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**Finding similar price preferences on
tourism activities**

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ABSTRACT

This article builds on the double role of the effect of prices on the choice of tourism activities: not only is it the only component of a destination marketing strategy that represents income but also a determinant factor in tourist choice. On this account, identifying patterns of tourists with different degrees of sensitivities to prices would help them design an appropriate bundle of activities and have a clear definition of the segment the destination should try to attract. Accordingly, the objective of this paper is to find tourist segments from individual price sensitivities to activities. The results show that, although price has a dissuasive influence on the choice of activities it shows a differentiated effect; this heterogeneous responsiveness to price supports the use of this variable as a segmentation criterion. In the empirical application four segments are found with significantly different price sensitivities.

Keywords: individual price sensitivity, tourism activities, tourist choice, segmentation strategy.

1. INTRODUCTION

The literature has devoted especial attention to the effect of price on destination choice, as the decision of going (or not going) to a destination is critical in tourism (Haider and Ewing, 1990; Morey et al., 1991; Eymann and Ronning, 1992; Morley, 1994a, 1994b; Dubin, 1998; Train, 1998; Riera, 2000; Siderelis and Moore, 1998). However, once the tourists are at the destination, the price of the activities available also becomes a salient attribute to determine their choice on them. In this regard, knowledge of the individual sensitivities to prices of activities would permit the identification of groups of people defined in terms of their predisposition to pay for a set of activities.

The analysis of individual price sensitivities to tourism activities has received less attention, although it is a variable of major importance: On the one hand, destination managers look for development in a sustainable way through the use of resources and creation of activities that enhance the destination's well-being. Consequently, identifying patterns of tourists with different degrees of sensitivities to prices would help them design an appropriate bundle of activities and have a clear definition of the segment the destination should try to attract. On the other hand, tourists obtain pleasure from leisure activities which they take part in at destinations, but they balance the pleasure obtained from the activity against the amount of money that has to be paid. Therefore, not only is it relevant to know who is interested in a specific activity but to learn how much an individual is predisposed to pay to partake in it.

In this vein, the objective of this paper is to find tourist segments from individual price sensitivities to activities. For this purpose, the article is organized as follows: the second section reviews the importance of segmenting tourist markets through price sensitivities, the third covers the design of the investigation; describing the data and methodology, the fourth section presents the results and their discussion, and the fifth section summarizes the conclusions.

2. INDIVIDUAL PRICE SENSITIVITIES

The existence of strong heterogeneous tourism demand looking for service provision adapted to its specific needs, along with the recent intensification of competition in the tourism market, has led to segmentation becoming fundamental to the marketing strategies of tourism organizations (Blomm, 2003; Chen, 2003). Basically, the heterogeneity of the tourism market reflects the existence of a diversity of needs and desires and, therefore, of differentiated consumer behavior among tourists. Because of this, tourism companies, in order to identify their target customer types and accurately find their characteristics, use market segmentation strategies that form and select typologies or groups of tourists in the market to develop marketing products and programs adapted to each group (Kotler, 2003). The application of the segmentation strategy entails the identification of the most profitable customers to establish a close and continuous relationship with them, bearing in mind their needs and adapting products accordingly.

The maintenance of a continuous long-term relationship with tourists requires knowledge of their behavior; and this implies observation of their purchase decisions. Underlying this matter is the concept that knowing how tourists make their purchase choices allows us to identify the factors that lead them to opt for particular alternatives (e.g. choosing a destination as well as selecting a specific set of activities). In this sense, Bronner and De Hoog (1985) show that the

manner in which individuals make decisions is an appropriate aspect to use as a base for market segmentation. Following this proposal, some studies use tourist decision making process to identify market segments. Chief among them are Hsieh et al. (1997) and Decrop and Snelders (2004). However, these decision making processes are analyzed at a segment level, with no identification of the decision process at an individual level. Alternatively, we analyze individual choice decisions and focus on the estimation of one of the most determinant variables, which is price.

Literature does not reach a consensus on the influence of prices on tourism decisions. One line of thought holds that demand for tourism products is that of an *ordinary good*, in such a way that price increments diminish consumption (Smith, 1995), meaning that price is considered as a factor which reduces the utility of an alternative. Conversely, another line of thought proposes that price does not have a dissuasive effect on destination choice, but that it is an attraction factor. Morrison (1996) indicates that the underlying hedonistic character often found in the consumption of tourism products implies that high prices do not always act against demand; rather that the concept of value for money, which compares the amount spent with the quality of installations and service, takes over. It means that, apart from being regarded as an element enhancing repetition, satisfaction and competitiveness (Stevens, 1992; Petrick, Morais and Norman, 2001; Petrick and Backman, 2002; Petrick, 2004; Chen and Tsai, 2007, 2008; He and Song, 2009), this concept might imply an association of price increases with demand increments. In this vein, Erickson and Johansson (1985) state that the role price plays in a consumer's evaluation of product alternatives is multidimensional, and they distinguish between the reduction of wealth because of high prices (prices as a constraint), and the information on product quality these high prices convey (prices as a product attribute), in line with the dual function of price-value perceptions (Murphy and Pritchard, 1997). This multidimensional view of prices leads to increased awareness of the importance of price implications, since the role of different price dimensions varies between consumers and product types, and recognition that complex pricing schemes may be a necessity for particular situations (Gijbrecchts, 1993). In other words, the measurement of the effect of price is not an easy task and a host of complicating factors emerges, such as consumer heterogeneity.

When it comes to the choice of tourism activities, it is important to note that tourists obtain pleasure from activities which they participate in at destinations, but they have to compare the pleasure obtained with the cost they have to incur, i.e., their prices. Therefore, the price appears to be a decisive element again once they arrive at the destination. Also, as destinations' financial income is mostly determined by the price paid, knowing the effect that the price of activities exerts on their selection is fundamental. What is more, if individual sensitivities to price were estimated, groups of tourists with different sensitivities could be found, making it possible for a destination to identify the best segments.

Therefore, considering the existence of tourist heterogeneity and the importance of establishing close relationships with tourists to provide tailored products once they get to the destination, we attempt to find segments according to individual price sensitivities to tourism activities, in a choice framework.

3. RESEARCH DESIGN

3.1. Data

The investigation of tourists' preferences toward hypothetical bundle of activities (i.e. tourist cards) at the destination has been carried out through a stated preference (SP) experiment conducted in Ticino - Switzerland during summer 2010.

Tourists were facing with a set of hypothetical choice situations generated according to an orthogonal experiment design comprising five attributes with three levels each. In particular, four attributes refer to activities undertaken by tourists and grouped applying a principal component analysis whereas the fifth attribute represents the price of the hypothetical tourist card. Table 1 describes the attributes and attributes levels considered in the study.

Table 1. Attributes and their levels

Attribute	Attributes levels
Culture and nature	Free usage of cable cars Free entrance to museums Free entrance to botanical gardens
Entertainment and sport	Free entrance to entertainment parks 20% discount on wellness facilities 20% discount on sports and renting sport equipment
Evening activities	20% discount on events and festivals 20% discount in restaurants 20% discount in bars/clubs
Water activities	Free boat trips on the lake Free entrance to Lido 20% discount on renting a boat
Price	30 CHF/day 45 CHF/day 60 CHF/day

As for the scenario of the experiment, the validity of the card has been set to one day (i.e. 24 hours) and the free access to public transport service has been included in the price of the hypothetical tourist card. Figure 1 shows an example of a choice card presented to tourists interviewed.

Each respondent had to state his preference among the three options, namely card A, card B and none of the two cards. In the case that the selected option was none of the two cards, the respondent was successively asked to state his preference only between card A and card B. The two setting afore-mentioned resulted in two different datasets. The following analysis is based on the latter scenario (i.e. the choice between card A and card B).

Along with the choice experiment, the tourists were also asked to answer to a set of questions concerning socio-demographic, tourist behavior, motivations (measured according to a four point Likert scale - not at all important, rather unimportant, rather important, very important) and activity participation frequency (measured according to a four point Likert scale - never, once, few times, every day). A detailed description is provided in the result section (Table 4).

In total, 261 valid interviews have been collected with each respondent facing 12 choice situations, resulting in 3132 choice observations.

Figure 1. Example of a choice card

	Card A	Card B	None
Public transport	Free public transport in Ticino	Free public transport in Ticino	
Culture and nature	Free entrance to museums	Free entrance to botanical parks	
Entertainment and sport	20% discount on wellness facilities	20% discount on sports and renting sport equipment	
Evening activities	20% discount in restaurants	20% discount in bars/clubs	
Water activities	Free entrance to lido	Free boat trips on the lakes	
Price	45 CHF	30 CHF	
Which card would you buy?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
If you could only chose between A and B, which one would you prefer?	<input type="checkbox"/>	<input type="checkbox"/>	

3.2. Methodology

As a new contribution to research, the proposed methodology allows us to estimate and explain individual sensitivities based on decisions. It consists of two stages: i) estimation of individual price sensitivities through a Logit Model with random coefficients (i.e. a mixed logit model); and ii) segment formation.

Stage I: Individual price sensitivities

To estimate the individual parameters (price sensitivities) of a mixed logit model, we apply Bayesian estimation methods in the context of destination choice. In particular, the utility function, associated with respondent n for alternative j in choice situation s , is typically assumed to be linear in parameters, and represented as follows:

$$U_{njs} = \alpha_j + \sum_k \beta_{nk} x_{njsk} + \varepsilon_{njs} \quad (1)$$

where, ε_{njs} is the random term that is Independent and Identically Distributed (IID) extreme value type 1. The mixed logit class of model allows the estimation of the taste heterogeneity by the specification of a density function for the standard deviation of the estimated coefficient. Formally, the random coefficient takes the following functional form:

$$\beta_{nk} = \beta_k + \sigma_k v_{nk} \quad (2)$$

where, β_k is the sample mean, v_{nk} is the individual specific heterogeneity with mean zero and standard deviation one, and σ_k is the standard deviation of β_{nk} around β_k , assumed normally distributed. Assuming a significant heterogeneity around the mean value, the individual estimates can be obtained through the concept of the Bayes Identity, which states as follows:

$$g(\beta|y_n)P(y_n) = P(y_n|\beta)f(\beta) \quad (3)$$

where y_n indicates the alternative j chosen by respondent n . Starting from the Bayes Identity it is possible to formulate the conditional density of the random coefficient, which result as follows:

$$g(\beta_n|y_n) = \frac{L_n(y_n|\beta)f(\beta)}{P_n} \quad (4)$$

where, L_n is the simulated log-likelihood and P_n is the probability associated to respondent n choosing alternative j . The conditional expectation is then derived resulting in the following function:

$$E(\beta_n|y_n) = \int \beta g(\beta|y_n)d\beta = \int \frac{\beta P(y_n|\beta)g(\beta|y_n)d\beta}{P_n} \quad (5)$$

where, the integral does not have a closed form. Therefore, the individual price coefficient estimates need to be simulated as follows:

$$E(\beta_n|y_n) = \frac{1}{R} \sum_r \beta_{nr} \omega_{nr} \quad \text{where, } \omega_{nr} = \frac{L_n}{\sum_r L_n} \quad (6)$$

where, $r = 1, \dots, R$ is the number of draws used in the simulation process for the estimation of the parameters. In the following study 500 Halton draws¹ have been used.

Stage II: Segment formation

Once we obtain the estimations of the parameters for each individual, we proceed to construct the segments with similar preferences. To this end, we apply cluster analysis (Ward's minimum variance hierarchical algorithm) to the matrix of the parameters of each individual. The Ward Algorithm is used to form hierarchical groups of mutually exclusive subsets (Ward, 1963). Given a number h of sets, this algorithm reduces them to $h-1$ mutually exclusive sets by taking into account the union of all possible $h(h-1)/2$ pairs and choosing the union that has the maximum value for the objective function. In short, this procedure seeks to minimize the sum of squares of any two potential clusters that can be formed at each stage.

The final number of segments is reached when the segments observed explain at least 65% of the global variance, and when another segment is added, the increase in the total variance is less than 5% (Lewis and Thomas, 1990). In the opinion of Grande and Abascal (2003) and Gené (2002), this is the most appropriate method when using variables derived from previous statistical procedures; and Sorensen (2003) indicates that this method is regarded as very efficient. Additionally, we apply a Variance Analysis (ANOVA) to confirm the segments obtained; i.e. to validate the existence of differences in the preference structures of the individuals.

4. RESULTS

4.1. Estimation of the individual parameters

Firstly, we estimate the coefficients for each individual of the variable price, which is determinant of tourism activity choice, using mixed logit models. The global results for the variable “price” that represent the preferences of an average individual are as follows: It shows a parameter equal to -0.0398 (*t-statistic* =-9.58) and a standard deviation standing at 0.041 (*t-statistic* =14.73), both significant at 0.001. Consequently, we find that price is significant and presents a negative sign, therefore being a dissuasive factor in the choice of activities. Its standard deviation parameter, however, is significant too, meaning that “price” has a differentiated effect among the individuals of the sample. This heterogeneous responsiveness to price supports the use of this variable as a segmentation criterion.

4.2. Formation and characterization of segments

Secondly, we apply Ward’s cluster method to the matrix of the estimations of the individual parameters. Applying the double explanation criteria of a minimum of 65% of the total variance, and of least 5% increase in variance when adding a new segment, we select four segments. Table 2 summarizes the results of the application; the shaded area represents the number of segments selected.

Table 2. Determination of the number of segments

N. of Segments	σ^{2*}	$\sigma^2(\%)*$	Explained Variance	$\Delta\sigma^{2*}$
10	0.004	1.19	0.29	98.81
9	0.005	1.48	0.29	98.51
8	0.006	1.78	0.59	98.21
7	0.008	2.38	1.19	97.61
6	0.012	3.57	1.48	96.42
5	0.017	5.06	2.08	94.94
4	0.024	7.14	10.41	92.85
3	0.059	17.56	16.07	82.44
2	0.113	33.63	66.36	66.36
1	0.336	100	0.00	0.00

The segments identified are significantly distinct at a level of 0.001 with regard to the value obtained from the *F* test for the variable considered, in the variance analysis applied to the average value of this variable ($F=1087.8$; $p<0.001$). This confirms the existence of differences in the preference structures of the individuals.

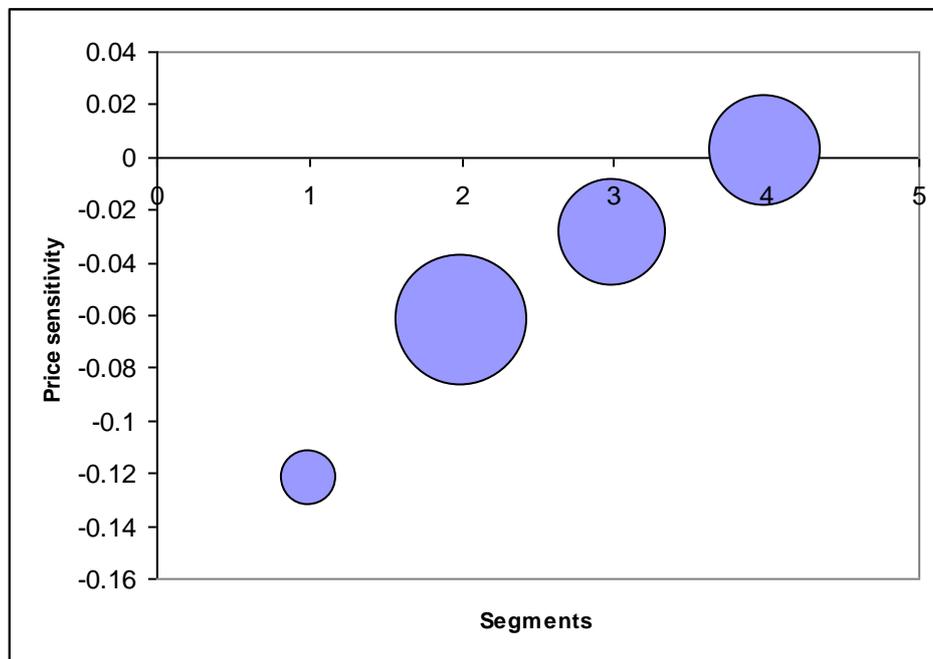
Once we identify the segments according to the proposed criterion, we proceed to characterize them according to price sensitivity and various variables that describe the tourists and their behavior. Table 3 characterizes the segments formed according to “price sensitivity”, showing the averages of each segment and the global values for the whole sample. We also indicate distinct segments according to the Scheffé Test. This test shows that the four segments have different preferences for the dimension of “price sensitivity”.

Table 3. Characterization of the segments through price sensitivities

Segments	Size	Proportion	Prices
1	18	0.07	-0.122
2	99	0.38	-0.062
3	70	0.27	-0.028
4	74	0.28	0.002
Average Value			-0.039
Distinct Segments (Scheffé Test)			1-2-3-4
Similar Segments (Scheffé Test)			None

In Figure 2, we show the position and dispersion of the segments (the circle represents the size of the segment). In general, segments 1, 2 and 3 present a negative posture towards prices, with segment 1 showing the highest negative effect -which in turn is the smallest segment- and segment 3 a moderately negative reaction to them. Observe that segment 4 has a positive sensitivity to price, meaning that they are predisposed to pay a higher price.

Figure 2. Graph segmentation



The four segments identified are finally analyzed with respect to individual characterization on demographics, tourist behavior, motivations and activity participation. In particular, Table 4 reports the mean for the overall sample and for the four segments. As a test for capturing significant differences across the segments we also report (Table 4, last column) the Chi-squared statistic computed for each individual characteristic.

Looking at the Chi-squared test results, few variables associated to demographics and activity participation are found to be statistically different among segments whereas none of the variables characterizing tourist behavior shows a valid difference. In particular, regarding demographic characteristics, segment one has the highest concentration of German citizens and segment two show the highest age average. Regarding activity participation, activities like “dining out”, “visiting museum and historical buildings” and “lido” register significant differences with the highest frequency observed for segment one, four and two, respectively.

Table 4. Characterization of the segments

Characteristics	Mean	Segment 1	Segment 2	Segment 3	Segment 4	χ^2 Anova	or
Demographics							
Swiss	0.452	0.278	0.433	0.529	0.446	4.01	
Germans	0.170	0.389	0.155	0.171	0.135	6.91**	
Italians	0.158	0.167	0.216	0.114	0.122	4.23	
Dutch	0.050	0.000	0.062	0.057	0.041	1.44	
Other Nationalities	0.170	0.167	0.134	0.129	0.257	5.69	
Age	3.8	3.7	4.0	3.8	3.5	27.48**	
Tourist behavior							
Accommodation	1.701	1.667	1.626	1.686	1.824	13.07	
First visit	1.674	1.667	1.747	1.614	1.635	4.08	
Number of nights	4.8	5.3	5.0	5.2	4.2	0.49	
Transportation mode							
bus	0.295	0.278	0.273	0.286	0.338	0.94	
train	0.352	0.444	0.333	0.343	0.365	0.90	
car	0.659	0.611	0.707	0.686	0.581	3.42	
rencar	0.011	0.000	0.010	0.000	0.027	2.61	
moto	0.004	0.000	0.000	0.000	0.014	2.53	
bike	0.073	0.167	0.051	0.043	0.108	5.37	
Holiday budget	292	354	299	296	265	0.49	
Motivations							
Being physically active	2.2	2.8	2.1	2.3	2.3	21.91***	
Finding thrills and excitement	1.6	1.8	1.5	1.5	1.7	14.79*	
Rediscovering myself	1.9	2.0	1.9	1.7	2.1	7.83	
Experiencing new/different lifestyles	1.9	2.1	1.7	1.9	2.3	17.84**	
Trying new food	2.6	2.0	2.5	2.6	2.7	12.83	
Visiting historical places	2.8	2.6	2.7	2.9	3.0	11.41	
Meeting new people	2.1	2.4	2.1	2.0	2.2	10.50	
Being free to act how I feel	2.7	3.4	2.4	2.8	2.9	19.57*	
Visiting friends and relatives	1.9	1.4	1.9	1.9	1.8	19.17**	
Being together with partner/family/friends	3.4	3.2	3.4	3.3	3.4	45.17***	
Experiencing a simpler lifestyle	2.2	2.4	2.1	2.1	2.4	15.70**	
Feeling safe and secure	2.4	2.9	2.1	2.3	2.7	24.04***	
Being entertained and having fun	2.8	2.4	2.8	2.9	2.9	22.92**	
Feeling at home away from home	2.3	2.9	2.2	2.3	2.4	21.40**	
Going to a sunny place	3.4	3.6	3.3	3.5	3.3	25.63***	
Experiencing landscape and nature	3.5	3.9	3.5	3.4	3.6	16.38**	
Getting rest and relaxation	3.5	3.7	3.4	3.5	3.5	17.57**	
Activities							
Events and festivals	1.5	1.5	1.5	1.5	1.5	4.32	
Dining out	2.7	3.1	2.5	2.7	2.8	21.12**	
Using cable cars (for visiting panoramic sites and/ or hiking)	1.8	1.7	1.7	2.0	1.9	11.63	
Visiting museums and/or historical buildings	1.9	1.6	1.6	1.9	2.2	22.67***	
Boat trip on the lake	1.9	1.9	1.7	2.0	1.9	13.08	
Renting a boat	1.2	1.1	1.2	1.3	1.1	9.34	
Entertainment parks	1.1	1.0	1.2	1.1	1.2	9.71	
Natural and botanical parks	1.4	1.3	1.4	1.3	1.5	13.45	
Lido	1.9	1.6	2.1	1.9	1.6	28.05***	
Wellness facilities	1.1	1.2	1.1	1.1	1.3	13.35	
Sports and renting equipment	1.1	1.0	1.0	1.1	1.2	10.33	
Nightlife (Bars/Clubs)	1.4	1.7	1.3	1.3	1.4	16.95	
Ride with the tourist train	1.4	1.2	1.3	1.5	1.3	16.60	

Note: Test statistics for continuous variables “number of nights” and “holiday budget” rely on F-test (ANOVA) whereas for all the other categorical variables χ^2 -test applies.

Turning to motivations expressed by tourists, thirteen statements out of seventeen are found to be statistically different within the four segments. In this context, it is interesting to note that tourists belonging to segment four, who on average have a positive sensitivity to price, give more importance to motivations that commonly imply to take part in paid activities. In particular, higher values, compared to the first three segments, have been found, for example, for “experiencing new /different lifestyles”, “being entertained and having fun”, “trying new food” and “visiting historical places” though for the latter two no statistical differences among the segments emerge from the dataⁱⁱ. On the contrary, segment one, which has the highest price sensitivity, is characterized by tourists giving more importance to motivations that typically do not involve additional expenses, such as “being physically active”, “going to a sunny place”, “experiencing landscape and nature” and “getting rest and relaxation”.

5. CONCLUSIONS

The effect of prices of tourism activities has a double role: on the one hand, it is the only component of a destination marketing strategy that represents income, and on the other, it is a determinant factor in tourist choice. On this account, identifying patterns of tourists with different degrees of sensitivities to prices would help them design an appropriate bundle of activities and have a clear definition of the segment the destination should try to attract.

This paper has found tourist segments from individual price sensitivities to activities. Specifically, the results indicate that price is a dissuasive factor in the choice of activities (tourism activities behave as ordinary goods), but with a differentiated effect (as this dissuasiveness is not general for all the individuals). Precisely, this heterogeneous responsiveness to price supports the use of this variable as a segmentation criterion.

By applying Ward’s cluster method to the matrix of the estimations of the individual parameters, we have detected four segments: three of them with negative effects of prices and one with a positive influence. This result is in accordance with the idea that price can sometimes be considered an attraction factor. In particular, segment 1 is the smallest segment, presents the strongest negative price effect and has the widest range of motivations rated above the mean, especially those motivations that do not necessarily imply paid activities; segment 2 shows the second most negative price effect and the highest age average along with the highest participation to lido activities on the lakes; segment 3 has a moderate negative price effect close to zero, but still negative, and it is characterized by tourists rating “experiencing landscape and nature” below the average but seeking entertainment and fun; and segment 4, presents a positive price effect and, compared to the others, represents the youngest segment and a particular inclination on visiting museum and historical places and attracted by new/different lifestyles.

As for managerial implications, note that the analysis is based on the preferences of individual people, and preferences are key elements in the choice of activities. Moreover, the estimation of the individual parameters (price sensitivities) allows the analyst to operate with precise information on each individual. At a time when people are increasingly demanding service provision adapted to their specific needs, knowledge of the profile of each individual allows organizations to offer the most suitable products. Identifying individuals with more or less predisposition to pay for a combination of activities is crucial for destination managers. In this way they can, first, know their clientele in terms of price preferences; second, develop appropriate products with the right set of activities; third, set “fair” prices (without incurring opportunity costs); and fourth, design promotional campaigns directed at the targeted group

with the stress on the appropriate traits (as motivations have been especially relevant, once destinations have identified their “good segment” they can include the motivations of interest as a topic to form the message to be promoted).

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ENDNOTES

i For a discussion on Halton draws see Train (2009).

ii The Chi-squared test for "trying new food" and "visiting historical places" is significant at an alpha level of 0.18 and 0.21, respectively.

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