APPLYING PARTIAL LEAST SQUARES IN TOURISM AND HOSPITALITY MANAGEMENT

APPLYING PARTIAL LEAST SQUARES IN TOURISM AND HOSPITALITY RESEARCH

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Preface

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Partial least squares-structural equation modeling (PLS-SEM) is a multivariate statistical technique and its usage in various disciplines is increasing. Considering this increase in the application of PLS-SEM, numerous scholars have reviewed its usage in accounting, business research, strategic management, marketing, management information system, tourism and hospitality research, etc. Review studies on the usage of PLS-SEM in tourism (do Valle & Assaker, 2016) and hospitality research (Ali, Rasoolimanesh, Sarstedt, Ringle, & Ryu, 2018) indicate an increasing dissemination of PLS-SEM in tourism and hospitality research. Researchers in tourism and hospitality seem to be aware of sample size issues in PLS-SEM, which have attracted considerable attention in recent years. In addition, the reporting practices regarding the assessment of reflective measurement models are clearly above standard but still warrant improvement. This is particularly true regarding discriminant validity assessment, which draws on metrics that recent research has debunked as ineffective in a PLS-SEM context. Similarly, the structural model assessment practices compare well with those in other disciplines but should consider more recent metrics that allow for assessing a model's out-of-sample predictive power. However, other aspects, such as formative measurement model assessment, clearly require improvement. Hospitality researchers disregard fundamental validation steps such as convergent validity and multicollinearity assessment.

While these studies indicate an increase in the application of PLS-SEM in tourism and hospitality research over last few years, it is noteworthy that PLS-SEM is clearly under-utilized as compared to the extensively used covariance-based SEM in these disciplines. Apart from providing insights into reporting practices, these review papers (Ali et al., 2018; do Valle & Assaker, 2016) also indicated that tourism and hospitality researchers seem unaware of recent advances/complimentary analysis techniques in the field. These advances and techniques clearly extend the scope of the analyses and help researchers gain more insights from the model and the data. Extensions include, but are not limited to, the weighted PLS algorithm, consistent PLS, methods for uncovering unobserved heterogeneity and impact-performance map analyses. Hence, we are editing this

handbook to provide tourism and hospitality researchers with the foundations when adopting the PLS-SEM method in their research.

This handbook on the "*Applying Partial Least Squares in Tourism and Hospitality Research*" includes 10 chapters, representing a comprehensive application of the current, original and the most advanced research in the domain of PLS methods with specific reference to their use in tourism and hospitality research. While most of the chapters comprise a thorough discussion of applications to problems from tourism and hospitality research, others focus on some key aspects of PLS analysis with a didactic approach. This handbook serves as both an introduction for those without prior knowledge of PLS and as a comprehensive reference for researchers and practitioners interested in the most recent advances in PLS methodology.

The use of PLS-SEM in tourism and hospitality research is on the rise, a trend that is in line with what has been taking place in many other fields where advanced multivariate statistical methods are employed. One of the most fundamental issues in PLS-SEM is that of minimum sample size estimation, where the "10-times rule" has been a favorite due to its simplicity of application, even though it tends to yield grossly imprecise estimates. In Chapter 1, Ned Kock discuss two related methods, based on mathematical equations, as alternatives for minimum sample size estimation in PLS-SEM: the inverse square root method and the gamma-exponential method. The application of the methods is illustrated based on a model derived from a tourism and hospitality research study. Both the methods are implemented in one of the leading PLS-SEM software tools, WarpPLS, starting in version 6.0.

There are five types of research that can be distinguished in the context of PLS-PM: (1) confirmatory, (2) explanatory, (3) predictive, (4) descriptive, and (5) exploratory. Each research type needs to be considered to select the appropriate assessment criteria. Chapter 2, by Jörg Henseler, Tobias Müller, and Florian Schuberth, sheds some light to these five research types and explains the differences by using empirical examples from the literature in hospitality, travel, and tourism (HTT) research. This chapter introduces new guidelines and enhancements for the use of PLS-PM in causal HTT research to assess overall model fit by using consistent PLS (PLSc) in combination with the bootstrap-based test, to measure discriminant validity with the heterotrait-monotrait ratio of correlations and assess the reliability of reflectively measured constructs via ρ_A.

Apart from the theoretic explanations offered by the empirical models in the research papers, practitioners are also interested in the practical implications that they can apply to future cases. Being able to provide predictive diagnoses is an increasingly important issue linking theory and practice, and empirical researchers in tourism and hospitality should heed the call for predictive evaluations of their theoretical models. Fortunately, PLS path models are uniquely suited to predictive analytics. Chapter 3, by Nicholas P. Danks and Soumya Ray, offers a review of the emerging predictive methodology for PLS path models and a practical guide to what researchers can do to diagnose the predictive qualities of their models. These discussions are followed by a demonstration on a well-regarded model and dataset from the tourism literature.

Chapter 4 is contributed by Hengky Latan. It aims to update the field of knowledge regarding recent advances in PLS path modeling. This chapter uses eight assessment criteria that have been adapted in accordance with recent advances in PLS-PM. Specifically, this chapter explores all recent advances in the application of each PLS-PM technique. This chapter highlights serious misconceptions surrounding the use of PLS-PM in many disciplines, including hospitality and tourism research. This chapter also contributes to the improved practices and application of PLS-PM by proposing a new framework for reporting the results of PLS-PM.

Chapter 5 is contributed by Minwoo Lee, Kawon Kim, Kyung Young Lee, and Jung Hwa Hong. It is an application of PLS-SEM to identify smart-computing functions of smartphone's use at the workplace in the hospitality industry and examine the impact of using smart-computing functions on Mintzberg's managerial role performance and overall performance improvement. This chapter presents how both reflectively measured constructs and formatively measured constructs can be tested by using PLS-SEM.

Chapter 6, contributed by Mara Mataveli and Alfonso J. Gil, is an application of PLS-SEM to examine the impact of motivations on rural tourism on loyalty. In addition, this chapter also uses and reports moderating as well as mediation analysis.

Chapter 7, contributed by Palwasha Bibi, Ashfaq Ahmad, and Abdul H. A. Majid is also an application of PLS-SEM to measure the relationships between compensation, training and development, performance appraisal and employee retention, and the moderating role of work environment on the relationships between compensation, training and development, performance appraisal, and employee retention.

Chapter 8, contributed by Jesús García-Madariaga, Nuria Recuero Virto, María Francisca Blasco López, and Joaquin Aldas-Manzano, aims to identify how features of museum websites explain visitors' intentions to visit the museum as well as revisit intentions to the website. This chapter applies multigroup analysis (MGA) to assess visitors' intentions across the websites of the two most visited museums of Spain: Prado Museum and Reina Sofia Museum.

Chapter 9, contributed by Carlos Alberto Alves, Claudio José Stefanini, and Leonardo Aureliano da Silva, applies PLS-SEM and MGA to investigate if the presence or absence of an environmental conscious can change the relationship between environmental practices, environmental image, and attachment, and their effects on customer loyalty in restaurants based on the theory of reasoned action.

Chapter 10, contributed by Maja Šerić and Đurđana Ozretić-Došen, examines whether consumers' perceptions of online and offline communication consistency can increase their perceived service quality and brand loyalty in hospitality by applying PLS-SEM and MGA.

Even though the discussion on PLS method is increasing, its application in tourism and hospitality is under-whelming. Consequently, editors for this handbook selected high-quality papers for publication where some of them advance and explain the recent advances of PLS-SEM and others report application of

the method. The handbook provides a forum for topical issues that demonstrate PLS path modeming's usefulness in tourism and hospitality applications. A description of the method, its empirical applications, and potential methodological advancements, which increase its usefulness for research and practice, are specifically emphasized. The editors believe that this handbook will be the starting point for a more intensive use of PLS-SEM in the tourism and hospitality discipline and for additional advances that will exploit PLS's capabilities in this area. The editors and authors gratefully acknowledge Christian M. Ringle and Marko Sarstedt's comments, encouraging support, and suggestions during the preparation of this handbook. The reviewers also deserve the heartfelt recognition of the editors for their remarkable contribution to the quality of this handbook. As usual, they were diligent, meticulous, constructive, and extremely competent. The editors specifically express their gratitude to the following reviewers: Babak Taheri (Heriot-Watt University), Chritian M. Ringle (Hamburg University of Technology), Gabriel Cepeda-Carrión (Universidad de Sevilla), Hengky Latan (Universitas Kristen Petra), José L. Roldán (Universidad de Sevilla), Jun-Hwa Cheah (Universiti Teknologi Malaysia), Marko Sarstedt (Otto von Guericke Universität Magdeburg), Murad Ali (King Abdulaziz University), and Rob Hallak (University of South Australia).

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do Valle, P. O., & Assaker, G. (2016). Using partial least squares structural equation modeling in tourism research: A review of past research and recommendations for future applications. *Journal of Travel Research*, *55*(6), 695–708.

A Word from Experts

Since its introduction by Herman O. A. Wold (1982) and Jan-Bernd Lohmöller (1989), partial least squares structural equation modeling (PLS-SEM) has undergone a broad adoption and numerous advances. The increasing dissemination of PLS-SEM in applied business is rooted in Wynne W. Chin's (1995, 1998) introductory articles and the availability of software with graphical user interface such as PLS-Graph (Chin, 2003) and SmartPLS (Ringle, Wende, & Becker, 2015; Ringle, Wende, & Will, 2005). Today, several textbooks (Garson, 2016; Hair, Hult, Ringle, & Sarstedt, 2017; Hair, Sarstedt, Ringle, & Gudergan, 2018; Ramayah, Cheah, Chuah, Ting, & Memon, 2016) and handbook articles (Esposito Vinzi, Chin, Henseler, & Wang, 2010; Henseler, Ringle, & Sarstedt, 2012; Rigdon, 2013; Sarstedt, Ringle, & Hair, 2017) provide researchers with the foundations when adopting the PLS-SEM method in their research. Numerous review studies on the use of PLS-SEM in various business research disciplines such as – accounting (Lee, Petter, Fayard, & Robinson, 2011; Nitzl, 2016), family business (Sarstedt, Ringle, Smith, Reams, & Hair, 2014), group and organization management (Sosik, Kahai, & Piovoso, 2009), hospitality management (Ali, Rasoolimanesh, Sarstedt, Ringle, & Ryu, 2018), human resource management (Ringle, Sarstedt, Mitchell, & Gudergan, 2018), information systems (Hair, Hollingsworth, Randolph, & Chong, 2017; Ringle, Sarstedt, & Straub, 2012), international marketing research (Henseler, Ringle, & Sinkovics, 2009; Richter, Sinkovics, Ringle, & Schlägel, 2016), marketing (Hair, Sarstedt, Ringle, & Mena, 2012), operations management (Peng & Lai, 2012), psychology (Willaby, Costa, Burns, MacCann, & Roberts, 2015), strategic management (Hair, Sarstedt, Pieper, & Ringle, 2012), supply chain management (Kaufmann & Gaeckler, 2015), and tourism (do Valle & Assaker, 2016) – not only substantiate the wide adoption of the method, but also provide an overview how researchers used PLS-SEM in their studies.

Accompanying the rapid pace of development, PLS-SEM has also witnessed controversies, with researchers sometimes even questioning the method's raison d'être (Rönkkö, Antonakis, McIntosh, & Edwards, 2016; Rönkkö & Evermann, 2013; Rönkkö, McIntosh, & Antonakis, 2015). However, most of the criticism has been refuted as inaccurate (Henseler et al., 2014) or grounded in different measurement philosophies (Rigdon, Sarstedt, & Ringle, 2017; Sarstedt, Hair, Ringle, Thiele, & Gudergan, 2016). These criticisms, however, helped furthering the method's theory base in terms of measurement and model estimation, triggering a wide range of follow-up research. New developments in PLS-SEM range from new estimators (e.g., Dijkstra & Henseler, 2015; Dolce, Esposito Vinzi, &

Lauro, 2018; Schuberth & Cantaluppi, 2017) and model evaluation metrics (e.g., Aguirre-Urreta & Rönkkö, 2018; Franke & Sarstedt, in press; Henseler, Ringle, & Sarstedt, 2015; Sharma, Sarstedt, Shmueli, Thiele, & Kim, 2017; Shmueli, Ray, Velasquez Estrada, & Chatla, 2016) to complementary methods such as methods for uncovering unobserved heterogeneity (e.g., Ringle, Sarstedt, & Schlittgen, 2014; Schlittgen, Ringle, Sarstedt, & Becker, 2016), different multigroup analysis approaches (Matthews, 2018), testing measurement invariance of composites (Henseler, Ringle, & Sarstedt, 2016), and endogeneity assessment (Hult, Hair, Proksch, Sarstedt, Pinkwart, & Ringle, 2018). These advances have greatly extended researchers' methodological toolbox (Khan et al., 2018) and fueled the adoption of PLS-SEM in the social sciences and other fields.

This handbook by Faizan Ali, S. Mostafa Rasoolimanesh, and Cihan Cobanoglu on PLS-SEM application in tourism and hospitality research represents another important contribution to progress on the method. We would like to thank Faizan Ali, S. Mostafa Rasoolimanesh, and Cihan Cobanoglu for the effort of developing this important handbook. Congratulations to a job done well!

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(Hamburg University of Technology) and Marko Sarstedt
(Otto von Guericke Universität Magdeburg).

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Chapter 8

Do Museums' Websites Boost Visitors' Intentions? A PLS Multigroup Comparison

Jesús García-Madariaga, Nuria Recuero Virto, María Francisca Blasco López and Joaquin Aldas Manzano

1. Introduction

Today, museums spend a large amount of financial resources on websites to promote visitors' arrivals and as an additional service that complements the physical visit (Marty, 2007, 2008, 2011). With the introduction of websites in this industry, its effects have expanded exponentially; while these digital platforms were initially designed to offer basic information, such as location, prices, and opening hours, Nowadays superstar museum websites offer a universe of visual, interactive, and e-learning tools, (Capriotti, Carretón, & Castillo, 2016; Capriotti & González-Herrero, 2013; Lagrosen, 2003; López, Margapoti, Maragliano, & Bove, 2010; Pallud, 2017).

In the specific case of museums, websites are important sources of information, as these are experiential services, which are now subject to a customer journey that begins in the digital sphere (Muskat, Muskat, Zehrer, & Johns, 2013). Digital platforms most strongly affect the tourism sector, as it has revolutionized the way visitors plan, enjoy, perceive, and share their experiences. Given the speedy growth of the different edutainment options these websites offer, museums are constantly re-designing the experience to delight visitors with enjoyable moments that enhance their loyalty (Lin, Fernandez, & Gregor, 2012). The recognition of the importance of all these flourishing innovations that superstar museums attempt to adopt in their websites to improve their service differentiation (Pallud & Straub, 2014) leads to their increased popularity among users. These technological innovations provoke users' fascination and emotions (Capriotti & Kuklinski, 2012; Hassenzahl & Tractinsky, 2013; López et al., 2010).

Although we are facing the so-called "experience economy" (Camarero et al., 2015), most academic research concerning museum websites has focused

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on functional aspects, while less attention has been paid to the loyalty attitudes that emerge once users visit these websites (Lepkowska-White & Imboden, 2013; Lin & Cassidy, 2008; López et al., 2010; Marty, 2007, 2008, 2011). Besides, none of these studies has examined the effects of trust on users' intentions of returning to the website and becoming real museum goers. This study aims to determine whether website features and trust have an impact on users' loyalty attitudes. Pallud and Straub (2014) analyzed the following effects: website evaluation (dimension that includes aesthetics, ease of use, emotion, content, made for the medium and promotion) on attitudes, attitudes on intentions to return to the website and intentions to go to the museum, facilitating conditions on intentions to return to the website and intentions to go to the museum, and subjective norms on intentions to return to the website and intentions to go to the museum. This research extends Pallud and Straub's (2014) model by acknowledging information about: (1) the relationships between website quality (which comprises aesthetics, ease of use, emotion, content, made for the medium and promotion) and users' perceived control, intentions to return to the website and visit the physical museum; and (2) the impact of trust on users' intentions to return to the website and visit the physical museum.

The interest of this research is also motivated by the undeniable popularity of these superstar museum websites. Although scholars have reached conclusions for the museum sector in general or specific types of museums (e.g., Lepkowska-White & Imboden, 2013; Marty, 2007), the fact is that museums are distinct not only in nature because of the heritage resources they house, but also in the way these resources are presented and how museum websites features differ. Therefore, in this research, the comparison of two superstar museum websites, namely the Prado Museum and the Reina Sofia Museum in Madrid, has been proposed. Both are art museums, the two most visited museums in Spain, and are considered as two of the most popular European museums and have updated and modern websites. However, these two museums do not offer the same navigation experience, because not only the Prado Museum collection is mainly of paintings of the twelfth to the eighteenth centuries and the Reina Sofia is a benchmark in the sphere of contemporary art, but also because the overall presentation of their websites differs, as these employ different design elements. Specifically, the Prado Museum website makes use of more static design components; whereas, the Reina Sofia Museum website uses more dynamic elements. Therefore, it is necessary to closely examine the differences in the relationships between these two superstar museums in order to gain knowledge and understanding of the influence of website quality on behavioral outcomes in the museum sector.

2. Literature Review and Hypotheses Development

2.1. Website Quality

Website quality has been a subject of research for museum visitors and scholars in the last decade and, in fact, the most common criterion in empirical methods for its evaluation has been the analysis of the overall presentation design of these

websites (Kabassi, 2017). Museum websites have transformed their presentation design from simple shop windows of prices, opening hours, and locations to multimedia platforms that allow the online visit to the museum areas, among many other services (Capriotti et al., 2016; Padilla-Melendez & del Águila-Obra, 2013). Even though museums have made a shift from collection-driven to visitor-centered spaces, the main aim of their websites is advertising and providing information to visitors (Pallud & Straub, 2014). The majority of worldwide superstar museums have updated these digital initiatives to maximize service differentiation, which, in essence, is implicitly encouraging future visits (Choi & Kim, 2016; Lin & Cassidy, 2008; Pallud & Straub, 2014).

Although some scholars have used other dimensions to measure website design effectiveness (e.g., Ho & Lee, 2007; Kabassi, 2017), the evaluation of the museum website design in this study has relied on the five categories used by Pallud and Straub (2014). We selected this instrument to measure the overall presentation design of museum websites for three main reasons. First, prior research has emphasized the importance of considering hedonic and utilitarian features to determine customers' outcomes (Bilgihan & Bujisic, 2014). Second, as other studies (e.g., Al-Qeisi, Dennis, Alamanos, & Jayawardhena, 2014; Tsao, Hsieh, & Lin, 2016) have shown that website design quality features must be related to their industry in order to measure their effectiveness appropriately, and, in this case, this instrument has been previously tested in the museum sector (Pallud & Straub, 2014). Third, this metric was selected after confirming that it includes the main aspects that users value about museum websites (Kabassi, 2017).

To advance in knowledge of the overall impression of users of museum websites, in this study, website quality comprises aesthetics, content, ease of use, emotion, made for the medium and promotion. Jiang, Wang, Tan, and Yu (2016) have described aesthetics in terms of "visual appearance," "perceived attractiveness," and "mood-relevant cues," which have been previously used by other scholars. Content has been defined as a function of the textual and visual quality of the information displayed, a concept related to information quality (Ho & Lee, 2007; Law, Buhalis, & Cobanoglu, 2011). Ease of use has been related to users' perceived simplicity to conduct their desired interactions during their navigation in a certain website (Aljukhadar & Senecal, 2015; Lin & Cassidy, 2008; Venkatesh, 2000). Emotion has been described in terms of all the affective responses that navigation in certain websites evokes (Lepkowska-White & Imboden, 2013; Lin & Cassidy, 2008). Promotion has been defined through all the advertising initiatives that try to drive traffic to the website (Agarwal & Venkatesh, 2002; Stewart & Marcketti, 2012). Made for the medium has been defined as a concept related to personalization, which explains users' capacity to customize the website (Kabassi, 2017; Marty, 2008, 2011).

2.2. Website Quality as a Driver of Perceived Control and Intentions

In this intensive economy experience, users need to feel they manage their actions to fully enjoy the service consumption. In this respect, perceived control has been considered a determinant variable that describes the fulfillment of users' desired

level of control (Manganari, Siomkos, & Vrechopoulos, 2014). It has been concluded that certain website features influence users' perception of control. Specifically, Rose Clark, Samouel, and Hair (2012) confirmed that the ease of use and customization, which is a related concept to made for the medium, had a positive effect on users' perceived control. Additionally, Hoffman and Novak (1996) proved that users who navigate in websites that provided a high number of interactive features had a higher sense of control. As indicated by Manganari et al. (2014), websites are to be designed to provoke users' confidence of controlling their navigation experience. Hence, it is quite reasonable to think that the good presentation and design of all these website features will jointly increase users' perceived control.

Museum professionals expect museum websites to arouse behavioral intentions among users (Lazarinis, 2011; Lepkowska-White & Imboden, 2013; Lin & Cassidy, 2008; Pallud & Straub, 2014; Marty, 2007, 2008, 2011). These behavioral outcomes in the museum context are mainly defined through intentions to return to the website and visit the physical museum. This latter behavioral approach implicitly comprehends purchase intentions. In fact, what really matters is visitors' willingness to visit the physical museum, regardless of whether or not the buying process was online. Cunliffe, Kritou, and Tudhope (2001) have pointed out that the effects of poor design can be dramatic and even mean losing potential repeat visitors. In contrast, positive interactions of users with websites boost users' intentions to return to these websites (e.g., Castañeda, Muñoz-Leiva, & Luque, 2007; Huang, Hsieh, & Wu, 2014; Van Noort, Voorveld, & Reijmersdal, 2012). Additionally, several scholars have examined the linkage between websites and behavioral attitudes toward visiting a physical place (e.g., Kaplanidou & Vogt, 2006; Tang, Jang, & Morrison, 2012). Moreover, it has been shown that continued usage intention of destination website has a positive and significant impact on intention to visit the destination (Chung, Lee, Lee, & Koo, 2015).

Alcántara-Pilar, Barrio-García, Crespo-Almendros, and Porcu (2017) have found positive and significant relationships between satisfaction and attitudes and the behavioral intention to visit the destination. Regarding the museum context, Pallud and Straub (2014) have measured the effect of website quality on attitudes, and attitudes on intention to return to the website and visit the physical museum. All these relationships had a positive and significant effect. Although many scholars (e.g., Lepkowska-White & Imboden, 2013; Marty, 2007, 2008, 2011) have pointed out the interest in analyzing the influence of website characteristics on visitors' intentions to visit the physical museum, up-to-date no research has been found that measures this linkage in the museum industry.

Specifically, it has been argued that users may navigate these websites to seek information about the assets in order to organize their visit in person to the museum, and they visit them online when they cannot make an in-person visit (Marty, 2007). Marty (2011) has made efforts to identify the factors that motivate users to navigate in digital collections, and to be more engaged with the museum visit. Hence, it is expected that if museum website quality is high, it can potentially raise continuance intentions, explicitly users' intention to return to the website and their future intention to visit the physical museum. Thus, the following hypothesis is proposed:

H1: Museum website quality has a positive and significant effect on perceived control (a), and on intentions to return to the website (b) and visit the physical museum (c).

2.3. Trust as a Precondition of Intentions

Trust is an essential ingredient of service marketing, as it determines business transactions and ensures long-lasting profitable relationships between service providers and clients (Han & Hyun, 2015; Lovell, 2009; Wang, Law, Guillet, Hung, Ka, & Fong, 2015). The concept denotes the level of customer confidence in the organization, which is especially interesting in the online environment due to the perceived security risks (Chiu & Tzeng, 2013; Li, Peng, Jiang, & Law, 2017; Pavlou, 2003). Moreover, it has been indicated that trust can be used as a means to minimize uncertainty (Pavlou, Lianf, & Xue, 2007).

The key concepts that fully explain trust are integrity, reliability, and competence (Wang, Law, Hung, & Guillet, 2014). In this regard, consumers usually rely on the same service providers because they feel these will continue to meet their needs, which in turn raises retention rates (Tsiotsou, 2016). Trust has been defined in tourism literature as the visitors' willingness to rely on the ability of the service organization to keep its promise and fulfill or exceed visitors' expectations. Indeed, it has been viewed as a significant driver of tourists' choice of a destination (Sannassee & Seetanah, 2015). Besides, as previously mentioned, trust seems to be a crucial factor to establish future relationships as it reduces customers' uncertainty about the organization and it can increase their loyalty (Fang, Ye, & Law, 2014; Matzler, Grabner-Kräuter, & Bidmon, 2008; Wen, Prybutok, & Xu, 2011).

It has been indicated that users who perceive a website as trustworthy enjoy their navigation experience more (Wu & Chang, 2005; Zhou, Li, & Liu, 2010). Although the importance of measuring the effect of trust on behavioral attitudes in online shopping contexts has been pointed out (Liang, Choi, & Joppe, 2018), research on this analysis is limited (e.g., Chen & Chou, 2012; Kim, Chung, & Lee, 2011; Tseng & Lee, 2016). Hence, no evidence to support the linkages between trust and intentions to return to the website and visit the physical place has been found in tourism literature.

However, prior tourism studies have confirmed trust as a precondition for repeated visits (Correia & Miranda, 2008; Sui & Baloglu, 2003) and noted that tourism services that are perceived as dependable are more likely to be visited (Ekinci & Hosany, 2006; Roodurmun & Juwaheer, 2010). Based on the precedent arguments, trust in the museum website should have a positive impact on users' willingness to repeat the website navigation and visit the physical museum. Hence, the following hypothesis is postulated:

H2: Trust has a positive and significant effect on intentions to return to the website (a) and visit the physical museum (b).

3. Research Method

3.1. Research Design

The model proposed in Fig. 1 has been tested following the recommendations of prior similar studies (e.g., Lu, Fan, & Zhou, 2016; Pallud & Straub, 2014; Wei, Seedorf, Lowry, Thum, & Schulze, 2017). These suggestions were focused on avoiding any condition that can predetermine subjects' answers, but rather stimulate a naturalistic atmosphere, outside the laboratory setting, as close as possible to the real world, where subjects can freely respond, as researchers had less control over them. The Prado and Reina Sofia museum websites were selected for the online study because these are the two most visited museums of Spain. We also confirmed that both websites fulfilled Pallud and Straub's (2014) evaluation for a good design (Appendix 1).

3.2. Research Instrument and Experimental Procedures

This study is based on an empirical method, considering Kabassi's (2017) categorization of evaluation of museum websites (empirical, inspection, and a combination of these two methods). Empirical methods are based on groups of final users or museum visitors; whereas, inspection methods consider experts' participation. We developed an online questionnaire, which offered additional information to participants, such as some instructions on how to participate in the experiment and hyperlinks to the museum websites. We conducted a

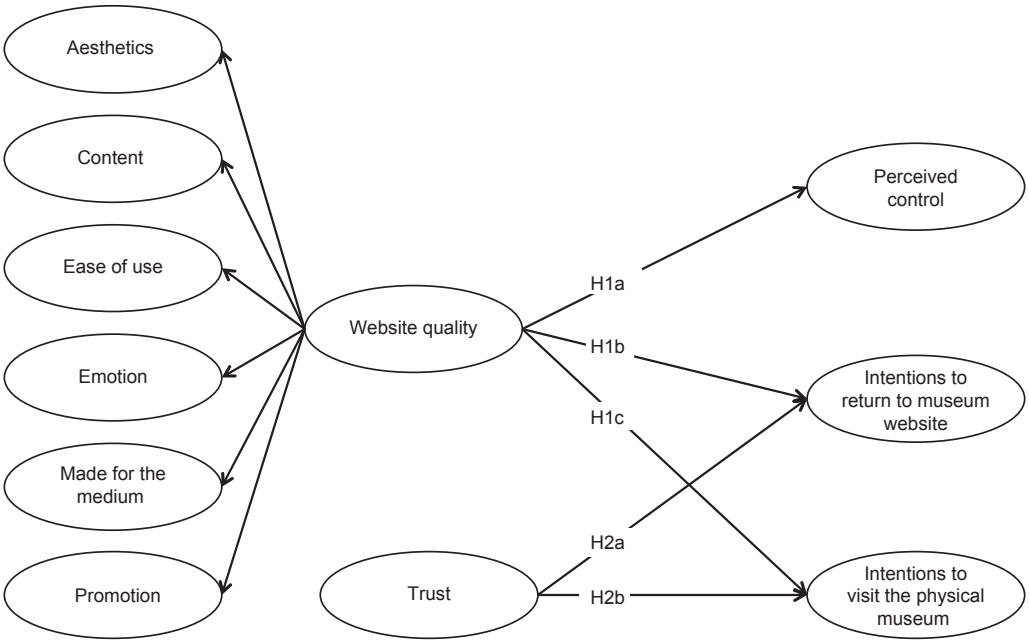

Fig. 1: The Proposed Model.

web-based survey during November 23–25, 2016. In order to ensure the scope of our study, we employed the public and official census data from each of the two museums to calculate the appropriate numbers of visitors in each gender and age category. Access services to a panel of general population based on the museums' sampling frames were taken from a reputable market research company specialized on online panels with a database of more than 726,210 consumers in 21 countries.

The constructs employed in this research were adopted from previous studies. All were rated on 7-point Likert scales. Following Hair, Sarstedt, Ringle, and Gudergan (2017), website quality was modelized as a second-order reflective-reflective hierarchical component model (Type I) where website quality represents the common factor of several specific factors (the dimensions); this is adequate to establish the common factor of several related, yet, distinct reflective lower-order components (aesthetics, content, ease of use, emotion, promotion, and made for the medium dimensions). The first-order dimensions for intentions (to visit the physical museum and return to the website) were operationalized using Pallud and Straub's (2014) scale. Perceived control, satisfaction, and trust were adapted from Hsu, Chang, and Chen (2012), Su, Swanson, and Chen (2016), Agag and El-Masry (2016), and Kim et al. (2011), respectively.

3.3. Data Analysis Process

In this research, we used SmartPLS (version 3.2.7; Ringle, Wende, & Becker, 2015) to perform the partial least squares-structural equation modeling (PLS-SEM) analysis and conduct multigroup analysis (MGA). PLS-SEM permits the statistical analysis based on a multivariate approach to examine each of the relationships between the variables in a conceptual model, regarding measurement, and structural components (Rasoolimanesh, Roldán, Jaafar, & Ramayah, 2016). This technique was selected because it is a nonparametric SEM method appropriate for MGA and especially recommendable when the measurement model presents a combination of first- and second-order constructs (Hair, Hult, Ringle, & Sarstedt, 2014; Henseler, Ringle, & Sarstedt, 2016; Sarstedt, Henseler, & Ringle, 2011). Power analysis was performed with G*Power 3, offering a statistical power for R^2 deviation from zero to 91% in both samples, above the recommended minimum level of 80% (Cohen, 1988; Faul, Erdfelder, Lang, & Buchner, 2007). Hence, the statistical powers of 151 and 156 for the two groups examined in this study are acceptable sample sizes.

PLS-SEM is also especially useful when a model like the one presented herein combines the interest in testing a theory with the interest in predicting a key target construct or using the latent variable scores in subsequent analyses (Hair, Hult, Ringle, Sarstedt, & Thiele, 2017; Rigdon, Sarstedt, & Ringle, 2017; Sarstedt, Hair, & Ringle, 2017). In our case, measuring website quality becomes crucial as a basis for improving a museum's website efficacy to build loyalty.

4. Analysis and Findings

4.1. Descriptive Analysis

Table 1 indicates the samples' profile in the two groups analyzed, namely, the Prado Museum website and the Reina Sofia Museum website. As presented in Table 2, the mean values of both samples indicate that users' rate the Prado museum website and the Reina Sofia Museum website, similarly.

4.2. Assessment of Measurement Model and Invariance Measurement across Two Groups

To estimate the model represented in Fig. 1, second-order constructs were operationalized using the repeated indicators approach (Hair, Sarstedt, Matthews, & Ringle, 2016). The results of the measurement model's reliability and convergent validity tests for both samples are indicated in Table 3. In general terms, loading factors should be higher than 0.7 for the indicator reliability to be considered adequate (Hair, Ringle, & Sarstedt, 2011). In our study, all the loading factors are above this threshold. Regarding construct reliability, the internal consistency indices (Cronbach's alpha coefficients) are higher than the recommended 0.70 (Hair, Black, Babin, Anderson, & Tatham, 2006). In addition, composite reliability values indicate the shared variance among a set of observed items measuring a construct (Fornell & Larcker, 1981). All of these are above the recommended coefficient of 0.60 (Bagozzi & Yi, 1988).

Discriminant validity measures the extent to which each latent variable is different from other constructs in the measurement model (Hair et al., 2016). Following Hair et al.'s (2018), heterotrait-monotrait (HTMT) ratio method

Table 1: Profile of Respondents

Characteristics		Frequency		Percentage (%)	
		Prado Museum Website	Reina Sofia Museum Website	Prado Museum Website	Reina Sofia Museum Website
Gender					
	Female	75	77	49.7	49.4
	Male	76	79	50.3	50.6
Age					
	18–24	18	18	11.9	11.5
	25–30	17	16	11.3	10.3
	31–34	8	9	5.3	5.8
	35–40	21	20	13.9	12.8

Table 1: (*Continued*)

Characteristics		Frequency		Percentage (%)	
		Prado Museum Website	**Reina Sofia Museum Website**	**Prado Museum Website**	**Reina Sofia Museum Website**
	41–44	14	16	9.3	10.3
	45–50	19	21	12.6	13.5
	51–54	11	13	7.3	8.3
	55–60	22	21	14.6	13.5
	61–65	12	10	7.9	6.4
	66–69	5	8	3.3	5.1
	70 and above	4	4	2.6	2.6
Education					
	Primary	4	1	2.6	0.6
	Secondary	49	44	32.5	28.2
	Undergraduate	24	25	15.9	16.0
	Graduate	61	64	40.4	41.0
	Postgraduate	13	22	8.6	14.1
Occupation					
	Student	15	16	9.9	10.3
	Employee	77	72	51.0	46.2
	Housewife	6	9	4.0	5.8
	Unemployed	21	22	13.9	14.1
	Retired	17	20	11.3	12.8
	Others	15	17	9.9	10.9
Home monthly income (in euros)					
	1500€ and below	71	60	47.0	38.5
	1500€–2500€	34	42	22.5	26.9
	Above 2500€	15	15	9.9	9.6
	I don't know/ I prefer not to answer	31	39	20.5	25.0
Nationality					
	National	147	154	97.4	98.7
	Other	4	2	2.6	1.3
Country of residence					
	National	146	155	96.7	99.4
	Other	5	1	3.3	0.6

Table 2: Descriptive Analysis.

	Prado Museum Website		Reina Sofia Museum website	
Construct/Associated Items	**Mean**	**Standard Deviation**	**Mean**	**Standard Deviation**
Aesthetics (AES)				
1. I find that the design of this museum website looks pleasant.	5.748	1.348	4.929	1.586
2. The layout of this museum website is fascinating.	5.132	1.370	4.295	1.618
3. I find the design of this museum website to be creative.	5.430	1.398	4.609	1.627
4. I find that the design of this museum website looks aesthetic.	5.563	1.412	4.782	1.558
Content (CON)				
1. This museum website offers content that is relevant to the core audience.	5.954	0.965	5.705	1.221
2. This museum website uses media appropriately and effectively to communicate the content.	5.788	1.113	5.442	1.205
3. This museum website provides the appropriate breadth and depth of content.	5.934	0.981	5.609	1.152
4. This museum website provides current and timely information.	6.013	0.990	5.718	1.280
Emotion (EMO)				
1. This museum website offers you an element of challenge.	4.079	1.601	3.603	1.663
2. This museum website provides an interesting story line.	5.272	1.201	4.667	1.550
3. This museum website ties to individuals, within and outside the organization, who have credibility.	4.907	1.363	4.487	1.430
4. This museum website allows you to control the pace at which you can interact with the presented information.	5.179	1.297	4.769	1.518

Ease of use (EOU)				
1. This museum website offers clear and understandable goals.	5.821	1.074	5.340	1.421
2. This museum website is well structured and organized.	5.854	1.142	5.449	1.420
3. This museum website provides clear and understandable results and feedback regarding your progress.	5.689	1.129	5.314	1.363
Made for the medium (MFM)				
1. This museum website offers you the opportunity to be part of an online group or community.	5.490	1.296	4.667	1.578
2. This museum website treats you as a unique person and responds to your specific needs.	5.179	1.352	4.673	1.455
3. This museum website reflects the most current trend(s) and provides the most current information.	5.675	1.142	5.365	1.271
Promotion (PRO)				
1. If I saw an advertisement of this website on the Internet or other related media (e.g., newspaper, TV), I would be stimulated to go to this website.	5.007	1.467	4.308	1.760
2. If I saw a promotion of this website on the Internet or other related media (e.g, newspaper, TV), I would be motivated to go to this website.	5.093	1.425	4.423	1.728
Trust (TRU)				
1. I believe that this museum website is trustworthy.	5.954	1.153	5.308	1.403
2. This museum website is reliable.	5.914	1.151	5.417	1.335
3. This museum website has integrity.	5.828	1.184	5.250	1.431
Perceived control (PCO)				

Table 2: (*Continued*)

Construct/Associated Items	Prado Museum Website		Reina Sofia Museum website	
	Mean	**Standard Deviation**	**Mean**	**Standard Deviation**
1. I feel in control of what I am doing when I navigate in this museum website.	5.166	1.344	4.769	1.501
2. I can easily control the information that is provided on this museum website.	5.338	1.255	5.013	1.476
3. I feel I can control my use of information on this museum website.	5.404	1.224	4.885	1.523
4. The level of information provided by this museum website makes me feel in control.	5.192	1.259	4.667	1.499
Intentions to visit the physical museum (INTM)				
1. Given the opportunity. I intend to visit the physical museum.	5.901	1.316	5.186	1.907
2. It is likely that I will actually visit the physical museum.	5.636	1.435	4.872	1.996
Intentions to return to the website (INTW)				
1. Given the chance, I intend to return to the website of this museum.	5.172	1.714	4.385	1.913
2. It is likely that I will actually return to the website of this museum.	5.139	1.772	4.423	1.945

(Henseler, Ringle, and Sarstedt, 2015) was analyzed to test discriminant validity. As website quality was measured as a second-order construct, Tables 4 and 5 show the HTMT ratio between the lower-order constructs of website quality and all the other latent variables in the model. All ratios are lower than 0.90 (Teo, Srivastava, & Jiang, 2008). Reliability and convergent validity were verified both at the first- and second-order level for the second-order constructs of the proposed model.

As noted by several scholars (Hair et al., 2016; Henseler et al., 2016; Rasoolimanesh et al., 2016; Rasoolimanesh, Ringle, Jaafar, & Ramayah, 2017; Sarstedt et al., 2011), before performing MGA, the acceptability of the measurements models and measurement invariance should be verified. As Henseler et al. (2016) recommended for the PLS-SEM technique, we assessed the measurement invariance of composites (MICOM) to analyze measurement invariance. MICOM entails the following three-step process: (1) configural invariance; (2) the assessment of compositional invariance; and (3) an evaluation of equal means and variances (Rasoolimanesh et al., 2017).

According to Hair et al. (2018), configural invariance has three requirements: the measurement model of each museum should use the same indicators, the indicators' data treatment should be identical, and so should the algorithm and optimization criteria. Compositional invariance exists if the correlation between the composite scores in both groups is not significantly different from 1 (correlation C in Table 6 falls within the 95% confidence interval of the empirical distribution of the permutation's correlations). These two conditions establish partial metric invariance, and the standardized coefficient of the structural model can be compared across groups.

Table 6 also shows that the latent means and variances are not equal across groups. This result would not allow pooling of data, but does not affect MGA feasibility, as indicated.

4.3. Structural Model and MGA

In this second phase of the analysis, we initially assessed the R^2 to examine the model's explanatory power (Hair et al., 2014). All dependent constructs presented an R^2 higher than 0.10 (Falk & Miller, 1992). In addition, positive Stone-Geisser's Q^2 were obtained using blindfolding with an omission distance of $D = 7$ (Henseler, Ringle, & Sinkovics, 2009). The predictive relevance of the model for both samples was established (Table 7).

Table 8 presents the results of the structural model analysis and hypotheses testing, using 5,000 bootstrap resamples and 5,000 permutations. Additionally, it indicates MGA results of two different nonparametric techniques: Henseler's MGA (Henseler et al., 2009) and the permutation test (Chin & Dibbern, 2010). Henseler's MGA compares group bootstrap estimates from each bootstrap sample, and the *p*-value that is lower than 0.05 or higher that 0.95 indicates significant differences at the 5% level between specific path coefficients across two groups (Henseler et al., 2009; Sarstedt et al., 2011). The permutation test also identifies differences at the 5% level of significance if the *p*-value is lower than 0.05.

Table 3: Reliability and Convergent Validity of the Final Measurement Model.

Factor	Indicator	Prado Museum Website					Reina Sofia Museum Website				
		Standardized Loading	CA	rho_A	CR	AVE	Standardized Loading	CA	rho_A	CR	AVE
Aesthetics	AES1	0.928	0.947	0.947	0.962	0.862	0.919	0.949	0.950	0.963	0.868
	AES2	0.924					0.938				
	AES3	0.919					0.927				
	AES4	0.944					0.942				
Content	CON1	0.844	0.880	0.881	0.918	0.736	0.883	0.918	0.921	0.942	0.802
	CON2	0.854					0.904				
	CON3	0.835					0.886				
	CON4	0.898					0.908				
Emotion	EMO1	0.722	0.917	0.919	0.948	0.858	0.752	0.902	0.903	0.939	0.836
	EMO2	0.832					0.880				
	EMO3	0.869					0.878				
	EMO4	0.847					0.847				
Ease of use	EOU1	0.926	0.836	0.846	0.891	0.672	0.911	0.862	0.881	0.906	0.707
	EOU2	0.932					0.927				
	EOU3	0.920					0.905				
Made for the medium	MFM1	0.849	0.857	0.878	0.912	0.776	0.835	0.800	0.813	0.881	0.712
	MFM2	0.905					0.849				
	MFM3	0.888					0.849				

Promotion	PRO1	0.975	0.950	0.951	0.976	0.953	0.979	0.956	0.956	0.979	0.958
	PRO2	0.977					0.979				
Trust	TR1	0.971	0.970	0.971	0.980	0.944	0.962	0.958	0.960	0.973	0.922
	TR2	0.979					0.970				
	TR3	0.964					0.948				
Perceived control	PC1	0.909	0.946	0.948	0.961	0.861	0.905	0.929	0.931	0.950	0.825
	PC2	0.946					0.928				
	PC3	0.921					0.908				
	PC4	0.935					0.892				
Intentions to visit the physical museum	INTM1	0.940	0.865	0.866	0.937	0.881	0.970	0.933	0.935	0.968	0.938
	INTM2	0.937					0.967				
Intentions to return to the website	INTW1	0.982	0.961	0.964	0.981	0.963	0.986	0.971	0.972	0.986	0.972
	INTW2	0.980					0.985				
Website Quality	Aesthetics	0.817	0.913	0.915	0.933	0.698	0.798	0.909	0.912	0.930	0.688
	Content	0.854					0.828				
	Ease of use	0.840					0.822				
	Emotion	0.864					0.875				
	Made for the medium	0.862					0.825				
	Promotion	0.773					0.827				

Note: All loadings are significant at the $p < 0.01$ level. CA, Cronbach's alpha; CR, composite reliability; AVE, average variance extracted.

Table 4: Measurement Model's Discriminant Validity. Prado Museum Website. HTMT Ratios.

		1	2	3	4	5	6	7	8	9	10
1	Aesthetics										
2	Content	0.673									
3	Ease of use	0.674	0.837								
4	Emotion	0.733	0.749	0.732							
5	Intention to return to the museum website	0.571	0.506	0.496	0.734						
6	Intention to visit the physical museum	0.190	0.295	0.293	0.276	0.502					
7	Made for the medium	0.697	0.850	0.753	0.774	0.486	0.233				
8	Perceived control	0.708	0.672	0.737	0.773	0.570	0.297	0.690			
9	Promotion	0.581	0.588	0.540	0.738	0.751	0.374	0.668	0.514		
10	Trust	0.634	0.706	0.567	0.750	0.615	0.334	0.613	0.563	0.514	

Table 5: Measurement Model's Discriminant Validity. Reina Sofia Museum Website. HTMT Ratios.

		1	2	3	4	5	6	7	8	9	10
1	Aesthetics										
2	Content	0.587									
3	Ease of use	0.710	0.812								
4	Emotion	0.722	0.676	0.688							
5	Intention to return to the museum website	0.649	0.614	0.577	0.791						
6	Intention to visit the physical museum	0.522	0.580	0.508	0.669	0.843					
7	Made for the medium	0.594	0.781	0.664	0.840	0.653	0.625				
8	Perceived control	0.655	0.652	0.723	0.676	0.704	0.601	0.620			
9	Promotion	0.621	0.606	0.571	0.805	0.777	0.746	0.723	0.649		
10	Trust	0.637	0.684	0.591	0.625	0.594	0.497	0.589	0.710	0.521	

Table 6: Results of Invariance Measurement Testing Using Permutation.

Constructs	Configural Invariance (Same Algorithms for Both Groups)	Compositional Invariance (Correlation = 1)		Partial Measurement Invariance Established	Equal Mean Assessment				Equal Variance Assessment			
		$C = 1$	5% quantile		Differences	Confidence Interval		Equal	Differences	Confidence Interval		Equal
Intentions to visit the physical museum	Yes	0.999	0.999	Yes	0.444	−0.194	0.191	No	−0.764	−0.309	0.302	No
Intentions to return to the museum website	Yes	1.000	1.000	Yes	0.408	−0.184	0.192	No	−0.213	−0.238	0.218	Yes
Perceived control	Yes	1.000	1.000	Yes	0.340	−0.195	0.187	No	−0.290	−0.294	0.264	Yes
Trust	Yes	1.000	1.000	Yes	0.451	−0.195	0.192	No	−0.333	−0.340	0.332	Yes
website quality	Yes	1.000	0.999	Yes	0.491	−0.196	0.181	No	−0.329	−0.284	0.302	No

Table 7: Evaluation of the Estimated Models.

Concept	Prado Museum Website		Reina Sofia Museum Webiste	
	R^2	Q^2	R^2	Q^2
Intentions to visit the physical museum	0.110	0.082	0.465	0.412
Intentions to return to the museum website	0.476	0.428	0.602	0.553
Perceived Control	0.577	0.461	0.541	0.418

The results show that website quality has a positive and significant effect on perceived control in both museum websites (*H1a*; Prado Museum website $\beta = 0.759$ $p < 0.01$; Reina Sofia Museum website $\beta = 0.735$ $p < 0.01$). In addition, the findings reveal a positive and significant effect of website quality on intentions to return to the museum website in both samples (*H1b*; Prado Museum website $\beta = 0.492$ $p < 0.01$; Reina Sofia Museum website $\beta = 0.712$ $p < 0.01$). However, results indicate a positive and significant effect of website quality on intentions to visit the physical museum for the Reina Sofia Museum website (*H1c*; $\beta = 0.674$; $p < 0.01$); whereas, the effect was not supported for the Prado Museum website (*H1c*; $\beta = 0.155$). This research also analyzed the effect of trust on intentions to return to the museum website and visit the physical museum. The effect of trust on intentions to return to the museum website was found to be positive and significant in both cases (*H2a*: Prado Museum website $\beta = 0.248$ $p < 0.01$; Reina Sofia Museum website $\beta = 0.089$ $p < 0.1$). The effect of trust on intentions to visit the physical museum was supported in the Prado Museum website case (*H2b*; $\beta = 0.204$; $p < 0.01$), but not in the Reina Sofia Museum sample ($\beta = 0.012$).

The results of Henseler's MGA and the permutation method indicate significant differences between the Prado Museum website and the Reina Sofia Museum website regarding the effect of website quality and intentions to return to the museum website and visit the physical museum (*H1b* and *H1c*). Moreover, Henseler's MGA identified a very slight difference between trust and intentions to return to the museum website (*H2a*). The findings of this study do not support significant differences between the Prado Museum website and the Reina Sofia Museum website regarding the effects of *H1a* or *H2b*. Both techniques similarly confirm the significance and nonsignificance of the differences, offering a multimethod confirmation of the results.

5. Discussion

We compared the Prado Museum website and the Reina Sofia Museum website regarding the effects of website quality on perceived control; intentions to return to the website and visit the physical museum; and the impact of trust on intentions to return to website and visit the physical museum.

MGA revealed significant differences between the Prado Museum website and the Reina Sofia Museum website with respect to the direct effects between website

Table 8: Hypotheses Testing.

Hypothesis	Relationship	Path Coefficients		Confidence Interval (95%)				Path Coefficient Difference	*p*-Value Difference (One-Tailed)	
		Prado Museum Website	Reina Sofia Museum Website	Prado Museum Website		Reina Sofia Museum Website			Henseler's MGA	Permutation Test
H1a	Website Quality → Perceived Control	0.759***	0.735***	0.667	0.819	0.652	0.807	0.024	0.356	0.359
H1b	Website Quality → Intentions to return to museum website	0.492***	0.712***	0.279	0.622	0.601	0.801	0.220	0.978**	0.025**
H1c	Website Quality → Intentions to visit the physical museum	0.155	0.674***	−0.080	0.360	0.539	0.760	0.519	1.000***	0.000***
H2a	Trust → Intentions to return to museum website	0.248***	0.089*	0.097	0.420	−0.001	0.206	0.158	0.085*	0.108
H2b	Trust → Intentions to visit the physical museum	0.204*	0.012	−0.014	0.459	−0.113	0.147	0.192	0.119	0.135

Note: In Hensler's MGA method, a *p*-value lower than 0.05 or higher than 0.95 indicates significant differences between specific path coefficients across groups at the 5% level.
***$p < 0.01$; **$p < 0.05$; *$p < 0.10$

quality and intentions to return to the website (*H1b*) and visit the physical museum (*H1c*); and between trust and intentions to return to the website (*H2a*). Thus, the results highlight the relevance of website quality and trust as drivers of behavioral intentions. In this respect, these results confirm the suggestions made by other scholars of the positive and significant direct effect of website quality on intentions to return to the website and visit the physical place (Lazarinis, 2011; Lepkowska-White & Imboden, 2013; Lin & Cassidy, 2008; López et al., 2010; Marty, 2007, 2008, 2011; Padilla-Meléndez & Águila-Obra, 2013). This study also validates the direct link between trust and intentions to return to the website in the tourism sector, and corroborates prior findings that have confirmed that online trust influences loyalty behaviors (Chen & Chou, 2012; Kim et al., 2011; Tseng & Lee, 2016).

In this study, we found a higher effect size for the Reina Sofia Museum website quality than for the Prado Museum website quality. Hence, users of the Reina Sofia Museum website are more predisposed to return to the website and visit the physical museum than the Prado Museum website users. The relationship between website quality and intentions to return to the websites is positive and significant for both websites, but the linkage between website quality and intentions to visit the physical museum is only positive and significant in the Reina Sofia Museum. As noted in Appendix 1, both museum websites' features differ in relation to the aesthetics, content, ease of use, made for the medium, emotion, and promotion. In this respect, the Prado Museum website offers many services to discover the artworks of the museum collection in an easy and appealing way, such that users discover the entire collection, which could be why there is no significant relationship between website quality and intentions to visit the physical museum. Hence, as the virtual visitor can have such a close contact with the museum artworks through the website, intention to visit the museum physically may be reduced due to this fact.

Although the relationship between website quality and intentions to return to the website is positive and significant in both cases, the size of the effect in the Reina Sofia Museum website is higher. This could be also due to the same reason: the Prado Museum website offers extensive information of the entire collection of artworks, while the Reina Sofia encourages users to use interactive tools to discover more about the collection of artworks (Capriotti et al., 2016; Pallud, 2017). Thus, the Reina Sofia's website is more focused on providing a unique experience of visiting the website itself instead of being focused on promoting a physical visit to the museum.

Moreover, the Reina Sofia Museum website has a modern design due to the collections it presents and, as pointed out previously, it is a dynamic website; whereas, the Prado Museum has a traditional website that is more static. This fact could explain that trust has a slightly significant higher effect on the intentions to return to the museum website for the Prado Museum website than for the Reina Sofia Museum website. The more traditional aspect of the website, and thus, of the museum's brand image could explain why the linkage between trust and intentions to return to the website is higher in the Prado Museum website than in the Reina Sofia Museum (Flavián, Guinalíu, & Gurrea, 2006). The traditional role of the Prado website, focused on promoting the visit to the museum, uses a design that adapts to users' information expectations and generates more

confidence in the user that this task will be correctly fulfilled, as it can be compared with the performance of similar sites in hundreds of museums. However, the more creative Reina Sofia site generates a lack of equivalent references with other museums sites and the problem of evaluating the site may reduce the trust conferred on it.

Furthermore, this study found that the effect size of the relationship between trust and intentions to visit the physical museum was either nonsignificant or barely significant. Hence, the intrinsic image of museums could imply that museums' website trust is not necessary to promote users' willingness to visit them (So, King, Sparks, & Wang, 2016). This result extends findings in relation to the influence of trust on behavioral attitudes (Chen & Chou, 2012; Kim et al., 2011; Tseng & Lee, 2016).

In the same vain, no differences were found between the Prado Museum website and the Reina Museum website in the link between website quality and perceived control. However, as expected, this relationship, in both cases, was significant, and positive, thus corroborating other prior studies' findings (Hoffman & Novak, 1996; Manganari et al., 2014; Rose et al., 2012).

6. Implications

6.1. Theoretical Contributions

This research advances knowledge by proposing links between website quality, perceived control, trust, intentions to return to the website and intentions visit the physical museum. Additionally, a comparison between the two websites of the most visited museums of Spain was made in order to confirm the results. Thus, this research adds value to prior studies related to museum websites for several reasons.

First, this research extends museum literature studies by empirically analyzing the following direct effects: (1) website quality on perceived control, intentions to return to the website and visit the physical museum; and (2) trust on intentions to return to the website and visit the physical museum. López et al. (2010) pointed out the relevance of analyzing the relationship between online visits and visitors' willingness to visit the physical museum. Although some scholars have evaluated this linkage (Marty, 2007, 2008; Padilla-Meléndez & Águila-Obra, 2013; Pallud & Straub, 2014), none of them have measured the direct impact of museum website quality on visitors' intentions to return to the website and to visit the physical museum (Kabassi, 2017). Moreover, as aforementioned, this research adds value to prior museum-related studies by also analyzing the effects of website quality on perceived control; and trust on intentions to return to the website and to visit the physical museum.

Second, through MGA, it was shown that there are differences between certain relationships between the two museum websites. In this respect, this research contributes to the understanding of the hierarchical latent variable, website quality. It also proposes Henseler's MGA and permutation test to extend the findings, in the analysis of a complex model that comprehends second-order construct.

Third, this research contributes not only to tourism and museum management literature, but also to ecommerce literature by proposing and empirically testing a theoretical framework for websites and users' behavioral attitudes that can be also analyzed in online shopping online contexts.

6.2. Managerial Implications

Users of museum websites, in particular of superstar museum, attach importance to website quality and their trust in these digital platforms. Moreover, as these superstar museums' websites are becoming increasingly important among many users and, hence, potential visitors, many other tourism organizations are taking into account the digital strategies outlined by superstar museums. The current research raises awareness of marketing practitioners, website designers, and digital experts in various sectors (museums, galleries, retail ecommerce, restaurants, hotels, archaeological sites, and historical buildings among others) concerning the importance of website quality and trust and their effects on users' behavioral attitudes of repeating the website experience and visiting the physical place.

In the area under discussion, the impacts of website quality and trust on users' intentions have been presumed to be positive and significant. Some museum experts have indicated the need of research to improve the understanding of users' website perceptions with a view to maintain the expensive museum digital systems. Some initial research on this topic (Lazarinis, 2011; Lepkowska-White & Imboden, 2013; Lin & Cassidy, 2008; Marty, 2007, 2008, 2011; Pallud & Straub, 2014) has shown that these digital platforms are normally used to complement the physical visit (Marty, 2007; Padilla-Meléndez & Águila-Obra, 2013; Pallud & Straub, 2014).

This fact has encouraged museum experts to acknowledge the direct influence of museum website features on users' willingness to repeat their navigation experience and visit the brick-and-mortar museum (Marty, 2007). Hence, taking into consideration the results of this research, marketing professionals of the tourism industry should focus on website quality characteristics (namely, aesthetics, content, ease of use, emotion, made for the medium and promotion) and trust, as it promotes users' intentions to repeat the website experience and even to visit the physical place. Thus, it has been proved that users who positively rate the website quality are predisposed to return to the website. Museum managers must ensure control and quickly manage situations and features that induce users to feel stress, anxiety, or boredom during their navigation experience.

It has been concluded that website quality positively and significantly influences users' intentions in the Reina Sofia Museum case, but not in the Prado Museum sample. Regardless of the efforts, which both superstar museums may make to increase visitors' arrivals, the Reina Sofia website promotes significantly more users' intentions to visit the museum physically. Both museums should establish interactive tools that stimulate an air of mystery in relation to their artworks. It would be advisable to not reveal all the secrets of the artwork collection, but rather to inspire curiosity among users, for instance, through interactive tools, elearning initiatives, and content marketing strategies (Capriotti et al., 2016; Pallud, 2017). Obviously,

this shows the importance of not revealing to users the most appealing secrets of the artwork collection in their first navigation through the website.

Although websites, and in general all digital channels, are the most appropriate channels that museum managers have to gain knowledge about their visitors, promote and maintain effective strategies that boost long-term relationships with them (Escobar-Rodríguez & Carvajal-Trujillo, 2013), they still do not seem to be aware of how many website users end up visiting physically the place, except for users who buy their tickets online (Marty, 2007). Hence, we encourage museum managers to implement actions to control the influence of their websites on visitors' arrivals, and control the visitors navigate their websites while enjoying the visit.

It is also important for marketing professionals in the tourism sector to be able to identify users' perceptions of organization trustworthiness. In fact, users' opinions of museum website trustworthiness can influence their behavioral intentions. The results of this study have shown that the links between website trust and intentions to return to the website and visit the physical museum were higher in the Prado Museum website. Although in the Internet era, it is important to boost users' opinions of website trust, initially, trust must be promoted through an integral marketing plan that begins with visitors' perception of the organization's brand. As mentioned, the Prado Museum website has a more traditional design concerning all the website quality features, which could be related to users' perception of the website's trustworthiness. It is therefore imperative to identify the features of the brand that prompt visitors' willingness to rely on the organization, and efficiently design the inclusion of these new characteristics in the digital arena.

6.3. Limitations and Future Research Directions

To extend the findings, future scholars are prompted to consider the limitations of this study. First, this research focused on the MGA comparison that has revealed that certain relationships presented significant differences between the two museum websites. It would be, therefore, interesting to advance our knowledge by considering interactivity as a mediator variable between website quality and intentions to return to the website and visit the physical museum (Capriotti et al., 2016). Moreover, whether the effect of multidirectional conversations reduces or increases visitors' willingness to visit the place (Capriotti & Pardo, 2012) or even the influence of social media in the users' intentions could be analyzed (Kidd, 2011).

Second, the sample of users could have led to bias, as these samples are related to the two most visited museums of Spain. Scholars are encouraged to replicate this study in different museums, tourism services, or even other online shopping contexts. Third, the model proposed in this research entailed the second-order construct website quality, which included related concepts in order to gain parsimony and understand the integral relationships with other dimensions. However, it could be interesting for future research to analyze the separate effects of each variable, as this would probably enrich the existing literature on this topic.

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Appendix 1: The Evaluation of the Two Websites Under Study

Museum website	Content	Aesthetics	Ease of use	Made for the medium	Emotion	Promotion
Prado Museum	– Useful information (such as opening hours, prices, and a map) – Calendar of events – Educative and research resources – Detailed description of the cultural assets the collections offer – Download function (for personal and commercial use). – 360º virtual tours (the museum is a partner of the Google Art Project) – Two languages (Spanish and English) – Seven collections: Spanish painting up to 1700; Italian and French painting up to 1700; Flemish painting and Northern schools; eighteenth-century painting and Goya; nineteenth-century painting; prints, drawings and photographs; sculpture and decorative arts	– Unified colors for all the sections of the website (white and gray background). – Several images of the collection (pictures of cultural assets, rooms of the museum) – Zoom possibilities – YouTube channel with videos associated with each of the rooms of the collections	– The website is well structured and organized (7 sections) – Horizontal and vertical menus – Very attractive website (colorful). Presents a more traditional aspect. This is related to the collections it presents. Prado Museum is rich in paintings of European artists of the sixteenth to ninteenth centuries.	– Permits users to plan their visit by creating their own itinerary and sharing them with other users – Eleven categories of visitors were identified (visitors above 65 years old, members of families that have three children or more, Youth Card holders, young people under 18, students under 25, groups, disabled visitors, friends of the museum, teachers, professionals, and associations, institutions or foundations related to musums, cultural heritage and fine arts) – Contact information – Tailored visits – Newsletter	– Download delay is short – Very interactive website that engages visitors (online games, tailored visits, videos) – Rich features that appeal to the senses	– What's-on section – Promotion on Youtube and other social media

Museum website	Content	Aesthetics	Ease of use	Made for the medium	Emotion	Promotion
Reina Sofia Museum	– Useful information (such as opening hours, prices, and a map) – Calendar of events – Educative and research resources – Detailed description of the cultural assets the collections offers – 360º virtual tours (the museum is a partner of the Google Art Project) – Five languages (Spanish, English, Catalan, Basque and Galician) – Three collections: the Irruption of the twentieth century, Utopias and Conflicts (1900–1945); Is the War Over? Art in a Divided World (1945–1968); From Revolt to Postmodernity (1962–1982).	– Unified colors for all the sections of the website (white and yellow background). – Several images of the collection (pictures of cultural assets, rooms of the museum, maps of the location of the rooms) – Zoom possibilities	– The website is well structured and organized (nine sections) – Horizontal and vertical menus – Very attractive website (colorful). Presents a more modern aspect. This is related to the collections it presents. Reina Sofia Museum's collection is of art pieces mainly of the twentieth century.	– Permits users to plan their visit by creating their own itinerary – Fifteen categories of visitors were identified (visitors above 65 years old, members of families that have three children or more, Youth Card holders, young people under 18, university students, students between 18 and 25, unemployed,offcial tourism guides, donors, groups, disabled visitors, friends of the museum, teachers, university teachers, company groups with a signed agreement and associations, instituions or foundations related to museums, cultural heritage and fine arts) – Contact information – Tailored visits – Newsletter	– Download delay is short – Text is attractive, uses short descriptions (e.g., "Enough and more than enough"; unpublished, "Krazy Kat is Krazy Kat is Krazy Kat") – Emotional realm: see exibitions and activities	– Today at the museum section – Promotion on Youtube and other social media