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AN URBAN ICON? THE CASE OF THE ICEMAN ÖTZI

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An urban icon? The case of the Iceman Ötzi

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Abstract
This study via a travel cost model estimates the likelihood to revisit South Tyrol's Museum of Archaeology, best known as the Ötzi museum, in the Autonomous Province of Bolzano(Italy). The purpose of this investigation is to analyse in what measure this museum may be regarded as a potential icon for the urban development of Bolzano. To this aim, the number of actual visits to the museum are employed as an economic indicator of the museum attraction propensity and an investigation on visitors' preferences and behavior is carried out. The relevant data were obtained from a survey undertaken in the months from June to August 2010 at site and a zero-truncated count data model is estimated. The empirical findings provide an important tool to plan the future urban development around the Ötzi museum.

Keywords: Museum; urban icon; travel cost; repeat visits; zero-truncated Poisson.
Jel Classification: C19; D12; L83

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1. Introduction

Since the '90's cultural economics has started developing as an economic discipline in its own right (Throsby, 1994; Towse, 1997; Blaug, 2001; Herrero et al. 2006; Guiso et al., 2006; Bedate et al., 2009). As Herrero et al. (2006) point out, at least three main and interrelated areas of analysis can be identified: performing arts, cultural industries and historic heritage. The latter can be regarded as a unique and not replicable public good that plays a relevant role for local communities as reminder of cultural and social cohesion.

The European Commission (2011) has increasingly provided policy directions aimed at enhancing education, vocational training, youth and culture surrounding tourism activity. On the one hand, recently, there is an upsurge in the restoration of abandoned small towns to historical culture sites, as considered as a mean to activate a virtuous path of growth for local communities. Residents and businesses can benefit of higher levels of revenue, employment, income and knowledge able to revitalise a given region often preventing youth migration flows, particularly common in economically marginal areas (Paniccia, 2007; Rudan, 2010). On the other hand, new cultural buildings have been constructed in small and big cities as a symbol of national identity, cultural engagement, economic development that helps to regain a central position and a new rejuvenation phase within a mature and declining life cycle of the destination. A recent outstanding example is the Opera House in Oslo (Smith and Strand, 2011).

Amongst other heritage sites, museums have a key role as repositories of historical knowledge, education, personal development identity and enable to preserve community roots. They can be regarded as a stimulus for the local economy. Culture in fact produces positive externalities as consumers generally have a higher spending propensity than other consumers' segments (Europa Inform, 2004); it enriches society's pool of cultural knowledge enhancing efficiency in human capital. Best practise examples of this kind are: the Museum of Science and Industry in Manchester (UK); Evans and Shaw (2004) report that for every pound sterling spent by visitors at the Museum, there is a multiplier effect of twelve pounds spent in the local economy. The direct economic benefit to the region was estimated of £18 million and the employment of one hundred and twenty people. Plaza (2000) calculates the contribution to local employment of the Guggenheim Museum in Bilbao in 1.25 jobs for every 1000 visitors (Plaza, 2000).

It seems of interest to investigate how a museum and local heritage can enhance the economy of this province capital. The objective of this paper is to predict the repeat visitation to the South Tyrol's Museum of Archaeology in Bolzano (Italy). This museum documents the Ancient History of the South Tyrol and presents outstanding finds from the Prehistory (Stone Age, the Bronze Age, the Iron Age), Roman times, to the time of Charlemagne (around 800 AD). Within this museum, the Icemen (best known as "Ötzi") 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 sight into the life of a man of the Chalcolithic Period who was travelling at high altitudes.

Via a travel cost model an investigation on visitors' preferences and behavior is carried out in order to analyse in what measure this museum may be regarded as a pull factor for the city of Bolzano. To this aim, the number of visits to the museum is employed as an economic indicator that measures the attractiveness propensity of the city of Bolzano. The relevant data were obtained from face-to-face interviews undertaken in the museum, during the summer season of 2009 (June-August). The representative sample consists of 724 visitors to the museum. Empirically, a zero-truncated Poisson is estimated, where the dependent variable is given by the number of times the respondent visited the museum in the past. As far as the author's knowledge is concerned, this econometric approach is used for the first time to investigate the likelihood to revisit a museum. From a policy perspective, it is of great importance to investigate what the main determinants for repeat visitation to a specific site are. The empirical findings provided in this paper give destination managers and policy makers valuable information to formulate managing and marketing strategies for future repeat visits. On the one hand, business are enable to plan their activities in a more efficient manner; on the other hand, local institutions are enable to stimulate urban planning policies around this exclusive museum.

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, an account of the empirical findings is given. Discussion and concluding remarks are provided in the last section.

2. Literature review on museums

Recently, there is a thread of literature on heritage sites that stems from environmental economics. It is assumed that the economic values of public goods, such as outdoor recreation resources and heritage sites, are not directly observable. Since the '80s economists have emphasised the need to assess the economic value of these assets to communities, as national and local governments often consistently contribute to their development and maintenance, raising tax credit (Ward and Loomis, 1986). As a matter of fact, an efficient allocation of public resources is a critical objective of welfare economics. Across the decades more advanced and sophisticated techniques have been applied to evaluate the monetary value of these nonmarket goods. Amongst other methodologies revealed preference and stated preference techniques have been widely employed (Mourato and Mazzanti, 2002). On the one hand, revealed preferences techniques are applied to use values, that measure the value to the public of recreational or other public users of the resource in terms of the changes in consumer surplus (e.g. services, activities); on the other hand, stated preferences techniques relate to non-use values, that measure aspects of the resource's value to individuals who are not linked to actual resource use (e.g. education, bequest, knowledge). Choi et al., 2010 emphasise that revealed preference methods, that is travel cost analysis, hedonic price, averting behaviour and market prices, can be used when data on market transactions and activities can be collected. While, stated preference methods, such as contingent valuation and choice modelling analysis, can be used when these type of data are not available.

To date there is an ample example of stated preference applications to evaluate the economic impact of museums. Mazzanti (2003) applies a multi-attribute choice experiment to measure the economic values and assess user preferences at the Galleria Borghese Museum in Rome. Amongst other methods, Sanz et al. (2003) propose a parametric, contingent valuation, estimation to evaluate the willingness-to-pay (WTP) of both visitors and residents for the national museum of Scuplture in Valladolid (Spain). Bedate et al. (2009), via a contingent valuation, estimate the WTP of a representative sample of residents and visitors to the art museum of Valladolid (Spain). They find that visitors expressed a higher WTP than residents, though enthusiastic at the prospect of new cultural facilities. Colombino and Nese (2009) consider the case of Paestum (Italy) and present an analysis of tourists' preferences in relation to different museum services. Overall,

respondents are more interested in extending opening hours, enhancing guided tours within the archaeological site and interactive teaching labs. However, they show less interest in transforming the site into a place of leisure and entertainment. Lampi and Orth (2009), via a contingent valuation method, measure visitors' WTP for a visit to the free entrance Museum World Culture in Sweden. The results show that four out of the six target groups are less likely to visit the museum after an implementation of a low fee; however, those who are regularly culture consumers state that are willing to visit the museum regardless the fee level. Choi et al. (2010) via a choice modelling, examine the economic values of changing various services provided by Old Parliament House, in Canberra (Australia), operating as a museum of social and political history. They calculate that temporary exhibitions and events contribute to nationwide welfare with AU$17.0 million and AU$21.8 million annually. Besides, and differently from Colombino and Nene (2009)'s findings, they reveal that extending the period of temporary exhibitions, hosting various events, and having shops, café and fine dining are evaluated positively by the respondents.

Nevertheless, only a very few studies have adopted the revealed preference analysis to provide an economic valuation of museums. For example, Bedate et al. (2004) provide an application of travel cost to four heritage sites in Spain, amongst which the museum of Burgos characterised by a collection of archaeological items and fine arts. Boter et al. (2004) show how revealed preferences, in particular travel time, may be used for comparing the relative value of competing museums in the Netherlands. To this aim, they explicitly take into account for the different museums distance to the population and for differences in willingness-to-travel. Fonseca and Rebelo (2010) employ a travel cost to estimate the demand curve in the Museum of Lamego (Portugal). They apply a standard Poisson model that reveals that the probability of visiting the museum is positively influenced by the education level, being female and negatively by the travel cost.

In the literature, several studies have also explored museum visitors' preferences, motivation, satisfaction and their probability to return and recommend the site. From an empirical perspective, several methodologies have been employed, such as laddering techniques (Thyne, 2000), ordinal and discrete logit models (Paswan and Troy, 2004; Burton et al., 2009), factor and structural equation models (Harrison and Shaw, 2004; Jeong and Lee, 2006; De Rojas and Camarero, 2008; Gil and Ritchie, 2009; Hume, 2011) as well as qualitative methods (Alcaraz et al.,

2009; Packer and Bond, 2010). Some stylised facts can be drawn from the main research in this field. Individuals have different values that influence their motivation to visit museums. However, together with education and learning objectives, socially oriented values, such as fun, entertainment and close relationships with other visitors, philanthropy and social recognition play a relevant role (Thyne, 2000; Aalst and Boogaarts, 2004; Paswan and Troy, 2004). Exhibition environment, the variety of special exhibitions and environmental cues (e.g lighting, colour, spaciousness, traffic flow) are important factors to perpetuate brand meaning and uniqueness in the minds of visitors (Jeong and Lee, 2006; Bonn et al., 2008; Plaza, 2008; Alcaraz et al., 2009). Burton et al. (2009) find that visitors tend to be actively engaged in social and cultural activities, often combining a number of activities in a single day. Hence, they suggest museums can benefit from strategic alliances with other cultural attractions and from joint packaging offers that add value to the overall experience.

Overall, although a vast literature has appeared on the impact that museums have on the local community, society and economy (e.g. Luksetich and Partridge, 1997; Plaza, 2000; Maddison and Foster, 2003; Dunlop et al., 2004; Maddison, 2004; Stynes and Vander Stoep, 2004; Frey and Meier, 2006; Scott, 2006; Kinghorn, and Willis, 2007 and 2008; Plaza, 2008; Çela et al., 2009; Plaza and Haarich, 2009; Fonseca and Rebelo, 2010; Plaza, 2010), as well as on visitors' experience and stated preferences, a very few studies have adopted revealed preferences methods to examine the economic benefit deriving from museums activity. Hence, the present paper further contributes to the existing literature applying a zero-truncated Poisson approach within a travel cost theoretically framework (e.g. Scarpa et al., 2007; Hellström and Nordström, 2008; Martinez-Espiñeira et al., 2008).

3. The methodological framework

Travel cost models unable to estimate economic use values associated with the heritage sites, where a sample of visitors willingness-to-pay to visit the site is revealed through the travel costs (Throsby, 2001).There are two types of travel costs: the Zonal Travel Cost, first presented by Hotelling (1949), employs number of trips originating from a zone, divided by the population of that zone, as the dependent variable; it is normally used when multiple individual visits are infrequent (Poor and Smith, 2004). The Individual Travel Cost (ITC), a more sophisticated model, employs trips per year (or season) by individual users of a site as

the dependent variable; overall, it provides more precise results. The ITC employs survey data from individual visitors to link the demand for tourism to its determinants. These factors include location of the visitor's home, the length of the trip, the amount of time spent on-site, travel and on-site expenses, the individual's income or other information on the value of their time, the perception of the bundle of characteristics of the destination and heritage site, as well as other socioeconomic characteristics (King and Mazzotta, 2011).

From an economic perspective, it is hypothesised that an individual *i* allocates his/her time and income for a bundle of non-tradable goods and services in the market place, such as a visit to a museum. Hence, the relevant trip function used to predict visit frequency is the following:

$$Yij = f(Xij, Ki, Zi) \qquad i = 1 \ldots n \quad (1)$$

where *Yij* is the number of visits undertaken to the site *j*, *Xij* is the travel cost incurred in visiting the site, that include variables such travel costs, accommodation costs, living costs (e.g. food, beverage, shopping, etc); *Ki* are the socio-economic characteristics of individual *i* (e.g. age, gender, number of family members, income) and *Zi* is the individual's perception of the bundle of characteristics of the destination and heritage site.

From an empirical perspective, it is important to identify the intrinsic characteristics of the dependent variable. In this case, as the objective is to predict repeat visitation to the museum, the dependent variable, (expressed in terms of number of visits to the site) is considered as a count variable. Hence, it can take on only integer values and the distribution includes a Poisson and the negative binomial. The latter allows for over-dispersion that can occur if only a few individuals had a large number of visits, this implies the variance in visits is larger than the mean.

The methodological procedure used in this study consists of running an initial standard Poisson, where the distribution is given by:

$$\Pr ob(Y_i = y_i \mid w_i) = \frac{e^{-\lambda}\lambda^{y_i}}{y_i!} \quad y_i = 0,1,2,..... \qquad (2)$$

$$E(y_i \mid x_i) = Var(y_i \mid x_i) = \lambda = e^{x_i'\beta}$$

the parameter λ represents the average and the variance, as assumed by the Poisson distribution, and is greater than zero. *wi* denotes the other controls as socio-economic characteristics of individual *i* (*ki*), perception of the bundle of characteristics of the destination and heritage site (*zi*) and costs (*xi*).

The Poisson model is non-linear, however, can be easily estimated by the maximum likelihood technique. 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).

Specifically, in this case, each call to the museum is at least one visit, that is a record would not appear in the database if a visitor had not gone to the Ötzi museum. As stated, the dependent variable assumes values that range from one (i.e. first time visit to the museum) to *N*. Thus *visit* is zero-truncated, and a zero-truncated Poisson regression allows one to model *visit* with this specific restriction. This model is specified by the following equation:

$$\Pr ob(Y_i = y_i \mid w_i > 0) = \frac{e^{-\lambda}\lambda^{y_i}}{y_i\,!} \cdot \frac{1}{(1-e^{-\lambda})} \quad y_i = 0,1,2,..... \qquad (3)$$

Bolzano as a cultural destination

Bolzano is a city of approximately 104,000 inhabitants, and the provincial capital of the autonomous province of Trentino Alto Adige, situated in the North-East of Italy (Figure 1).

The economy is based on tourism, high-quality intensive agriculture (including wine, fruit and dairy products), traditional handicraft (wood, ceramics) and advanced services. Bolzano combines different cultures that blend Italian and North-European architectonic features. Churches, palaces, castles and museums are of most artistic value.

In the last two decades, the city 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". The city has a diversified cultural offer, that ranges from eno-gastronomic activities in the valleys, to mountain holiday and well-known cultural events, such as Südtirol Jazz Festival and Bolzano Festival.

Bolzano hosts also many art galleries as "Galleria Goethe", "Galleria Civica", "Galleria Les Chances de l'Art" and since1905 has opened the first museum of the entire region, the Civic Museum of Bolzano (Figure

2, A). A number of other museums have been opened in the last two decades. This growing trend shows a increasing attention towards arts and culture: in 1985, the "Museion" (Figure 2, B), 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 (Figure 2, C); in 1997, the Natural Science museum of Alto Adige (Figure 2, D); in 1998, the South Tyrol Museum of Archaeology (Figure 2, E), a Mercantile Museum (Figure 2, F), the "*Dommuseum"* opened in 2007 (Figure 2, G) and the Technikmuseum (opened in 2005) the first virtual museum in the province that hosts the technical achievements in the past 200 years; Bolzano has the oldest cableway in the world (Figure 2, H). It is also has a "nativity scene" (*presepio*) Museum, in addition, in 2006, the Firmian Castle of Bolzano was devolved as a museum centre for the Messner Mountain Museum project. Referring to the latter and to the South Tyrol's Museum of Archaeology, the Sunday Times (The Sunday Times, May 31, 2006) described Bolzano as the "world's centre of mountain history and achivement".

The Archaeological museum, opened on March 1998, hosts the world's best-known and well-preserved mummies, Ötzi the Iceman. An intact body from the Copper Age, along with his clothing and equipment, that was accidently discovered in 1991 in the Ötzal Alps where it had been preserved for more than 5,000 years. This extraordinary find, as a unique case in the world, has attracted researchers from around the world, and has become the main cultural pole of the city of Bolzano. The museum is approximately 1200mq and the entire first floor is dedicated to the Iceman findings. It has a permanent exhibition on Alto Adige's pre-historical and history, and also hosts temporary exhibitions. Since its opening, it counted around 250,000 visitors per year.

From a theoretical perspective, in the literature (see Evans, 2005), three models can be identified through which cultural activity is included into the urban regeneration process: the *culture-led regeneration model*, where the cultural activity has a high-public profile and is frequently cited as a symbol of regeneration; the *cultural regeneration model*, where culture is fully integrated into an ad hoc strategy along with other activities in the environmental, social and economic field (see e.g. the case of Barcelona in Balibrea, 2001). Finally, the *cultural and regeneration model*, where culture activity is not strategically integrated, and the planning and intervention is of small-scale. The city of Bolzano can be reconducted into a cultural

regeneration framework. Nowadays, the city of Bolzano offers a best practise example of cultural city. This is also confirmed by economic and environmental indicators that rank Bolzano as the Italian city with the highest standard of quality of life (Sole 24 Ore, 2010). Besides, the province of Bolzano ranks first in terms of economic freedom. Such a measure is estimated taking into account 38 indicatorsof its overall performance such as: Bolzano is the richest province in Italy in terms of GDP per capita with more than thirty six thousand euro per resident, 2.6 times higher than the poorest province of Crotone. Besides, Bolzano city accounts for a rate of poverty of 4% of total province population (in the South of Italy it reaches 40%). It ranks second in terms of unemployment rate that reaches 2.8%, against the Italian average of 7.7% - as a matter of fact in Bolzano one in two women is employed. The average public expenditure in services is 417 euro, against a national average of 91 euro per capita (NuovaCosenza, 2011).

Overall, Bolzano can be regarded as a province of excellence having a high performance in terms of business, jobs, public security, environment, health and well-being. These outstanding figures provide further evidence that Bolzano is actually following a sustainable path of growth within a culture and regeneration framework.

5. Empirical analysis

5.1 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, with the aim to determine museum impact on the territory. The respondents were selected with a quota random sampling procedure based on age and gender trying to capture heterogeneous demographics features. Finally, 724 complete interviews were successfully concluded.

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 on visitors' characteristics and expenditure pattern (Table 1). Most of the visitors (69%) came from other European countries rather than Italy. They are mostly male (55%), 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 (52%) if compared to other age range. Regarding the education level, 49% had a college degree or a higher degree. As far as income is concerned, 40% of the sample had a middle-high average income, while just 3% earn up to 20.000 euros per year.

It is important to notice that for 58% of the sample is their first time in Bolzano and for 90% is their first visit to the Archeological Museum. The great part (62%) would equally visit the city even if it were not hosting Ötzi, that however has an enormous potentiality to attract tourists considered that 63% 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.

Given the definition, 95% of the sample can be identified as tourists, since they spend at least one night outside the habitual place of residence. 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, visitors have a higher spending propensity in the museum shop, as well as in doing shopping in the city, than daily visitors (see Table 2). The descriptive statistics provide an insight into the attractiveness of this outstanding archaeological find and the role that the museum has in the urban context.

5.2 Econometric results

The parametric 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 Table 1.A (Appendix).

The travel cost model is estimated by using STATA 10 and results are reported on coefficients and IRR (incidence rate ratio) obtained exponentiating the Poisson regression coefficient (Table 3).The best specification has been identified as a zero-truncated Poisson since the

dependent variable, *number of visits* to Ötzi, allows for the specific restriction, ranging from one to N (i.e. the count variable cannot be zero). Applying the goodness-of-fit test in the standard Poisson model (*estatgof* in Stata 10), the null hypothesis (*i.e.* the empirical model fits the data) cannot be rejected (i.e. Goodness-of-fit chi2 = 74,72 - Prob> chi2(634) = 1.0000). Comparing the standard Poisson with the zero truncated Poisson specification the AIC and BIC 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 Poisson as a better empirical specification. The model has been estimated correcting for robust standard errors considered the relatively low number of observations that may lead to heteroskedasticity problems in the residuals.

Among the socio-demographic characteristics, *ceteris paribus*, it emerges that foreigners, if compared with Italians, are more likely to revisit the museum and a unit change in age results in the expected number of visits to Ötzi to increase by a factor of exp(0.0157) = 1.0158. Female visitors have a significant expectation to repeat visit of 1.58 times and education has also a positive influence on the number of revisit to the museum. Comparing employment status, autonomous, occasionally workers, unemployed (that has a very high statistically significant coefficient), retired and housewives are less likely to revisit the museum if compared to employed. Conversely, students are more interested in revisiting the museum. Taking into account the civil status, those who are single or never married, separated, divorced or widows are less likely to revisit the museum when compared with married people (with children). This is confirmed by the coefficient of the number of people in the family; an increase in the family size positively influence the probability to repeat the visit. However, as the number of family members receiving an income increases, the propensity to visit the museum decreases, thus further validating the hypothesis that families with youngsters are more interested to cultural activities. Income itself has a negative impact if under the lower bound of the reference category (40,000 €), while a positive impact is found for higher levels of income (70,000 €).

Travel costs (with a highly statistically significant coefficient), accommodation costs, food and beverage expense and spending in shopping in Bolzano have a rather marginal effect on the repeat visitation rate. On the other hand, respondents spending more money in

souvenirs within the museum are less likely to return, while the entry fee discourage the visit. Time spent visiting the museum positively affects the likelihood to repeat the visit as well as bad weather conditions.

A set of further controls highlight how pull forces may encourage to revisit the museum in the future. The findings reveal the importance to visit friends and family and to relax as factors that may positively drive repeat visits. Other positive pull factors are business and study visits.

Furthermore, the higher is the probability to return to Ötzi in the next five year the higher is the expected number of visits. The probability to suggest the site to friends and relatives reduces the expected revisit by the respondent.

The presence of substitution sites (i.e. other museums) in Bolzano has a positive and statistically significant influence on the possibility to repeat visitation to Ötzi as well as the number of times respondents choose the city as their destination.

6.Discussion and conclusions

This paper has contributed to examine what are the factors that influence the intention to revisit a cultural attraction. The case study is the South Tyrol's Museum of Archaeology in Bolzano (Italy), best known as the Ötzi museum. As Silberger (1995) points out, cultural and heritage facilities require means to increase attendance and self-generated revenues. Hence, heritage administrators should pay particular attention in focusing on customer service, partnerships and network opportunities. Besides, the investigation on the degree of attractiveness of an outstanding cultural site, such as the Ötzi museum, can be regarded as a good economic indicator for enhancing urban planning.

On this basis, it seemed of interest to analyse the visitors' experience, motivations and their intention to revisit the museum in the future. Theoretically, a travel cost model has been used that has the advantage to estimate economic values based on market prices as well as on what people do, rather than on what people would do in a hypothetical situation, as in stated preferences methods (Ha, 2007). Relevant data were obtained via a survey on 724 visitors at the museum from June to August 2010. Empirically, given the specific characteristics of the dependent variable (i.e. number of visits to the museum), a count variable that assumes at least the value of one, a zero-truncated Poisson has been estimated as an extension to the standard Poisson.

The main findings reveal that,on the one hand visitors, are more likely to revisit if are female and older, have a higher level of education

and income, are students, have a higher number of family components. They tend to revisit the museum if experience bad weather conditions and are willing to have a relaxing time. Also, they are likely to return to the site if they spend their vacation visiting friends and family and travel for business. The probability to return is higher if they intend to return to the museum in the next five years, the higher the number of times they spend in Bolzano and if attribute importance to visit other museums. On the other hand, visitors are less likely to repeat the experience at Ötzi, if are Italians, have a lower income and pay an entrance fee. Interestingly, the higher the actual travel costs the higher the probability to revisit, though the IRR is almost one and highly statistically significant. Similar results are achieved for living costs (i.e. food and beverage, and shopping in Bolzano), that present statistically significant coefficients, and accommodation costs(with an IRR just below one) though the overall effect is rather marginal.

Knowing consumers' characteristics, motivations and preferences is of highly value in determining the cultural attraction promotion, position and pricing as well as to investing in a more adequate urban planning. From these empirical findings important implications have arisen from a marketing and management point of view. First, the results indicate that the museum has a particular key role for education, as students are more likely to revisit. Hence, ad hoc marketing policy may be particularly directed to Italian and German schools, being Bolzano a bi-lingual city. Ideally, the museum would benefit from more interactive teaching labs designed for children and students of different ages. Digital access centres will allow visitors to experience a new dimension of learning. For instance, an interactive pre-historical overview on comparable sites at Ötzi times will increase the value of the visit from an education point of view.

Second, the travel cost and, in general, living costs at destination and site (but accommodation costs) show positive coefficients, that imply that visitors are willing to travel a longer distance to visit the museum. This is consistent with the idea that visiting a cultural attraction may be regarded as a form of activity that helps the visitor to escape from his/her daily routine. Besides, the study also shows that the higher the income is the higher the likelihood to repeat the experience.

Several studies have examined the pricing rules for entry fees. For example, Lampi and Orth (2009) assess the effect that the introduction of a free entrance has on the Museum of World Culture in Sweden. They show that visitors who regularly visit cultural attractions are willing to

visit the museum regardless of the fee level. However, four out of the six target groups declare to be less likely to visit the museum after the implementation of the fee. They show that the composition of museum visitors, that was not evenly distributed across different socio-economic groups during the free entrance, became ever more skewed after the introduction of the fee. Hence, the findings in the present paper further confirm that the actual entrance fee at Ötzi discourages future repeat visits, possibly more by Italians with a low income. As a matter of fact, Bolzano is also denotes the highest consumer price index in Italy.

The importance to visit other museums as a drive for repeat visits can be used by museum managers in a more efficient manner. As reported in Aalst and Boogaarts, (2004) for the Amsterdam's Museumplein and Berlin's Museuminsel cases, a cooperation amongst local museums may be also successful for the Province of Bolzano. A best practise may involve the development of same style brochures that advertise each other as a complementary offer, together with a share of a common website. The visitor may purchase a pass that with special discounts encourage multiple visits within a museum network.

From a urban planning point of view, it may be regarded as an economic investment to dedicate a new building to Ötzi. As said, international archaeological and anthropological researchers are interested in studying this ancient and unique mummy. A more adequate and spacious infrastructure would provide a venue for international conferences.

Overall, the present paper contributes to the museum literature implementing a more sophisticated econometric tool to assess a travel cost framework and the degree of attractiveness of a cultural city. Nevertheless, a further research, based on the present study, will be aimed to investigate the residents' willingness-to-pay to invest in a new urban structure entirely dedicated to Ötzi. It would be of interest to replicate the current investigation to other cultural sites in order to find regular features.

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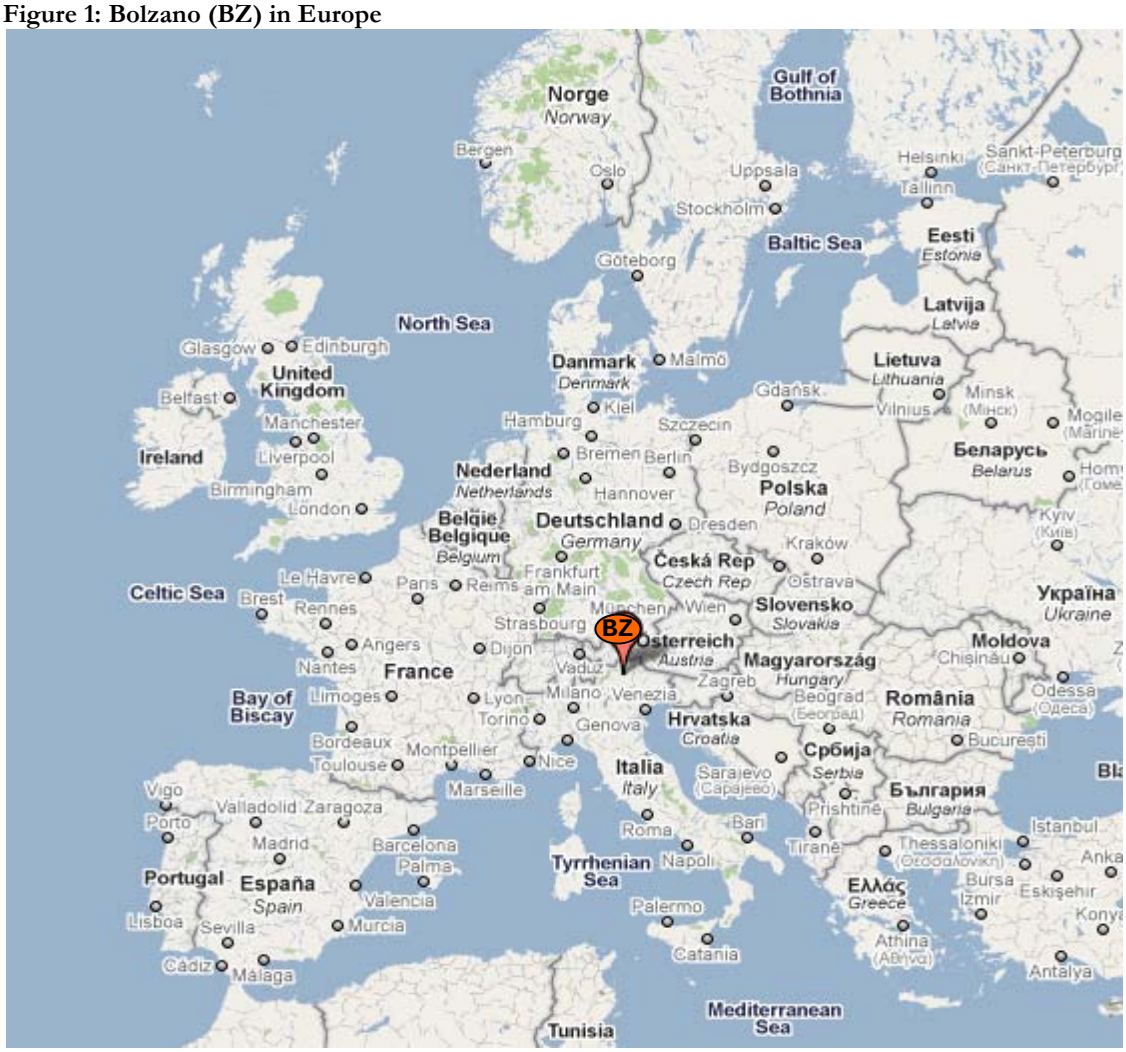
Figure 1: Bolzano (BZ) in Europe



Source: Google Maps, 2011

Figure 2: Museums in Bolzano

Source: Google Maps, 2011

Table 1: **Sample characteristics**

Residence (%):		**Age (% in category)**	
Bordering Region	10%	>55	17%
Trentino Alto Adige	2%	41-55	52%
Rest of Italy	18%	26-40	25%
Europe	60%	9-25	6%
Others	10%	Mean	45
Civil Status		**Number family components**	
Single/never married	14%	1-2	36%
Married or de-facto	80%	3-4	51%
Separate/divorced	4%	5	10%
Widow	2%	>5	3%
Income (% in category)		**Education**	
< € 20.000	3%	Below high school	19%
€20.000-€40.000	22%	High school	32%
€40.000-€70.000	40%	College/ degree or more	49%
€70.000-€100.000	17%		
>€100.000	18%		
First visit in Bolzano (% yes)	58%	**First visit to the Archaeological Museum**	90%
Visit Bolzano without Iceman(% yes)	62%	**Visit other city with Iceman (% yes)**	63%
Strong intention to return to Bolzano next year (% yes)	24%	**Strong intention to return to the IcemanMuseum next year (% yes)**	11%
Strong recommend Bolzano (% yes)	40%	**Strong recommend IcemanMuseum (% yes)**	56%

Source: Our elaboration on sample data

Table 2: 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: Our elaboration on sample data

Table 3 Zero-truncated Poisson regression results

VARIABLES	Coefficients	IRR§
Nationality *(reference group foreigners)*	-0.3492 (0.2697)	0.7052 (0.1902)
Age	0.0157 (0.0150)	1.0158 (0.0152)
Gender *(ref. female)*	0.4635** (0.2292)	1.5897** (0.3644)
Education	0.0357 (0.0716)	1.0363 (0.0742)
Employment *(reference group employment 2:full time or part-time employee)*		
Employment1	-0.00275 (0.3573)	0.9974 (0.3564)
Employment3	-0.7446 (0.6220)	0.4748 (0.2954)
Employment4	-10.6561*** (0.7016)	0.0000*** (0.0000)
Employment5	-1.1533* (0.6985)	0.3155* (0.2204)
Employment6	0.3282 (0.7500)	1.3885 (1.0415)
Employment7	-0.7270 (0.4828)	0.4833 (0.2333)
Civil status *(reference group status2: married or de facto)*		
Status1	-0.0935 (0.4111)	0.9107 (0.3744)
Status3	-0.2550 (0.3902)	0.7748 (0.3023)
Status4	-0.2963 (0.6689)	0.7435 (0.4973)
Number of family components	0.0353 (0.0275)	1.0360 (0.0285)
Number of people in the family receiving an income	-0.3280** (0.1477)	0.7203** (0.1064)
Income *(reference group income3: from 40.000 to 70.000 €)*		
Income1	-0.9155 (0.5907)	0.4003 (0.2364)
Income2	-0.0086 (0.4029)	0.9913 (0.3995)
Income4	0.1837 (0.3207)	1.2016 (0.3854)
Income5	0.2661 (0.4024)	1.3049 (0.5251)
Travel cost	0.0025*** (0.0005)	1.0025*** (0.0006)
Total accommodation costs	-0.0000 (0.0001)	0.9999 (0.0001)
Total food and beverage costs	0.0006** (0.0002)	1.0006** (0.0002)
Shopping expenditure in Bolzano	0.0031* (0.0018)	1.0031* (0.0018)
Souvenir expenditure at Otzi	0.0136 (0.0149)	1.0137 (0.0151)
Price	-0.2320** (0.2191)	0.7929** (0.1737)
Time spent visiting Otzi	0.0041 (0.0021)	1.0041 (0.0021)
Bad weather	0.1193 (0.1062)	1.1267 (0.1197)
Relax	0.0492 (0.0774)	1.050 (0.0814)
Learn archaeology of South Tyrol	-0.0290 (0.1013)	0.9713 (0.0983)
Something different to do	-0.0687 (0.1207)	0.9335 (0.1127)
Nothing to do	-0.0994 (0.1460)	0.9053 (0.1322)
Importance to visit friends and family	0.1188 (0.0982)	1.1261 (0.1106)
Advised	-0.0913 (0.1021)	0.9126 (0.0931)
Curiosity	-0.2081** (0.0836)	0.8120** (0.0679)
Work or study visit	0.0281 (0.1345)	1.0281 (0.1383)
Visit Otzi in next five years	0.3450*** (0.0872)	1.4120*** (0.1232)
Suggest to visit Otzi	-0.2190** (0.0907)	0.8032** (0.0728)
Importance to visit Otzi	-0.0405 (0.0996)	0.9602 (0.0957)
Importance to visit other museums	0.1708* (0.0941)	1.1862* (0.1117)
Number of times in Bolzano	0.5139*** (0.0538)	1.6719*** (0.0900)
Constant	-1.8423 (1.6792)	
Number of obs.	675	675
Pseudo R^2	0.5906	0.5906
Wald chi2(40)	1294.53 Prob>χ^2= 0.000	1294.53 Prob>χ^2= 0.000
Log pseudolikelihood	-204.08	-204.08
AIC	490.16	490.16
BIC	675.27	675.27
Goodness of fit test	χ^2=74.72	Prob>$\chi^2(634)$=1.000

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

Appendix

Table 1.A: List of control variables

NAME	DEFINITION
Nationality (reference group Foreigners)	This dummy takes the value one if the visitor is foreigner, zero otherwise.
AGE	Age of the respondent
GEN (reference group male)	This dichotomous variable takes the value one if female, zero if male.
Education	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).
Employment (reference group empl2:full time or part-time employee)	Employment1: autonomous; Employment 3:working occasionally; Employment 4:unemployed Employment 5: retired; Employment 6: student, Employment 7: housewife.
Civil status (reference group status2: married or de facto)	Status1: Single/never married; Status3: Separate/divorced; Status4: Widow.
Number of family components	This discrete variable takes into account the size of the family of the respondent.
Number of people in the family receiving an income	This discrete variable takes into account how many people of the family are receiving an income
Income (reference group income3: from 40.000 to 70.000 €)	Income1: 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 €.
Travel cost	This is a continuous variable that accounts for travel expenses and has benne calculated as (2*cost of single travel)/(npeople*ndays)
Total accommodation costs	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.
Total food and beverage costs	This is a continuous variable that accounts for the costs, expressed in euro, undertaken by the respondent to purchase food and beverage.
Shopping expenditure in Bolzano	This is a continuous variable that accounts for the shopping expenditure, expressed in euro, undertaken by the respondent.
Souvenir expenditure at Otzi	This is a continuous variable that accounts for the costs, expressed in euro, undertaken by the respondent to purchase goods at the ArchaeologicalMuseum.
Entry fees	This is a continuous variable that accounts for the ticket expenses to get to the ArchaeologicalMuseum
Time spent visiting Otzi	This is a discrete variable that accounts for the time (i.e. minutes) the respondent spent in the whole visit.
Bad weather	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 ArchaeologicalMuseum during bad weather conditions.
Relax	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 ArchaeologicalMuseum.
Learn archaeology of South Tyrol	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 ArchaeologicalMuseum.
Something different	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 ArchaeologicalMuseum visitation.
Nothing to do	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.
Importance to visit friends and family	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 is visiting friends and family.
Advised	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.
Curiosity	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 curios.
Work or study visit	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.
Visit Otzi in next five years	This is a discrete variable that takes values from 1 (very unlikely) up to 5 (very likely) for the possibility the respondent returns in the next five years.
Suggest to visit Otzi	This is a discrete variable that takes values from 1 (very unlikely) up to 5 (very likely) for the possibility the respondent recommends the ArchaeologicalMuseum to friends and family.
Importance to visit Otzi	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 the ArchaeologicalMuseum .
Importance to visit other museums	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 Archeological.
Number of times in Bolzano	This discrete variable takes into account the number of times the respondent has been in Bolzano.

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