.

Regarding the tourists that travelled by boat, median and mode values tended to be both equal to 6, except on the following cases: “Wellness activities” (median=6.5; mode=7); “Public transportation services and rent-a-car” (median=7; mode=7); “Landscapes and environmental conservation” (median=7; mode=7); “Street cleanliness and lighting” (median=7; mode=7); e “Friendliness of the local people” (median=7; mode=7).

Regarding the tourists that travelled by airplane, median and mode values also tended to be 6, except in the case of the following items: “Wellness activities (median=5; mode=5 and 6); “Entertainment and nightlife” (median=5; mode= 6); “Knowledge of foreign languages” (median=5; mode=5); “Health Services” (median=5; mode=5); “Landscapes and environmental conservation” (median=7; mode=7); “Conservation of buildings” (median=5; mode=6); “Accessibility for people with reduced mobility” (median=5; mode=5); and “Free Wi-Fi available in public spaces” (median=5; mode=5).

Hence, in the case of tourists that travelled by airplane, median and mode suggest a lower satisfaction with the following items: “Knowledge of foreign languages”; “Health Services”; “Accessibility for people with reduced mobility”; and “Free Wi-Fi in public

spaces”. “Landscapes and environmental conservation” also had high ratings among the tourists that travelled by airplane.

Given the ordinal nature of the items that measure the visitors’ satisfaction, the Mann-Whitney U test was used, as a way to compare the respondents’ satisfaction levels between those that travelled by boat and those that travelled by airplane, regarding a set of features of the Municipality. Table 2 contains the main results of this nonparametric hypothesis test.

Table 2

**Results from the Mann-Whitney U test – items from the Satisfaction Scale according to the means of transport used to travel to the Azores**

Items	Means of transport	MR	U	p
Accommodation	Boat	117.42		
	Airplane	92.49	1,189.000	0.043
Restaurants and gastronomy	Boat	185.66		
	Airplane	134.06	7,544.500	0.000
A-A: Access to tourist attractions	Boat	196.00		
	Airplane	154.46	11,739.000	0.000
A-A: Cultural activities	Boat	157.23		
	Airplane	115.39	6,453.000	0.000
A-A: Well-being activities	Boat	119.44		
	Airplane	69.18	1,985.000	0.000
A-A: Sportive, nautical and activities in Nature	Boat	127.90		
	Airplane	103.61	4,706.500	0.003
A-A: Entertainment and nightlife	Boat	93.95		
	Airplane	66.59	731.000	0.003
I: Knowledge of foreign languages	Boat	157.59		
	Airplane	121.81	7,282.500	0.000
I: Tourism information	Boat	204.31		
	Airplane	136.94	9,154.500	0.000
I: Signage	Boat	195.28		
	Airplane	137.60	9,220.000	0.000
S: Public transportation services and rent-a-car	Boat	119.06		
	Airplane	81.44	2,551.500	0.000
S: Health services	Boat	44.05		

	Airplane	26.78	109.500	0.001
A: Monuments/museums	Boat	137.50		
	Airplane	96.45	4,290.000	0.000
A: Landscapes and environmental conservation	Boat	177.51		
	Airplane	169.62	14,277.500	0.407
A: Beaches and bathing areas	Boat	102.22		
	Airplane	87.18	2,589.000	0.072
OA: Conservations of buildings	Boat	195.00		
	Airplane	136.50	9,027.500	0.000
OA: Street cleanliness and lighting	Boat	212.24		
	Airplane	140.31	9,347.500	0.000
OA: Noise	Boat	197.31		
	Airplane	145.15	10,088.000	0.000
OA: Safety	Boat	190.07		
	Airplane	165.72	1,391.500	0.012
OA: Price-Quality relationship	Boat	188.12		
	Airplane	151.30	11,077.00	0.000
OA: Friendliness of the local populations/professionals	Boat	182.75		
	Airplane	147.95	10,569.000	0.000
OA: ATM availability	Boat	142.21		
	Airplane	131.49	8,240.500	0.223
OA: Automatic payment ability in local shops	Boat	145.88		
	Airplane	129.50	8,140.000	0.061
OA: Accessibility for people with reduced mobility	Boat	128.16		
	Airplane	96.28	4,382.500	0.000
OA: Free Wi-Fi available in public spaces	Boat	173.43		
	Airplane	114.08	5,858.000	0.000

According to the Mann-Whitney U test, some statistically significant differences were found between the tourists that travelled by boat and the tourists that travelled by airplane, regarding the following features on the satisfaction scale: “A: Landscapes and environmental conservation”; “A: Beaches and bathing areas”; “OA: ATM availability”; “OA: Automatic payment ability in local shops”, considering a significance level of 0.05, as Table 6 shows. In

all the items, the means of the ranks are higher regarding tourists that travelled by boat, i.e., the satisfaction levels are, in general, higher for tourists that travelled by boat. This suggests that tourists that travelled by airplane are, generally, more prone to criticism.

### 4.3 Nonlinear Principal Component Analysis

In this study, respondents who visited the Municipality of Ponta Delgada were asked to answer questions related to their degree of satisfaction on different items about several aspects of the Municipality of Ponta Delgada. A seven-point response scale was used (1- Totally dissatisfied; 7- Totally satisfied). Consequently, these items correspond to ordinal variables.

Applying the nonlinear Principal Component Analysis (NLPCA), taking into account the ordinal nature of the items, with Varimax rotation with Kaiser Normalization, we found a five-component structure (see Table 3). The five components (dimensions) have eigenvalues greater than the unity, and the percentage of variance accounted for (PVAF) across these components is 67.38% of the total variance of the tourists' satisfaction. Moreover, according to the values of the Cronbach's Alpha coefficient, all these principal components (PCs) have an acceptable internal consistency. Moreover, the first two principal components have a satisfactory internal consistency.

Table 3

**Rotated component matrix: Loadings for the first five PCs of the tourism data – five component structure**

	Component				
	1	2	3	4	5
1-Accommodation	<b>0.637</b>	0.018	0.086	0.083	0.102
2-Restaurants and gastronomy	0.278	0.111	<b>0.566</b>	0.223	0.239
3-A-A: Access to tourist attractions	0.095	0.223	<b>0.501</b>	0.176	0.193
4-A-A: Cultural activities	<b>0.991</b>	0.001	0.008	-0.010	-0.046
5-A-A: Wellness activities	<b>0.992</b>	0.006	0.013	-0.006	-0.039
6.A-A: Sportive, nautical and activities in Nature	<b>0.991</b>	-0.004	-0.003	-0.009	-0.044
7-A-A: Entertainment and nightlife	<b>0.990</b>	-0.002	-0.001	-0.012	-0.051
8-I: Knowledge of foreign languages	<b>0.630</b>	-0.028	0.114	-0.131	0.393
9-I: Tourism information	<b>0.991</b>	-0.003	0.004	-0.006	-0.046
10-I: Signage	0.006	<b>0.979</b>	0.022	0.008	0.001
11-S: Public transportation services and rent-a-car	-0.009	0.033	<b>0.759</b>	-0.017	0.296

12-S: Health services	-0.028	-0.038	<b>0.697</b>	0.082	-0.187
13-A: Monuments / museums	-0.015	-0.044	<b>0.750</b>	0.077	-0.021
14-A: Landscapes and environmental conservation	-0.014	<b>0.664</b>	0.116	-0.080	0.265
15-A: Beaches and bathing areas	0.002	<b>0.980</b>	0.020	0.005	0.002
16-OA: Conservation of buildings	0.013	-0.001	0.425	-0.078	<b>0.693</b>
17-OA: Street cleanliness and lighting	0.003	<b>0.979</b>	0.026	-0.003	0.015
18-OA: Noise	0.012	0.165	-0.001	0.086	<b>0.723</b>
19-OA: Safety	0.000	<b>0.792</b>	-0.009	0.110	-0.051
20-OA: Price-Quality relationship	0.017	-0.038	0.042	0.388	<b>0.584</b>
21-OA: Friendliness of the local population/professionals	-0.023	0.000	-0.012	0.430	<b>0.434</b>
22-OA: ATM availability	-0.002	-0.058	0.039	<b>0.702</b>	0.173
23-OA: Automatic payment ability in local shops	0.007	-0.005	0.195	<b>0.682</b>	0.049
24-OA: Accessibility for people with reduced mobility	-0.001	-0.006	-0.042	<b>0.785</b>	-0.003
25-OA: Free Wi-Fi available in public spaces	-0.015	0.133	0.207	<b>0.625</b>	0.000
<b>Eigenvalue (VAF)</b>	5.802	4.064	2.497	2.451	2.031
<b>Percentage accounted (PVAF)</b>	23.209	16.255	9.988	9.804	8.125
<b>Cronbach's Alpha</b>	0.863	0.789	0.682	0.657	0.628

*Variable Principal Normalization. Rotation Method: Varimax with Kaiser Normalization*

The most important items for the first component are the items related to the “Accommodation”, “Cultural activities”, “Wellness activities”, “Sportive, nautical and activities in Nature”, “Entertainment and nightlife”, “Knowledge of foreign languages”, “Tourism information”. Therefore, this component may be called “Activities of tourist animation and tourism information”.

The items “10-I: Signage”, “14-A: Landscapes and environmental conservation”, “15-A: Beaches and bathing areas”, “17-OA: Street cleanliness and lighting”, and “19-OA: Safety” are associated with the second component, that was designated “Natural and environmental Heritage and spatial planning”.

The items “2-Restaurants and gastronomy”, “3-A-A: Access to tourist attractions”, “11-S-Public transportation services and rent-a-car”, “12-S: Health services and “13-A:

Monuments/museums”, are the most important items for the third component, which was called “Cultural and built Heritage and Services”.

The items “22-OA: ATM availability”, “23-OA: Automatic payment ability in local shops”, “24-OA: Accessibility for people with reduced mobility” and “25-OA: Free Wi-Fi available in public spaces are associated with the fourth component, which was called “Conditions of access to automatic payment, wi-fi and accessibility for people with reduced mobility”.

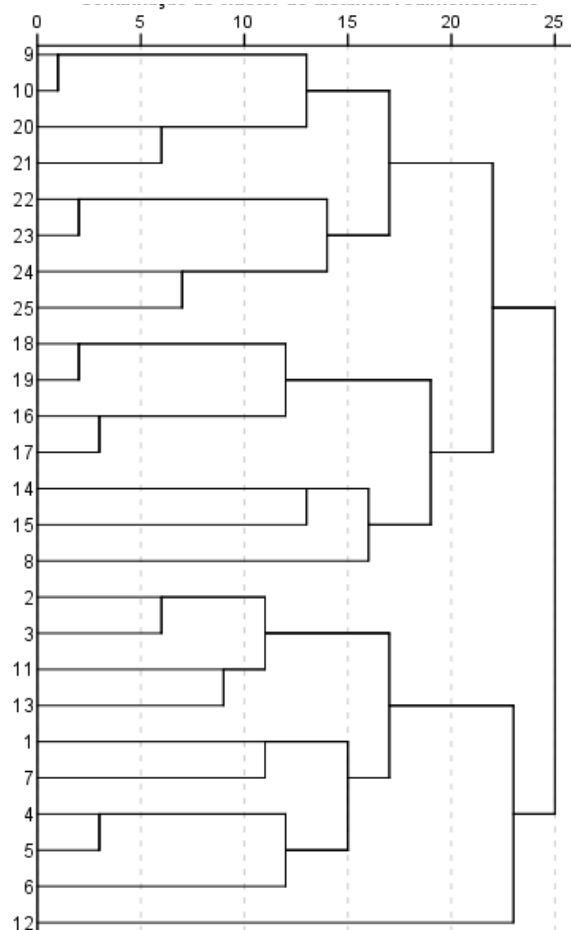
The items “16-OA: Conservation of buildings”, “18-OA: Noise”, “20. OA: Price-Quality relationship”, “21-OA: Friendliness of the local population/professionals” are correlated with the fifth component, which was called “Other aspects”.

#### 4.4 Ascendant Hierarchical Cluster Analysis

The dendrograms provided by the used algorithms of Ascendant Hierarchical Cluster Analysis (AHCA) revealed some consistent clusters, which were obtained from all of the applied clustering methods (Single Linkage, Complete Linkage, and Average linkage):

- {“9-I: Tourism information”, “10-I: Signage”};
- {“2-Restaurants and gastronomy”, “3-A-A: Access to tourist attractions”};
- {“11-S: Public transportation services and rent-a-car”, “13-A: Monuments/museums”};
- {“4-A-A: Cultural activities”, “5-A-A: Wellness activities”};
- {“20-OA: Price-Quality relationship”, “21-OA: Friendliness of the local population/professionals”};
- {“18-OA: Noise, “19-OA: Safety”, “16-OA: Building conservation”, “17-OA: Street cleanliness and lighting”};
- {“22-OA: ATM Availability”, “23-OA: Automatic payment ability in local shops”, “24-OA: Accessibility for people with reduced mobility”, 25-OA: Free Wi-Fi in public spaces”}.





**Figure 1.** Dendrogram obtained based on the Spearman's Correlation Coefficient and on the Complete Linkage method.

Figure 1 shows the dendrogram provided by the method Complete Linkage, in which it is possible to observe the high proximity between the opinions related to the items: “9-I: Tourism Information” and “10-I: Signage”; “18-OA: Noise” and “19-OA: Safety”; “16.OA: Conservation of buildings” and “17-OA: Street cleanliness an lighting”; “22-OA: ATM availability” and “23-OA: Automatic payment ability in local shops”; and “4-A-A: Cultural activities” and “5-A-A: Wellness activities”.

The selected partition is the following partition into five clusters (level 20), which was provided by the Complete Linkage method (see Figure 1):

C1: {9, 10, 20, 21, 22, 23, 24, 25};

C2: {18, 19, 16, 17};

C3: {14, 15, 8}. This cluster was detected by two of the applied methods (Complete Linkage and Average Linkage).

C4: {2, 3, 11, 13, 1, 7, 4, 5, 6};

C5: {12}.

Cluster C1 contains two subclusters, namely, {9, 10, 20, 21}, which contains two of the four items associated with component 5, and {22, 23, 24, 25}, which contains all items associated with component 4.

Cluster C4 contains two subclusters, namely {2, 3, 11, 13}, which contains four of the five items associated with dimension 3, and {1, 7, 4, 5, 6}, which contains five of the seven items associated with dimension 1.

Cluster C5 contains only an item. In fact, the dendrograms given by the three methods show that the most dissimilar item from the others, keeping in attention the degree of (dis)satisfaction of the respondents, is the item "12-S: Health services". The mean and the median values related to this item are the smallest (mean=5; median=5). In addition, the cluster resulting from the merging of clusters C2 and C3, {18, 19, 16, 17, 14, 15, 8}, at level 21 of the dendrogram shown in Figure1, contains four of the five items associated with component 2.

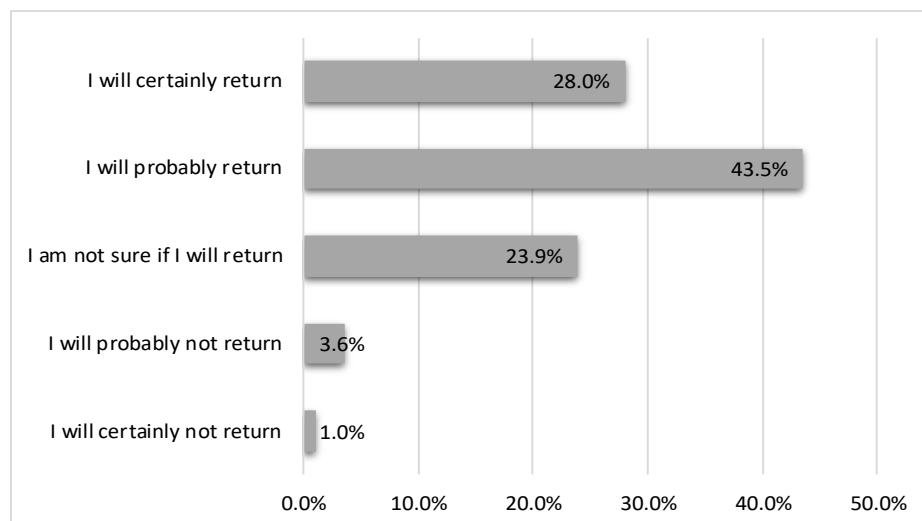
#### 4.5 Overall Satisfaction Level

The tourists of our sample are generally satisfied with regard to the different aspects of the Municipality of Ponta Delgada. The values of the mean (146.83) and the median (148.50) of the total scores obtained in the scale that evaluates the latent variable "Visitor satisfaction" are higher than the midpoint (100) of the interval [25, 175] defined by the possible extreme values of this scale. The total scores obtained on this scale were higher (mean = 150.83, median = 151.50) and presented lower variability (Coefficient of Variation (CV) = 3.80%) in the case of tourists who traveled by boat, comparatively to the tourists who traveled by airplane (mean = 142.75, median = 144.50, CV = 7.04%).

Given the non-compliance with the normality assumption of the total scores, the Mann-Whitney U test was applied. It was possible to conclude that there are statistically significant differences ( $U = 9284.500$ ;  $p = 0.000$ ) among the tourist who traveled by boat and those who traveled by airplane at the level of the total scores obtained in this scale. The means of the ranks (MR) are higher in the case of those who traveled by boat (MR = 253.54), compared to those who traveled by airplane (MR = 146.39).

The median (6) and mode (6) values regarding the answers to the question about the level of overall satisfaction (only one question) – having a scale from 1 (“Totally unsatisfied”) to 7 (“Totally satisfied”)–also suggest that the respondents are satisfied with their visit to Ponta Delgada. The minimum rate was 3 and the maximum was 7, and 20.7% of the respondents said they were “Totally satisfied”. In fact, the distribution of the answers (valid percentages) concerning this question were: (“3”: 0.3%; “4”: 2.8%; “5”: 21.9%; “6”: 54.3%; “7-Totally satisfied”: 20.7%).

When asked about the probability of returning to the Azores, 43.5% of the respondents said that they would probably return and 28% said that they would certainly return. Only 1% of the respondents said that they would certainly not return. 3.6% said that they would probably not return and 23.9% picked the option “I am not sure if I will return” (see Figure 2). From those that want to return to the Azores, the majority (64.8%) answered “I’ll return in the next 3 years” and 35.2% answered “I will return next year”.



**Figure 2.** Probability to return to the Azores (%).

#### 4.6 Features to be improved

Regarding the features that the respondents think need to be improved, the following should be highlighted: “Restaurant services: better quality/variety of food” (referred by 33% of the respondents); “More walking trails” (29.4%); “More cultural spaces” (25.8%); “More/better environmental conservation” (24.4%); “Better signage on roads and tourists attractions” (23.5%); “Better touristic planning of the different areas of the municipality” (21.7%); “Better public roads, pavements and sidewalks” (21.7%); “Better conservation of buildings” (21.3%); “More nightlife entertainment for young people” (20.8%); “More

nightlife entertainment for senior people” (20.4%); “More spas” (20.4%); and “Lower prices” (20.4%).

Applying the Chi-square independence test, we have concluded that there are statistically significant associations between the means of transport to travel to the Azores and the items that are listed on Table 4, considering a significance level of 0.05. Regarding the items on Table 4 and considering the values of the residuals, it was possible to conclude that the category “Yes, it needs improvement” is associated with the category “Airplane” of the variable “Means of transport”.

Table 4

**Variables with statistically significant association with “Means of transport” – Features to improve/implement in the Municipality of Ponta Delgada**

<i>Features to improve/implement</i>	$\chi^2$	<i>p</i>
I-Resorts	10.560	0.001
I-More golf courses	7.377	0.007
I-More nightlife entertainment for young people	47.474	0.000
I-More nightlife entertainment for senior people	18.063	0.000
I-More campsites	12.625	0.000
S-Better public transport services	25.523	0.000
S-Better taxi services	23.429	0.000
S-Better rent-a-car services	24.306	0.000
S- Better services in restaurants, shops and bars	25.880	0.000
S- More nautical tourism services	5.698	0.017
S- Restaurant services: better quality / variety of food	49.170	0.000
OA- Better touristic planning of the different areas of the municipality	6.016	0.014
OA- More / better environmental conservation	10.560	0.001
OA- Better signage on roads and tourist attractions	10.822	0.001
OA- Better preservation of beaches	13.510	0.000
OA- Lower prices	7.086	0.008
OA- Better public roads, pavements and sidewalks	4.596	0.032
OA- More information in foreign languages	7.292	0.007

According to the opinion of the tourists that travelled by boat, the main features that should be improved/implemented are “More walking trails” (36.8%), “More cultural spaces” (29.5%) and “Better conservation of buildings” (29.5%).

Regarding the tourists that travelled by airplane, the most important features to improve/implement are “Restaurant services: better quality / variety of food” (49.2%); “More nightlife entertainment for young people” (34.9%); “Better services in restaurants, shops and bars” (29.4%); “More / better environmental conservation” (29.4%); “Better signage on roads and tourist attractions” (28.6%); “More nightlife entertainment for senior people” (27.8%); “Better touristic planning of the different areas of the municipality” (24.6%); “More walking trails” (23.8%); “Lower prices” (23.8%); “Better public roads, pavements and sidewalks” (23.8%); “More cultural spaces” (23.0%); “Better preservation of beaches” (23.0%); “Better public transports services” (21.4%) and “Better rent-a-car services” (20.6%).

Only 45.4% of the respondents of the overall sample had the opinion that there is no need to change anything (“everything is good”). This is an opinion shared by 53.3% of the tourists that travelled by boat and 36.5% of the tourists that travelled by airplane. It is important to highlight that according to the Chi-square independence test there is a statistically significant association between the answer “Nothing change, everything is good” and the means of transport to travel to the Azores ( $\chi^2=11.118$ ;  $p=0.001$ ).

### Discussion

Ponta Delgada is the main urban centre of the Azores and an emergent adventure tourism destination that is prioritizing Nature Tourism as its core tourism experience. Although Ponta Delgada is the most important and most developed tourism municipality of the region, the results from a survey of tourists revealed very interesting results and peculiarities in demand. This data should be considered, especially for destination planning and management, by all local stakeholders aiming for a better-quality tourist experience. Beyond demographics and travel-related information, the results also allowed the identification of specific strengths and weaknesses of the touristic supply of Ponta Delgada.

Additionally, the analysis of two separate samples, namely tourists that travelled by airplane and tourists that travelled by boat, allowed a more detailed understanding of the specificities of different types of tourists. It is important to recall that Ponta Delgada has the only airport and the only cruise terminal in the island of São Miguel, and these two infrastructures are the biggest of their kind throughout the region. It was expected a priori that the two main groups of tourists – visitors that travelled by airplane and visitors that travelled by boat – would have some significant differences in behaviour, which the results of this survey confirmed.

Generally, tourists that travelled to Ponta Delgada by boat were mostly British and were older than the tourists that travelled by airplane. Cruise tourists had a major influence on this general profile since the vast majority of tourists that travelled by boat were on cruises.

Broadly speaking, tourists that travelled by airplane and tourists that travelled by boat sought the same attractions and activities in Ponta Delgada, which were, mostly, visits to natural attractions, visits to museums and cultural/religious sites, and activities such as jeep tours. Nevertheless, there are some differences that should be highlighted. Tourists that arrived by airplane were more active and sought adventure and nature-based activities. Tourists that travelled by boat tended to stay at the historical town centre, resorting to organized tours (jeep or bus) to visit natural attractions outside this area. For both groups, the most sought-out attractions in Ponta Delgada were located in the town centre or in Sete Cidades.

The features that generated more satisfaction among tourists that travelled by airplane were related to 'nature', 'hospitality', and 'accommodation', but the references to a very good 'price-quality relationship' should also be highlighted. The tourists that travelled by boat appreciated the 'road cleanliness and lighting', 'hospitality', and 'landscape and environmental conservation'. These results reveal many characteristics that can contribute towards a distinguished qualification of the destination and the development of the municipality's competitive potential.

Conversely, lower levels of satisfaction arose from the inadequate 'supply structure', in particular the lack of 'entertainment and nightlife', 'low building conservation', 'quality of restaurants', functionality of the 'public transport services', 'accessibility difficulties for people with reduced mobility', and 'Wi-fi availability in public places'. This last feature is critical given the great global trends and the need to reinforce the destination's technological performance to keep up with the evolution of the consumer profile and with the dynamics of the sharing economy. Nevertheless, the overall satisfaction with the destination is very high and respondents revealed clear intentions of revisiting Ponta Delgada.

On a strategic level, it would be crucial to develop efforts to improve the links of tourism value chain. They are related to the performance of associated services, but also include upstream activities, specifically in destination planning and management. It includes the need to improve territorial planning considering the different zones of the Municipality, environmental conservation, structuring of routes, building conservation, creation of more walking trails, and the lighting of roads and tourist attractions. Another important

consideration is the need to improve nightlife, entertainment activities, restaurants services, customer service, cultural entertainment diversity, and the quality of the touristic experience.

Finally, it is relevant to highlight the references to the need for more spas. Some tourist segments are characterized by their older age and income levels that are higher than the average, which could lead to a higher propensity to consume health, wellness, and relaxation services. This topic is relevant for further and focused research, since these types of services in a sustainable tourism island destination such as the Azores could create great opportunities for local companies. It can be a relevant product for first-time tourists and, especially, for generating repeat tourists as some cruise tourists use their short stays to prospect destinations for future visits.

### Conclusions

Tourism demand in the Azores has been increasing significantly and its positioning in the adventure tourism market is generating greater awareness. This is a consequence of the new air transport system, which allowed the operation of low cost carriers (LCCs) and resulted in cheaper airfares, availability across multiple distribution channels, and greater exposure to international markets. This new paradigm on one of the most sustainable destinations in the world has spurred the need for thorough strategic planning and management of the destination, especially at the regional and local levels.

As Ponta Delgada is the leading Azorean municipality in terms of tourism activity, the City Hall's Council felt the need to outline an integrated strategy for its tourism sector development. A team of experts, which included the authors of this paper, built upon Couto et al.'s (2017) approach and structured a strategic plan for tourism development in the municipality. The underlying diagnostic process of this approach is very detailed, involving diversified and thorough data collection from tourists (demand), local tourism players (supply), and public entities as well as the technical analysis of market dynamics and local resources.

This paper is focused on the demand analysis component, which was based on a survey of tourists that visited Ponta Delgada during August and September 2016 (high season months in the Azores). The questionnaire was relatively long and comprehensive and was structured into four main groups with a total of 19 questions. This decision involved some risk as the long time needed for completion could discourage tourists from collaborating. Nevertheless, it was a necessary process to be able to gather sustained and coherent information.

A total of 400 responses were gathered across two different samples: tourists that travelled by airplane and tourists that travelled by boat. For each group, the main goals of the questionnaire were to gather information about the tourist profile, activities and attractions visited in Ponta Delgada, satisfaction with the destination's attributes and with the overall experience. Furthermore, the main strengths and weaknesses on the supply side were also a very important goal to achieve.

The results highlighted the importance of nature and culture as the most relevant qualifying elements of the tourists' experiences in Ponta Delgada. The dichotomic but also symbiotic relationship between the natural space and the town centre leverages a true differentiation and has a deep impact on the tourist. However, it is essential to preserve these local assets and strive for a consistent structure and qualification of the tourism supply. Generally, both samples – tourists that travelled by airplane and tourists that travelled by boat – exhibit high levels of satisfaction with the destination and willingness to return.

Nevertheless, there are critical differences between the two groups. It is clear that visitors that travel by airplane are more prone to engage in adventure experiences than the ones travelling by boat. This information, as well as other data collected from local players and statistical databases, was crucial for the sustained and coherent outline of a strategy and of a concrete action plan for Ponta Delgada's development as a tourism destination.

This paper contributes to the research on destination competitiveness and performance, as well as tourism strategic planning at the local level. It is suggested that future investigations adopt a more segmented analysis and apply specific models to better understand the attributes and dimensions that contribute to experience quality, satisfaction, and behavioural intentions.

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Submetido em: 21.01.2019

Aceito em: 13.03.2019