

# DISA

Dipartimento di Informatica  
e Studi Aziendali

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visitors' behavior: a case of South Tirol's  
museum of archeology in Bolzano**

*Juan Gabriel Brida, Oksana Tokarchuk*



UNIVERSITÀ DEGLI STUDI  
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**Perceived authenticity and museum visitors' behavior: a case of South Tyrol's museum of archeology in Bolzano**

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**Abstract**

In this study we analyze perception of authenticity by visitors of South Tyrol's museum of archeology, best known as Ötzi museum, in the Autonomous Province of Bolzano (Italy). With the help of factor analysis we individuate two factors related to authenticity and study the determinants of the perception of authenticity by the visitors. Individuated factors are then employed to explain visitors' behavior at the museum. In particular, we study how perception of authenticity is related to the time visitors spend at the museum. Next we investigate the influence of authenticity on shopping behavior of museum visitors. The relevant data were obtained from a survey undertaken in the months from June to August 2010 at site. The empirical findings provide important insights for the management of the Ötzi museum.

Keywords: Authenticity, museum management, souvenirs, factor analysis, tobit regression  
JEL codes: C19; D12; L83

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## **1. Introduction**

The concept of authenticity is of particular importance for heritage management as authenticity is driven force for tourists to travel to distant places

Nowadays tourists quest for authenticity becomes determinant factor in the provision of cultural heritage offering. Authenticity is especially important for museum visitors. Many authors confirm that, authenticity is the central theme of contemporary museums (Prentice, 2001).

Most of scholar research in the field of museum research concentrated on the evaluation of authenticity. The main question in these studies is whether a certain site is perceived as authentic or not, and why (Waitt, 2000). Few attempts have been made to disentangle the determinants of authenticity besides using demographic characteristics to explain it (Wait, 2000). One of these attempts is the study by Kolar and Zabkar (Kolar and Zabkar, 2010) that relates cultural motivations to existential and object-based dimensions of authenticity. Goulding (2000) evidenced three types of visitors based on their perception of authenticity. For 'existential' visitors the most important motivation for visiting is enjoyment and escape. They mainly perceive authenticity through exhibited artefacts. 'Aesthetical' visitors perceive history mainly through art. 'Social' visitors are looking for learning and social experiences. Their main interest lies in assisting demonstrations and acquiring souvenirs in museum shops.

The concept of authenticity is used to explain probability to return to the museum or recommend it to friends and relatives, loyalty dimension. Kolar and Zabkar (2010) find that cultural motivations, existential and object-based authenticity altogether influence loyalty to the site.

Our research is based on a case of South Tyrolean Museum of Archaeology. 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 Iceman (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 artifacts (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. Thus, the museum hosts unique historical treasure.

There are little doubts with regards to the authenticity of the mummy of Iceman, the object of our research. Our main interest in the present study is to what kind of authenticity gives rise the story of Iceman; what are the determinants of this phenomenon and how it affects museum visitors' behavior.

The representative sample consists of 724 visitors to the museum. To address these questions several research techniques are implemented. We use factor analysis to determine the main factors that constitute the perception of authenticity. With the help of ordinary linear squared regression we explore the determinants of the components of authenticity. Next, we justify and implement Tobit regression to explore how perceptions of authenticity affect the length of the museum visit and shopping behavior at museum shop. Our findings will help museum marketers to better structure promotion campaign. Managers are given precious insights on how to improve visitor's flows. Moreover, knowing the determinants of the shopping expenditure at the museum store will help managers to develop assortment of souvenirs and better manage their stock.

The paper is organized as follows. In the next section, literature review is provided on relevant research on authenticity and its relation to museums. In Section 3 the case study is described. Section 4 collects empirical research. In this section we describe research methods and provide account of empirical findings. Discussion and conclusions are provided in the last section.

## **2. Literature review on authenticity in research on museums**

There is no general agreement in the literature on what constitutes authenticity and how to evaluate it. In particular, the dispute is whether authenticity is an objectively identifiable property of objects and cultures, or a subjective, socially and individually constructed perception of them. As reported by Hughes (1995), MacCannell has been one of the first academics dealing with authenticity in tourism. Almost four decades ago, MacCannell (1973) introduced the concept of authenticity or better "staged authenticity" to sociological studies of tourism motivations and experiences (Wang, 1999). Since then this topic has gradually become an issue of particular interest in tourism field (Wang, 1999). MacCannell's interpretation of authenticity was based on object's or experience's degree of originality. Judging objects or experiences according to their extent of genuineness assumes that there is an absolute, objective criterion (i.e., a tangible origin) against which to gauge it.

Alternative view is that tourists' can have authentic experiences even when they are perfectly aware that the setting has been modified to please tourists (Cohen, 1988). In this way Cohen (1988) draws on the concept of "staged authenticity" introduced by MacCannell (1973). As described by Cohen (1988), more and more artificial cultural products are "staged" to please tourists. These products pretend to appear authentic although they are the result of a growing pressure for "spectacular, exotic and titillating attractions" to be shown to tourists (Boorstin, 1964, cited by Cohen, 1988).

Another important question is about the source of authenticity, what can be authentic. According to Wang (1999) there is a need to distinguish between authenticity related to objects and authenticity based on bodily feelings and self-making. Thus, a sharp distinction is drawn between object-based

authenticity and existential authenticity that can be completely independent from each other.

Most of scholar research in the field of museum research concentrated on the evaluation of authenticity. The main question in these studies is whether a certain site is perceived as authentic or not, and why (Waite, 2000). Few attempts have been made to disentangle the determinants of authenticity besides using demographic characteristics to explain it (Wait, 2000). One of these attempts is the study by Kolar and Zabkar (Kolar and Zabkar, 2010) that relates cultural motivations to existential and object-based dimensions of authenticity. Goulding (2000) evidenced three types of visitors based on their perception of authenticity. For 'existential' visitors the most important motivation for visiting is enjoyment and escape. They mainly perceive authenticity through exhibited artefacts. 'Aesthetical' visitors perceive history mainly through art. 'Social' visitors are looking for learning and social experiences. Their main interest lies in assisting demonstrations and acquiring souvenirs in museum shops. While, Chhabra et al. (2003) found that involved and knowledgeable tourists perceive higher levels of authenticity.

The concept of authenticity is used to explain probability to return to the museum or recommend it to friends and relatives, loyalty dimension. Kolar and Zabkar (2010) find that cultural motivations, existential and object-based authenticity altogether influence loyalty to the site.

### **3. Bolzano as 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 enogastronomic 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 since 1905 has opened 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. This growing trend shows an increasing attention towards arts 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, a Mercantile Museum, the “Dommuseum” opened in 2007 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. It is also has a “nativity scene” (presepio) Museum, in addition, in 2006, the Firmian Castle of Bolzano was devolved as a museum center 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 achievement”.

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 accidentally discovered in 1991 in the Ötztal 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 it’s 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 included into a cultural regeneration framework. Nowadays, the city of Bolzano offers a best practice 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 indicators of 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.

#### **4. Empirical analysis**

##### *4.1 Research design*

We base our measure of authenticity on the typology developed in Wang (1999). Wang expresses the view that authenticity is a complex construct that includes several dimensions. The most important dimension of authenticity for heritage sites is object-based authenticity (Naoi, 2004, Waite, 2000). The object-based component of authenticity refers to perceptions of architecture, impressions of buildings, peculiarities about the interior design of the sites and the streetscape. We assess these object-based elements in the sense of appropriateness of the hosting building and areas to the main goal of the museum: telling the story of the Iceman. The existential component of authenticity relates to the perceptions, feelings and emotions of museum visitors, such as ‘uniqueness of experience or ‘feeling the historic era’. The notion of ‘getting closer to history’ is found to be the most important for experiencing the authenticity of heritage sites (Chhabra et al., 2003, Naoi, 2004). The context of the archeological museum and the history of Iceman were considered in the development of the measurement items.

We also collect information on cultural motivations of museum visitors. Previous research finds positive relationship between cultural motivations and perceived authenticity (Chhabra, 2003).

In this study our interest is in how the concept of authenticity is related to the assessment of relevance for the management of museum, namely, the length of stay at the museum, expenditure on museum’s souvenirs and loyalty.

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. Possibility to reply ‘I do not know’ was given to respondents.

#### 4.2 Description of the sample

We analyze main characteristics of the sample in order to give a better understanding of visitors’ profile 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 1). 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.

Table 1. Sample characteristics

<b>Residence (%):</b>		<b>Age (% in category)</b>	
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
<b>Civil Status</b>		<b>Number family components</b>	
Single/never married	14%	1-2	36%
Married or de-facto	80%	3-4	51%
Separate/divorced	4%	5	10%

Widow	2%	>5	3%
<b>Income (% in category)</b>		<b>Education</b>	
< € 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%		
<b>First visit in Bolzano (% yes)</b>	58%	<b>First visit to the Archaeological Museum</b>	90%
<b>Visit Bolzano without Iceman(% yes)</b>	62%	<b>Visit other city with Iceman (% yes)</b>	63%
<b>Strong intention to return to Bolzano next year (% yes)</b>	24%	<b>Strong intention to return to the IcemanMuseum next year (% yes)</b>	11%
<b>Strong recommend Bolzano (% yes)</b>	40%	<b>Strong recommend IcemanMuseum (% yes)</b>	56%

### 4.3 Authenticity analysis

#### 4.3.1. Methodology

We use factor analysis to derive the underlying dimensions of the object-based and existential authenticity. The present survey instrument contains a list of 15 items that define authenticity. Formally, the following model can represent factor analysis:

$$\mathbf{av} = \Lambda \mathbf{f} + \Xi, \quad (1)$$

where  $\mathbf{av}$  corresponds to the matrix of visitors responses to authenticity items;  $\mathbf{f}$  captures the matrix of factor scores that places visitors with respect of the authenticity factors;  $\Lambda$  is a matrix of factor loadings that shows correlations between the answers on authenticity items and individual factor scores and  $\Xi$  corresponds to the matrix of residual terms.

Factor analysis consists in the definition of covariance matrix of the observed answers to authenticity items

$$\text{cov}(\mathbf{av}) = \Lambda \Lambda' + \Omega.$$

This covariance matrix is broken down in two components: a common component, called the communality ( $\Lambda \Lambda'$ ) and a unique component, called the specific variance ( $\Omega$ ). This analysis permits to describe the proportion of variance in the observed variables that is determined by the authenticity factors by analyzing the communalities scores matrix. However, the communalities are not known. Thus, there is a need to estimate the communalities in a way that the underlying factor structure can reproduce them as well as possible.

In the empirical work presented here we proceed in the following way. First, we conduct exploratory analysis in which initial common factors are extracted. Next, we conduct confirmatory analysis in which we test how well the factor structure is supported by the data. Finally, estimation results of common factors are presented followed by corresponding interpretation.

#### 4.3.2. Results of the factor analysis

First we identify common factors that determine authenticity. At this stage we do not specify the number of factors to be retained. Calculations are made with the use of Stata 11. Estimation results are presented in the table 2. The values above 0.5 are flagged with the star. Exploratory analysis gives rise to two main factors with corresponding Eigen values of 5 and 1,34. These values are higher than 1 and thus the factors' contribution to the variance is higher than contribution of a single variable.

Table 2. Rotated factor pattern

Item	Factor 1 (Existential authenticity - EA)	Factor 2 (Object- based authenticity - OBA)
Ötzi is unique in the world	0.7489*	0.191
It is a true story	0.8254*	0.1686
It is a place that makes you think	0.7265*	0.2272
It is a fascinating story	0.8123*	0.2153
It is a way to describe a historical era	0.7747*	0.2142
I consider the Iceman (Ötzi) and his history authentic	0.6625*	0.1887
Atmosphere at the entrance	0.262	0.7265*
Relaxing areas	0.2254	0.7372*
The rooms that host the exposition	0.4334	0.5437*
The external building	0.2066	0.7384*
The road signs in the city center	0.0891	0.5975*

Next, we proceed with confirmatory analysis. We test the appropriateness of the two-factor structure by computing Kaiser-Meyer-Olkin measure of sampling adequacy (KMO). The KMO measure for the given specification reaches 0.917, which indicates 'marvelous' adequacy of the structure. It means that variables considered in the analysis can be explained by two common factors and this description is excellent.

We can conceptually describe the identified factors:

*Factor 1* collects items that refer to perception and feelings of visitors. Concepts like 'Ötzi is unique in the world' or 'It is a way to describe a historical era' position this factor as expression of existential authenticity. A higher score on this factor indicates strong perception of existential authenticity.

*Factor 2* collects a number of items that evaluate appropriateness of the museum building and its rooms

to tell the fascinating story of the Iceman. Being related to the objects we identify it as object-based authenticity.

#### 4.3.3 Determinants of authenticity factors

Finally, we can compute individual authenticity scores. Based on equation (1) we can compute  $\mathbf{f}$ , the matrix of individual factor scores.

In order to understand better each individual authenticity score we run a linear regression model:

$$\widehat{f}_{EA,j} = a_{0EA} + \sum_k a_{k,EA} x_{k,j} + u_{EA,j}$$

$$\widehat{f}_{OBA,j} = a_{0OBA} + \sum_k a_{k,OBA} x_{k,j} + u_{OBA,j}, \quad \text{for all } j \text{ respondents.}$$

Where  $\widehat{f}_{EA,j}$  is a vector of individual scores on existential authenticity,  $x_{k,j}$  is a vector with the observations of individual socio-economic characteristic  $k$ ,  $u_{EA,j}$  is a vector of disturbance terms and  $a$ 's are coefficients to be estimated.

The following characteristics of visitors were included as explanatory variables: (a) nationality, (b) age, (c) education level, total accommodation costs, (i) total food and beverage costs, (j) shopping expenditure in Bolzano, (k) expenditure in the museum shop, (l) actual time spent visiting museum, (m) expenditure on accommodation, (n) expenditure on food and beverages, (o) number of previous visits to museum, (p) motivations for coming to the city of Bolzano, (q) number of visits to the museum.

Table 3. Authenticity and social and motivational characteristics

Variables	Existential authenticity		Object-based authenticity	
	Model 1	Model 2	Model 1	Model 2
Nationality (reference group Italians)	0.0279 (0.0771)		0.0401 (0.0940)	
Gender	0.0141 (0.0602)		-0.0607 (0.0733)	
Age	0.0037 (0.0028)		-0.0049 (0.0034)	
Education	0.0147 (0.0180)		-0.0466** (0.0220)	-0.0470** (0.0183)
Shopping expenditure in Bolzano	0.0000 (0.0002)		0.0002 (0.0002)	
Expenditure at the museum shop	-0.0004 (0.0034)		0.0039 (0.0041)	
Expenditure on accommodation	-0.0006 (0.0004)		0.0007 (0.0005)	
Expenditure on food and beverage	0.0002 (0.0004)		-0.0003 (0.0005)	
Time spent visiting museum	-0.0003 (0.0006)		-0.0007 (0.0007)	
Number of previous visits	-0.0008 (0.0244)		-0.0133 (0.0297)	
Came to Bolzano to visit the city	-0.0155 (0.0302)		0.1048*** (0.0368)	0.0885*** (0.0261)
Came to Bolzano to visit museum	0.0579* (0.0312)		-0.0488 (0.0380)	
Came to Bolzano to visit other museums	-0.0340 (0.0273)		0.1077*** (0.0333)	0.0899*** (0.0259)
Came to visit South Tirol	0.0400 (0.0297)		0.0003 (0.0362)	
Came to visit friends and relatives	0.0447 (0.0353)		-0.0731* (0.0430)	
Business/study trip	-0.0218 (0.0345)		0.0742* (0.0421)	

Came to Bolzano to relax	0.0482* (0.0250)	0.0498** (0.0197)	0.0056 (0.0305)	
Would visit the city anyway	-0.2088*** (0.0746)	-0.1918*** (0.0675)	0.0286 (0.0909)	
Would visit other city that hosts the museum	-0.1611* (0.0946)		0.1036 (0.1153)	
Probability to return to museum within 5 years	-0.0009 (0.0248)		0.0491 (0.0303)	0.0409* (0.0234)
Probability to recommend museum	0.2589*** (0.0297)	0.2648*** (0.0248)	0.0681 (0.0361)	0.0821*** (0.0252)
Bad weather	0.0204 (0.0248)		-0.0068 (0.0302)	
Relax	-0.0352 (0.0261)		0.0539*** (0.0319)	0.0572** (0.0242)
Learn about Iceman	0.1295*** (0.0337)	0.1657*** (0.0276)	0.0377 (0.0411)	
Learn about South Tyrol archeology	-0.0364 (0.0281)		0.0118 (0.0342)	
Experience something different	0.0443 (0.0270)		0.1380*** (0.0329)	0.1159*** (0.0245)
Had nothing better to do	-0.0584 (0.0394)		-0.0399 (0.0480)	
To stay with partner, friends	-0.0198 (0.0289)		-0.0074 (0.0352)	
Was advised to do so	-0.0130 (0.0256)		0.0782** (0.0312)	0.0543** (0.0238)
Curiosity	0.0990*** (0.0248)	0.0733 *** (0.0206)	-0.0070 (0.0302)	
Work/study visit	-0.0208 (0.0316)		-0.0416 (0.0384)	
Seen the mummy itself	0.2808* (0.1463)	0.3361*** (0.1252)	-0.1093 (0.1783)	
Number of visits to museum	0.0198 (0.0610)		0.0206 (0.0743)	
Const.	-1.6861*** (0.2775)	-1.7639*** (0.1516)	-0.5277*** (0.3382)	-0.7973*** (0.1285)
Adj.-R2	0.3899	0.3973	0.2224	0.2114

Notes: \*\*\*, \*\* and \* indicate statistical significance at the 1%, 5% and 10% level, respectively;

For each factor we fit two models. Model 1 corresponds to a broader model specification. Model 2 represents specification based on significant coefficients. Regression results are presented in the table 3. These results present some interesting information.

First of all, socio-demographic characteristics do not provide explanation of the authenticity except for education level in the case of object-based authenticity. The corresponding coefficient carries negative sign; it means that visitors with higher level of education find the building of the museum inappropriate for telling the story of Iceman. In fact, the museum is situated in the historical building in the centre of the city that was originally constructed as a bank. There is an ongoing discussion in the city council regarding the construction of the new building more suitable and more appropriate to host the mummy of Iceman and his history.

Visitors that actually saw the mummy (the mummy is conserved in special room and visitors can observe the mummy through a small window that is hidden in the exposition room) report higher perceived existential authenticity.

Motivational factors of visiting the city of Bolzano and of the museum also provide explanation to existential authenticity. Visitors that came to Bolzano to visit the museum report more existential authenticity, while respondents that admit that they would visit Bolzano even if the museum were not located in the city perceive less existential authenticity. Curiosity and willing to learn the story of Iceman are the main cultural motives of visiting the museum that provide explanation to existential

authenticity. It suggests that prior preparation to the visit and motivation create the feeling of authenticity before actually getting to the museum. Finally, respondents that came to Bolzano to relax report more existential authenticity.

Object-based authenticity, on the other hand, is more appealing to visitors that came to Bolzano to visit the city and other museums. Visitors reporting more object-based authenticity are those visitors that are going to the museum to relax, to experience something different or because they follow somebody else's advise. Apparently, expectations of these visitors are more related to the general architecture of the city and relaxed atmosphere of the museum than to specific motivation of learning the story of Iceman.

Both existential and object-based concepts of authenticity are related with the probability to recommend friends and relatives visiting the museum.

#### *4.4 The impact of authenticity on visitors' behavior*

In the present section we present analysis of several variables of interest for museum manager, namely, duration of the visit to the museum, expenditure in the shop of the museum, intentions to visit the museum within next 5 years and recommend visiting the museum to friends and relatives. We will explain these variables with the help of the authenticity factors.

##### *4.4.1 Analysis of the duration of the visit to the museum*

In the present section we analyze duration of the visit to the museum. Knowing the determinants of this variable will help management of the museum to better manage the flows of visitors. In the questionnaire we collected information on the duration of the visit to the museum. The average visiting time was of 90 minutes with the minimum of 30 minutes and the maximum of 3 hours.

Our interest, therefore, is to define the We run simple linear regression model to explain the duration of the visit to the museum

$$\widehat{\text{Duration}}_j = a_0 + \sum_k a_{jk}x_{jk} + u_j,$$

where  $\text{Duration}_j$  is individual duration of the visit to the museum,  $x_{k,j}$  is a vector with the observations of individual factor loading and socio-economic characteristic k,  $u_{E,A,j}$  is a vector of disturbance terms and  $a$ 's are coefficients to be estimated. In the table 4 we present the model based only on significant coefficients.

Visitors that report higher existential authenticity spend more time visiting the exposition. In fact, subjects that observed the mummy spent around 22 minutes more at the museum. While respondents



that claim they would visit another city that hosts the Iceman spent 13 minutes more. Tourists that came to Bolzano to visit South Tyrol also tend to spend more time inside the museum. Visitors that planned their visit to museum time ahead spent more time at the museum reaching 11 minutes more for respondents that decided to visit the museum a month ago. This confirms our conjecture that preparation to the visit increases motivation.

Families with children under 6 spent relatively less time inside the exposition. Apparently, small children get annoyed during the visit and the museum does not provide neither special rooms nor enough relaxation areas to meet the needs of these families. Respondents that visit the museum for work or study tend to stay less time at the museum. Tourists travelling with organized group spent almost 22 minutes less. Organized groups are usually under time pressure and individuals probably cannot enjoy the visit at their own pace.

Object-based authenticity did not have significant influence on the duration of the visit.

Table 4. Duration of the visit to the museum and its determinants

Variables	Coefficients
Existential authenticity	5.8166** (2.4756)
Object-based authenticity	-0.7108 (2.4076)
Visit South Tyrol	5.3030*** (1.5341)
Visit museum for work/study	-4.1021** (1.8004)
Would have visited another city that hosted Iceman	13.1220*** (4.2916)
Seen the mummy itself	22.2607** (8.7956)
Travelling with organized group	-21.5719*** (7.1383)
Time when decided to visit museum	2.3845* (1.3495)
Number of children under 6	-7.2464** (3.1494)
constant	51.6709 (10.4897)
R2-adjusted	0.0897

Notes: \*\*\*, \*\* and \* indicate statistical significance at the 1%, 5% and 10% level, respectively;

#### 4.4.2 Analysis of expenditure at the museum shop

Analysis of the determinants of the expenditure at the museum shop is of great importance for the management of the museum. Knowing who is your target may help the management to improve assortment of souvenirs and better handle stock issues. In the survey we collected information on whether respondents visited the museum shop and how much did they spend there.

Our variable of interest is, therefore, spending at the museum shop.

$$\widehat{\text{Spending\_shop}}_j = a_0 + \sum_k a_{jk}x_{jk} + u_j,$$

The spending at the shop can take the value 0 with positive probability and it is a continuous variable over strictly positive values. In fact, individuals solve maximization problem on how much to spend.

For some of these individuals, the optimal choice will be the corner solution, **Spending hop = 0**. Wooldridge (2002) points out that it is problematic using OLS in this setting. A recommended model to use in this case is standard censored Tobit model.

The structural equation in the Tobit model is

$$\widehat{y}_1 = X_i\beta + \varepsilon_i,$$

where  $y_i$  is a latent variable that is observed for values greater than  $\tau$  and censored otherwise. In our case, we assume  $\tau = 0$ . Thus, we have

$$y_i = \begin{cases} \widehat{y}_1 & \text{if } \widehat{y}_1 > 0 \\ 0 & \text{if } \widehat{y}_1 \leq 0 \end{cases}$$

Tobit model is estimated with log-likelihood. We use Stata 11 for calculations. The results of estimation are presented in table 5.

Coefficients corresponding to existential and object-based authenticity are significant and positive. This means that visitors that perceive the artifact as authentic from both existential and object-based point of view are willing to spend more on souvenirs. Existential component of authenticity induces in individuals the emotional state of excitement with regards to the story of Iceman, what psychologists define as 'hot' state. They look for some reminder of this state that they find in souvenirs at the museum shop. Object-based authenticity on the other hand is related to museum building, exposition design and relaxing areas. More suitable relaxing areas, design of exposition rooms and bar service allow individuals to reflect more on the story they are presented with and feel part of it. This also contributes to the emotional excitement previously discussed and, thus, higher spending on souvenirs.

We also find that more numerous families are more willing to spend on souvenirs. It is related to a previous finding that families with small children are spending less time on visiting the museum. Visitors with higher educational level, in particular, those with university degree or above, are willing to spend more on souvenirs. This finding may be related to the fact that, generally, people with higher educational level have higher income and, as a consequence, higher propensity to spend. Unfortunately, most of respondents preferred to not declare their income. This fact renders income not suitable for control in our analysis. We use reports on the spending at the shops in Bolzano as a proxy of the income level and general propensity of the sample to consume. Visitors that spend more in shops of Bolzano also tend to spend more in the museum shop.

Visitors that declare to work occasionally or on projects tend to spend significantly less at the museum

shop. This fact can be due to their relatively lower income level and uncertainty of income. On the other hand, retired persons have higher propensity to spend on souvenirs, as indicated by significant positive coefficient on this variable.

Visitors for whom the main reason of coming to Bolzano was to visit the museum spend more at the shop of the museum. The same is true for respondents that declared that they have prolonged their stay in Bolzano to visit the museum. Previous motivation of these individuals in museum makes them spend more on souvenirs.

Nationality is not a significant determinant of the expenditure at the museum shop, as well as the fact of being day-tourist.

*Table 5. Determinants of the expenditure at the museum shop*

<b>Variable</b>	<b>Coefficient</b>
Existential authenticity	4.810*** (1.520)
Object-based authenticity	2.879** (1.417)
Number of family members at the visit	1.983** (0.827)
University degree	8.696*** (2.674)
Occupied as autonomous worker	-2.824 (4.645)
Occupied as employee	-3.785 (3.786)
Working occasionally or on projects	-20.392* (12.310)
Retired	9.535* (5.000)
Dummy museum as main motivation to come to Bolzano	5.243** (2.701)
Dummy nationality (Italians are the reference group)	-0.898 (2.795)
Dummy tourist	-5.872 (5.338)
Expenditure at the shops in Bolzano	0.013* (0.007)
Extended stay to visit museum	10.873* (5.790)
Constant	-22.570*** (6.813)

*Notes: \*\*\*, \*\* and \* indicate statistical significance at the 1%, 5% and 10% level, respectively;*

## **5. Discussion and conclusions**

In the present study we explore dimensions of authenticity observed in visitors to South Tyrol's Museum of Archeology. With the help of factor analysis we individuated two factors corresponding to the distinct dimensions of authenticity, object-based and existential authenticity. We conduct analysis of the determinants of existential and object-based authenticity. These concepts are not explained by socio-demographic characteristics except for object-based authenticity being negatively related with education level. We explain this negative correlation by the fact that visitors with higher education, and presumably larger experience in visiting museums, perceive the building and hosting rooms of the museum as inappropriate to host the story of the Iceman. As we report in the paper the building that hosts the museum is a historical building in the center of Bolzano. This building was originally constructed to serve as a bank and structurally is ill suited to host the museum. This finding suggests

that the city should provide more appropriate and more authentic placing for Iceman mummy.

Two distinct profiles of visitors' motivations emerge that contribute to each dimension of authenticity. Existential authenticity is mainly explained by strong motivation of visitors to visit the museum. This goes from reporting that visiting the museum was the main reason of coming to Bolzano to indicating the curiosity in the story of the Iceman as the main reason of visiting museum. Observing the mummy of the Iceman through the opposite window contributes to the rise of existential authenticity. We hypothesize that pre visit motivation creates fertile grounds for the rise of existential authenticity. In some sense individuals start savoring the story long time before the actual visit takes place.

Motivational profile that characterizes object-based authenticity consists of more general cultural motivations for visiting the city and museum. Thus, visitors that expect to see general architecture of the city and looking for relaxation when visiting the museum, general cultural tourists, are more influenced by object-based authenticity.

The relationship between cultural motivations and perceived authenticity has been developed in consumer-based model of authenticity developed in Kolar and Zabkar (2010). Our findings go in line with this model as well as with the findings of Chhabra et al. (2003) who found that involved and knowledgeable tourists perceive higher levels of authenticity. We hypothesis that these motivations create specific expectations that visitors confirm or not during their visit. Thus, the marketers of the museum should underline the dimension of existential authenticity in their promotion of the museum.

We find that existential authenticity, but not object-based authenticity, positively affects the length of the visit to the museum. Observing the mummy increases the time for the visit by 22 minutes. This can be explained by the fact that the visitor should attend in line to be able to look at the special window. It can also be true that seeing the mummy increases the interest in the story of the Iceman. Families with small children and organized groups spend less time at the museum.

The perception of authenticity is important in the decision to buy souvenirs. Both components of authenticity, existential and object-based, are important for this decision. We suggest that existential component of authenticity induces in individuals emotional state of excitement with regards to the story of Iceman. They look for some reminder of this state that they find in souvenirs at the museum shop. Object-based authenticity that includes among other factors suitable relaxing areas, design of exposition rooms and bar service. These factors allow individuals to reflect more on the story they are presented with and feel part of it. This also contributes to the previously discussed emotional involvement and, thus, leads to higher spending on souvenirs.

Retired persons and families with more members tend to spend more in museum shop. The managers

should take this in mind when deciding on the assortment of the items to be sold there. Once again, strong motivation to visit the museum results in higher spending at the shop. The findings of this study underline the importance of previous motivation for the perception of authenticity and higher propensity to spend at the museum shop. Museum marketers should put efforts to build strong motivations to visit the museum in its potential visitors.

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