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Article

The effects of airline choice on accommodation type and length of stay: Evidence of an islands region

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ARTICLE



The effects of airline choice on accommodation type and length of stay: evidence of an islands region

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ABSTRACT

This study aims to analyze the influence of the entrance of low-cost carriers in the Azores in terms of the determinants of the number of overnight stays and the choice of accommodation type. Different methods of statistical analysis were used for the empirical study. Estimates were considered based on variables related to the trip. In addition, a different variable was considered in the estimates of the type of accommodation: the tourist's perception of the importance of the existence of several types of accommodations, quantified on a qualitative scale. The results indicate that tourists traveling to the Azores on low-cost carriers tend to stay fewer days at the destination, although these tourists may have other characteristics that predispose them to shorter stays. Finally, the results suggest that the characteristics related to travel are explanatory variables in the choice of accommodation type.

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Low-cost carrier; travel behavior; length of stays; type of accommodation; choices of the tourist

1. Introduction

In an increasingly global and competitive market, whether in terms of passenger or freight mobilization, the transport sector – in particular, air transport – has become a strategic factor in the development of countries or regions due to its capacity to improve accessibility and its multiplicative effect in the economy. The process of liberalizing airspace revolutionized the global air transport sector by changing the existing paradigm, defined and established by governments and regulators mainly in an attempt to ensure the survival of their flagship companies. However, faced with a highly competitive and global market plagued by economic and financial crises, airlines were forced to adopt new strategies and approaches to their business.

Based on a flexible and service-oriented business model at very competitive prices, low-cost carriers (LCC) increased the availability of routes and the frequency of flights, ensuring greater air accessibility and growth of tourism in several regions, including those where tourism is still underdeveloped (Chung & Wang, 2011; Dobruszkes & Mondou, 2013; Rey, Myro, & Galera, 2011). The present study aims to evaluate the

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influence of the entry of LCC into the airspace of the Azores at two levels: tourists' length of stay and choice of type of accommodation, controlled by other trip-related variables.

This study provides an important contribution to the literature as it reflects earlier viewpoints held immediately after the liberalization of the airspace of the Azores and the consequent operationalization of the LCC activity, making the Azores an interesting laboratory in which to study the impacts of LCC on a local economy. In addition, the study explains the determinants of the choice of accommodation type in the function of variables related to the trip and travelers' perceptions about the need for different types of accommodation – a theme not widely explored in the literature.

The study is organized as follows. [Section 2](#) presents a review of the relevant literature while [Sections 3](#) and [4](#), respectively, formulate the research hypotheses and discuss the methodology employed. In [Section 5](#), the sample is described, while [Section 6](#) presents the results. [Section 7](#) offers a discussion of the results and, finally, in [Section 8](#), the main conclusions and policy implications of the paper are presented.

2. Literature review

In the tourism and transport area, several studies have focused on tourists' profile and its influence on tourism to the destination, with reference to different indicators (e.g., length of stay) that help define the tourist profile. Length of stay and its effective analysis can be an indicator of the profile of tourists visiting a destination and their propensity to spend money during holidays, provided that longer stays generate higher tourism revenues (Gokovali, Bahar, & Kozak, 2006). The length of stay is a more relevant economic indicator than tourist arrivals for quantifying, for example, tourism reference indicators (Qiu, Rudkin, & Sharma, 2017).

Several studies have used trip-related variables to explain the duration and choice of stay. In the case of travel characteristics, the most common variables used in the literature are the cost of travel, the attributes of the destination, the organization of the trip, the motivation or purpose of the trip, repeated visits to the same destination, the type of accommodation, and the size and composition of the travel group. Some studies have also considered destination distance, type of flight or mode of transportation used, number of trips per year, overseas travel experience, and satisfaction (Lawson, 1991) as explanatory variables of length of stay. The size of the group on the trip is relevant in the time of permanence. Lawson (1991) observed that the average stay at the destination of elderly individuals traveling alone was greater than the average stay of those traveling as part of a group. Similar results were suggested by Alegre and Pou (2006). Salmasi, Celidoni, and Procidano (2012) verified that, as the size of the group increases, the length of stay at the destination decreases.

In terms of the trip purpose, some studies have found that leisure tourists tend to have longer stays while business tourists tend to make shorter stays than those who visit friends and relatives (Hellström, 2006; Mak, Moncur, & Yonamine, 1977). Menezes, Moniz, and Vieira (2008) concluded that leisure tourists expect to stay longer than the other two groups, as suggested in their study of the Azores. Meanwhile, Yang, Kevin, and Jie (2011) found that vacationers in Yixing, China, stay, on average, shorter lengths than business tourists whereas those visiting friends and relatives have a longer average stay. For trips made with the purpose of visiting family and/or friends, the average length of

stay is usually higher due to the reduction in accommodation costs, which allows the stay at the destination to be extended for the same available budget (Jang, Bai, & O'Leary, 2003; Lawson, 1991; Wang, Zhang, Xia, & Wang, 2008).

Some authors have studied the influence of the means of transportation, the distance of the trip, and the type of flight used on the time of tourists' stay. Menezes et al. (2008) estimated that tourists traveling on scheduled flights tend to stay for shorter periods than tourists using charter flights. According to Wu and Carson (2008), longer international travel has a more positive relationship with the length of stay than domestic travel. Indeed, Nicolau and Más (2009) suggested that tourists show a greater predisposition to travel longer if they are staying at the destination for a minimum number of days to compensate for the extra effort made during the trip and to dilute the costs associated with it. On the other hand, in the face of LCC growth, tourists tend to prefer shorter trips throughout the year rather than long periods of vacation to the same destination (Martinez & Raya, 2008); thus, they seek to enjoy different experiences in cities and tourist destinations all over Europe at a reduced cost. Brida and Scuderi (2013) and Marrocu, Paci, and Zara (2015) related the type of flight to the number of overnight stays, suggesting that travelers using LCC may have other characteristics that predispose them to shorter stays, such as being younger groups who tend to spend less. Studies have also revealed that lower transportation costs and access to more destinations encourage travelers to take a short vacation, which minimizes the total length of stay at each tourist destination (Mason & Alamdari, 2007). Other authors have focused on the number of prior visits to the destination and its attributes or characteristics in order to relate and explain the duration of the tourists' stay. When the number of previous visits to the destination is considered, the empirical evidence indicates a positive relationship with the tourists' stay period (Alegre and Pou, 2006; Alegre, Mateo, & Pou, 2011; Barros & Machado, 2010; Thrane & Farstad, 2012; Yang et al., 2011) whereas the opposite was hypothesized by Paul and Rimmawi (1992) and Silberman (1985). In addition, the choice of accommodation type affects tourists' length of stay, although the relevant findings are not uniform in the literature.

From a very early stage, the literature has suggested that a relationship exists between hotel choice and length of stay (Mak & Nishimura, 1979). More recently, Martinez and Raya (2008) and Ferrer-Rosell, Martinez, and Coenders (2014) reported that stays in high-quality hotels tended to be shorter, while Alegre and Pou (2006) obtained divergent results, stating that guests of higher quality hotel tended to stay longer than guests of lower quality hotels. Reducing the cost of accommodation (or transportation) and, consequently, the total cost of the trip can have an impact on the increase in travel frequency or length of stay. Some studies have suggested that the types of accommodation usually associated with a lower cost, such as non-hotel dwellings and apartments (for example, Martinez & Raya, 2008), lead to longer stays and, consequently, to an increase in related expenses with other activities in the destination. Stays made in tourist apartments, family or friends' houses, or in second homes have a significant positive effect on the length of stay (Lawson, 1991; Martinez & Raya, 2008; Nicolau & Más, 2006; Salmasi et al., 2012).

3. Research hypotheses

Several authors (e.g., Brida & Scuderi, 2013; Marrocu et al., 2015) relate the type of flight to the number of overnight stays, suggesting that travelers using LCC may have other

characteristics that predispose them to shorter stays, such as being younger groups that tend to spend less. Menezes et al. (2008) estimated that tourists traveling on scheduled flights tend to stay for shorter periods than tourists using charter flights. Thus, the following hypothesis was formulated:

H1: The type of flight influences the duration of the stay.

The size of the group of the trip is relevant to the time of permanence. Lawson (1991) observed that the average stay at the destination for elderly individuals traveling alone was greater than that for those traveling as part of a group. Similar results were suggested by Alegre and Pou (2006) and Salmasi et al. (2012), who verified that, as the size of the group increases, the stay at the destination is reduced. Hence, the following hypothesis was formulated:

H2: The size of the travel group influences the length of stay of the tourist.

Alegre and Pou (2006) verified that tourists' length of stay varies according to both nationality and the travel package. A tourist without a tourist package tends to stay more days at the destination (11 days) than a tourist on an organized trip (8 days). In this context, the following hypothesis was formulated:

H3: The travel package influences the length of stay.

The purpose of the trip is a fundamental explanatory variable of tourists' period of stay. Leisure tourists tend to have longer stays (Hellström, 2006; Mak et al., 1977) while business tourists tend to make shorter stays than those who visit friends and relatives (Menezes et al., 2008). Hence, the following hypothesis was formulated:

H4: The purpose of the trip influences the permanence in the destination.

Other authors focused on the number of prior visits to the destination and its attributes or characteristics in order to relate and explain the duration of the tourists' stay. When the number of previous visits to the destination is considered, the empirical evidence indicates a positive relationship with the length of tourists' stay (Alegre and Pou 2006; Alegre et al., 2011; Barros & Machado, 2010; Thrane & Farstad, 2012; Yang et al., 2011), whereas the opposite was predicted by Paul and Rimmawi (1992) and Silberman (1985). Therefore, the following hypothesis was formulated:

H5: The number of previous visits to the destination influences the length of stay.

The choice of accommodation type affects tourists' length of stay, although the findings are not uniform in the literature. Some authors have suggested that a relationship exists between hotel stays and length of stay (Mak & Nishimura, 1979). Ferrer-Rosell et al. (2014) reported that stays in high-quality hotels tended to be shorter, while Alegre and Pou (2006) obtained divergent results, stating that guests at higher

quality hotels tended to stay longer than those at lower quality hotels. In this context, the following hypothesis was formulated:

H6: The choice of type of accommodation has an impact on the length of stay.

4. Method

In this section, the econometric analysis methods that were used as the basis for the empirical study are presented, specifically: multinomial logit model and Poisson regression.

4.1. Multinomial logit model

The model to be estimated considers five options regarding the type of accommodation: four-star hotel ($j = 4$), two- or three-star hotel ($j = 3$), local accommodation ($j = 2$), house of family or friends ($j = 1$), and others, such as hostels, camping, or private vacation houses ($j = 0$). The model is based on the assumptions of the discrete choice or random utility model, introduced by McFadden (1973). This model considers that the visitor chooses the alternative that provides the greatest utility – that is, alternative j is chosen if $U_j > U_k$ for any $k \neq j$.

In addition, the utility for an individual of a specific alternative j is the sum of the deterministic component (V_j) with a random element (u_j). Therefore, the utilities are stochastic and given by $U_j = V_j + u_j$, where $j = 0, 1, 2, 3$, or 4.

The probability of the visitor choosing an alternative j can be described by $P_j = P(U_j > U_k)$. Considering that the random components follow a distribution of the Gumbel type, the conventional multinomial logit model can be used to estimate the probability of choosing the different j alternatives. In addition, considering that $V_j = \alpha'_j X$, where α'_j is a set of parameters associated with each alternative j being estimated and X is a set of observable explanatory variables, such probability can be written as:

$$P_j = \exp(\alpha'_j X) / \sum_{k=0}^4 \exp(\alpha'_k X) \quad (1)$$

The model is estimated by the maximum likelihood method. Given that the parameters are not identified because a constant term is included in the regression, a normalization procedure is usually used that chooses a base category and defines its coefficients equal to 0. For this purpose, we consider that $\alpha'_0 = 0$ (see Greene, 2012; Maddala, 1983).

The multinomial logit model can be expressed in terms of odds ratios. The odds of outcome m versus outcome n , given X , equal

$$\frac{P_m}{P_n} = \frac{\exp(\alpha'_m X) / \sum_{k=0}^4 \exp(\alpha'_k X)}{\exp(\alpha'_n X) / \sum_{k=0}^4 \exp(\alpha'_k X)} \quad (2)$$

This is equivalent to

$$\frac{P_m}{P_n} = \frac{\exp(\alpha'_m X)}{\exp(\alpha'_n X)} = \exp(X(\alpha'_m - \alpha'_n)) \quad (3)$$

Taking the logs,

$$\log\left(\frac{P_m}{P_n}\right) = X(\alpha'_m - \alpha'_n) \quad (4)$$

and

$$\frac{\partial \log\left(\frac{P_m}{P_n}\right)}{\partial x_i} = a_{im} - a_{in} \quad (5)$$

This allows us to interpret $\alpha'_m - \alpha'_n$ as follows: For a unit change in variable x_i , the logit of outcome m versus outcome n is expected to change by $a_{im} - a_{in}$ units, holding all other variables constant.

As $\alpha'_0 = 0$, the equation for the comparison with outcome 0 can be simplified to:

$$\log\left(\frac{P_m}{P_0}\right) = X(\alpha'_m - \alpha'_0) = X\alpha'_m \quad (6)$$

Therefore, the coefficient a_{im} can be interpreted as follows: For a unit change in variable x_i , the logit of outcome m versus outcome 0 is expected to change by $a_{im} - a_{in}$ units, holding all other variables constant.

The logit multinomial model will be used to analyze the relationship between the type of accommodation chosen (dependent variable) and a set of characteristics related to the trip (explanatory variables), including the type of airline used.

4.2. Poisson regression

The Poisson regression model is particularly revealing when the dependent variable results from a count, which is presented in a quantitative form with discrete and non-negative values. In this study, it is assumed that the number of overnight stays (y) follows a Poisson distribution with a conditional average that depends on several factors.

The model is written as:

$$\mu_i = E(y_i | X_i) = \exp(X_i \beta) \quad (7)$$

The likelihood function for the Poisson regression model is given by:

$$L(\beta | y, X) = \prod_{i=1}^N \Pr(y_i | \mu_i) = \prod_{i=1}^N \frac{\exp(-\mu_i) \mu_i^{y_i}}{y_i!}, \quad (8)$$

After considering the logarithm, the numerical maximization can be used. As the likelihood function is globally convex (see, for example, Wooldridge, 2002), if a maximum value is found, it must be the only one.

The partial effect on $E(y|X)$ resulting from variations of x_k (marginal effect) can be calculated using the composite derivative rule:

$$\frac{\partial E(y|X)}{\partial x_k} = \frac{\partial \exp(X\beta)}{\partial X\beta} \cdot \frac{\partial X\beta}{\partial x_k} = \exp(X\beta)\beta_k \quad (9)$$

Thus, the value of the marginal effect depends on the values of each of the explanatory variables.

Equation (8) can be rewritten as follows:

$$E(y_i|X, x_k) = \exp(\beta_0) \cdot \exp(\beta_1 x_1) \dots \exp(\beta_k x_k) \dots \exp(\beta_K x_K) \quad (10)$$

If x_k is modified by ∂ :

$$E(y_i|X, x_k + \partial) = \exp(\beta_0) \cdot \exp(\beta_1 x_1) \dots \exp(\beta_k x_k) \exp(\beta_k \partial) \dots \exp(\beta_K x_K) \quad (11)$$

The variation in the expected value of the dependent variable (expected count) resulting from ∂ in x_K is given by:

$$\begin{aligned} \frac{E(y_i|X, x_k + \partial)}{E(y_i|X, x_k)} &= \frac{\exp(\beta_0) \cdot \exp(\beta_1 x_1) \dots \exp(\beta_k x_k) \exp(\beta_k \partial) \dots \exp(\beta_K x_K)}{\exp(\beta_0) \cdot \exp(\beta_1 x_1) \dots \exp(\beta_k x_k) \dots \exp(\beta_K x_K)} \\ &= \exp(\beta_k \partial) \end{aligned} \quad (12)$$

For variation ∂ in x_K , the expected count is multiplied by the factor $\exp(\beta_k \partial)$ keeping all remaining variables constant. For a variation of one unit in x_k , the expected factor count is multiplied by a factor of $\exp(\beta_k)$, keeping all other variables constant.

Alternatively, the percentage changes in the expected count that result from ∂ variation in x_k , keeping all other variables constant, can be determined as follows:

$$\frac{E(y_i|X, x_k + \partial) - E(y_i|X, x_k)}{E(y_i|X, x_k)} \times 100 = [\exp(\beta_k \times \delta) - 1] \times 100 \quad (13)$$

The effect of a certain variable x_k in the expected count can also be determined by calculating the changes, in the expected value of y , of a certain variation in x_k , starting with x_k and finishing in x_E :

$$\frac{\Delta E(y|X)}{\Delta x_k} = E(y|X, x_k = x_E) - E(y|X, x_k = x_S) \quad (14)$$

The effect of a binary variable is obtained by a change in x_k of 0 (x_S) to 1 (x_E), which corresponds to:

$$\Delta E(y|X) = E(y|X, x_k = 1) - E(y|X, x_k = 0) \quad (15)$$

The magnitude of the variations in the dependent variable is a function of the values of all the explanatory variables of the model. The variations in the expected count due to a given explanatory variable are calculated by setting all other explanatory variables in their mean values. Thus, the Poisson model explains the number of overnight stays based on variables such as the type of flight, whether the ticket was last minute, the type of reservation, the modality (or regime) of the reservation, the type of accommodation, the group with which an individual is travelling, and the package chosen.

5. Description of the sample

For the purposes of the current study, 1417 questionnaires were distributed to individuals traveling to the Azores between 2014 and 2016. The questionnaires were grouped as follows: 671 in the high-low seasons of 2014–15 (from April 2014 to March 2015) and 746 in the high-low seasons of 2015–16 (from April 2015 to March 2016). [Table 1](#) describes the sample.

In the high-low seasons of 2015–16, there was an increase in the number of respondents in the younger age group and a corresponding decrease in the number of respondents in the older age group when compared with the high-low seasons of 2014–15. Regarding gender, the proportions of men and women in the sample are similar in the different periods under analysis. The proportions of respondents in the different marital status categories remained relatively constant during the two periods. In terms of nationality, the majority of respondents were Portuguese and German. In terms of the destination choice, the great majority chose the Azores destination as the first option in the high and low seasons of 2014–15 and 2015–16. In addition, the majority of respondents traveled to the Azores with bed and breakfast included during the high and low seasons of both 2014–15 and 2015–16.

Table 1. Sample description.

Variable	Season 2014–2015		Season 2015–2016	
	Frequency	%	Frequency.	%
Age: ≤24 years old	50	7,46%	83	11,13%
Age: 25–34 years old	135	20,15%	170	22,79%
Age: 35–44 years old	162	24,18%	177	23,73%
Age: 45–54 years old	153	22,84%	170	22,79%
Age: ≥55	170	25,37%	146	19,57%
Gender: Female	318	47,89%	342	46,22%
Gender: Male	346	52,11%	398	53,78%
Marital status: Single	175	26,48%	216	29,59%
Marital status: Married	388	58,70%	411	56,30%
Marital status: Other	98	14,83%	103	14,11%
Nationality: Portuguese	260	38,75%	293	39,28%
Nationality: Danish	39	5,81%	39	5,23%
Nationality: Spanish	10	1,49%	48	6,43%
Nationality: Swedish	31	4,62%	61	8,18%
Nationality: German	120	17,88%	134	17,96%
Nationality: Dutch	46	6,86%	41	5,50%
Nationality: North American	32	4,77%	5	0,67%
Nationality: Other	133	19,82%	125	16,76%
Type of accommodation: Just Bed	112	17,31%	161	22,39%
Type of accommodation: Bed & Breakfast	398	61,51%	403	56,05%
Type of accommodation: Other	137	21,17%	155	21,56%
Whom are you travelling with? Spouse/partner	263	39,79%	386	55,30%
Whom are you travelling with? Family	178	26,93%	151	21,63%
Whom are you travelling with? Alone	93	14,07%	63	9,03%
Whom are you travelling with? Other	127	19,21%	98	14,04%
How many times have you come to the Azores? 1	438	65,47%	572	78,04%
How many times have you come to the Azores? 2	80	11,96%	77	10,50%
How many times have you come to the Azores? 3	35	5,23%	9	1,23%
How many times have you come to the Azores? >3	116	17,34%	75	10,23%
Were the Azores the first holiday destination choice? Yes	518	77,89%	607	82,03%
Were the Azores the first holiday destination choice? No	147	22,11%	133	17,97%
Trip motive? Leisure	27	19,57%	44	40,00%
Trip motive? Visit family	51	36,96%	43	39,09%
Trip motive? Work	30	21,74%	6	5,45%
Trip motive? Other	30	21,74%	17	15,45%

The tourists who chose accommodations with bed and breakfast included made up the majority of the sample, and the number of respondents who chose this type of accommodation increased in the high and low seasons of 2015 and 2016. In both periods, more than 2/3 of the respondents traveled with a spouse/partner or family. The proportion of tourists who traveled to the Azores for the first time increased after the low-cost airlines entered the market.

Finally, in terms of reasons for travel, the majority of respondents traveled to the Azores for leisure or family reasons; in the high and low seasons of 2015–16, this proportion increased to about 80%.

6. Results

This section includes the analysis and discussion of the results obtained after applying the methods of estimation for each empirical study: the determinants of the number of overnight stays and the determinants of choice of accommodation type.

6.1. Determinants of length of stay

The duration of stay is a variable of particular interest for any tourist destination given its positive relationship with tourism receipts (Barros, Butler, & Correia, 2010; Martinez & Raya, 2008), in addition to being one of the most important factors in tourists' decision-making process (Salmasi et al., 2012). The analysis of the length of stay is of the utmost importance as it is strongly related to the other variables intrinsic to the experience of the tourist, such as the type of accommodation used (Dellaert, Ettema, & Lindh, 1998).

In order to achieve the proposed objectives, the Poisson regression method was used to estimate and test the parameters related to a set of variables that explain the permanence (number of overnight stays) of tourists. After that, the overdispersion test was used to evaluate the most appropriate method (whether the Poisson regression method or the negative binomial regression method) for the statistical analyses of the data. The statistic of the overdispersion test did not point to the rejection of the null hypothesis ($H_0: \alpha = 0$) at the 95% confidence level, which suggested the use of the Poisson regression method for the empirical study. The muhat indicator showed a coefficient of -0.0064378 , a standard error of 0.012393 , and a p -value of 0.604 .

From the Poisson regression's results, it is first noted that the type of flight used by tourists influences the number of overnight stays. Specifically, tourists who travel to the Azores via LCC tend to stay fewer days at the destination. However, it is possible that some kind of endogeneity bias exists in that conclusion as the choice of an LCC may itself be influenced by the fact that the person plans to spend a short time at the destination. For this reason, we conducted a test based on the well-known Hausman (1978) endogeneity test, using as an instrument a dummy variable that assumes the value of one when a reservation was made on aviation companies' websites (assumed to be correlated with the choice of LCC to travel). The test consisted of estimating a logit model with LCC choice as the dependent variable (and all exogenous variables as explanatory variables) and including the residuals from this regression in the structural equation (Poisson regression). Given that the coefficient of the residuals was not statistically different

from zero (with a t statistic of -1.66 and a p -value of 0.096) we did not reject the null hypothesis of exogeneity.

In addition, tourists who consider rural housing to be important tend to stay fewer days at the destination, as do tourists who travel alone or with family or friends. Advanced reservations are also a decisive variable in the number of overnight stays. Tourists who make their reservations less than one month in advance tend to stay fewer days at the destination whereas tourists with last-minute reservations and those who opt for a tourist package are more likely to remain more days at destination (see Table 2).

6.2. Determinants of choice of accommodation type

As previously mentioned, we analyzed a set of variables related to the trip in order to estimate their influence on travelers' choice of type of accommodation. We considered type of housing as a variable to be explained in the model rather than an explanatory variable. With regard to the dependent variable, we assumed the following categories: four-star hotel, two- or three-star hotel, local accommodation, and house of family or friends.

The types of accommodation were explained by a set of variables related to the type of flight: the purchase of the ticket (if it was last minute), advanced reservation, the modality of the stay and the perceptions regarding the importance of the existence of housing projects in rural areas, wellness hotels, and low-cost hotels.

Table 2. Poisson regression: significance of the explanatory variables of the number of overnight stays.

Independent variables	Coefficient	Standard Error	Z statistic	P > z	Sig.	[95% Confidence Interval]	
Type of flight: Charter	-.0501304	.1079771	-0.46	0.642		-.2617616	.1615008
Flight type: Low-Cost	-.4487435	.0849762	-5.28	0.000	*	-.6152937	-.282193
Last minute trip: Yes	.2927331	.0841988	3.48	0.001	*	.1277065	.4577598
Accommodation in rural areas: not very important	.1101787	.1330137	0.83	0.407		-.1505234	.3708808
Accommodation in rural areas: not important	.2275015	.135001	1.69	0.092		-.0370955	.492098
Accommodation in rural areas: important	-.2657515	.0846408	-3.14	0.002	*	-.4316444	-.0998586
Accommodation in rural areas: very important	-.054402	.0703126	-0.77	0.439		-.1922122	.0834081
Reservation antecedence: < 1 month	-.1716982	.0948419	-1.81	0.070	**	-.3575849	.0141886
Reservation antecedence: between 1 and 3 months	.000367	.0688598	0.01	0.996		-.1345958	.135329
Reason: leisure	.2348587	.177146	1.33	0.185		-.1123412	.5820586
Reason: Visit family and friends	.1896674	.2178729	0.87	0.384		-.2373556	.6166903
Travel with family or friends	-.3197268	.0940013	-3.40	0.001	*	-.5039659	-.1354876
Travel alone	-.45241	.1594961	-2.84	0.005	*	-.7650166	-.13980
Tour Package: Yes	.2534706	.0770274	3.29	0.001	*	.1024997	.40444
Azores first choice: Yes	-.0467603	.0688812	-0.68	0.497		-.181765	.0882444
Type of accommodation: Hotel 4 stars	-.0292139	.105254	-0.28	0.781		-.235508	.1770801
Type of accommodation: Hotel 2 and 3 stars	.0054834	.124736	0.04	0.965		-.2389946	.2499615
Type of accommodation: Local Accommodation	.1981092	.1277132	1.55	0.121		-.052204	.4484224
Type of accommodation: House of family and friends	.3234569	.1444639	2.24	0.025	**	.0403129	.6066009
_cons	2.248989	.2276439	9.88	0.000	*	1.802815	2.695162

* Significant at a confidence level of 99%

** Significant at a confidence level of 95%

Table 3. Determinants of dependent variable type of accommodation: 4 stars hotel.

Independent variables	B	Standard Error	Sig.	Exp(B)
Interception	2,260	2,331		
Flight type: Low-cost	-4,748	1,588	*	0,009
Type of flight: Charter	-5,712	2,153		,003
Last Minute Trip: Yes	-1,381	,986		,251
Reservation antecedence: less than a month	-4,631	1,436	*	,010
Reservation antecedence: between 1 and 3 months	-,078	1,083		,925
Reservation: Travel Agencies/Operators	1,662	1,450		5,271
Reservation: Online Travel Agencies/Operators	,887	,907		2,427
Type of stay: Room only	2,255	1,777		9,536
Type of stay: Bed and Breakfast	4,357	1,658	*	78,031
Type of stay: Half Board	22,359	1307,313		5,13E+09
Type of stay: All Inclusive	12,033	6706,037		1,68E+05
Rural accommodation expectation: far less important	21,803	3580,993		2,94E+09
Rural accommodation expectation: less important	1,424	1,863		4,155
Rural accommodation expectation: important	5,096	1,680	*	163,343
Rural accommodation expectation: quite important	-1,096	1,088		,334
Health and wellness hotels expectation: far less important	-,343	5,271		,710
Health and wellness hotels expectation: less important	-1,901	1,964		,149
Health and wellness hotels expectation: important	-3,143	1,513	**	,043
Health and wellness hotels expectation: quite important	-,727	1,140		,483
Low Cost hotels expectation: far less important	-,059	5,198		,943
Low Cost hotels expectation: less important	,766	1,586		2,151
Low Cost hotels expectation: important	,060	1,138		1,062
Low Cost hotels expectation: quite important	2,344	1,063	**	10,422

* Significant at a confidence level of 99%

** Significant at a confidence level of 95%

As indicated in [Table 3](#), it is possible to verify that travelers who choose to travel using a full service carrier (FSC), those who opt for a bed and breakfast (BB), those who judge accommodations in rural areas as important, and those who consider the existence of low-cost hotels to be quite important tend to prefer four-star hotel accommodations. Meanwhile, tourists who make their reservations less than a month in advance and those who think that health and wellness hotels at the destination are important tend to avoid four-star hotels.

Two- and three-star hotel accommodations are usually preferred by FSC travelers, BB travelers, and those who find it important and quite important for accommodations to be in rural areas and be low-cost hotels. Travelers who purchase last minute tickets show a lower propensity to stay in two- and three-star hotels (see [Table 4](#)).

The results in [Table 5](#) indicate that travelers using FSC and those who consider the existence of rural accommodations to be important tend to stay in local accommodation projects whereas travelers who book trips less than a month in advance show a lower propensity for local accommodation units.

Finally, travelers who consider accommodation in a major rural area to be important and those who consider the existence of low-cost hotels quite important tend to prefer to stay in homes of family and friends. Travelers who book their stay less than a month in advance, those who opt for BB, and those who consider the existence of wellness hotels at the destination important or quite important tend not to stay in homes of family and friends (see [Table 6](#)).

7. Discussion of results

Given their influence in mobilizing resources and people, airlines are capable of generating impacts at various levels in the economy. Demand for air travel has steadily

Table 4. Determinants of dependent variable type of accommodation: 3- and 2-stars hotels.

Independent variables	B	Standard Error	Sig.	Exp(B)
Interception	0,083	2,562		
Flight type: Low-cost	-3,428	1,627	**	0,032
Type of flight: Charter	-4,474	2,290		,011
Last Minute Trip: Yes	-3,076	1,181	*	,046
Reservation antecedence: less than a month	-2,206	1,625		,110
Reservation antecedence: between 1 and 3 months	1,788	1,328		5,980
Reservation: Travel Agencies/Operators	-0,438	1,644		0,646
Reservation: Online Travel Agencies/Operators	,563	1,010		1,757
Type of stay: Room only	1,567	1,806		4,790
Type of stay: Bed and Breakfast	3,615	1,635	**	37,160
Type of stay: Half Board	5,407	2391,231		2,23E+02
Type of stay: All Inclusive	-2,566	12,005,216		7,69E-02
Rural accommodation expectation: far less important	20,833	3580,993		1,12E+09
Rural accommodation expectation: less important	-20,421	1835,357		0,000
Rural accommodation expectation: important	3,646	1,656	**	38,337
Rural accommodation expectation: quite important	-0,671	1,117		,511
Health and wellness hotels expectation: far less important	11,089	667,104		65,427,315
Health and wellness hotels expectation: less important	0,044	2,083		1,045
Health and wellness hotels expectation: important	-1,485	1,446		,227
Health and wellness hotels expectation: quite important	-,802	1,243		,448
Low Cost hotels expectation: far less important	-8,588	667,081		,000
Low Cost hotels expectation: less important	,946	1,755		2,575
Low Cost hotels expectation: important	-,471	1,262		0,624
Low Cost hotels expectation: quite important	2,807	1,154	**	16,566

* Significant at a confidence level of 99%

** Significant at a confidence level of 95%

Table 5. Determinants of dependent variable type of accommodation: Local Accommodation.

Independent variables	B	Standard Error	Sig.	Exp(B)
Interception	2,777	2,894		
Flight type: Low-cost	-5,093	2,028	**	0,006
Type of flight: Charter	-76,075	1929,034		,000
Last Minute Trip: Yes	1,331	1,347		3,785
Reservation antecedence: less than a month	-3,954	1,911	**	,019
Reservation antecedence: between 1 and 3 months	1,230	1,231		3,423
Reservation: Travel Agencies/Operators	-16,766	5097,149		0,000
Reservation: Online Travel Agencies/Operators	-1,096	1,079		0,334
Type of stay: Room only	0,297	1,638		1,346
Type of stay: Bed and Breakfast	1,293	1,565		3,644
Type of stay: Half Board	6,178	2235,722		4,82E+02
Type of stay: All Inclusive	12,472	0,000		2,61E+05
Rural accommodation expectation: far less important	104,854	4176,379		3,45E+45
Rural accommodation expectation: less important	0,304	2,212		1,355
Rural accommodation expectation: important	3,759	2,095	**	42,918
Rural accommodation expectation: quite important	-1,142	1,284		,319
Health and wellness hotels expectation: far less important	-40,045	1510,818		,000
Health and wellness hotels expectation: less important	2,274	2,143		9,719
Health and wellness hotels expectation: important	-63,444	5475,324		,000
Health and wellness hotels expectation: quite important	,169	1,312		1,184
Low Cost hotels expectation: far less important	17,632	843,149		4,55E+07
Low Cost hotels expectation: less important	-15,587	1129,103		0,000
Low Cost hotels expectation: important	,978	1,362		2,660
Low Cost hotels expectation: quite important	1,017	1,226		2,765

* Significant at a confidence level of 99%

** Significant at a confidence level of 95%

Table 6. Determinants of dependent variable type of accommodation: House of relatives and friends.

Independent variables	B	Standard Error	Sig.	Exp(B)
Interception	5,680	2,601		
Flight type: Low-cost	-2,837	2,090		0,059
Type of flight: Charter	-18,313	2551,354		1,114E-08
Last Minute Trip: Yes	-0,870	1,205		,419
Reservation antecedence: less than a month	-2,762	1,639	***	,063
Reservation antecedence: between 1 and 3 months	1,200	1,488		3,320
Reservation: Travel Agencies/Operators	-0,263	1,797		0,769
Reservation: Online Travel Agencies/Operators	-1,774	1,176		0,170
Type of stay: Room only	-0,972	1,297		0,378
Type of stay: Bed and Breakfast	-2,428	1,427	***	0,088
Type of stay: Half Board	1,642	3037,072		5,16E+00
Type of stay: All Inclusive	-8,694	0,000		1,68E-04
Rural accommodation expectation: far less important	19,843	8175,777		4,15E+08
Rural accommodation expectation: less important	-12,011	2592,555		0,000
Rural accommodation expectation: important	4,077	2,315	***	58,951
Rural accommodation expectation: quite important	-0,466	1,298		,628
Health and wellness hotels expectation: far less important	5,037	10,520,184		153,949
Health and wellness hotels expectation: less important	-18,103	2681,403		,000
Health and wellness hotels expectation: important	-4,338	2,320	***	,013
Health and wellness hotels expectation: quite important	-2,625	1,490	***	,072
Low Cost hotels expectation: far less important	-4,721	6414,542		,009
Low Cost hotels expectation: less important	-13,020	2680,506		0,000
Low Cost hotels expectation: important	-2,604	1,811		0,074
Low Cost hotels expectation: quite important	2,510	1,258	**	12,302

** Significant at a confidence level of 95%

*** Significant at a confidence level of 90%

increased over time due to lower airfares, technological advancements, the optimization of operating costs, and improved living conditions (Stephens, 2008). All these dynamics have been translated into increases in market flows and the establishment of new routes, with forecasts for an increase in low-cost flights boosted by not only the liberalization of markets, but also the generation of new touristic inflows. In many cases, LCC have generated new demands for air traffic, attracted new air passengers (especially price-sensitive travelers), and increased passenger travel frequency (Brilha, 2008) while also promoting new tourist destinations, including some destinations previously unknown to tourists (Bieger & Wittmer, 2006; Echevarne, 2008).

The current research developed an empirical study to explore the determinants of the number of overnight stays (period of stay of the tourists). The results show that tourists traveling to the Azores via LCC tend to stay fewer days at the destination; similar evidence was suggested in the studies of Brida and Scuderi (2013) and Marrocu et al. (2015). The characteristics of travel, such as advanced reservations, the form of reservation (whether made online on the airlines' website or through agencies or tour operators), last-minute reservations, and the option for a tour package, affected the period of permanence (number of overnight stays). The type of accommodation and tourists' perceptions about the importance of accommodations in rural areas also influenced the number of overnight stays. Traveling as part of a group and the type of flight used by the travelers impacted tourists' length of stay, supporting the results of Alegre and Pou (2006), Menezes et al. (2008), and Salmasi et al. (2012). No evidence was found to suggest that socioeconomic variables such as age, sex, education, and nationality affected the number of overnight stays, contradicting studies by Barros and Machado (2010), Salmasi et al. (2012), Wang,

Little, and DelHomme-Little (2012), and Chaiboonsri, Chokethaworn, and Chaitip (2012), but supporting Peypoch, Randriamboarison, Rasoamananjara, and Solonandrasana (2012) and Ferrer-Rosell et al. (2014). Meanwhile, the reason for the trip, the frequency of the trip, and the type of accommodation did not influence variables in the travelers' stay period, contrary to the conclusions by Yang et al. (2011), Kazuzuru (2014), and Ferrer-Rosell et al. (2014).

This study also sought to evaluate the influence of a set of variables related to travel on travelers' choice of type of accommodation. The results indicated that the type of flight used by travelers, the modality (or regime) of the chosen stay, the perception about the importance of accommodation in rural areas and low-cost hotels at the destination, advanced reservations, and last-minute tickets are determining variables in the choice of accommodation type.

8. Conclusions

This study consolidates the existing literature related to transportation's influence on the tourist profile and related to indicators and determinants of tourist length of stay and accommodation choices. The study is relevant considering that it reflects a viewpoint just prior to and immediately after the liberalization of the airspace of the Azores and consequent operationalization of the LCC activity.

Another relevant aspect of the study is the fact that variables related to the trip are used to explain travelers' choice regarding the type of accommodation – a theme not yet widely developed in the literature. In addition, included in the estimates were several variables for the quantification of tourists' perception of the importance of several types of accommodation. Such variables have not been deeply explored in the literature.

In addition, this study is complementary to existing literature, in which the type of accommodation is considered a variable to be explained rather than an explanatory variable. On the other hand, given that the Azores is named one of the most sustainable destinations in the world every year and that the length of stay is important for the analysis of tourism sustainability, the study considers the determinants of the number of tourists' overnight stays at the destination to be important.

It is essential to define a strategy that incorporates the different economic agents into an integrated and visitor-oriented offer in order to increase tourist gains and visitor stays. In addition, from a more comprehensive perspective, decision-makers and managers can obtain comparative advantages over other destinations by using a marketing strategy oriented to the target segments that are more appropriate for the attributes of the destination and potentially more profitable.

LCC provide an increase in passenger travel frequency, often in mid-week and low seasons, which tourism professionals should take advantage of in order to seek ways to mitigate the seasonality of the activity.

Given that length of stay can be a proxy for the profile of tourists visiting a destination and their propensity to spend during vacations, it is important that economic agents provide differentiating products and services that encourage tourists to stay. In this context, more diversified and integrated tourist packages, in terms of products and services, can be created to meet the needs and expectations of the potential tourists.

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