



**THE ATTRACTIVENESS OF A MODERN AND
CONTEMPORARY ART MUSEUM**

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WORKING PAPERS

2011/06



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Titolo: THE ATTRACTIVENESS OF A MODERN AND CONTEMPORARY ART MUSEUM

ISBN: 978 88 8467 661 0

Prima Edizione: Aprile 2011

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09123 Cagliari
Tel./Fax 070 291201
www.cuec.it

The attractiveness of a modern and contemporary art museum

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Abstract

This paper analyses the different factors influencing the intention to revisit a cultural attraction with an application to the Museum for Modern and Contemporary Art (MART) of Rovereto (Italy). The empirical data were obtained from a survey undertaken from September to November 2009 and a zero-truncated count data model is estimated. The findings reveal that, on the one hand, socio-demographic characteristics positively influence the probability to return. Also, as reported in other studies, the temporary exhibitions offered by the museum have a significant impact with a incidence rate ratio of almost two times. On the other hand, no matter how much the visitors spend on accommodation, are less likely to revisit if they travel in groups, by train or foot, are farer from their town of origin and spent longer visiting the museum.

Keywords: museum; cultural economics; repeat visitation; zero-truncated Poisson; Rovereto (Italy)

Jel Classification: C19; D12; L83

Acknowledgements: Our research was supported by the Autonomous Province of Bolzano, project “Tourism, growth, development and sustainability. The case of the South Tyrolean region” and by the Free University of Bolzano, project “L’impatto del turismo di crociere. Analisi empirico per il caso del Caraibi Colombiano”. The investigators deeply appreciate the time and effort that Beatrice Festini spent collecting and entering data and the research assistance we received from her in designing the questionnaire and collecting information about the MART.

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1. Introduction

Cultural activity is regarded as a form of tourism, though, during most of the past century, these two activities were considered as separate. Cultural resources were in fact related to education, whereas tourism was regarded as pure leisure. However, since the 80's cultural activity has begun to be viewed as a part of tourism (OECD, 2009). As UNESCO reports, cultural and natural heritage tourism is 'the most rapidly growing international sector of the tourism industry'. Although it is difficult to estimate the actual size of this phenomenon, the OECD and the UNWTO estimated that in 2007, cultural tourism accounted for 40% of all international tourism, up from 37% in 1995 (Mintel, 2011).

Amongst other heritage sites, museums play a relevant role as repositories of cultural diversity, education, social cohesion, personal development. Museums promote an integrated approach to cultural heritage and enable preserve community roots. Besides, they are also a stimulus for the economy, enhancing employment and income, thanks to the multiplier effects that may foster. Culture consumers generally have a higher spending propensity than other consumers' segments (Europa Inform, 2004). Overall, museums are expected to produce positive externalities that can be called cultural spill-over. The presence of a museum, in a specific geographical area, will not benefit only the public (private) agent but society as a whole because new knowledge will enter society's pool of cultural knowledge.

Italy makes an interesting case study for its outstanding cultural heritage. As Tafter (2011) reports, it ranks second, after Germany, for number of museums (both public and private) that in 2006 reached 4,742. Art museums alone represent 29.8% of the total non-public supply. Italian museums had approximately sixty million visitors that translates into more than one hundred and forty million euros as tickets sales alone. However, these figures may underestimate the actual economic impact given that not all the institutes hold data on the number of visitors, and more than 43% did not pay an entrance ticket.

From a practitioner perspective, it is of great importance to predict the repeat visitation to a specific site. In fact, local institutions, business, such as hotel, shops and leisure firms are enable to plan their activities in a more efficient manner. Besides, as Litvin (2007) points out, the variable "repeat visitation" has received scarce attention in the quantitative investigation for museum demand. Hence, the objective of this study is to predict the repeat visitation to the MART of Rovereto, one of the most important museums of modern and contemporary art in Italy. The

empirical data were obtained from face-to-face interviews undertaken in the museum, in September-November 2009. The representative sample consists of 350 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. The empirical findings provided in this paper give destination managers, local government and policy makers valuable information to formulate development and marketing strategies for future repeat visits.

The paper is organized as follows. In the following section, an updated literature review on the economic impact of museums is provided. Section 3 provides the empirical section with a description of the methodology employed, presents the case study of MART and the main findings. Discussion and concluding remarks are provided in the last section.

2. Literature review

The literature on the impact that museums have on the local community, society and economy is vast (Luksetich and Partridge, 1997; Plaza, 2000; Maddison and Foster, 2003; Maddison, 2004; Stynes and Vander Stoep, 2004; Frey and Meier, 2006; Scott, 2006; Kinghorn, and Willis, 2007 and 2008; Plaza, 2008; Plaza and Haarich, 2009; Fonseca and Rebelo, 2010; Plaza, 2010).

Empirical evidence is provided on the effects of museums and galleries on the economy via mainly impact analysis, revealed preference techniques, such as travel cost analysis, and stated preference techniques, such as contingent valuation (Mourato and Mazzanti, 2002; Choi et al., 2010). On the one hand, only a 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, gender and negatively by the travel cost.

On the other hand, there are more examples of stated preference applications. 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 Sculpture 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, in 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.

Via impact analysis, Dunlop et al. (2004) find that, in Scotland, independent arts museums and galleries scored the highest income multiplier (2.36) and an employment multiplier of 1.81. The impact of Guggenheim museum of Bilbao is estimated in 1.25 jobs for every 1000 visitors (Plaza, 2010). Çela et al. (2009), analyse visitor spending and the economic impact of heritage sites at the Silos and Smokestacks National Heritage Area, in Iowa. The empirical findings show that total shopping

per person is the highest amongst visitors to farms, museums, parks and gardens. Non-residents gave a total contribution of 103 million US\$ to the rural Northeast Iowa and created 1,981 jobs, thus encouraging institutions and managers to preserve and enhance their heritage.

Satisfaction with the offered product also plays a key role in providing a constant income source for businesses that can be used to further increase the welfare of the local community. In the literature, several studies have been devoted to explore 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 highlighted from such a strand of literature. 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 (Jeong and Lee, 2006; Alcaraz et al., 2009), the variety of special exhibitions on offer (Plaza, 2008) and, as Bonn et al. (2008) emphasise, environmental cues (e.g lighting, colour, spaciousness, traffic flow) are far more important to perpetuate brand meaning and uniqueness in the minds of visitors than tour guides, music, merchandise quality. 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.

This literature review shows that although numerous studies have appeared on stated preferences and satisfaction, little attention has been paid on the economic impact of museums on the economy. More recently, this view is also confirmed by Cellini and Cuccia, (2009) and Choi et al. (2010). In addition, only a few studies have presented count models that have been widely applied in empirical travel cost research (see e.g. Scarpa et al., 2007). Hence, the present paper stands as a novel case study since for the first time a zero-truncated count model,

stemming from the standard Poisson and negative binomial, is used in analysing the likelihood to repeat a visit to a museum (e.g. Hellström and Nordström, 2008; Martinez-Espiñeira et al., 2008).

3. Empirical section

3.1 The theoretical framework

To analyse visitors' likelihood to revisit MART, a theoretical framework is constructed based upon the study by Hellström and Nordström, (2008) and Martinez-Espiñeira et al. (2008). 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. This model can be included into the revealed preferences techniques, given by the direct observation of consumer behaviour. Specifically, an individual i , whose aim is to maximise his/her utility, chooses to visit n times a given site j (y_{ij}), and purchases a bundle of goods and services that include amongst other items transport, food and beverage, accommodation subject to a budget and time constraint (Fonseca and Rebelo, 2010). Hence, the relevant utility function is given by the following expression:

$$u_i = u_i(y_{i1}, \dots, y_{ij}, k_i, z_i) \quad j=1, \dots, N \quad i=1, \dots, I \quad (1)$$

where y is the number of visits to the museum, that can take the value one up to n times; k_i are the socio-economic characteristics of individual i (e.g. age, gender, number of family members, income) and z_i is the perception of the bundle of characteristics of the destination and heritage site.

The choice of the visitor also could depend on the costs incurred by individual i , x_i , that include variables such as distance from the place of habitual residence, accommodation costs, living costs (e.g. food, beverage, shopping, etc);

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:

$$\text{Pr ob}(Y_i = y_i | w_i) = \frac{e^{-\lambda} \lambda^{y_i}}{y_i !} \quad y_i = 0,1,2,\dots \quad (2)$$

$$E(y_i | x_i) = \text{Var}(y_i | x_i) = \lambda = e^{x_i \beta}$$

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

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).

In this paper, a zero-truncated Poisson regression is employed. 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 MART. 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 (or negative binomial) regression allows one to model $visit$ with this specific restriction. This model can be specified by the following equation:

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

4. The case study

4.1 The town of Rovereto and its cultural heritage

Rovereto is a town of approximately 37,000 inhabitants in the Autonomous Province of Trento situated in the North of Italy. It has a very interesting cultural heritage developed since the Venetian rule (15th century) and during the Austro-Hungarian domination. Amongst other heritage sites, the town hosts one library founded in 1764 with a collection of 370,000 books. Nowadays, it is well-known for its cultural and sport events and, especially, for the Mozart Festival (he held a

concert here in 1769), *Oriente-Occidente* festival, that aims at expanding social and ethnic cohesion, and *Palio "Città della Quercia"* with its athletic tournament. The town also hosts four museums: the Italian War History Museum, the Civic Museum, the Museum "Casa Depero", which is part of the MART and the Museum for Modern and Contemporary Art of Trento and Rovereto itself, where Italian Futurism was born.

The idea of a museum for modern and contemporary art was born in the late 70's of the past century, against the industrial and unemployment turmoil. The project, begun in 1987-88, as an independent public institution of the Autonomous Province of Trento, is designed by the Swiss architect Mario Botta, who also designed the Museum of Modern Art in San Francisco. The museum is developed on 12,000 square meters of which 6,000 dedicated to the exposures and is divided into three exhibition centers: the MART main building; the "Palazzo delle Albere" that is based in Trento; the recently restored "Casa Depero" that re-opened in January 2009. The project was aimed at unifying the different collections of masterpieces by Fortunato Depero and other town futurist artists to create a permanent collection. In total three sections of the museum have had more than one million and seven hundred visitors since its opening in December 2002.

From a financial point of view, the museum has revenues from tickets sales, merchandising, sponsors and publishing that cover 24% of total running costs. The remaining 76% is publicly funded by the Autonomous Province of Trento.

Despite this rich cultural heritage today the bulk of its economy is based on industry, agriculture and tertiary sector. As far as the tourism activity is concerned, the heterogeneous features of this province allow to diversify the tourism supply: rural and eno-gastronomic holiday in the valleys, skiing holiday in the mountains and cultural holiday in towns and cities. Rovereto and Trento are the main centers for the last typology of tourism, and the MART can be regarded as a strategic heritage site for both the municipalities, that are only 25 Km apart. Rovereto tourism office has recently started a cooperation with the city of Trento with the aim to create specific tourist packages and a more efficient network.

Hence, before running the empirical investigation, it is worthwhile investigating tourism demand and supply in Rovereto and Trento, the province capital, and the whole province as a further benchmark. In the province of Trento, tourist supply is based on two main components: hotel and other non-hotel infrastructure such as bed & breakfast, serviced apartments, hostels, agritourism activities, camp-sites. Table 1

provides the percentage growth of hotel and non-hotel accommodation, expressed both in terms of consistency (i.e. number of infrastructure) and capacity (i.e. number of hotels), for the time span 2000-2008 (Statistics Office of the Autonomous Province of Trento, 2011).

On the one hand, for the hotel sector, Rovereto shows the highest growth in terms of capacity (+5%), while the province capital of Trento presents the highest increase in terms of consistency (+9%). Notably, the province as a whole has experienced an overall decrease (-4% consistency; -1% capacity). On the other hand, the non-hotel sector presents a different picture. Both Rovereto and Trento denote a remarkable growth in the number of infrastructure and bed-spaces, despite the province as a whole grows less (+31% consistency) and even denotes a relevant decrease in terms of capacity (-46%).

Tourist flows show a steady increase during 2000 and 2008 (Table 2). In the province as a whole, overnight stays grew at 13%, while arrivals at 19%. On balance, arrivals and overnight stays increased more in non-hotel accommodation (26%, 20%, respectively) than in hotels (18%, 11%, respectively). In Rovereto, the total number of arrivals increased (26%) more than in Trento (22%), while the reverse can be noticed in terms of overnight stays, that is 55% in Trento versus 41% in Rovereto. Likewise, non-hotel accommodation show an outstanding growth, especially in Rovereto.

These figures provide a clearer picture on the potential attractiveness of both cities of Trento and Rovereto on the province that may also denote the positive impact of MART on its overall tourism activity.

4.2 The survey on the MART

The questionnaire run at the MART museum of Rovereto is organized in six blocks, containing in total 56 questions. They gather information on socio-economic features, trip description and costs incurred by the respondent, information about MART, motivation, satisfaction, and loyalty (as previously described). A five-point 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.

The survey was administered from September to November 2009, via face-to-face interviews. The respondents were selected with a quota random sampling procedure. The quotas were based on age and gender

and covered cases characterized by heterogeneous demographics features. Overall, 350 complete interviews were successfully completed.

The main socio-economic characteristics of the visitors are summarized in Table 3. More than half of the sample (52%) came from the neighborhood regions (Veneto, Lombardy and Emilia Romagna), followed by the habitants of the region (26%) hosting the museum (Trentino Alto Adige). Visitors average age is approximately 42, and the greatest concentration (37%) is in the age range between 26 and 40, showing that MART is able to attract relatively young people. A middle high education level and income level (61% declare to gain more than 28.000€ per year) characterize the MART respondents. More than 40% of the sample visited MART for the first. A strong intention to repeat the visit has been declare by the 36% of the visitors, while 53% will strongly recommend this kind of visit to friends and relatives.

Based on the sample, MART represent a great attraction for the city of Rovereto: only 34% would visit the city without it, and 91% are willing to visit another city that would host it. Overall, this visitors' profile appears in line with the middle visitor of contemporary art museums in Italy (Il Pubblico dei Musei di Arte Contemporanea, Centro Studi e Ricerche Associazione Civita, 2007). Moreover, a recent ISTAT (National Institute of Statistics, 2011: Noi Italia 100 statistiche per capire il paese in cui viviamo) survey reports that the greatest quota of people, aged more than 6 years old, visiting a museum in the last 12 months are from Trentino.

It is also interesting to give a more detailed account on the expenditure pattern of the MART visitors (Table 4). For this purpose, the sample is divided into four visitor-types: tourists, those that by definition spent at least one night in the town; day visitors, whose visit lasts only one day; locals, who are resident nearby; and finally, groups on average travelling with two other people (i.e. small groups). For all typologies considered, but accommodation costs, the greater fraction of expenditure is, on average, shopping in Rovereto, followed by food and beverage; the smallest expenditure is shopping at the museum. These data show that overall MART is able to produce positive externalities on the town economy.

5. Empirical 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 as presented in the previous paragraph, are described in greater details in Table 1A, in Appendix.

The empirical specification is estimated by using STATA 10 and results are reported in Table 5. As a basic specification, a standard Poisson regression is employed in order to predict the repeat visitation to the MART (e.g. Fonseca and Rebelo, 2010). As stated, the dependent variable, *number of visits*, is a count variable. The standard Poisson model is then empirically compared to the standard negative binomial specification, to allow for over-dispersion. The *log-likelihood-ratio test of alpha*, that tests the standard Poisson distribution is empirically a better specification (or equivalently the mean is equal to the variance), fails to reject the null (see Table 5). Besides, 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 $\chi^2 = 98.6969$ - Prob > $\chi^2(187) = 1.0000$). This result is further confirmed by the AIC and BIC criteria that are minimised in the former model.

As a further extension of the model, a zero-truncated Poisson is estimated, that explicitly allows one to model the dependent variable with the specific restriction, ranging from one to N (*i.e.* the count variable cannot be zero). Full results are presented in Table 6. As one can notice, the AIC and BIC criteria are further minimised in the zero-truncated Poisson. Hence, there is statistical ground to retain the zero-truncated Poisson as a better empirical specification. It is worthwhile pointing out that in all the cases robust standard errors are estimated, given the relatively low number of observations that may lead to problems in the residuals (e.g. heteroskedasticity). It is worthwhile noticing that overall, and only with one exception, the signs of the coefficients are congruent in both the models. For both models are reported IRRs (Incidence Rate Ratio), that are exponential of the coefficients. The interpretation varies according to the magnitude of IRRs: if the value is below one then the variable is negatively influencing the likelihood to repeat the visitation; if the value is above one the opposite holds; finally, if the value is equal, or very close to one, then a neutral effect is detected.

Considering the socio-demographic controls, *ceteris paribus*, it emerges that a unit change in age results in the expected number of visits to MART to increase very marginally by a factor of $\exp(0.0002) = 1.0002$. A female visitor has an expected repetition visit of 1.12 times. Education also indicates a positive influence on the number of revisit to

the museum. As an economic control, income depicts a negative impact. As one can notice all these coefficients turn out not to be statistically significant in the zero-truncated Poisson model. The number of people travelling with the respondent positively affects the likelihood to repeat the visit to the MART, and present a statistically significant coefficient.

The nationality dummy (Italians is the reference group) suggests that foreigners are more likely to revisit the museum. However, distance from Rovereto to the place of habitual residence has a negative and highly statistically significant impact on the expected number of visits to the museum. This variable can be thought as a proxy of the actual trip costs. Hence, the further the distance from Rovereto the less is the probability to repeat the visit. Taking into account the choice of transportation mode, on the one hand, respondents going by bus are more likely to revisit than those travelling by car (as the reference group). On the other hand, visitors by train or foot (that present a highly statistically significant coefficient) are less likely to repeat the experience in the future.

Accommodation costs and expenditure in souvenirs at the museum present a statistically significant coefficient with a positive sign. IRRs are very close to one meaning that these expenses are not much influencing the probability to revisit MART. Reversely, the coefficients for expenditure in shopping in Rovereto and food-beverage present a negative sign, hence these variables have a negative influence on the number of visits to the MART. Time spent visiting the museum may be regarded as a proxy for the opportunity cost of leisure time, in this case the expectation is that those who spent a longer time in visiting MART are less likely to repeat the visit.

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 Trentino as well as friends and family as factors that may positively drive repeat visits. Positive pull factors are temporary exhibitions (with a statistically significant coefficient), and both permanent-temporary, than permanent exhibitions, treated as the base case. Furthermore, those who either had already visited, or intended to visit later, the “Casa Depero” denote an expected number of visits equal to 1.78 and 1.29, respectively, than those who did not visit the site (the reference group). A significant factor that is likely to encourage future visitation is the MART itself, no matter its location. Besides, the higher is the originality attributed by visitors to the museum the higher the likelihood to repeat the experience.

As one would expect, If on the one hand, the higher is the probability to return to MART in the next year the higher the expected number of visits. On the other hand, the probability to suggest the site to friends and relatives reduces the expected revisit by the respondent.

6. Discussion and conclusions

In this paper, the different factors influencing the intention to revisit the Museum for Modern and Contemporary Art (MART) of Rovereto (Italy) has been analysed.

The recent investment in cultural activities has been the local institutions' answer to face the economic crisis Rovereto was going through. As shown in this study, over the past decade, the town has experienced an increase in the total number of tourism overnights, both in hotel and non-hotel infrastructure, as well in the overall tourism supply. It is well-established that tourism activity itself is able to trigger economic growth (see Brida and Pulina, 2010) for a detailed literature review). Specifically, Brida and Risso (2010), by running a Johansen cointegration analysis applied to regional data, show that the long run elasticity of the real gross domestic product (GDP) to tourism demand is 0.29. Besides, the Granger causality test assesses a unidirectional temporal relationship running from tourism activity to real GDP. This shows empirical evidence that tourism activity is able to activate a virtuous path of growth for the Trentino region as a whole.

In the present paper, the theoretical model has been based on the hypothesis that an individual maximises his/her utility given the number of times he/she visits the heritage site and further socio-economic variables, subject to time and income constraints. Empirical data were collected via a survey on 350 visitors at the site. From an empirical perspective, the study shows that the zero-truncated Poisson gives a better specification than a standard Poisson model, as the dependent variable (i.e. number of visits to the museum) does not assume a zero value.

The findings reveal that, on the one hand, visitors are more likely to revisit if are female, have a higher level of education, are foreigners, travel by bus, are pulled by visiting the Trentino region, visiting friends and family, are attracted by temporary exhibitions at MART, have already visited the house of Fortunato Depero at Rovereto, or intend to visit it either in the same or another day. On the other hand, visitors are less likely to repeat the experience at MART, if have an higher income, travel within wider groups of people, by train or foot, if the museum is

far from their home town, spend in food-beverage or shopping in Rovereto, the longer the visit to the museum and are willing to suggest MART to friends and relatives. Interestingly, respondents are more neutral to revisit depending on age and total accommodation costs. Results are in line with other empirical studies concerning probability of revisiting cultural attractions (Fonseca and Rebelo, 2010) and other tourist attractions (Scarpa et al., 2007).

These empirical findings highlight important marketing and management implications: MART could be used as the icon for Rovereto itself aimed to generate an immediate association of the city with this cultural site as well as a marketing tool. Since especially youngsters are interested in visiting MART, a specific strategy needs to be implemented in order to further attract this segment of demand.

A network with the other museums, such as “*Casa Depero*” and the Museum for Modern and Contemporary Art (Museion) in Bolzano, may be created in order to develop a systematic culture itinerary.

Considering that those with a less probability to repeat visitation have a strong intention to suggest it to friends and relatives, a successful management policy may be to provide visitors with tangible incentives such as discount vouchers for entry fees, souvenir and museum bookshop purchases. Specific advertising policies may be also implemented in the neighbourhood of Rovereto and in the nearer provinces, especially Bolzano, as another important cultural centre.

The contribution of the present study, in applying a new empirical approach into the investigation of a museum economic impact, can be further tested for and expanded to other heritage sites, providing robustness to the present paper. Besides, a future challenge of research in this field will involve a systematic investigation on the relationship between Rovereto cultural attractions and its tourism growth.

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Table 1: Growth rates hotel and non-hotel sector (2000-2008)

Growth rates 2000-2008	Hotel		Non-hotel	
	Consistency	Capacity	Consistency	Capacity
Trento	9%	4%	129%	68%
Rovereto	0%	5%	167%	59%
Province	-4%	-1%	31%	-46%

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

Table 2: Tourism Demand, growth rates in hotel and non-hotel sector (2000-2008)

Growth rates 2000-2008	Hotel		Non-hotel		Total	
	Arrivals	Overnight stays	Arrivals	Overnight stays	Arrivals	Overnight stays
Trento	13%	34%	121%	133%	22%	55%
Rovereto	13%	12%	150%	145%	26%	41%
Province	18%	11%	26%	20%	19%	13%

Source: Our elaboration of Statistics Office of the Autonomous Province of Trento data

Table 3: Descriptive statistics of the sample

Residence (%):		Age (% in category)	
Bordering Region	52%	>55	21%
Trentino Alto Adige	26%	41-55	28%
Rest of Italy	15%	26-40	37%
Europe	6%	18-25	14%
Others	0,6%	Mean	42%
Education		Income (% in category)	
Below high school	6%	< €15.000	11%
High school	36%	€15.000-€28.000	28%
College/ degree	36%	€28.000-€55.000	38%
Postgraduate	22%	€55.000-€75.000	12%
		>€75.000	11%
First visit (% yes)	42%		
Visit other city with MART (% yes)	91%	Visit Rovereto without MART (% yes)	34%
Strong intention to return to MART next year (% yes)	36%	Strong recommend MART (% yes)	53%

Source: Our elaboration on sample data

Table 4: Expenditure pattern of MART visitors

Average Expense types	Tourists	Day-visitors	Locals	Small groups
food and beverage	€15,50	€12,18	€8,10	€15,23
Mart shop	€11,32	€9,72	€6,01	€11,12
shopping in town	€20,67	€16,33	€19,88	€20,28
overnight stay	€32,36			
Total	€79,85	€38,23	€33,99	€46,63

Source: Our elaboration on sample data

Table 5 Zero-truncated Poisson regression results

VARIABLES	Poisson Model		Zero-Truncated Poisson Model	
	Coefficients	IRR§	Coefficients	IRR§
Age	0.0014 (0.0027)	1.001 (0.0027)	0.0002 (0.0045)	1.0002 (0.0045)
Gender (ref. male)	0.1007 (0.0706)	1.1059 (0.0781)	0.1129 (0.1114)	1.1196 (0.1247)
Education	0.0495* (0.0261)	1.050* (0.0275)	0.0594 (0.0416)	1.0612 (0.0441)
Income	-0.0473 (0.0325)	0.9537 (0.0310)	-0.0680 (0.0503)	0.9342 (0.0470)
Number of people in the group	-0.0341** (0.0161)	0.9664** (0.0156)	-0.003649*	0.9211* (0.0409)
Nationality (ref. Italians)	0.1817 (0.1884)	1.1993 (0.2260)	0.3143 (0.4139)	1.3693 (0.5668)
Distance Rovereto-home town	-0.1018*** (0.0324)	0.9031*** (0.0293)	-0.1485*** (0.0565)	0.8619*** (0.0487)
Mean of transport to get to the MART (ref. car)				
Train	-0.1627 (0.1209)	0.8498 (0.1027)	-0.3154 (0.02589)	0.7294 (0.1888)
Bus	0.1491 (0.2340)	1.1608 (0.2716)	0.4900 (0.4225)	1.6323 (0.6897)
Foot	-0.2033** (0.0819)	0.8160** (0.0668)	-0.3247*** (0.1154)	0.7226*** (0.0834)
Total accommodation costs	0.0001** (0.0000)	1.0001** (0.0000)	0.0002* (0.0001)	1.0000* (0.0001)
Souvenir expenditure within the MART	0.0039*** (0.0013)	1.0039*** (0.0013)	0.0061*** (0.0019)	1.0061*** (0.0020)
Total food and beverage costs	-0.0024* (0.0014)	0.9975* (0.0014)	-0.0028 (0.0025)	0.9971 (0.0025)
Shopping expenditure in Rovereto	-0.0015 (0.0012)	0.9984 (0.0012)	-0.0020 (0.0022)	0.9979 (0.0022)
Importance to visit MART	-0.0606* (0.0347)	0.9411* (0.0327)	-0.1231** (0.0548)	0.8841** (0.0484)
Importance to visit Trentino	0.0506** (0.0219)	1.0519** (0.0231)	0.0831** (0.0358)	1.0866** (0.0389)
Importance to visit friends	0.0417 (0.0322)	1.0426 (0.0336)	0.0836* (0.04702)	1.0872* (0.0511)
Time spent visiting MART	-0.0487 (0.0396)	0.9524 (0.0377)	-0.0623 (0.0639)	0.9395 (0.0600)
Exhibition (ref. permanent)				
Temporary	0.2559* (0.1269)	1.2916* (0.1639)	0.5737* (0.1269)	1.774* (0.4736)
Permanent and temporary together	-0.0388 (0.1496)	0.9618 (0.1439)	0.0946 (0.2995)	1.0993 (0.3293)
Have you visited "Casa Depero" (ref. no)				
Depero yes	0.4149*** (0.0873)	1.5143*** (0.1322)	0.5761*** (0.1368)	1.779*** (0.2435)
Depero later	0.1689** (0.0826)	1.2056** (0.0996)	0.2565* (0.1374)	1.2924* (0.1776)
Would you visited other city hosting MART (ref. no)				
Other city	0.1562 (0.1171)	1.1691 (0.1370)	0.3427** (0.1664)	1.4088** (0.2344)
MART originality	0.0333 (0.0469)	1.0338 (0.0485)	0.0758 (0.0736)	1.0788 (0.0795)
Visit MART next year	0.2870*** (0.0394)	1.3324*** (0.0525)	0.5217*** (0.0781)	1.6850*** (0.1316)
Suggest to visit MART	-0.1851*** (0.0473)	0.8309*** (0.0393)	-0.3339*** (0.0746)	0.7160*** (0.0534)
Constant	0.4921* (0.2639)		-0.1452 (0.4664)	
Pseudo R ²	0.1445	0.1445	0.2392	0.2392
Wald chi2(26)	580.6 Prob>chi2= 0.000	580.6 Prob>chi2= 0.000	256.05 Prob>chi2= 0.000	256.05 Prob>chi2= 0.000
Log pseudolikelihood	-329.28	-329.28	-277.96	-277.96
AIC	712.56	712.56	609.92	609.92
BIC	803.44	803.44	700.81	700.81
Likelihood-ratio test of alpha=0	Chibar2(01)=0.000	Prob>=chibar2=1.000		

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.

Appendix

Table A.1: List of control variables

NAME	DEFINITION
<i>AGE</i>	Age of the respondent
<i>GEN (reference group male)</i>	This dichotomous variable takes the value one if female, zero if male.
<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>Income</i>	This is a discrete variable that takes the value 1 for an income up to 15 thousand euros, and progressively up to 5 for an income higher than 75 thousand euros.
<i>Number of people in the group</i>	This discrete variable takes into account the size of the travelling group of the respondent.
<i>Nationality (reference group Italians)</i>	This dummy takes the value one if the visitor is foreigner, zero otherwise.
<i>Distance Rovereto-home town</i>	<i>This is a discrete variable that takes the value one if the respondent comes to Trentino Alto Adige, and progressively a higher value further the distance of his/her place of residence.</i>
<i>Mean of transport to get to the MART (reference group car)</i>	<i>train:</i> takes one if the respondent travelled by train, zero otherwise; <i>bus:</i> takes one if the respondent travelled by bus, zero otherwise; <i>foot:</i> takes one if the respondent went to the MART by foot, zero otherwise.
<i>Total accommodation costs</i>	<i>This is a continuous variable that accounts for the 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>
<i>Souvenir expenditure at MART</i>	<i>This is a continuous variable that accounts for the costs, expressed in euro, undertaken by the respondent to purchase goods at the MART.</i>
<i>Total food and beverage costs</i>	<i>This is a continuous variable that accounts for the costs, expressed in euro, undertaken by the respondent to purchase food and beverage.</i>
<i>Shopping expenditure in Rovereto</i>	<i>This is a continuous variable that accounts for the shopping expenditure, expressed in euro, undertaken by the respondent.</i>
<i>Importance to visit MART</i>	<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 Rovereto, given the presence of the MART.</i>
<i>Importance to visit Trentino</i>	<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 Rovereto, given is located in the region of Trentino Alto Adige.</i>
<i>Importance to visit friends</i>	<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 Rovereto, given the respondent is visiting friends and family.</i>
<i>Time spent visiting MART</i>	<i>This is a discrete variable that accounts for the time (i.e. minutes) the respondent spent in the MART for the visit.</i>
<i>Exhibition (reference group permanent exhibitions)</i>	<i>Permanent:</i> this dummy takes the value one if the visitor was driven by a temporary exhibition, zero otherwise. <i>Permanent and temporary together:</i> this dummy takes the value one if the visitor was driven both by a temporary and permanent exhibition, zero otherwise.
<i>Have you visited “Casa Depero”(reference group no)</i>	<i>This is a dummy variable that takes the value one if the respondent has already visited “Casa Depero” (i.e. the house of the futurist Fortunato Depero) in Rovereto, zero otherwise.</i>
<i>Depero later (reference group no)</i>	<i>This is a dummy variable that takes the value one if the respondent has the intention to visit “Casa Depero” (i.e. the house of the futurist Fortunato Depero) in Rovereto later (or another day, zero otherwise.</i>
<i>Depero later (reference group no)</i>	<i>This is a dummy variable that takes the value one if the respondent has the intention to visit “Casa Depero” in Rovereto later (or another day, zero otherwise.</i>
<i>Would you visited other city boasting MART (reference group. no)</i>	<i>This is a dummy variable that takes the value one if the respondent would visit another city boasting the MART, zero otherwise.</i>
<i>MART originality</i>	<i>This is a discrete variable that takes values from 1 (not original at all) up to 5 (very original) for attributing an increasing satisfaction with the originality of the MART.</i>
<i>Visit MART next year</i>	<i>This is a discrete variable that takes values from 1 (very unlikely) up to 5 (very likely) for the possibility the respondent returns the next year.</i>
<i>Suggest to visit MART</i>	<i>This is a discrete variable that takes values from 1 (very unlikely) up to 5 (very likely) for the possibility the respondent recommends the MART to friends and family.</i>

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Finito di stampare nel mese di Maggio 2011
Presso **studiografico&stampadigitale Copy Right**
Via Torre Tonda 8 – Tel. 079.200395 – Fax 079.4360444
07100 Sassari

www.crenos.it

ISBN 978-88-84-67-661-0

