Article

An Audience-Centric Approach for Museums Sustainability

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Abstract: The main purpose of this study is to propose a visitor centric perspective that can support museums towards sustainability. The main premise of this study is due to a concept of economic and social sustainability of museums, defined as the possession of sufficient resources to maintain the existence of an organization, and achieve their goals in the future, ensuring a certain flow of visitors. A great number of museums are characterized by a low number of visits; therefore, in order to become sustainable, museums should pay attention to audience and its internal diversity. In this way, a cultural site can plan tailored strategies to increase the number of visits and re-visits and to achieve community support. For this reason it is necessary to understand the cultural needs of visitors, acquiring appropriate monitoring tools, such as qualitative and quantitative ones. Generally, quantitative analyses are more reliable and complete, even if they require a considerable number of observations for the reliability of the results. Moreover, qualitative analysis provides more in depth information, even if their data do not allow us to make generalizations. The qualitative and quantitative methods for the detection of satisfaction are usually used separately, but their integration may bring significant added value in terms of the wealth of information. This study follows the analysis of the potential of the integration of qualitative and quantitative analysis techniques customized with respect to different types of targets. The results of the experimentation performed on ethnographic

museums shows a consistency of the results obtained by the two different tools that increase the capacity information of survey instruments.

Keywords: museum sustainability; visitors' feedback system; economic and social KPIs

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1. Introduction

Culture in its broadest sense plays a decisive role in constructing a system of interventions, where social and sustainable development, employment, and tourism become the product of the integration of places, people, nations, economies and traditions [1].

As emphasized by Santagata [2], cultural heritage is a resource for creativity capable of producing economic and technological innovation, the art-historical research and the development of sustainable opportunities for the future. Hence, culture and heritage can be considered as key factors for the sustainable development, which go far beyond their ability to generate economic impact and positive externalities. Because of this, cultural heritage appears as a value to be preserved and transmitted to future generations through a multidisciplinary approach, capable of promoting informed participation in the system and to integrate its ethical, cultural, ecological, economic, social and political issues. Many authors state that culture represents a separate and relevant pillar in achieving sustainability and that cultural communities are key economic and social drivers.

Museums are usually non-profit institutions/organizations oriented to the fulfillment of their social function of collection, preservation, and public education. As any organization, museums have to be concerned with economic, social and environmental points of view in order to meet sustainability. Some authors argued that museums must return to being learning hubs, not destination attractions. Only then they will be sustainable [3].

Specifically, the principles of sustainability are related to two main aspects: (i) building deep long-term relationships with a range of audiences; (ii) responding to changing political, social, environmental and economic contexts and having a clear long-term purpose that reflects society's expectations.

In particular, museums have great potential to contribute to creating sustainable communities, places in which people want to live, now and in the future that embody the principles of sustainable development at the local level [4]. Sustainability and cultural life are linked and both relevant for local community engagement, since as Pink [5] said, people are seeking connections and greater meaning in their lives.

As a result, museums are expected to conceive their economic and social sustainability as part of their function.

Given that sustainable development meets the needs of the present without compromising the ability of future generations to meet their own needs [6], museums' adopting a visitor perspective represents an emerging key factor in order to satisfy users and increase their intention to revisit as well as a way to achieve a sustainable future. This is moreover relevant on the strength that the term sustainability is used with the meaning of an organization having sufficient resources to maintain existence, and fulfill its objectives, into the future [7].

According to the economic sustainability perspective, museums are increasingly asked to create value for attracting new visitor flows [8] and generate significant incomes [9] to guarantee their self-sufficiency and autonomy and to become more competitive and self-reliant [10]. The emergent need for museums to demonstrate the capacity to deliver value for money [9] has an impact on the development of their capacity to attract increasing visitor flows [8]. Thus, museums achieve competitiveness [10] by expanding their supply and offering traditional and cultural services that meet the additional visitors' needs, so as to increase visitors numbers and the related incomes [10–16].

Social sustainability concern the situation of an organization embedded within the whole society, which includes audience and other stakeholders. As suggested by Villeneuve, museums, by becoming responsive and relevant to diverse audiences, can become vital to their communities and thus sustainable [17]. Moreover, sustainable museums have to develop a long-term attitude to audiences, e.g., by valuing repeat visitors. In particular, the capacity to create relationships with new audiences beyond the limits of a short-term audience-development project represents an important step to achieve sustainability. Museums can become more responsive to people's interests and needs if they plan and manage audience research on visitors' attitude, behavior and satisfaction [18]. As Gurian [19] states, social weaknesses can be dangerous and can make a temporary financial problem fatal.

Social sustainability is far more difficult to quantify than economic growth or environmental impact. Further purposed indicators of social sustainability are too general to be useful, and specific indicators need to be developed for particular companies, meaning that their usefulness to academic discourse in particular contexts of social sustainability is questionable [20].

The valorization process of museums implies the adoption of innovative organizational and managerial models able to generate virtuous circles of museums performances. These models entail the new view on the role of the consumer that has evolved in a proactive perspective. Visitors are not only passive receivers of the cultural supply, they are at odds active stakeholders who should be involved in the service quality improvement [21]. Moreover, museums have to redesign their identity by focusing on the principles of democracy and inclusion, becoming a cultural, ethical and social system, able to meet the stakeholders' needs and to generate value [22–24].

Hence, to ensure the long term sustainability in the museums, a radical change in managerial approaches and practice is required. In particular, as Villeneuve argued [17], we believe that the development of a visitors' centric perspective is crucial for implementing in the museum a sustainable managerial approach. However, the lack of specific models in that field allowed us to understand the need to develop an Audience-Centric Model able to support the museum managers in planning improvement actions and to increase the quality of provided services.

In particular, the role of the cultural consumer is changing, and particularly in the recent years, they are becoming active users, directly involved in the evaluation and improvement processes.

Therefore, it is increasingly felt the need to activate and develop customer feedback systems in order to collect information about visitors' attitudes, behaviors and satisfaction, in order to align their offer with the visitors' external perspective.

These data can be an indispensable asset for any museum in order to plan new strategies to provide innovative services and to revitalize the cultural sector.

The paper is structured as follows. First, a literature review section follows which is focused on customer's attitude, behavior and satisfaction management. Then, an experimental case, which

involved an Italian Museum of Prehistory and Ethnography, is presented, aiming at overcoming the lack of customer orientation interaction [25].

Literature Review

Museums need to focus on what is contemporary and relevant to be sustainable [26]. Museums have a complex relationship to sustainability issues, given that preserving tangible and intangible heritage in perpetuity, they are one of the main tool for communicating sustainability [27]. They must develop ways to market its authenticity, while still providing an enjoyable experience [28].

Tourism is sustainable when the demand for an increasing number of tourists is satisfied, *i.e.*, continuing to attract them and to meet the needs of host communities through a positive transformation of the quality of life, protecting at the same time both the environment and the cultural heritage [29]. In heritage tourism, a long-term planning, together with a policy of integral and continuous conservation, is essential to ensure a quality experience to visitors [30] and the integrity of cultural heritage.

On the basis of the assumptions of Timothy and Boyd [31], accessibility is relevant in the extent of allowing individuals to gain benefits from a cultural site, but at the same time an excessive level of accessibility can inflict damages on heritage. Moreover, the authors [31] posit that accessibility is deeply linked to education (because in order to appreciate an historical object, the comprehension of its importance and relevance also at local and national level are necessary) and to leisure opportunity provided by museums to visitors (they would be encouraged to return to the site or recommend it to others).

In some cases the requirement of conservation limits the possibility to offer entertainment even if the "edutainment", that is the consequence of education and entertainment, is often the best approach for decoding the message from a user's perspective. Given all of these assumptions, the application of interpretative techniques results is essential for communicating properly with visitors. Aiming at choosing the most suitable techniques, it is necessary to start investigating visitors' needs by allowing museums to become competitive, offering quality services overcoming expectations.

As Weil [32] states, the museums must make a shift from being about something (the object) to being for someone (the visitors). Museums must increase their focus on retaining current customers because, as many authors said, new visitors are a plus, but retaining customers is more cost-effective in the long run for museum building, due to intention to return and intention to recommend others to visit [33]. Museums have to find a way to stand out of the crowd [28] due to the fact that people have an immense number of entertainment options. For this reason, museums need to know who their competitors are and who their current and potential customers are [34]. The planning of sustainable museums is very much about achieving a balance between the needs of collections and people, and in both cases there is a need for consistency with mission, educational and financial objectives [35].

Barbosa and Brito [36] noticed that many authors recognize that museums have to consider audience development as a long-term goal [37–40]; then the management, providing a satisfying experiences, can influence visitors motivation, attitudes, perceptions and behavior in the long-term [41–43]. Customer satisfaction is considered as a key factor to create and sustain a competitive business [44]. Consumers' intentions frequently originate from a structured decision-making process [45–48] and many studies have explored the relationships among variables affecting consumer intentions [21]. Nowadays, visitor satisfaction has become an essential component to guarantee the quality of the

museum experience [38,39]. Also in this context, customer satisfaction management (CSM) should be aimed to establish an active dialogue with the visitors, measuring in a systematic way their satisfaction level and their expectations to support the management in the planning of an offer characterized by a high level of quality and accessibility. In particular, the museum offer requires customization to the specific needs of the different categories of visitors. As highlighted by Goulding [10], museum effectiveness is closely linked with its capacity to involve the visitor directly through the social exchange and the combination of traditional and innovative methods. To increase a cultural site's desirability, the managers should focus on providing a high quality, satisfying experience that is perceived to be of good value [21,49,50]. Different authors evidenced the existence of a direct relationship between an high satisfaction level and word-of-mouth [51–54]. Moreover, this kind of post-purchase behavior can influence the long-term profitability [55–57].

The visitors' satisfaction has to be studied in relation with all the elements that constitute the museum experience [58–60]. Burton and Scott [61] related satisfaction, loyalty and WOM with the main museum aspects: structures, staff and exhibition.

Given that the artifacts are clearly tangible objects and the emotions they evoke are intangible [62], it is necessary to make intangible elements more tangible in the communication and provision of the service in order to render them more memorable and concrete and to influence increased service consumption [63]. What museums can do best within their purview is connect the public with art in a meaningful way, particularly through visitor-centered exhibitions, which are a visible and identifiable manifestation of a museum's work and benefit to society [17]. If the museums are to maintain their popularity as leisure options, they need to become better at understanding and serving their visitors [33]. People who come to see museums as relevant and important can become a critical part of the museum's new resource engine through attendance, volunteer hours, memberships, financial and in-kind donations, political support and promotion of a positive image for the museum within the community [17]. In order to study and analyze the visitors' satisfaction and behavior several methods are used even if the integration between qualitative and quantitative methods, such as triangulation, are suggested due to obtain a more complete, contextual and holistic portrayal of the unit under study [64].

Since the second half of the 1980s, qualitative methods have been applied to study cultural visitors' behavior. A different approach has been implemented using a multi-methods evaluation system. As highlighted by Loomis [65], in many situations it is better to focus attention on what people do, instead of what they assert. Some authors like Wolf [66], Fournier and Mick [67] affirmed that the qualitative methods are more effective than the quantitative one, while other researchers like Bitgood, Serrell and Thompson [68] maintain that the integration between qualitative and quantitative tools is much more useful because it allows us to obtain detailed information about visitors' satisfaction and behavior. In this context, a purely quantitative approach is not able to provide all the elements for a complete managerial assessment.

In the museum sectors, different SERVQUAL [69] applications were carried out. Saleh [70] implemented a variant of the model, entering new attributes beside the traditional ones, depicted as visit experience (visit educational, events educational, information displays, authentic crafts, and stimulating displays). The study detected that the tangible factors were less important for the visitors, while the quality of experience factors were indeed a major determinant of their service quality expectations [71]. Also Huh, Uysal and Mccleary [72] emphasized that the application of expectation-satisfaction

methods can generate important suggestions for the manager of cultural heritage. Conversely, Cronin and Taylor [73] criticized the SERVQUAL model, highlighting the superiority of other easier methods to measure the performance. They reccomend including the concept of expectation for measuring the quality produce redundancy in the model, because the respondent for judging the items perception makes a mental comparison between perceptions and expectations. As confirmed by Carman, [74], Bouman and van der Wiele [75], the double administrations of perception and expectation questionnaires may lead to boredom and confusion and may also be deemed too time consuming. Babakus and Boller [76] suspected that the difference in scores does not provide any additional information beyond that already contained in the perception component of the SERVQUAL scale [77].

Though there is a flourishing stream of literature dealing with the emergence of managerial approaches to cultural economics and management, there is still a lack of comprehensive models on attitude, behavior and satisfaction customized for the museums.

The literature review showed that the most of the authors focuses on quantitative methods to detect customer satisfaction in the museum, whereas only a few cases illustrate the implementation of qualitative research to understand the visitors' behavior. Only a restricted number of authors emphasize the importance of both the quantitative and qualitative methods. In this study, we propose an integrated approach for investigating visitors attitude, behavior and satisfaction.

2. Experimental Section

The present study shows the results of a study conducted to analyze the visitors perspective of a museum proposing an integrated approach between qualitative a quantitative techniques.

The experimental phase was developed in the ethnographic museum context, which is defined by UNESCO (UNESCO/STC/Q/853) as the museums specialized in the conservation of human evidence and civilization. Usually, these kind of museums are characterized by: (i) low visitor flow; (ii) different kinds of target (mainly students and teachers, but also general tourists or local visitors); (iii) in addition to the permanent collections these museums organize temporary exhibitions. This kind of museum has been chosen because we suppose it requires attention in terms of sustainability relative to others due to its low attractiveness capacity. Indeed, a museum cannot be considered sustainable if it does not guarantee the presence of an appropriate flow of visitors.

First, the research plan was shared in different parts to develop an integrated system for measuring the visitors' satisfaction and understanding their needs. An explorative phase with a literature was carried out to identify the main variables that impact on the visitors' satisfaction and their perceptions. Second, a descriptive phase was realized for designing the most appropriate tools to measure the visitors' satisfaction. In particular, a quantitative questionnaire and a check-list for the observation were detected. These two tools were tested during the experimental phase conducted at the Italian Museum of Art and Tradition (MAT). The pre-test allowed us to correct, refine and customize both the qualitative check-list for observation and the structure of the questionnaire (taking into consideration the different age of the visitors) and it allows to test the integrated model in the Italian Museum of Prehistory and Ethnography "Luigi Pigorini".

Following the steps proposed by Bollo [78,79] a check-list was developed to use during the observation (Table 1).

Table 1. Check-list for observation.

Positive aspects	Negative aspects	Factor of attention/distraction
P.1 = interaction with the guide	**N.1** = to look elsewhere	**FACT_1** = noise for renovation
P.2 = to ask questions	**N.2** = to talk about not pertinent things	**FACT_2** = noise of other classes
P.3 = to stare at the guide	**N.3** = to walk away from the guide	**FACT_3** = lengthy explanation
P.4 = to look what the guide shows	**N.4** = to lean to wall, chair, *etc.* (tiredness)	**FACT_4** = lighting (high/low)
P.5 = to talk each other about the object	**N.5** = to go ahead by their own	**FACT_5** = guide shift
P.6 = to read the informative a panels	**N.6** = to be attracted by other object	**FACT_6** = interaction (present/missing)
P.7 = sharp look	**N.7** = distracted look	**FACT_7** = temperature (cold/heat)
P.8 = to listen carefully	**N.8** = tiredness	**FACT_8** = video (distraction/attention)
P.9 = to continue staring at the object	**N.9** = sleepiness	**FACT_9** = pictures (distraction/attention)
P.10 = to need to touch the objects	**N.10** = to be seated	**FACT_10** = transitional spaces
P.11 = to follow the guide	**N.11** = to not follow the guide	**FACT_11** = educational workshop
P.12 = to be surprised	**N.12** = unrest/need of movement	
P.13 = to go near the object	**N.13** = swinging the legs	
P.14 = to reason about the object		
P.15 = to lean forward to see better		

As a quantitative method, a survey of visitors to the museum was planned through the use of a questionnaire. The development of this quantitative tool arose by integrating contributions from the literature reviews and international best practices. The questionnaire was divided into modules with the aim to develop a model adaptable to the different museum contexts and characteristics. To include all the most important items detected in literature, the initial questionnaire was lengthy, consisting of 33 questions. The questions are mostly closed, while open ones are present only in the profiling section (Section E) and suggestions. A 6-point scale has been used, whose minimum value is 1 and the maximum is 6.

During the pilot survey conducted at MAT, 38 questionnaires were collected and distributed randomly to check the items' adequacy and ease of understanding. The pilot survey allowed us to identify areas for improvement the quantitative tool, working on: length, readability, comprehensibility of the questions, comprehensibility of the legend and the mode of response, redundant questions, questions incomprehensible (to which most people have not been able to respond) and graphic layout. The results obtained were statistically analyzed in order to delineate the final questionnaire. In particular, factor analyzes were performed to identify which questions can be merged into one and which questions can be redistributed among the modules, in order to simplify the questionnaire. Throughout the statistical analysis on the pilot survey data, it was possible to obtain a flexible questionnaire structured in modules that can be organized according to research needs.

In order to meet different needs among the audience and differentiate the strategies according to the specific target of the museum, it was decided to include two types of questionnaires in the Audience-Centric Model: the first for general audience (casual visitors and teachers), the second for the student group (16–17 years).

The definitive structure of the general audience questionnaire is composed of 5 sections and 17 questions (Table 2).

Table 2. Questionnaire structure.

Section	Scale	Items
Section A: General information		(**A.1**) First visit; (**A.2**) Company; (**A.3**) Visiting; (**A.4**) services/supports; (**A.5**) Museum's website; (**A.6**) Source of information; (**A.7**) Mood
Section B: Before the visit	importance scale 1 to 6	(**B.1**) Tangible aspects (exposition's quality, informative panels, ticket price, waiting time, museum path, lighting, *etc.*); (**B.2**) Accessibility; (**B.3**) Courtesy and competence of staff; (**B.4**) Adequacy of information; (**B.5**) Accessory services (cafeteria, restaurant, library, gift shop, rest areas, *etc.*); (**B.6**) Technological Support; (**B.7**) Ability to create an immersive experience; (**B.8**) Support services (audio guides, guide books)
Section C: During the visit	satisfaction scale of 1 to 6	(**C.1**) Satisfaction; (**C.2**) Tangible aspects (exposition's quality, informative panels, ticket price, waiting time, museum path, lighting, *etc.*); (**C.3**) Accessibility; (**C.4**) Staff; (**C.5**) Adequacy of information; (**C.6**) Accessory services (cafeteria, restaurant, library, gift shop, rest areas, *etc.*); (**C.7**) Support services (audio guides, guide books)
Section D: After the visit: future intentions and fidelity	Likert scale from 1 to 6	(**D.1**) Purchase souvenirs; (**D.2**) Revisit the museum; (**D.3**) Recommend the museum; (**D.4**) Recommend the museum through social networks; (**D.5**) Suggestions (open question)
Section E: Personal Information		(**E.1**) Gender; (**E.2**) Age; (**E.3**) Origin; (**E.4**) Education; (**E.5**) Number of museums visited (last year); (**E.6**) Favourite period to visit museums

The structure of the student questionnaire was adapted to the youngest visitors needs, simplifying its language and reducing its length. The scale was reduced to three points facilitating understanding through the use of emoticons: negative value (☹), neutral value (☺) and positive value (☺).

The questionnaire was reduced to 6 questions, according to the following structure: profiling (First visit, Gender and Age); section B: before the visit (importance of aspects), section C: during the visit (satisfaction aspects) and section D: After the visit (future intentions and fidelity).

The definitive Audience-Centric Model was tried out in the Italian Museum of Prehistory and Ethnography "Luigi Pigorini". The Pigorini Museum is characterized by low flows of visitors and its main targets are elementary school groups. For this reason the observation was realized on student groups and their professor, while the quantitative survey was conducted administrating the student questionnaire to the groups of students and administrating the ordinary questionnaire to the professors and the normal visitors.

3. Results and Discussion

3.1. Qualitative Results

During the observation, as the visits are guided tours, we recorded behavior and interaction among the visitors in each area of the exhibition rather than focusing on individual visitors. This method allows us to evaluate how visitors distribute their attention, without having to examine each exhibition element for each visitor. Between January and March, we observed 18 classes and a total of about 430 visitors, including teachers, children and adolescents, and qualitative data were collected. The

observation results are shown in the map of the Pigorini Museum represented in Figure 1, that highlights the areas which receive more interest among the student groups. The qualitative evaluation was based on the attractive power of the different areas and their ability to capture the student attention. The *Red areas* present high attractive power and ability to capture the attention. This area is represented by a reconstruction of an archaeological site where visitors can look closely at the objects. The *Orange areas* stimulate curiosity, but the physical and mental fatigue and excessive time spent at the same place can cause boredom to young visitors. These areas are located at the second part of the archaeological site and at a "human evolutionary path" where visitors can see some reconstructions very close; these zones are less comfortable than the red areas due to the absence of the chairs and the long explanation. The *Green areas* have attractive power but low ability to capture the attention of visitors; here the visitors are sitting in front of a showcases wall without interacting with the objects, so the role of the guide is crucial to maintain a certain level of attention and not to let the explanation become as passive as a classroom lesson. The *Blue areas* are not able to attract the classes, probably due to the absence of information panels, the low light, the cold temperature of the room and the presence of windows/showcase that do not allow one to see objects up close; these areas is represented by an huge hall with the previous above characteristics without any interaction with the exhibition.
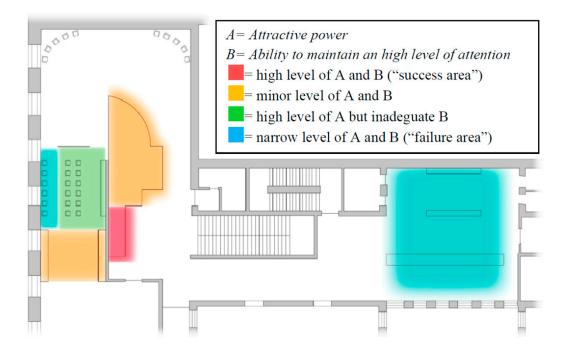
Figure 1. Attractive level of the main Pigorini Museum areas.

The observation and suggestions provided by the visitors have helped to identify the critical points of a visit. Visitors are attracted mostly by the exhibition characterized by a high user-object interaction and these are the areas that mainly satisfied them. In particular, deficiencies have emerged regarding the following aspects: lighting (low and absent in some of the showcase); informative material (insufficient support to the visit and absence of material orientation); informative panels (unattractive or absent); not engaging experience (lack of interactivity, dispersive environment, the presence of sources of distraction and lack of support to the visit to involve the visitors, e.g., technology, visual

and sound effects). On the basis of these results, museums must improve these deficiencies in order to align their offer to the visitors' learning style.

3.2. Quantitative Results

The general audience questionnaire was administered to adult visitors (teachers and people older than 18 years) while the student questionnaire was dispensed to a sample of high school students.

The sample of adult visitors is composed of 57 respondents, 49 women (86%) and 8 men (14%), with an average age of 42 years, among which 46 people come from Rome (80.7%). In terms of education 11 people (19.3%) have a post-graduate degree, 21 people (36.8%) a degree, 24 people (24%) a high school diploma. The sample of students is composed of 50 respondents coming from Grosseto, is made up of people aged between 16 and 18, and mainly of female people (84%). The adult sample shows a mean satisfaction of 5.1 and it is 2.5 for the student sample; this result is quite similar taking into consideration the fact that the questionnaires have a different scale (six point Likert scale for the former and three point Likert scale for the latter).

Through the importance-performance analysis, the score of importance that visitors ascribe to each aspect of the visit and the judgment of satisfaction were compared. In this way, it was possible to detect the priority attributes on which the museum should act to enhance the satisfaction of its audience.

The analysis provides two outputs that can be integrated: a table that shows the ranking of the attributes based on the ratio I/S (Importance/Satisfaction), and a graphical representation, the Map of Priority, to identify priority attributes Table 3 and Figure 2.

The Importance Performance Analysis (IPA) matrix is useful to identify priorities and strategies that should be developed depending on the quadrant wherein each attribute falls. The attention should be focused on the top-left quadrant (Area of criticality) which includes the attributes priority for improvement. Concerning adult visitors, the priority attributes are the informative material, the quality of services provided, the museum's website, lighting, informative panels, ticket price, and the ability to create an immersive experience. Instead of referring to student visitors, the attributes which work foremost are lighting, the ability to create an immersive experience, the museum's website, the informative material and the ticket price.
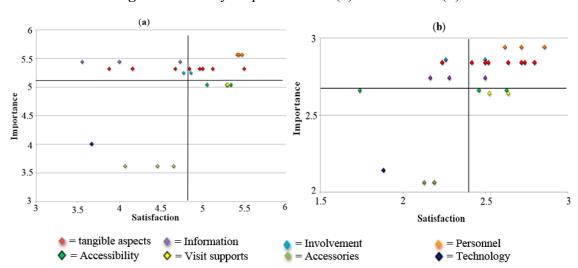
Figure 2. Priority maps for adults (**a**) and students (**b**).

Table 3. Ranking priority attributes for adults (**a**) and students (**b**).

Code	Item	Importance-mean-(I)	Satisfaction-mean-(S)	Ratio I/S	Code	Item	Importance-mean-(I)	Satisfaction-mean-(S)	Ratio I/S
		(**a**) adults					(**b**) students		
I1	Informative material	5.438	3.553	**1.530**	A2	Opening hour	2.66	1.74	**1.529**
S2	Services quality	5.316	3.877	**1.371**	S3	Lighting	2.84	2.24	**1.268**
I2	Website	5.438	4	**1.359**	S4	Immersive experience	2.86	2.26	**1.265**
S3	Lighting	5.316	4.158	**1.278**	I2	Website	2.74	2.167	**1.264**
I3	Informative panel	5.438	4.732	**1.149**	I1	Informative material	2.74	2.283	**1.2**
AT3	Ticket price	5.316	4.673	**1.137**	AT3	Ticket price	2.84	2.419	**1.174**
S4	Immersive experience	5.246	4.772	**1.099**	S5	General atmosphere	2.86	2.5	**1.144**
AT6	Comfortable environment	5.316	4.842	**1.098**	AT6	Comfortable environment	2.84	2.5	**1.136**
SV3	Technological support	4	3.667	**1.091**	SV3	Technological support	2.14	1.884	**1.1359**
S5	General atmosphere	5.246	4.860	**1.079**	AT2	Museum path	2.84	2.52	**1.127**
AT2	Museum path	5.316	4.965	**1.071**	P3	Staff assistance	2.94	2.62	**1.122**
AT1	Outfitting	5.316	5	**1.063**	I3	Informative panel	2.74	2.5	**1.096**
AT5	Exhibition	5.316	5.123	**1.038**	P2	Clear provided information	2.94	2.72	**1.081**
P1	Staff courtesy	5.561	5.418	**1.026**	A3	Accessibility for people with special needs	2.66	2.463	**1.08**
P2	Clear provided information	5.561	5.436	**1.023**	AT1	Outfitting	2.84	2.64	**1.076**
P3	Staff assistance	5.561	5.472	**1.016**	SV2	Book guide/audio guide	2.64	2.526	**1.045**
A3	Accessibility for people with special needs	5.035	5.053	**0.996**	S2	Services quality	2.84	2.72	**1.044**
AT4	Waiting time	5.316	5.5	**0.966**	AT5	Exhibition	2.84	2.74	**1.036**
A2	Opening times	5.035	5.291	**0.952**	P1	Staff courtesy	2.94	2.86	**1.028**
SV1	Tourist guide	5.035	5.295	**0.951**	AT4	Waiting time	2.84	2.8	**1.014**
SV2	Guide book/audio guide	5.035	5.30	**0.950**	A1	Reachability	2.66	2.63	**1.011**
A1	Reachability	5.035	5.340	**0.943**	SV1	Tourist guide	2.64	2.64	**1**
SA3	Rest area	3.614	4.070	**0.888**	SA1	Bookshop	2.06	2.13	**0.967**
SA2	Souvenir shop merchandise	3.614	4.458	**0.811**	SA2	Souvenir shop merchandise	2.06	2.192	**0.94**
SA1	Bookstore	3.614	4.652	**0.777**					

From this point further statistical analysis can be developed in order to deepen the relations between the variables and overall satisfaction. The integrated results of the qualitative and quantitative analysis appear consistent with each other but at the same time they offer a level of detail customized by the instrument used.

The qualitative and quantitative analysis lead to the same results and as Guion *et al.* [80], who state that if the conclusions from each of the methods are the same then the validity is established. Moreover, each tool is considered useful because it adds some more specific information. For instance, they agree about the necessity to improve several aspects: lighting of exhibition and showcase, informative materials (maps, brochure, paper guide) and informative panels since they result absent, insufficient and not appealing. Concerning the specific information, the qualitative tool also shows the need for working on the museum outfitting and space in order to make the environment more fruitful, while the quantitative analysis highlights the importance of technological support throughout the tour. This museum improving these aspects will be able to offer an engaging experience in accordance with evolving audience's needs.

4. Discussion

Nowadays, the way in which a museum communicates with its audience is changing, by adapting to new communication tools and overtaking the past ones, and, as Weil [32] said, by shifting from being about something (the object) to being for someone (the visitor).

Many authors (e.g., [31,81,82]) showed the importance of providing a quality experience through the management of a cultural heritage, in order to increase the visitor satisfaction and, therefore, the respect and the conservation from customers toward the cultural sites. Hence, it becomes essential for museums to focus the attention first on basic elements and then to further services in order to meet audience's needs in a continuous way and thus become sustainable. In this case study, Pigorini Museums have to act with priority on those aspects that are essential in every cultural site, such as lighting, informative materials, informative panels providing other support at the visit; many museums are suitable for guided tour and any individual visits do not allow us to obtain complete information. Hence, this issue can be overcome by providing clear and complete information through a brochure, museum map, and through appealing informative panels and materials. Furthermore, monitoring audience's needs related to technological support is suggested. Each of the above aspects can contribute to developing an engaging experience throughout the visit.

These results have been confirmed in both the qualitative and quantitative analysis and coherence between them is even supported. This supports the accuracy of the analysis and the efficiency of the results. For a museum, an audience–centric approach, integrating qualitative and quantitative tools is recommended. This integration must be carefully structured and planned; a continuous quantitative research and a sporadic qualitative research are suggested.

5. Conclusions

As posited by Goeldner *et al.* [83], competitiveness and sustainability are the two primary issues to take into account in the management of heritage sites [84].

Considering the decreased public funding [85] and the low number of visitors that characterize many museums, in order to become sustainable a museum should pay attention to audience and its internal diversity for planning tailored strategies to increase the number of visits and re-visits/returns. Hence, museums can become vital to their communities and thus sustainable [17] by means of new sources of support deriving from retaining and attracting new visitors. In this way, museums can achieve community support and, as a consequence, economic-financial self-sufficiency by obtaining reliable information not only on the level of visitors' satisfaction by using a quantitative tool, but even on visitors' behavior through the museum examined with qualitative techniques and in particular by means of observation. The integrated use of qualitative and quantitative tools allow us to better understand visitors' expectation and to meet their needs in an appropriate way; as a consequence, satisfied visitors would more likely visit or re-visit the museum, contributing to the cultural site's economic self-sufficiency.

The paper aims to propose an Audience-Centric Model integrating qualitative and quantitative tools in order to measure customer satisfaction in museum sector. The model is composed of two parts: a qualitative part with observation, which requires a drawing up of a check-list, and a quantitative one, which requires the development of a questionnaire. Both of them are useful as their integration allows us to get more specific and valid data. The integrated approach permits to develop customized information for specific targets of visitors, while the SERVQUAL and other models could be less appropriate because the qualitative methods already provide an outcome in terms of visitors' expectations. Each part of the model needs certain requirements and some guidelines are shown below. If these recommendations are followed it is possible to perform statistical analysis as regression, factor analysis, cluster analysis and structural equation modeling (SEM), to obtain deepened information/data for strategic and managerial improvements.

First the qualitative part requires some steps: an accurate mapping activity of the museum path to study the location and identify the main interaction points between exhibition and visitors and the object they should come across during the visit; a planning to identify all the possible visitors' behavior during the visit; a check list to summarize and code all the aspects to analyze during the observation; graphic results, distinguishing the different areas in terms of attractive power and ability to maintain the attention, to support and compare quantitative results. This part could substitute the SERVQUAL expectations part since it allows us to have a direct view of visitors' expectancy merely by observing their reactions during the visit.

The quantitative analysis requires the development of a structured questionnaire composed of an overall satisfaction question, modules for each aspect to analyze (tangible aspects, accessibility, staff, information, accessory services, technological support, support services), almost three dimensions for each aspect to allow the application of SEM.

The integration of qualitative and quantitative methods in a unique model, to investigate the behavior and the satisfaction of museum visitors, represents the main innovation of the proposed Audience-Centric Model and it allows to obtain a complete informative set, which is able to support the managers in planning improvement actions and to increase the quality of provided services.

The main contribution of the present paper is to provide to the museum management a rigorous and complete methodology to define policy and strategy based on the visitors needs, in order to pursue competitiveness with a sustainable approach. Indeed, consistently with the statement made by

Goeldner *et al.* [83], the proposed Audience-Centric Model integrating qualitative and quantitative tools represents an effective model to balance the relationship between competitiveness and sustainability.

Author Contributions

The presented research was conjointly designed and planned by Laura Di Pietro, Roberta Guglielmetti Mugion and Maria Francesca Renzi; Martina Toni has performed operatively the survey and managed the data input. The data analysis and discussion were realized conjointly by Laura Di Pietro, Roberta Guglielmetti Mugion, Maria Francesca Renzi and Martina Toni. All authors contributed equally in the writing of this paper. All authors have read and approved the final manuscript.

Conflicts of Interest

The authors declare no conflict of interest.

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