

Tourism sustainability in archaeological sites

This research aims to determine a model for developing sustainable tourism in archaeological sites. A qualitative and quantitative approach has been assumed in order to test a model of market orientation, where 11 experts were interviewed and 122 employees of archaeological sites answered the e-questionnaire. This study offers useful insights for researchers and managers. The findings have revealed that market orientation and innovativeness positively and significantly influence tourism sustainability, measured in economic and social terms. Besides, tourist functionality has been determined as an antecedent of market orientation.

Keywords: archaeological sites, market orientation, tourism sustainability, tourist functionality, innovativeness.

Introduction

Many policy makers have considered heritage resources as custom-built products to satisfy contemporary consumers, and tourists' arrivals have been contemplated as businesses opportunities (Avraham, 2016). Due to this chance, managers of archaeological sites have tried to boost marketing strategies in order to attract visitors to these non-renewable resources without taking into account the possible result of receiving high tourism flows in certain periods of the year (Ely, 2013). As a consequence, these assets have received so many visitors that it has been impossible to guarantee their endurance, and in turn, their economic and social continuity (Benur and Bramwell, 2015; Kozak and Martin, 2012). As a consequence, now many of these managers are trying to preserve these non-renewable assets at the same time these are exposed to the public (Alazaizeh *et al.*, 2016; Calver and Page, 2013). It has been pointed out that effective communication strategies enhance performance in this kind of tourist assets (Ely, 2013).

The direct contribution of market orientation to the long-term performance measured in economic and non-economic terms has been examined in different cultural organisations (Camarero and Garrido, 2008; Gainer and Padanyi, 2005;

Hsieh and Curtis, 2008; Hsieh et al., 2008; Jones, 2000; Sorjonen, 2011; Thomas et al., 2009; Voss and Voss, 2000). Although scholars have pointed out that a market orientation approach can have a positive impact on the sustainability of archaeological sites (Alazaizeh et al., 2016; Ely, 2013; Kavoura and Bitsani, 2013; Milman, 2015; Orbasli, 2014; Poria et al., 2011), empirical research into market orientation, innovation and their influence on tourism sustainability in archaeological sites remains under-research.

In this respect, it has been proved that cultural organizations that implemented a market orientation approach tend to innovate more (Camarero and Garrido, 2012). Innovations in organizations proactively respond to market changes, which is a necessary precondition to guarantee organization's sustainability plus a market orientation approach (Camarero and Garrido, 2008; Tajeddini, 2010). As in the case of museums, archaeological sites are organizations with specific characteristics wherein not only social objectives prevail but also economic goals. Therefore, the commitment to innovation reflects their need to boost financial revenues (and not just public funding) as well as adapt to social needs (Camarero and Garrido, 2012). In this competitive environment where visitor preferences are getting more dynamic and complex, innovation in archaeological sites appears to be one of the main efforts these organizations have to undertake in order to achieve sustainable tourism development (Calver and Page, 2013; Camarero et al., 2015; Weidenfeld and Leask, 2013).

The main objective of this study is to determine the variables that best explain tourism sustainability in archaeological sites. For this purpose, we initially conducted a qualitative research, which identified the main factors that impact archaeological site's sustainability, and led us to propose the hypotheses and the model to analyse.

The relationships by which market orientation could positively impact tourism sustainability are analysed in the following section of this paper. The data collection and measurement model are described in the methodology procedures and context. The hypotheses tests and empirical findings are detailed in assessment of the measurement model, reliability and discriminant validity analysis and hypotheses testing. Theoretical and managerial implications are

explained in contributions and implications. Limitations and future research lines are identified in the last section.

Theoretical background and hypotheses

The impact of innovation on tourism sustainability

Guaranteeing sustainable tourism in archaeological sites implies the achievement of financial and non-financial objectives. Although it seems that the goals of performance are the same for any organization, the objectives of archaeological sites differ due to their advocacy of guarantee sustainable tourism development. Economic sustainability of heritage resources has been mainly related to the generated revenues, benefits, and visitors' arrivals, whereas social sustainability in this context has been mostly referred to visitors' satisfaction, site's reputation and prestige, and the improvement of residents' standard of living (Bryan et al., 2012; Camarero and Garrido, 2008; Gürel and Kavak, 2010; Loach et al., 2017; Stylianou-Lambert et al., 2014; McDonald, 2011). Managers' attitudes towards sustainable tourism have been broadly analysed (Geerts, 2014; Tay et al., 2016), but up to date no research has examined employees of heritage resources considerations about the achievement of tourism sustainability.

Innovation has been measured in organizational and technological terms, comprehending both dimensions the fundamental dichotomy of this concept (Camarero and Garrido, 2008). Organizational innovation is related to the introduction of improvements in the structure of the organization and administrative procedures whereas technological innovation refers to the adoption of pioneering services, products and technical processes (Camisón and Villar-López, 2014). To this respect, innovations denote the extent to which an organization develops useful new products and services that are consistent to the market needs, taking into account the competitive alternatives (Ordanini et al., 2014). Hence, it relies on the management decisions undertaken and affects organization's growth and sustainability (Carayannis et al., 2015).

As noted previously, archaeological sites have adopted innovations to fulfil economic and social goals by offering educational and valuable services, which are highly appreciated in the so-called 'experience economy' (Camarero et al., 2015). It has been concluded that innovations improve service differentiation

leading to higher levels of visitor loyalty and satisfaction (Hultman et al., 2015), which in result increases economic and social sustainability (revenues, awareness, sponsorships, donations, educational purposes, among others). To this respect, new technologies offer these organizations the opportunity to embrace new markets and create new expectations, which end up improving visitor experiences (Tajeddini, 2010). Nowadays, new technologies are raising popularity such as virtual visits, architecture aesthetics, technologies to improve site's image, among others (Abate et al., 2011; Bruno et al., 2010; Camarero and Garrido, 2008; Salvo, 2013). Organizational innovations are properly introduced when managers and employees adopt a multidisciplinary approach that balances business and cultural objectives (Camarero and Garrido, 2012). Therefore, these sorts of innovations are related to the organization's culture where the attitudinal perspective of managers is characterized by the introduction of new ideas (Grissemann et al., 2013; Tajeddini, 2010). In this sense, new perspectives for heritage management are been considered such as involving the public (co-creation) (Calver and Page, 2013).

Some scholars have suggested that innovativeness is a key determinant factor for organizations' performance when it is based on a market orientation approach. To this respect, findings have been reported by other researches that agree about the positive effect of innovation on performance (Camarero et al., 2015; Grisseman et al., 2013; Tajeddini, 2010).

In the tourism industry, Grisseman et al. (2013) have concluded that organizational innovation improves economic and social performance. Similarly, Tajeddini (2010) has determined a positive relationship between innovativeness and profit goal achievement, sales goal achievement and ROI achievement in the hotel industry. Camarero and Garrido (2008) have identified innovation as a meditating variable between market orientation and performance in the museum sector. Moreover, Camarero et al.'s research (2015) has stated that technological innovation enhances market and economic performance in museums. Therefore, it is reasonable that innovativeness in archaeological sites enhances tourism sustainability, measured in economic and social terms. Hence, the following hypothesis is presented:

Hypothesis 1: Innovativeness positively and significantly influences on tourism sustainability.

A market orientation approach

The relevance of market orientation has been notorious both in business and in academic contexts, as it has been related to the creation of sustainable competitive advantages that imply obtaining better performances in organisations (Kumar et al., 2011; Lee et al., 2015).

Market orientation adoption in cultural heritage organisations still remains scarce. Specifically, market orientation has been analysed in museums (Camarero and Garrido, 2008), in the art context (Gainer and Padanyi, 2005; Hsieh and Curtis, 2008; Hsieh et al., 2008; Sorjonen, 2011) and in theatres (Voss and Voss, 2000), in operas (Jones, 2000) and in theatres (Thomas et al., 2009; Voss and Voss, 2000).

On the basis of Camarero and Garrido's study (2008), market orientation in the context of archaeological sites is very similar to museums as it shares: visitor orientation, donor orientation, competitor orientation and inter-functional coordination. Some cultural heritage related studies have indicated that market orientation may have a positive influence on sustainability (Camarero and Garrido, 2008; Gainer and Padanyi, 2005; Voss and Voss, 2000). Besides, other scholars have reported a positive effect of market orientation on financial and non-financial performances in food-service franchise firms (Lee et al., 2015) and in hotels (Campo et al., 2014). Therefore, it is quite reasonable to think that is an archaeological site has a market orientation approach it will probably influence in a positive way its tourism sustainability.

Innovativeness is related to the extent an organisation is opened to new ideas as an aspect of their values and beliefs towards innovation (Grissmann et al., 2013). Archaeological sites like museums adopt visitor orientation to make the site more accessible to the audience, which means that both organization and technological innovations are introduced (Camarero and Garrido, 2008). It has been pointed out that market orientation enforces employees' ability to be innovative and to enhance properly audience needs and desires (Tajeddini,

2010). Camarero et al.'s research (2008) concluded that market orientation positively impacts performance and more when innovativeness mediates the relationship. Besides, it has been suggested that market orientation has a positive effect on innovation (Chang et al., 2014). Based on the preceding discussion, the following hypotheses are presented:

Hypothesis 2a: Market orientation positively and significantly influences tourism sustainability (a) and innovativeness (b).

Tourist functionality of archaeological sites

Several scholars have indicated the need of customer orientation in heritage tourist resources (Alazaizeh et al., 2016; Fullerton et al., 2010). However, up to date no research has analysed as antecedent factor a dimension that examines the tourist functionality of these resources. Theatres and museums were conceived to receive visitors (Mottner and Ford, 2005). Their nature is intrinsic to their market orientation as these were originally designed to fulfil commercial and educational objectives. Instead, archaeological sites like other cultural resources, such as urban heritage, were not created for the purpose of being tourist products. Hence, evaluating the tourist functionality of archaeological sites allows the management team developing the tasks more accurately. This implies marketing specific strategies could be developed in accordance to the public functions of the archaeological site and the target market.

Some researchers have confirmed the need of evaluating the potential of heritage resources before implementing tourism development (Kavoura and Bitsani, 2013; Poria et al., 2011). In this respect, if these resources are not liable to receive visits and are opened to visitors, this can lead to many disadvantages such as social trivialization, local community exasperation, stakeholder's annoyance, non-conservation of heritage resources, among others (Fullerton et al., 2010). Based on the previous approaches, the following hypothesis is presented:

Hypothesis 3: Tourist functionality has a positive impact on market orientation.

Procedures and context

A mixed method approach was adopted for this research, which has combined

qualitative and quantitative methods (Tashakkori and Teddlie, 2010). Initially, a qualitative research was conducted, as we did not have a theoretical basis support to determine that the adoption of a market orientation approach enhances tourism sustainability of archaeological sites (Malhotra, 2010). The main purpose of the qualitative study was to confirm if there is a relationship between market orientation and tourism sustainability.

Qualitative research

Grounded theory methodology was used to define a theory based on unstructured interviews and participative observations, and considering the two main strategies of this methodology, specifically, theoretical saturation and constant comparative method (Strauss and Corbin, 2008). Besides, Pandit's (1996) technique was employed to support the use of grounded theory with ATLAS/ti software version 6.2. ATLAS/ti software converges with grounded theory as it allows open, axial and selective coding, and offers the possibility of creating networks.

The population sample were 11 experts of heritage management, where six are University Associate Professors and five are Directors of archaeological sites' organizations. Although these 11 interviews are not a window of reality, they represent a part of it (Czarniawska, 2004). Respecting the principles of grounded theory, a combination of purposive sampling and snowballing was applied until theoretical saturation, and hence, theoretical sampling, were reached (Ruiz-Ballesteros and Cáceres-Feria, 2016; Strauss and Corbin, 2008). All the information was complemented with literature review and participative observation so as to achieve data triangulation and increase the validity of the research (Denzin, 1975). This study was conducted from October 2010 to July 2011. As a result, the qualitative study generated 13,376 citations and 233 codes.

Table 1. Qualitative sample

| Expert | Position held in 2011 (related to the specialization) |
|-----------------------|--|
| Luis Jaime Castillo | Professor of the Section of Archaeology of the Pontificia Universidad Católica del Peru. Director of the San José de Moro Archaeological Program |
| Larry Coben | PhD in Archaeology at the University of Pennsylvania. Executive Director of Sustainable Preservation Initiative |
| María García | Lecturer in Human Geography of Universidad Complutense de Madrid |
| Pilar Fatas | Deputy Director of the Museum of Altamira |
| Santiago Uceda | Co-director of the Proyecto de la Huaca de La Luna (Peru) |
| Miguel Ángel Troitiño | Professor of Human Geography of Universidad Complutense de Madrid |
| Antonio Vallejo | Director of Conjunto Arqueológico de Medina Azahara |
| Antonio Martínez | Professor in the Magíster en Gestión del Patrimonio Histórico and Cultural of Universidad Complutense de Madrid |
| Alfons Martinell | Director of the UNESCO Chair 'Políticas culturales and cooperación' of Universidad de Gerona |
| Jesús Perán | PhD in Forestry Engineer of Universidad Politécnica de Madrid |
| Javier Esteban | Professor of the Department of Economics of Universidad Rey Juan Carlos |

Experts' validation

With regard to tourism sustainability, all respondents pointed out the main variables that influence sustainability in archaeological sites are the conditions of the asset and the control of the actions developed. Some of the comments were as follows:

But these assets must remain in a state of conservation, a minimum state of conservation. It must exhibit a certain capacity to transmit historical discourse.

The Alhambra, for instance, has a record of visitors and has estimated its carrying capacity to deal with sustainable problems.

For example, Carmona cemetery's biggest attraction was the tombs. A Roman cemetery of hypogean tombs and these are very small. We are talking about a three-squared meter funeral chamber with a small passageway. Not everyone

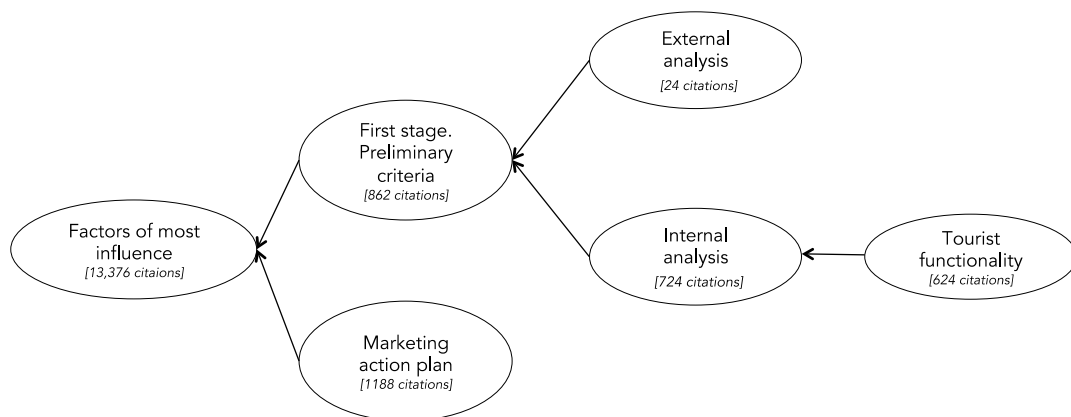
visits the tombs, and the purpose of the visit is completely diminished.

I think that places that have new information, that are under research, have a special attractive. Visitors want to be the first in viewing a discovery. A place that has been researched by archaeologists is a new place with novel information.

A distinctive characteristic of a place as Medina Azahara, an archaeological site, is that is a place which its story is not concluded and, therefore, in permanent evolution. In the case of these sites, the stories are unresolved and the renovation of the information and its appealing is constant due to the researches developed to understand the past.

On the basis of these ideas, it was concluded that market orientation influences tourism sustainability. Besides, as all respondents highly emphasised the importance the preconditions of these resources are to be appealing for visitors. In this line, as this criterion was highlighted by all respondents and due to the data triangulation made across literature review, we identified tourist functionality as a prerequisite for market orientation (Kavoura and Bitsani, 2013; McKercher et al., 2005; Poria et al., 2011) (Figure 1). Therefore, we decided to test a market orientation approach to check its impact on tourism sustainability and create the new construct tourist functionality to evaluate its impact on market orientation. Subsequently, we performed a consultation with 5 experts to ensure the validity of the content of the e-questionnaire.

Figure 1. Atlas/ti network of the commodification process for sustainable archaeological sites.



Quantitative research

The results of the qualitative study lead to confirm that market orientation influences tourism sustainability and emerged with two new dimensions, namely, tourist functionality and cultural and environmental sustainability. In light of these positive results, we proposed the measurement scale, taking into account that tourist functionality was identified as an antecedent to market orientation, and cultural and environmental sustainability as a consequence of market orientation. The study was conducted from 5th of February to the 23rd of July 2015.

The questionnaire

Table 3 presents in detail the scale items, which have been rated on a seven-point psychometric Likert scale. The questionnaire was provided in two languages, English and Spanish. Tourist functionality and item ES4 were accomplished using the items generated in the qualitative research. Market orientation was operationalized using the four first order dimensions visitor orientation, donor orientation, competitor orientation and interfunctional coordination by Camarero and Garrido (2008). The first order dimensions of innovativeness, technological and organizational innovation, were adapted from Camarero and Garrido (2008). The first order dimensions of tourism sustainability, economic and social sustainability were adapted from Camarero and Garrido (2008) and we introduced one item (ES4, Table 3) due to the findings of the qualitative study. The adaptation for all these dimensions was performed modifying the items wording to refer archaeological sites.

Table 3. Measurement model

| Factor | Indicator | Description |
|----------------------------------|------------------|---|
| Tourist Functionality | TFR1 | The archaeological site has a commercial appealing. |
| | TFR2 | The archaeological site is appealing for visits. |
| | TFR3 | The archaeological site is prepared for public visits. |
| | TFR4 | Other functionalities are exploit above from the tourist (educative - courses, seminars -, as a cultural space - musicals or theatrical performances -, religious - as a devotion place, etc.). |
| Visitor orientation | VO1 | Archaeological site strategy is based on those aspects which we feel may create value for the visitor. |
| | VO2 | The archaeological site's goals are geared towards visitor satisfaction. |
| | VO3 | We endeavour to keep abreast of changes so as to assess their impact on visitors' needs |
| | VO4 | Strategies aimed at gaining an advantage over other archaeological sites when seeking resources are based on understanding visitors' needs. |

| | | |
|-------------------------------------|-----|--|
| Donor orientation | DO1 | Archaeological site strategy is designed taking into account those aspects which we feel may create value for donors of resources. |
| | DO2 | The archaeological site's goals are geared towards donor satisfaction. |
| | DO3 | We endeavour to keep abreast of changes so as to assess their impact on the expectations of those who provide resources. |
| | DO4 | We try to identify donors' needs and expectations in a constant process. |
| | DO5 | Strategies aimed at gaining an advantage over other archaeological sites when obtaining resources are based on an understanding of donors' expectations. |
| Competitor orientation | CO1 | We make an effort to cooperate with other forms of tourism or leisure which complement what we have to offer. |
| | CO2 | We cooperate with other cultural or leisure institutions to provide alternatives for visitors or to offer joint initiatives |
| Interfunctional coordination | IO1 | Staff in the various departments work closely together. |
| | IO2 | The archaeological site is concerned with ensuring that the activities of all the departments are well coordinated. |
| | IO3 | All departments are involved in drawing up the archaeological site's plans. |
| | TI1 | At the archaeological site we are deeply committed to adopting new technologies and resources aimed at enhancing management and administration. |
| Technological innovation | TI2 | At the archaeological site we are deeply committed to using new resources and technologies to assist the visiting public |
| | TI3 | In general, we have incorporated numerous technical innovations at the archaeological site in recent years. |
| | TI4 | We are one of the leading archaeological site in the use of technological resources. |
| | TI5 | We cooperate with other institutions or firms to improve the technology and innovations implemented at this archaeological site. |
| | OI1 | In general, in recent years significant changes have been introduced into the archaeological site's organizational structure. |
| Organizational innovation | OI2 | The archaeological site management has a background and training in company management. |
| | OI3 | The archaeological site management strives to take on staff from a range of training backgrounds. |
| | ES1 | During these last three years the income the archaeological site has generated has increased. |
| Economic sustainability | ES2 | ... the number of visitors has increased. |
| | ES3 | ... the archaeological site has completely fulfilled its financial objectives. |
| | ES4 | ... has diversified its financial lines (donations, public money, associations of friends, services, goods, shop...). |
| | SS1 | During these last three years the archaeological site has improved its reputation and prestige. |
| Social sustainability | SS2 | ... visitors show their enthusiasm and satisfaction after their visit. |
| | SS3 | ... many visitors have returned or have recommended the visit to others. |
| | SS4 | ...the archaeological site has contributed in the improvement locals' standard of living. |
| | SS5 | ... the archaeological site has contributed in increasing visitors' interest (they are more sharp in their knowledge after their visit). |
| | | |

| | |
|-----|---|
| | ... the archaeological site has completely fulfilled the objectives respecting conservation and the improvement of the collections it accommodates. |
| SS6 | ...the archaeological site has contributed in raising community's awareness about the exhibitions it shows. |
| SS7 | ... the archaeological site has transformed into cultural reference point in this area. |
| SS8 | |

Sample

The current study is based on data supplied by employees of archaeological sites worldwide via an online questionnaire. Due to the impossibility of finding a worldwide database for archaeological site employees, we created a sampling frame comprised of archaeological sites through three databases (Arqueotur.org, Past Horizons, Archaeological Institute of America websites). The bounded sampling frame had 2,461 population elements; we randomly selected, using SPSS version 19, and contacted 750 units. For this purpose, we employed simple random sampling technique to sample archaeological sites within each database, as other studies have adopted (Gómez et al., 2015; López-Sánchez and Pulido-Fernández, 2016). 250 archaeological sites of each database (Arqueotur.org, Past Horizons, Archaeological Institute of America websites) were selected.

We finally obtained 122 valid answers with a sampling error of $\pm 8\%$ at a 95,46 % level of confidence ($z=2$). The descriptive statistics are detailed in Table 2. Besides, the sample of employees was of archaeological sites located in Australia (1%), Canada (2%), Chile (1%), Colombia (1%), Dominican Republic (1%), Dutch Caribbean (1%), Ecuador (1%), Egypt (3%), Ethiopia (1%), Greece (3%), Guatemala (1%), Iraq (1%), Ireland (3%), Israel (2%), Italy (16%), Mexico (2%), Morocco (1%), Norway (1%), Pakistan (1%), Peru (4%), Portugal (1%), Romania (1%), Scotland (1%), Spain (46%), Taiwan (1%), The Netherlands (1%), Tunisia (1%), Turkey (1%) and United States of America (3%).

Table 2. Sample profile

| | N | % |
|---|-----|------|
| <i>Professional activity of respondents</i> | | |
| Administrative staff | 11 | 9 |
| Management staff | 7 | 5,7 |
| Others. Conservator | 1 | 0,8 |
| Promotion | 3 | 2,4 |
| Researcher | 18 | 14,7 |
| Senior Management (Directors) | 65 | 53,2 |
| Technical staff | 13 | 10,6 |
| Tour guides | 4 | 3,2 |
| <i>Price</i> | | |
| < 2 € | 12 | 9,8 |
| > 4 € | 15 | 12,2 |
| 2 - 4 € | 38 | 31,1 |
| Free | 57 | 46,7 |
| <i>Ownership</i> | | |
| Mixed | 1 | 0,8 |
| Private | 22 | 18 |
| Public | 99 | 81,1 |
| <i>Visitors per year</i> | | |
| < 6,000 | 57 | 46,7 |
| > 100,000 | 13 | 10,6 |
| 20,000 - 100,000 | 22 | 18 |
| 6,000 - 20,000 | 30 | 24,5 |
| <i>Geographical location</i> | | |
| Inside (caves, necropolis, etc.) | 16 | 13,1 |
| Open air | 106 | 86,8 |

Pre-test procedures

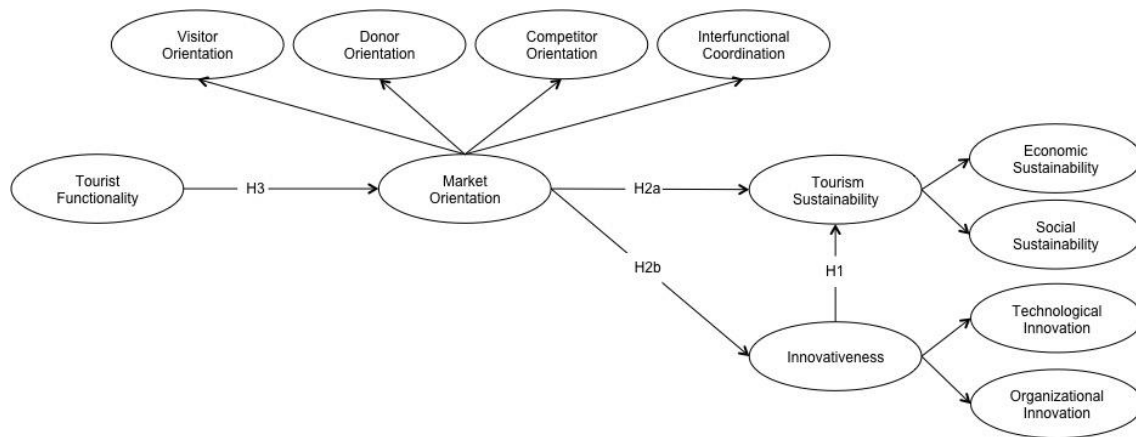
Subsequently, to ensure the validity of the content of the e-questionnaire and, consequently, of the scale, we firstly performed a consultation with 5 experts, and a pre-test of 57 individuals belonging to management teams at various archaeological sites worldwide.

Assessment of the measurement model

The model in Figure 2 was estimated using variance based structural equation

modelling, also known as Partial Least Squares Structural Equation Modelling (PLS-SEM). PLS-SEM was adopted due to three main reasons: (1) it is appropriate when measures are not well outlined; (2) the relationships to test are predictive and not confirmatory; and (3) it permits studying measurement properties simultaneously (outer-measurement model and inner-structural model) (O'Cass and Sok, 2015).

Figure 2. Proposed model



Reliability and discriminant validity analysis

Second order constructs were analysed using the two stage approach (market orientation, innovativeness and tourism sustainability), which implies undertaking the repeat indicator approach to obtain the latent variable scores for the first order constructs that in the second stage are the manifest variables in the second order constructs (Hair et al., 2014). All the constructs in the outer model were reflective and, hence were evaluated checking the indicator reliability (significant standardized loadings higher than .70; Hulland, 1999), internal consistency reliability (Composite Reliability-CR, higher than .70-Bagozzi and Yi, 1988), the convergent validity (Average Variance Extracted-AVE higher than .50; Bagozzi and Yi, 1988) and discriminant validity (each construct's AVE higher than its squared correlation with any other construct; Fornell and Larcker, 1981; Hair et al., 2012). The measurement model presented in Tables 4 and 5 shows suitable reliability and validity properties.

Table 4. Measurement model reliability and convergent validity

| Factor | Item | Standardized loadings | t-value (bootstrapped) | CA | CR | AVE |
|------------------------------------|------------------------|-----------------------|------------------------|-------|-------|-------|
| Tourist functionality | TFR1 | 0.738 | 13.151 | 0.826 | 0.884 | 0.657 |
| | TFR2 | 0.789 | 15.542 | | | |
| | TFR3 | 0.872 | 42.824 | | | |
| | TFR4 | 0.836 | 29.616 | | | |
| Visitor orientation | VO1 | 0.903 | 45.195 | 0.933 | 0.952 | 0.832 |
| | VO2 | 0.929 | 59.609 | | | |
| | VO3 | 0.937 | 70.148 | | | |
| | VO4 | 0.879 | 32.461 | | | |
| Donor orientation | DO1 | 0.779 | 18.955 | 0.920 | 0.940 | 0.760 |
| | DO2 | 0.900 | 33.643 | | | |
| | DO3 | 0.872 | 31.683 | | | |
| | DO4 | 0.923 | 36.361 | | | |
| | DO5 | 0.879 | 26.572 | | | |
| Competitor orientation | CO1 | 0.889 | 38.387 | 0.767 | 0.896 | 0.811 |
| | CO2 | 0.912 | 52.088 | | | |
| Interfunctional orientation | IO1 | 0.825 | 22.508 | 0.843 | 0.906 | 0.763 |
| | IO2 | 0.862 | 21.565 | | | |
| | IO3 | 0.930 | 77.843 | | | |
| Technological innovation | TI1 | 0.748 | 13.551 | 0.876 | 0.910 | 0.669 |
| | TI2 | 0.848 | 29.899 | | | |
| | TI3 | 0.875 | 34.377 | | | |
| | TI4 | 0.831 | 20.780 | | | |
| | TI5 | 0.783 | 15.821 | | | |
| Organizational innovation | OI1 | 0.858 | 29.738 | 0.819 | 0.892 | 0.734 |
| | OI2 | 0.869 | 32.783 | | | |
| | OI3 | 0.842 | 24.426 | | | |
| Economic sustainability | ES1 | 0.822 | 25.207 | 0.821 | 0.881 | 0.650 |
| | ES2 | 0.767 | 16.321 | | | |
| | ES3 | 0.817 | 18.659 | | | |
| | ES4 | 0.817 | 20.291 | | | |
| Social sustainability | SS1 | 0.570 | 8.664 | 0.919 | 0.935 | 0.646 |
| | SS2 | 0.881 | 28.162 | | | |
| | SS3 | 0.901 | 48.254 | | | |
| | SS4 | 0.731 | 12.585 | | | |
| | SS5 | 0.802 | 17.682 | | | |
| | SS6 | 0.821 | 19.428 | | | |
| | SS7 | 0.825 | 22.143 | | | |
| | SS8 | 0.852 | 28.891 | | | |
| Market orientation | Visitor orientation | 0.885 | 48.616 | 0.859 | 0.905 | 0.704 |
| | Donor orientation | 0.791 | 16.500 | | | |
| | Competitor orientation | 0.875 | 36.901 | | | |

| | | | | | | |
|-------------------------------|-----------------------------|-------|--------|-------|-------|-------|
| | Interfunctional orientation | 0.801 | 17.124 | | | |
| Innovativeness | Technological innovation | 0.933 | 75.774 | 0.845 | 0.928 | 0.865 |
| | Organizational innovation | 0.928 | 67.942 | | | |
| Tourism sustainability | Economic sustainability | 0.915 | 53.393 | 0.823 | 0.919 | 0.850 |
| | Social sustainability | 0.929 | 79.427 | | | |

Note: CA=Cronbach's alpha; CR=Composite Reliability; AVE=Average Variance Extracted
All loadings are significant at $p < .01$ level.

Table 5. Measurement model discriminant validity

| Factor | F1 | F2 | F3 | F4 |
|----------------------------|-------|-------|-------|-------|
| F1. Innovativeness | 0.930 | 0.751 | 0.827 | 0.502 |
| F2. Market Orientation | 0.641 | 0.839 | 0.912 | 0.825 |
| F3. Tourism Sustainability | 0.689 | 0.770 | 0.922 | 0.732 |
| F4. Tourist Functionality | 0.427 | 0.710 | 0.615 | 0.810 |

Note: Diagonal values are AVE square root, values below the diagonal are latent variable correlations values above the diagonal are HTMT ratios.

Hypotheses testing

The results of the inner estimation of the model are presented in Table 6. Bootstrapping with individual sign changes of 5,000 samples was performed to establish parameters significance, as suggested by Hair et al. (2012). R2 was higher than .40 for all the dependent constructs that assures a power higher than .80 (Cohen, 1988) for the inferential statistics. Predictive relevance of the model is well verified with a positive Stone-Geisser's Q2 obtained using blindfolding (Geisser, 1975; Henseler et al., 2009; Stone, 1974).

Table 6. Hypotheses Testing

| Hypothesis | Path | Standardized Path Coefficients | t-value (bootstrap) |
|------------|--|--------------------------------|---------------------|
| H1 | Innovativeness -> Tourism Sustainability | 0.334 | 3.647 |
| H2a | Market Orientation -> Tourism Sustainability | 0.772 | 20.496 |
| H2b | Market Orientation -> Innovativeness | 0.642 | 12.266 |
| H3 | Tourist Functionality -> Market Orientation | 0.714 | 15.025 |

R2 (market orientation)= .499; R2 (tourism sustainability)= .652; R2 (innovativeness)=.406

Q2 (market orientation)= .345; Q2 (tourism sustainability)= .533; Q2 (innovativeness)=.345

Note: All loadings are significant at $p < .01$ level

Table 6 presents that innovativeness impacts positively tourism sustainability (H1; $\beta=0.33$; $p<0.01$). This finding supports the results of previous tourism researches (Grissman et al. 2013; Tajeddini, 2010), specifically at the museum sector (Camarero and Garrido, 2008; Camarero et al., 2015), and widens the findings to archaeological sites domain. Additionally, market orientation has a significant effect on tourism sustainability (H2a; $\beta=0.77$; $p<0.01$). The results are consistent with previous studies (Camarero and Garrido, 2008; Gainer and Padanyi, 2002; 2005; Lee et al., 2015). In the present study this relationship has been the most significant of the links analysed, proving that applying a market orientation perspective in archaeological sites meaningfully contributes to tourism sustainability.

Also, it has been revealed that market orientation has a positive impact on innovativeness (H2b; $\beta=0.64$; $p<0.01$). Hence, market orientation has been supported as a driver towards innovativeness, which is quite reasonable that if the organization considers and attends visitors, donors, and competitors and boosts interfunctional coordination it will positively impact innovativeness.

Besides, tourist functionality has a positive impact on market orientation (H3; $\beta=0.71$; $p<0.01$), which coincides with the suggestions made by several scholars (Kavoura and Bitsani, 2013; McKercher et al., 2005; Poria et al., 2011).

Contributions and implications

Tourism management of archaeological sites has focused on visitors' perceptions (Boukas, 2012; Martin-Ruiz et al. 2010; Prayag et al., 2013), residents' attitudes (Jaafar et al., 2015; Mustafa and Tayeh, 2011) and responsible tourism development (Pacifico and Vogel, 2012; Wager, 1995). Although MacMillan et al.'s (2005) and Gainer and Padanyi (2005) pointed out that marketing strategies in non-profit organizations are to be assessed in economic and non-economic terms, still no study has assessed the impact of a market orientation approach on tourism sustainability in archaeological sites.

This research has several implications for scholars. Archaeological sites are showing a great concern to achieve tourism sustainability. In this research we have found evidence to support that market orientation positively and significantly

impacts tourism sustainability. Firstly, this study has focused on the influence of innovativeness on tourism sustainability, proving that both kinds of innovations, technological and organizational, conjointly have a favourable effect on sustainable tourism performance.

Secondly, a market orientation approach that takes into account visitors, donors, competitors and interfunctional coordination effectively influences tourism sustainability, confirming that market orientation may have a positive effect on sustainability (Camarero and Garrido, 2008; Campo et al., 2014; Gainer and Padanyi, 2005; Lee et al., 2015; Voss and Voss, 2000).

Thirdly, tourist functionality has been ascertained to be a significant antecedent of market orientation. Therefore, a precondition for sustainable tourism development of archaeological sites is evaluating the potentiality of these assets-

This study reveals interesting and relevant managerial contributions for archaeological sites. The major implication of this study is a market orientation model that combines innovativeness in order to contribute in the sustainable development of archaeological sites. In the archaeological sites context, if employees are geared towards fulfilling visitors' and donor's needs, cooperating with other related organisations and cooperating between the different departments of the organisation it is likely social and economic sustainability improvements. Therefore, managers' commitment to enhance market orientation is fundamental to boost tourism sustainability. In this sense, several scholars have pointed out that managers' attitudes should mainly encourage employees in the commitment of market orientation implementation (Camarero and Garrido, 2008; Fyall and Garrod, 1998; Martin-Ruiz et al., 2010).

Innovativeness influences tourism sustainability, which reinforces the idea that offering technological and organizational innovations enhance economic and social sustainability. Hence, it is suggested to improve innovations across embracing new technologies and the introduction of structural changes in the organization to increase loyalty, satisfaction, community awareness and standard of living, among others. Some examples of innovations are been adopted in these resources, such as virtual reality, beacons and video mapping (Abate et al., 2011;

Bruno et al., 2010; Salvo, 2013), and thus the extension of these innovations and a new perspective for the organizational structure are to be implemented in archaeological sites so as to improve tourism sustainability.

Another implication from the study shows that tourist functionality is an antecedent of market orientation, which is specifically interesting for certain heritage resources that were not originally built to satisfy contemporary visitors (such as archaeological sites, urban or industrial heritage). Thus, managers are suggested to examine the tourist potentiality of these assets before implementing a tourism development plan by analysing if the resource fulfils the criteria exposed in Table 2 and the suggestions made by McKercher et al. (2002). Specifically, these scholars indicated that heritage resources organizations must be able due to the asset's characteristics to: 1) tell a story; 2) manage the asset so it was an alive resource; 3) offer a participative and relevant experience, and 4) focus on quality and authenticity.

In essence, it is recommended that archaeological sites organizations adopt a process of offering customer value to visitors, by following market orientation considerations, as it will boost innovation and tourism sustainability and, hence, improve visitors and residents' satisfaction, as suggested by Martin-Ruiz *et al.*'s (2010).

Limitations and future research

The findings offer some limitations and future avenues for research. Firstly, this study is limited by the sample sizes of both researches. The qualitative study was conducted with eleven experts, which could be increased. Likewise, the population sample of the quantitative study was of 122 managers of archaeological sites worldwide, which are broadly dispersed in geographical terms. Future researchers are encouraged to increase the sample size and hence, increase the generalizability of the findings.

Secondly, the model has second order constructs (market orientation, innovativeness and tourism sustainability) that include related concepts to increase parsimony and understand relations with other variables. As a result, separate effects of these dimensions have not been measured, which could

report interesting findings in future related studies. Besides, other approaches are to be analysed (such as Alazaizeh et al.'s, 2016) in order to identify which perspective results in a better performance of tourism sustainability. To end, it would rather interesting analysing other points of views such as residents' (Rasoolimanesh et al., 2017) or visitor considerations (Xu and Fox, 2014).

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