

# An urban icon? The case of the Iceman Ötzi

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## Abstract

Cultural tourism is one of the fastest-growing tourism markets. Many governments are investing in tangible and intangible cultural assets as a means to attain comparative advantages, enhancing and supporting the most recent glocalisation phenomenon. Amongst other cultural attractions, museums have been defined as an efficient marketing tool for urban tourism and as a flagship of urban development. The literature shows that museums play a key role in attracting tourists in urban areas contributing to the revitalisation of the city. Museums have a role of as repository of cultural heritage and not replicable public good able to produce revenues and other positive spill-over effects. In this respect, Italy provides an outstanding case study, as the country hosts an immense heritage. This paper explores the factors that influence cultural tourism. Within a microeconomic setting, the objective of this paper is to provide evidence on the attitude of a museum visitors regarding culture and their overall vacation motivation. As a case study, visitors' experience to the South Tyrol's Museum of Archaeology in Bolzano (Italy), best known as "Ötzi", is analysed. A zero-truncated negative binomial model is estimated as a generalization of a Poisson distribution. It is possible to understand in which manner each variable of interest affects the length of stay, taking into account tourists' heterogeneity. The empirical findings show variations in such factors correspond to variation in the span of the vacation that is also positively affected by the presence of the icemen Ötzi in the museum as well as by the presence of other cultural attractions. These findings provide an essential tool to plan the future tourism development around the Ötzi museum.

**Key words:** Length of stay; cultural tourism; museum; zero-truncated negative binomial; management implications.

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## **INTRODUCTION**

From a semantic viewpoint, cultural tourists are those who travel to and spend at least 24 hours, and less than a year, in a given destination, different from their usual residence, with the primary motivation to gather new information and experiences to satisfy cultural needs (see also Richards, 1996; 2003). According to the OECD (2009), cultural tourism is one of the fastest-growing tourism markets. Nowadays, many governments are investing in tangible and intangible cultural assets as a means to attain comparative advantages, enhancing and supporting the most recent glocalisation phenomenon. Glocalisation is a neologism that describes a situation when competition has become global, but competitiveness still occurs at a local level.

In this respect, Italy provides an outstanding case study, as the country hosts an immense heritage with its city of arts, historical urban city centers, archeology and history. Sergardi and Biraghi (2007) estimate cultural tourism in Italy grew by 25% between 2004-2006; this growth was particularly driven by Western European (51%) and Extra-European (22%) demand. Though the cultural tourism length of stay is relatively smaller than traditional tourism (i.e. 7.1 nights for the former and 8.9 nights for the latter), the daily expenditure per capita in euro is the highest (i.e. cultural tourism, 105.7; business, 95.7; traditional tourism, 73.6; others, 62.2). Hence, their study confirms that cultural tourists generally have a higher spending propensity than other consumers' segments (Europa Inform, 2004).

This paper explores the factors that influence cultural tourism. To this aim, as an economic indicator, length of stay of cultural visitors is employed. In the literature, length of stay is in fact considered of a great importance since it has a positive correlation with profits derived from tourism (Barros et. al., 2010). Within a microeconomic setting, the objective of this paper is to provide evidence on the attitude of a museum visitors regarding culture and their overall vacation motivation. As a case study, visitors' experience to the South Tyrol's Museum of Archaeology in Bolzano (Italy) is analysed. This museum, best known as "Ötzi", hosts an Icemen that occupies a central position in the exhibition area and is without doubt one of the main attractions. In 1991, an

intact glacier mummy of more than 5,000 years ago was discovered in the Alps (Schnal Valley glacier), together with his accompanying artefacts (clothing and equipment). This was an extraordinary finding that provided a unique example of a man of the Chalcolithic Period who was travelling at high altitudes. Hence, this museum is characterized by authenticity and uniqueness, fundamental characteristics for such type of cultural tourism.

Empirically, a zero-truncated negative binomial model is estimated to understand in which manner each variable affects the length of stay, taking into account tourists' heterogeneity. The findings provide useful information for the Ötzi museum managers and policy makers of its hosting city, giving further insight on how better exploit this ancient discovery for the future planning and tourism development of the city. Furthermore, the results may be used to help promoting further the length of stay of cultural tourists in Bolzano as well as in the whole South Tyrol region, provided a deeper understanding on the overall socio-economic impact of such a niche tourism activity within the local economy.

The paper is organized as follows. In the following section, an updated literature review is provided. In Section 3, the methodological framework is highlighted. Section 4 provides a description of the case study. In Section 5, a description of the questionnaire is provided. Section 6 gives an account of the empirical findings. Concluding remarks are presented in the last section.

## **2. Literature review**

### **2.1 Cultural tourism and economic impact**

In the last few decades, cultural tourism has been defined in a number of ways (Silbeberg, 1995; Richards, 2003), however all definitions converge on the single concept, that is moving people for cultural purposes. Tourism and culture are intrinsically connected by their capacity to attract people and their role in destination competitiveness. Together these two activities produce synergies able to promote growth. As OECD (2009) points out, "cultural tourism is one of the largest and fastest

growing global tourism markets and the cultural and creative industries are increasingly being used to promote destinations”.

Richards (2003), further investigating on the concept of cultural tourism, makes a parallel between culture and tourism and growth in demand and supply. As a matter of fact, cultural tourism is characterized by similar push and pull factors comparable to those of tourism activity able to stimulate the economy (see Brida and Pulina, 2010). The objective of a cultural tourist is to exploit cultural attractions such as historical cities, archaeological sites, monuments and museums. According to the Irish Tourist Board (1988) and Richards (1996) these kind of travellers are definable as “specific cultural tourists” if, the visit in a destination has a specific cultural motivation while are “general cultural tourist” if, during their vacation, they also visit a cultural attraction though their travel has not being motivated by culture.

The literature shows that museums play a key role in attracting tourists in urban areas contributing to the revitalisation of the city. Examples of this kind can be found in Bilbao (Plaza, 2000), Manchester (UK) (Evans and Shaw, 2004), Amsterdam and Berlin (Aalst and Boogaarts, 2004).

A great quota of museum visitors may be defined as specific cultural tourists. Specifically, cultural tourists are fascinated by the authenticity and the uniqueness of cultural attractions. Amongst other cultural attractions, museums have been indeed defined as an efficient marketing tool for urban tourism (Jensen-Verbeke and Van Rekom, 1996) and as a flagship of urban development (Hamnett and Shoval, 2003). Museums have a role of as repository of cultural heritage and not replicable public good able to produce revenues and other positive spill-over effects (e.g. employment).

In addition, as Tufts and Milne (1999) highlight, museums exert a pull attraction to the city from people with different background. It is in the destination that consumption activities are combined with personal experiences in such a way that cultural attractions, shopping centres and other activities offer each other tourism services and experiences. Jolliffe and Smith (2001)

underline that an essential feature of tourists' experiences derive from their contact with the local culture and heritage, often as a result of the local museum visitation. The same authors highlight how much museums can benefit from tourism though it is also true that museums boost tourism. In fact, museums are regarded as a part of the tourism system as well as a part of a holiday package.

During the last decade, the studies on the relationship between museum and economic impacts have been increasing due to their importance in the host community wealth. Dunlop (2004), via an input-output analysis, provides evidence on the effects of museums and galleries on the Scottish economy. By employing an autoregressive moving average (ARIMA) econometric analysis, Plaza (2006) analyses the impact of the Guggenheim Museum of Bilbao (GMB) on tourism demand. Carrying out a Delphi analysis in Australia Scott (2006) captures perceptions of impact and value from professionals working with museums as well as the general public. Plaza (2008) analyses the economic impact of the GMB in the Basque economy. Çela et al. (2009), with a qualitative approach, analyse visitor spending and the economic impact of heritage sites at the Silos and Smokestacks National Heritage Area, in Iowa. Choi et al. (2010) employ a choice modelling analysis to evaluate the economic value of the Old Parliament House in Australia, currently operating a museum of social and political history.

The present research aims to contribute to the existing literature in this field considering cultural tourism in the city of Bolzano. The South Tyrol's Museum of Archaeology, hosting the well-known man of the Copper age, and its visitors are especially taken into account to study the determinants of the length of stay in South Tyrol. This variable is in fact of great importance since its positive correlation with profits derived from tourism (Barros et. al., 2010).

## **2.2 An overview of length of stay literature**

In the empirical literature, little attention is paid on modelling tourism length of stay both from a macroeconomic and a microeconomic perspective. Notably, tourist arrivals are the most employed variable, whereas length of stay has rarely been adopted as the dependent variable. Nevertheless,

length of stay can be regarded as a better economic indicator for the hospitality sector and public local agents. Arguably, longer holidays are more likely to produce higher expenditure in tourism goods and services, though the relationship may not be linear. This translates into higher revenues for businesses and multiplier effects within the local economy. Moreover, length of stay provides useful information on the capability of a specific destination to attract and maintain tourists' flows, and it is a useful indicator to businesses, investors and local institutions for future planning purposes (e.g. Pulina, 2010).

To the authors' knowledge, within a microeconomic framework, none of the reviewed studies on museums and economic impact takes into consideration length of stay of cultural tourists in a destination. However, the importance of this variable in tourism has been recently established by a strand of the literature that mainly refers to sun and sand destinations (e.g. Alegre and Pou, 2006; Gokovali et al., 2007; Martinez-Garcia and Raya, 2008; Menezes et al., 2008; Menezes et al. 2010; Barros et al., 2010; Barros and Machado, 2010; Alegre et al. 2011). As emphasised by Alegre and Pou (2006), length of stay allows to assess the effect of tourism on residents' wealth, that varies according to the time spent by tourists at destination. Besides, according to the vacation duration, different activities can be experienced by tourists.

Within this strand of research, micro-econometric models are mostly employed to estimate determinants of length of stay, in contrast with previous studies in the field that were mainly descriptive. For example, using data referred to the high season from 1993 to 2003, Alegre and Pou (2006) estimate a binomial logit model. The authors take into consideration microeconomics factors to analyse length of stay in the Balearic Islands. Some of the considered variables have a direct influence in the length of stay (i.e. size of the family) but others are found as indirect determinants (i.e. age, education, occupation). As a further example, the study of Gokovali et al. (2007) was the first to apply a survival model, since to analyse length of stay the Weibull specification was preferred among other models. They examine a sun and sea destination in Turkey, as the case study, and investigate how trip characteristics and socio-demographics variables

affect tourists' length of stay. Following the work by Govokoli et al. (2007), Menezes et al. (2008) consider the length of stay of tourist in Azores (Portugal) and analyse survey data by means of a Cox proportional hazard model (survival model). It emerges that socio-demographics and trip characteristics are able to explain length of stay.

Martinez-Garcia and Raya (2008) consider length of stay of low cost tourism in Costa Brava (Catalonia, Spain) using a log-logistics and Cox survival models. Employing survey data, they analyse the effect of microeconomic determinants such as nationality, age, education, occupation and travel characteristics on the length of stay. Barros et al. (2008) analyse length of stay of Portuguese tourists in South America. By running different survival models, they find that length of stay depends positively on factors such as budget, nature and culture, negatively on age, ethnicity and importance of security. The authors highlight as length of stay is specific to each tourist destination.

More recently, Barros et al. (2010) examine length of stay of golf tourists in Algarve (Portugal) highlighting that tourists' socio-economic characteristics such as age, education, nationality and motivation of the trip contribute to increase length of stay. Besides, to investigate length of stay determinants of tourists in Madeira Island (Portugal), Barros and Machado (2010) use a sample selection survival model. Once more it emerges that this variable is strongly dependent on socio-demographic characteristics of tourists and in lesser degree on perceived characteristics of the destination.

Despite this growing interest in survival models, a critique has been recently moved by Thrare (2011) who assert that this class of models complicate the length of stay analysis. The author empirically shows that OLS regression describes length of stay and independent variable as empirically well as survival models.

However, a further strand of research in tourism demand is given by count models. As an example, Smith (1988) estimates per trip consumer surplus of household in Pennsylvania using a Poisson Model that treats visits as a count of "successful" outcomes. Hellerstein (1991) considers

two count model (Poisson and Negative Binomial) to estimate a country level travel cost model in Minnesota controlling for censoring and integer nature of trip demand. Equally, Helleström (2006) estimates a bivariate mixed Poisson model for Swedish household tourism demand, while Menezes et al. (2010) evaluate the determinants of length of stay of tourists in the Azores (Portugal) estimating a zero truncated Poisson and a zero truncated Negative Binomial Model. A recent application by Alegre et al. (2011) analyses the length of stay of tourists in Balearics Island (Spain), by estimating a conditional demand function with a latent class truncated Poisson. The authors ascertain the existence of two tourism segments with different preferences where, socio-economics characteristic play a fundamental role. An overall interest in this class of models has been shown by the most recent literature since their capacity to take into consideration the intrinsic features of the analysed data.

The present study further contributes to the current debate on length of stay with an application of a zero-truncated Negative Binomial to ascertain, within a microeconomic framework, its determinants of length of stay. To the best of our knowledge, for the first time, tourists' heterogeneity is explored in an area with different characteristics from the well-researched sea and sun destinations.

### **3. The model**

#### ***3.1 The theoretical framework***

The present empirical research is underpinned to the consumer behaviour theory developed by Lancaster (1966) and Rosen (1974). Goods characteristics are the source of consumer's utility whose final aim is its maximization in terms of prices and quantities of characteristics. Considering a tourist destination, several elements contribute to determine consumer's choice. Indeed, every destination incorporates a bundle of characteristics and perceived features that will determine the utility of each consumer.

A fundamental role in this sense is played by length of stay in the destination that is determined by the tourists according to their budget, time constraints and preferences. The tourist chooses to consume goods  $x$  according to their characteristics, subject to an income constraint  $M$ , and considering the prices of the purchased good ( $p(x_1, x_2, \dots, x_c)$ ) and the other goods ( $d$ ), as follows:

$$\text{Max } U(x_1, x_2, \dots, x_c) \quad \text{subject to} \quad p(x_1, x_2, \dots, x_c) + d = M \quad (1)$$

When booking a vacation the consumer-tourist chooses the typology of holiday and the length of stay he/she prefers and can afford. Following the framework built by Alegre et al. (2011), the demand function of length of stay can be presented in the following form:

$$L_j = (x_{jc}, p_{jc}, Y, t, \eta_i, \varepsilon_j) \quad (2)$$

Therefore, the consumer-tourists will stay in a given destination  $j$  according to destinations characteristics  $x_{jc}$ , prices  $p_{jc}$ , income  $Y$ , time  $t$  allocated to a site, individual non observable characteristics  $\eta_i$  and destination non observable characteristics  $\varepsilon_j$ . Following Alegre et al. (2011), tourist-consumers do not share the same set of factors in their utility function and for this reason it is important to account for heterogeneity in a way to account for those who may prefer shorter stays.

### **3.2 The empirical framework**

In the present empirical model, for each individual the exact number of nights spent on holiday is assessed, avoiding in this way the right censoring problem (observation period ends before the event has taken place). This is possible since all tourists are asked about their length of stay. The variable cannot assume negative values and ranges from one to  $N$ , and therefore is zero-truncated. Hence, the distribution includes either a Poisson or a Negative Binomial.

As a first step, the methodological procedure used in this study consists of running an initial standard Poisson, as a restriction of the more general Negative Binomial distribution, where the distribution is given by:

$$Prob(Y_i = y_i | w_i) = \frac{e^{-\lambda} \lambda^{y_i}}{y_i!} \quad y_i = 0,1,2,\dots \quad E(y_i | x_i) = Var(y_i | x_i) = \lambda = e^{x_i \beta} \quad (3)$$

The parameter  $\lambda > 0$  is average and variance of the Poisson distribution;  $w_i$  denotes the other controls (e.g. socio-economic characteristics of individual  $i$ , perception of the bundle of characteristics of the destination and costs). As the Poisson model is non-linear the maximum likelihood technique is used.

In the literature, there appear many extensions of the Poisson model according to the characteristics of the empirical data as well as because of the stringent condition of the mean equal to the variance as previously stated (Greene, 2003). In this specific case, a zero-truncated Negative Binomial is empirically preferred to the zero-truncated Poisson. The Negative Binomial allows for over-dispersion that occurs when only a few individuals had a large number of visits, implying the variance in visits is larger than the mean.

Specifically, in this case, length of stay is at least one night, that is a record would not appear in the database if a visitor had not spent at least a night out his/her usual place of residence. This model is specified by the following equation:

$$Prob(Y_i = y_i | w_i > 0) = \frac{\Gamma\left(W + \frac{1}{\vartheta}\right)}{\Gamma(W + 1)\Gamma\left(\frac{1}{\vartheta}\right)} (\vartheta \lambda_i)^W [1 + \vartheta \lambda_i]^{-\left(W + \frac{1}{\vartheta}\right)} [1 - F_p(0)]^{-1} \quad y_i = 1,2,\dots \quad (4)$$

where  $\vartheta$  is an ancillary parameter to be estimated from the data,  $\Gamma$  is the gamma function and  $F_p$  is the density function of the Poisson distribution. The estimation is run using maximum likelihood (Menezes et al., 2010).

#### 4. South Tyrol as a cultural destination

South Tyrol is one of the two autonomous provinces within the autonomous region of Trentino-Alto Adige/Sudtirolo, located in the north-east of Italy. The province, also known with its Italian name, Alto Adige, has just above 500.000 inhabitants.

Bolzano, its provincial capital, counts for approximately 104,000 inhabitants. The economy is based on tourism, high-quality intensive agriculture (including wine, fruit and dairy products), traditional handicraft (wood, ceramics) and advanced services. South Tyrol combines different cultures that blend Italian and North-European architectonic features. Churches, palaces, museums are of most artistic value. In the last two decades, the city of Bolzano has experienced a new impulse to the cultural life that brought the openings of numerous museums as well as multiple summer and winter events, such as the “Christmas Markets”. Hence, the town has also a diversified tourism supply, eno-gastronomic holiday in the valleys, mountain holiday and cultural holiday, and the well-known cultural events, such as Südtirol Jazz Festival and Bolzano Festival. Bolzano has also many art galleries as “Galleria Goethe”, “Galleria Civica”, “Galleria Les Chances de l'Art” and from 1905 is hosting the first museum of the entire region, the Civic Museum of Bolzano. A number of other museums have been opened in the last two decades indicating the growing attention towards art and culture: in 1985, the “Museion”, a modern and contemporary art museum; in 1995, the “Schulmuseum”, a museum of the school, the first one of this genre in Italy, based on the Mittel-Europe experience; in 1997, the Natural Science museum of Alto Adige; in 1998, the South Tyrol Museum of Archaeology. It is also has a “nativity scene” (presepio) Museum, a Mercantile Museum and the “Dommuseum”(2007). In addition, in 2006, the Firmian Castle of Bolzano was devolved as a museum centre for the Messner Mountain Museum project. A total of eighty museums are currently present in South Tyrol.

The principal attraction of the area is the Archaeological museum situated in Bolzano and opened on March 1998 to host one of the world’s best-known and most important mummies, Ötzi the Iceman, a well-preserved natural mummy of a man dated from 53 centuries ago. The museum is approximately 1200mq and the entire first floor is dedicated to the Iceman findings. It has a permanent exhibition on South Tyrol’s pre-historical and history, and also hosts temporary exhibitions. Since its opening, it had around 250,000 visitors per year. From a financial point of view, the museum has revenues from tickets sales, merchandising, sponsors and publishing.

The territory of Bolzano offers mountain holidays but also cultural holidays all the year round. It is worthwhile to analyse its tourism demand and supply evolution. In 2010, the whole province counted over 10.000 accommodations among hotels and non-hotel infrastructure, such as bed and breakfast, hostels and agro tourist activities. While the latter sector grew by 8% between 2000 and 2010, the hotel sector decreased by 6% (Table 1). In terms of capacity (i.e. number of beds), non-hotel infrastructures show a higher increase of 4%. The positive growth of the latter sector in the province is confirmed by the outstanding growth in the number of arrivals (+36%) and overnight stays (+20%). The Italian component, expressed in terms of the number of arrivals, increased by 48% and overnight stays by 25%. Foreigners' flows present a similar picture: arrivals increased by 33% and overnights increased by 19%. It is interesting to notice as overall, in the last decade, during the spring-summer period, arrivals increased by 39% and overnight stays by 21%. This good performance may be also due to the increase in the cultural supply in the recent years, as previously described. Data on average overnight of stays seem to reinforce this hypothesis: in 2000, people stayed in South Tyrol on average 5.7 nights, while in 2010 stayed 5.0. (Source: Statistics office of the autonomous province of Bolzano, ASTAT), possibly showing a pattern for a different holiday type. These findings provide some evidence that especially the Italians are changing their habits preferring more frequent holidays for shorter period of time.

**INSERT TABLE 1 BY HERE**

Comparing arrival flows in South Tyrol and visitor flows to the museum may provide a better insight on the relationship between tourism and the Ötzi museum. Data collected from the Statistic Office of the Province of Bolzano (ASTAT) and museum visitors' data, provided by the museum administration, for the time span 2007-2010, allow for a comparison of these time series (Figure 1) and their correlation.

**INSERT FIGURE 1 BY HERE**

Pearson's correlation coefficient is equal to +1 denoting the positive linear relationship between the two series. From Figure 1, it emerges that the two flows have the same trend for the considered year implying that the two series are intrinsically connected.

This descriptive investigation offers a clearer picture on the potential attractiveness of Bolzano and its province that may also denote the positive impact of the South Tyrol Museum of Archaeology on its overall tourism activity.

## **5. The questionnaire and the sample**

The survey was administered at the Ötzi museum in Bolzano, from June to August 2010, via face-to-face interviews on weekdays (except for the closing day on Mondays) and on Saturdays and Sundays, at different opening hours (between 10.00 am – 6 pm). In a recent survey investigation, conducted by Sergardi and Biraghi (2007) for Italian cultural tourism, it emerges that, though cultural tourism seasonal distribution is very stable during the year (from a minimum of 25% to a maximum of 31%), nevertheless, traditional tourism in Italian provinces sees the highest shares within June-August (ranging from 36% to 41%). Hence, running the survey within the time span June- August can provide better insight on the characteristics of tourists and the factors that influence urban cultural tourism.

The respondents were selected with a quota random sampling procedure based on age and gender trying to capture heterogeneous demographics features. As opposed to random sampling, quota sampling requires that representative respondents are chosen out a subset of individuals within a population. Notwithstanding this procedure may lead to bias because not everyone gets a chance to be selected, nevertheless, it overcomes the potential bias derived from a random sample procedure, as the trial may be likely to over-represent specific demographic characteristics, such as gender or age. Based on the visitor's data of the previous year provided by the administrative office of the museum, the sample size was determined according to a 95% confidence level with a 5%

error. It was fixed in 350 visitors per month. Finally, 724 complete interviews were successfully concluded.

Among all respondents, 582 of them (80%) declared to have spent at least one night in South Tyrol, outside the habitual place of residence. Hence, according with the definition of tourist, this portion of respondents is considered as cultural tourists.

The questionnaire contained in total 36 questions, organized in four blocks: the first section asked trip information, the next demanded information about the city of Bolzano, then information on the visit to the museum are collected and, as the last section, a sequence of questions on socio-economics characteristics of the visitors. In the questions on how important is to visit Bolzano and the museum, information, motivation, satisfaction and loyalty a Likert scale was used ranging from 'not important' to 'very important' for the motivation factors, from 'strongly in disagreement' to 'strongly in agreement' for assessing tourist's satisfaction, and from 'very unlikely' to 'very likely' for the loyalty factors.

Main characteristics of the sample are here analysed in order to give a better picture tourists visiting the Archaeological Museum and Bolzano. Most of the visitors (64%) came from other European countries rather than Italy (25%) (Table 2). Interestingly, comparing these survey data with those proposed by the official statistics, the average length of stay of the sample (7.8 days) is greater of the traditional tourism average length of stay in South Tyrol (5.0 days) and consistent with Sergardi and Biraghi (2007) who computed an average length of stay of 7.1 days for cultural tourists. This outcome is different from a typical sea and sun destination that denotes a traditional tourism length of stay higher than a cultural tourism length of stay (Sergardi and Biraghi computed 8.9 days of traditional tourists).

#### **INSERT TABLE 2 BY HERE**

From Table 2, it emerges that responders are mostly male (56%), generally married or de-facto (80%), with a family of 3-4 members (51%); those between 41 and 55 years old are more interested in the museum visitation (47%) if compared to other age range. Regarding the education level, 50%

had a college degree or a higher degree. As far as income is concerned, 39% of the sample had a middle-high average income, while just 3% less than 20.000 euros per year. It is important to notice that for 58% of the sample is their first time in Bolzano and for 89% is their first visit to the Archeological Museum. The great part (78%) would equally visit the city even if it were not hosting the Iceman Ötzi, that however has the high potentiality to attract tourists considered that 89% is willing to visit another city that would host it. Also, 11% expressed a strong intention to revisit the museum the following year, while 24% had a strong intention to come back to Bolzano and 40% would strongly recommend the city to relatives and friends. Besides, 56% declared that they will very likely advise relatives and friends to visit this museum.

Considering the family unit that spends at least one night out, the average expenditure for accommodation is approximately 96 euros per night, while 61 euros for food and beverage. On balance, tourists have a higher spending propensity in the museum shop, as well as in doing shopping in the city, than daily visitors.

**INSERT TABLE 3 BY HERE**

## **6. Empirical results and discussion**

The econometric estimation is based upon the theoretical framework previously specified. The relevant variables included into the model, and obtained by the survey data, are described in greater details in the Appendix A, Table 1.A.

The best specification has been identified as a zero-truncated Negative Binomial. The estimation is run by using STATA 10 and results are reported on coefficients and IRR (incidence rate ratio) obtained taking the exponent of the zero-truncated Negative Binomial regression coefficient (Table 4).

**INSERT TABLE 4 BY HERE**

The dependent variable, *length of stay in South Tyrol*, allows for the specific restriction, ranging from one to N (i.e. the count variable cannot be zero), given the definition of cultural tourism provided previously. The goodness-of-fit test in the standard Poisson model (*estatgof* in Stata 10) suggests that the null hypothesis (i.e. the empirical model fits the data) cannot be accepted (i.e. Goodness-of-fit  $\chi^2 = 492.79$  - Prob  $> \chi^2(178) = 0.0000$ ). Hence, a negative binomial needs to be estimated. Furthermore, comparing the standard negative binomial with the zero-truncated negative binomial the *AIC* (1140.94; 1131.36, respectively) and *BIC* (1276.87; 1267.29, respectively) information criteria are minimised in the latter model. Besides, the Wald test indicates that the overall model is well specified at the level of significance of 1%. Hence, there is statistical ground to retain the zero-truncated negative binomial as a better empirical specification. The model has been estimated correcting for robust standard errors, given the relatively low number of observations may lead to heteroskedasticity problems in the residuals.

Taking into account statistically significant coefficients (at least at the 10% level of significance), among the socio-demographic and economic characteristics, *ceteris paribus*, it emerges that nationality is relevant as an explanatory factor in the case of Italians who denote a relatively low probability to increase the length of stay. This fact may be due to either an overall lower spending capacity or propensity. With regard to age and employment status, the findings show a smaller probability to stay for the group under the age of 30. This outcome may be due to the fact that this category of people, on the one hand, has in general less spare time and, on the other hand, a lower income level, that does not facilitate of longer period of vacation. On the opposite, people aged 60 years or more denote a higher probability to stay longer. As far as the income range is concerned, the group who has an income up to twenty thousand euro presents a higher probability to increase the length of stay in South Tyrol.

One can discriminate between general and specific cultural tourists, by taking into account the importance that respondents attribute of visiting: Bolzano as a city, Bolzano because it hosts the Ötzi museum, other museums in the city, and if the respondent would have visited any other city

that had hosted the Ötzi museum, if it were not have been located in Bolzano. The findings reveal that respondents can be indeed regarded as specific cultural tourists, as they are likely to increase their vacation time when they attribute a higher importance in visiting Bolzano because it hosts the Ötzi museum. Moreover, their vacation duration in South Tyrol, would be shorter, if the museum of Ötzi had not been located in Bolzano. Though the latter coefficient turns out not to be statistically significant, the negative sign in the *Know-BZ* and the positive sign in *visit\_otmus* variable further confirm that the respondents are more likely to be specific cultural tourists. These results are even more meaningful as the survey was conducted during the time span June and August, revealing that specific cultural tourists, in South Tyrol, do not dislike visiting the destination during the tourism high season of the province.

Turning to the pull and push factors, bad weather, as a pull factor, encourages visits to the archaeological museum and longer vacation duration in South Tyrol. Besides, travel costs and living costs, as supposed theoretically, negatively influence length of stay in the province.

## **7. Concluding remarks**

In this paper, a microeconomic analysis has been carried out to explore the definition of cultural tourist and what are the main determinants of their length of stay in a destination. The case study is the South Tyrol's Museum of Archaeology in Bolzano (Italy), best known as the Ötzi museum.

The empirical investigation has been underpinned to the consumer behaviour theory developed by Lancaster (1966) and Rosen (1974). Goods characteristics are assumed to be the source of consumer's utility whose final aim is maximize his/her utility in terms of prices and quantities of characteristics of a destination.

Empirical data were obtained via a survey on 724 visitors at the museum from June to August 2010. Overall, evidence has been provided that cultural length of stay in a mountain destination with two peak seasons (summer and winter) seems higher than length of stay in more traditional tourism destinations. Given the specific characteristics of the dependent variable (i.e. length of

stay), that is a count variable that assumes at least the value of one, a zero-truncated Negative Binomial has been estimated, as it has outperformed the zero-truncated Poisson model as the nested case. As the main objective of this research, there is empirical evidence that respondents, who visit the Ötzi museum, are mainly interested in a cultural experience and can be regarded as specific tourists.

Ötzi, and consequentially the Archaeological Museum, is already considered as the main attraction of the city of Bolzano, however, according to the present research it deserves even more attention from local institutions. Local press (Mair, 2010; Vikoler, 2010) reported the inadequacy of the existing building hosting Ötzi and the debate around the possibility to transfer it in a larger building. So far, a decision has not been taken. However, policy makers should closely consider the impact that Ötzi has on tourism and their motivation to extend their vacation to visit this unique museum. The empirical analysis has shown the need for a long-term development strategy around this museum, that enables to attract new tourism flows.

The contribution of the present study, in applying a novel empirical approach into the investigation of length of stay of cultural tourists in a mountain destination, can be further tested for and expanded to other heritage sites of this kind, providing robustness to the present paper. Besides, a future challenge of research in this field will involve a systematic investigation on the complementary and substitute effects amongst other important museums in the whole region of Trentino Alto Adige.

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**Table 1: Tourism supply and demand growth rates (2000-2009)**

Supply/demand	Hotel	Non-hotel	Italians	Foreigners	Spring-Summer (April-October)
Consistency	-15%	33%	-	-	-
Capacity	14%	33%	-	-	-
Arrivals	17%	174%	17%	30%	25%
Overnight stays	-3%	63%	-4%	8%	4%

Source: Calculation on data from Statistics Office of the Autonomous Province of Bolzano

**Table 2: Sample characteristics**

Residence	%	Length of stay in South Tyrol in days	Age	%
Italy	24%	6.37	>55	22%
Europe	66%	8.73	41-55	47%
Rest of the World	10%	5.56	26-40	25%
		7.82 (mean)	9-25	6%
<b>Civil Status</b>			Mean	45
Single/never married		14%		
Married or de-facto		80%	<b>Female</b>	44%
Separate/divorced		4%	<b>Male</b>	56%
Widow		2%		
			<b>Number family components</b>	
<b>Income (% in category)</b>			1-2	36%
< € 20.000		3%	3-4	51%
€20.000-€40.000		22%	5	10%
€40.000-€70.000		39%	>5	3%
€70.000-€100.000		18%		
>€100.000		18%	<b>Education</b>	
			Below high school	19%
			High school	31%
			College/ degree or more	50%
<b>First visit in South Tyrol (% yes)</b>		58%		
<b>Visit South Tyrol without Iceman (% yes)</b>		78%	<b>Visit other city with Iceman (% yes)</b>	89%
<b>Strong intention to return to South Tyrol next year (% yes)</b>		24%	<b>Strong intention to return to the Iceman Museum next year (% yes)</b>	11%
<b>Strong recommend South Tyrol (% yes)</b>		40%	<b>Strong recommend Iceman Museum (% yes)</b>	56%

Source: Elaboration on sample data

**Table 3: Expenditure pattern of Ötzi visitors**

Expenses categories	Tourists	Day-visitors
Food and beverage (per family unit)	61,52 €	48,33 €
Museum shop	14,46 €	12,98 €
Shopping in town	69,16 €	48,14 €
Overnight stay (per family unit)	96,43 €	-

Source: Elaboration on sample data

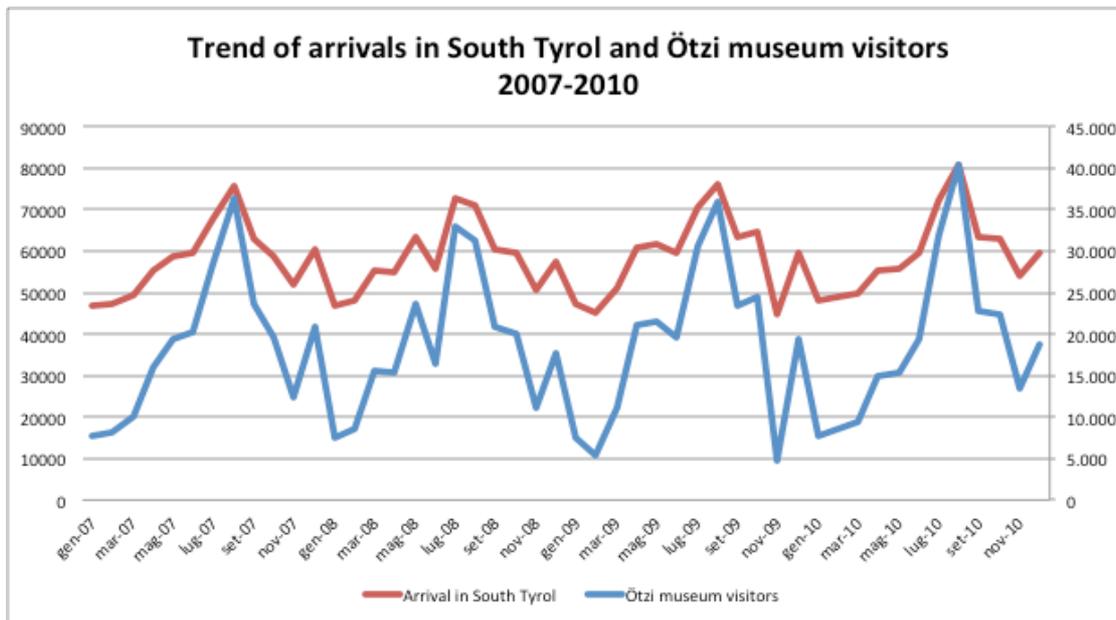
**Table 5: Zero-truncated negative binomial regression results**

VARIABLES	Coefficients	IRR§
<i>Nationality (reference group)</i>		

<i>Germans)</i>		
<b>Italians</b>	-0.603 (0.122)***	0.547 (0.066)***
<b>USA</b>	-0.326 (0.359)	0.721 (0.259)
<b>Ned</b>	-0.019 (0.199)*	0.980 (0.195)
<b>UK</b>	0.348 (0.352)	1.416 (0.499)
<b>Weu</b>	-0.212 (0.194)	0.808 (0.157)
<b>Eeu</b>	0.093 (0.286)	1.097 (0.314)
<b>Extraeu</b>	-0.271 (0.300)	0.762 (0.229)
<b>Gender (ref. male)</b>	-0.044 (0.098)	0.956 (0.094)
<b>Education</b>	-0.022 (0.030)	0.977 (0.029)
<b>Ncomfam</b>	0.053 (0.040)	1.054 (0.042)
<b>Age (reference group: 46-59 years old)</b>		
<i>Ageunder30</i>	-0.635 (0.259)**	0.529 (0.137)**
<i>Age31-45</i>	0.017 (0.110)	1.017 (0.112)
<i>Age60on</i>	0.829 (0.268)***	2.292 (0.616)***
<b>Employment (reference group employment 2: full time or part-time employee)</b>		
<i>Employment1</i>	0.085 (0.172)	1.089 (0.187)
<i>Employment4</i>	0.178 (0.283)	1.195 (0.338)
<i>Employment5</i>	-1.928 (0.459)***	0.145 (0.066)***
<i>Employment6</i>	0.437 (0.394)	1.548 (0.610)
<i>Employment7</i>	-0.177 (0.296)	0.837 (0.248)
<b>Civil status (reference group status2: married or de facto)</b>		
<i>Status1</i>	-0.043 (0.245)	0.957 (0.234)
<i>Status3</i>	-0.098 (0.250)	0.906 (0.226)
<i>Status4</i>	0.239 (0.330)	1.270 (0.419)
<b>Income (reference group income3: from 40.000 to 70.000 €)</b>		
<i>Income1</i>	0.508 (0.262)*	1.663 (0.436)*
<i>Income2</i>	-0.230 (0.162)	0.793 (0.128)
<i>Income4</i>	0.177 (0.125)	1.194 (0.150)
<i>Income5</i>	-0.278 (0.187)	0.757 (0.141)
<b>Know_BZ</b>	-0.044 (0.059)	0.956 (0.056)
<b>Visit Ötzi</b>	0.123 (0.063)**	1.131 (0.071)**
<b>Visit otmus</b>	0.131 (0.049)***	1.140 (0.056)***
<b>Ötziany</b>	-0.209 (0.207)	0.810 (0.168)
<b>Learn archaeology of South Tyrol</b>	-0.037 (0.039)	0.967 (0.048)
<b>Curios</b>	-0.008 (0.040)	1.008 (0.041)
<b>Relax</b>	-0.016 (0.0421)	0.983 (0.041)
<b>Bad weather</b>	0.109 (0.048)**	1.116 (0.054)**
<b>Something different to do</b>	-0.042 (0.048)	0.958 (0.046)
<b>Nothing to do</b>	0.020 (0.059)	1.020 (0.061)
<b>Advised</b>	-0.015 (0.047)	0.984 (0.046)
<b>Work or study visit</b>	0.006 (0.047)	1.006 (0.047)
<b>Travel cost</b>	-0.004 (0.002)*	0.995 (0.002)*
<b>Total accommodation costs</b>	-0.0003 (0.000)	1.000 (0.000)
<b>Total food and beverage costs</b>	-0.004 (0.001)***	0.995 (0.000)***
<b>Shopping expenditure in Bolzano</b>	-0.0005 (0.0007)	0.954 (0.189)
<b>Price</b>	-0.046 (0.198)	0.060 (0.158)
<b>Constant</b>	2.566 (1.867)	
<b>Pseudo R<sup>2</sup></b>	0.0744	0.0744
<b>Wald chi2(42)</b>	26248.83	26248.83
	Prob>χ <sup>2</sup> = 0.000	Prob>χ <sup>2</sup> = 0.000
<b>Log pseudolikelihood</b>	-523.6829	-523.6829
<b>AIC</b>	1131.36	1131.36
<b>BIC</b>	1267.29	1267.29

Notes: \*\*\*, \*\* and \* indicate statistical significance at the 1%, 5% and 10% level, respectively; § e.g. IRR indicate the exponentiated coefficients =  $e^b$ ; Robust Standard Errors are in parenthesis.

Figure 1: Comparison of arrivals in South Tyrol and museum visitors, 2007-2010



Source: elaboration on ASTAT and Museum data, 2011.

## Appendix A.

**Table 1.A: List of variables**

NAME	DEFINITION
<i>Dependent variable</i>	
<i>Length of stay</i>	Nights spent away from visitor's actual place of residence
<i>Control variables</i>	
<i>Nationality (reference group Germans)</i>	This dummy takes the value one if the visitor is Italian, zero otherwise.
USA (reference group Germans)	This dummy takes the value one if the visitor is from the USA, zero otherwise.
Ned (reference group Germans)	This dummy takes the value one if the visitor is from the Netherlands, zero otherwise.
UK (reference group Germans)	This dummy takes the value one if the visitor is from the UK, zero otherwise.
Weu (reference group Germans)	This dummy takes the value one if the visitor is from other Western countries, zero otherwise.
Eeu (reference group Germans)	This dummy takes the value one if the visitor is from other Eastern countries, zero otherwise.
Extraeu (reference group Germans)	This dummy takes the value one if the visitor is from other extra European countries (i.e. Australia, Japan and New Zealand), zero otherwise.
<i>Education</i>	This is a discrete variable that takes the value one for the lowest level of education (i.e. primary school) up to 7 for the highest level of education (i.e. Ph.D).
<i>ncompfam</i>	This is a discrete variable that takes into account the number of family members
<i>AGE (reference category age46-59)</i>	Age of the respondent, as a continuous variable
<i>Ageunder30</i>	This dummy takes the value one if the visitor is less than 30 years old, zero otherwise.
<i>Age3045</i>	This dummy takes the value one if the visitor is between 30 years old and 45 years old, zero otherwise.
<i>Age60</i>	This dummy takes the value one if the visitor is 60 years old or older, zero otherwise.
<i>Employment (reference group empl2: full time or part-time employee)</i>	Employment 1: autonomous; Employment 3: working occasionally; Employment 4: unemployed; Employment 5: retired; Employment 6: student, Employment 7: housewife.
<i>Civil status (reference group status2: married or de facto)</i>	Status 1: Single/never married; Status 3: Separate/divorced; Status 4: Widow.
<i>Income (reference group income3: from 40.000 to 70.000 €)</i>	Income 1: up to 20.000 €; Income 2: from 20.000 to 40.000 €; Income 4: from 70.000 to 100.000 €; Income 5: more than 100.000 €.
<i>Know_BZ</i>	This is a discrete variable that takes values from 1 (not important at all) up to 5 (very important) for attributing an increasing importance for visiting Bolzano as a

	city.
<i>Importance to visit Otzi</i>	This is a discrete variable that takes values from 1 (not important at all) up to 5 (very important) for attributing an increasing importance for visiting Bolzano, giving the present of the Archaeological museum.
<i>Importance to visit other museums</i>	This is a discrete variable that takes values from 1 (not important at all) up to 5 (very important) for attributing an increasing importance for visiting the city of Bolzano, given the presence of museums other than the Archaeological.
<i>Otzi any</i>	This is a dummy variable that takes 1 if the respondent would have visited any other city that had hosted Ötzi, and zero otherwise.
<i>Learn archaeology of South Tyrol</i>	This is a discrete variable that takes values from 1 (not important at all) up to 5 (very important) for attributing an increasing importance to Learn archaeology of South Tyrol during the visit to the Archaeological Museum.
<i>Curiosity</i>	This is a discrete variable that takes values from 1 (not important at all) up to 5 (very important) for attributing an increasing importance for visiting the museum, given the respondent was curious.
<i>Relax</i>	This is a discrete variable that takes values from 1 (not important at all) up to 5 (very important) for attributing an increasing importance to relaxation during the visit to the Archaeological Museum.
<i>Bad weather</i>	This is a discrete variable that takes values from 1 (not important at all) up to 5 (very important) for attributing an increasing importance for visiting the Archaeological Museum during bad weather conditions.
<i>Something different</i>	This is a discrete variable that takes values from 1 (not important at all) up to 5 (very important) for attributing an increasing importance to do something different corresponding to Archaeological Museum visitation.
<i>Nothing to do</i>	This is a discrete variable that takes values from 1 (not important at all) up to 5 (very important) for attributing an increasing importance for visiting the museum, given the respondent has anything else to do.
<i>Advised</i>	This is a discrete variable that takes values from 1 (not important at all) up to 5 (very important) for attributing an increasing importance for visiting the museum, given the respondent was advised to do so.
<i>Work or study visit</i>	This is a discrete variable that takes values from 1 (not important at all) up to 5 (very important) for attributing an increasing importance for visiting the museum, given the respondent was doing a part of his/her job or a study visit.
<i>Travel cost</i>	This is a continuous variable that accounts for travel expenses and has been calculated as $(2 * \text{cost of single travel}) / (\text{npeople} * \text{ndays})$
<i>Total accommodation costs</i>	This is a continuous variable that accounts for total accommodation costs, expressed in euro, undertaken by the respondent in all official (i.e. hotel, non-hotel – camp sites, agrotourism, serviced apartments) and non-official tourism infrastructure such as second homes and friends and family.
<i>Total food and beverage costs</i>	This is a continuous variable that accounts for the costs, expressed in euro, undertaken by the respondent to purchase food and beverage.
<i>Shopping expenditure in Bolzano</i>	This is a continuous variable that accounts for the shopping expenditure, expressed in euro, undertaken by the respondent.
<i>Entry fees</i>	This is a continuous variable that accounts for the ticket expenses to get to the Archaeological Museum