





## Article

# An Exploratory Analysis of Museum Attributes from the Perspective of Tourists and Residents: The Case of Thyssen-Bornemisza National Museum, Madrid, Spain

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**Citation:** Orea-Giner, A.; Calero-Sanz, J.; De-Pablos-Heredero, C.; Vacas-Guerrero, T. An Exploratory Analysis of Museum Attributes from the Perspective of Tourists and Residents: The Case of Thyssen-Bornemisza National Museum, Madrid, Spain. *Societies* **2021**, *11*, 64. <https://doi.org/10.3390/soc11020064>

Academic Editor: Gregor Wolbring

Received: 20 April 2021

Accepted: 16 June 2021

Published: 19 June 2021

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**Abstract:** Attribute evaluation provides an understanding of the perceived quality and subjective value of the museum visitor experience. The principal contribution of this paper is to analyze the attributes perceived by tourists and the local community (Madrid residents) of the Thyssen-Bornemisza National Museum (Madrid, Spain), utilizing the results from choice experiment and willingness-to-pay questionnaires. To analyze in depth the assessment regarding the museum attributes and the visitor perceptions of them, the relevance-determination model was applied. Data collection was achieved with a questionnaire using a convenience sample of international tourists and the local community, providing a total of 775 valid surveys. The results of the application of the relevance-determination analysis (RDA) show that there are two types of attributes: higher-impact core and lower-importance attributes. The attributes with the highest subjective value perceived by interviewed tourists and interviewed residents are the location, the building, and the permanent collection. These results show that there are substantial differences between the perception and appreciation of these attributes by interviewed residents and interviewed tourists. The results provide valuable information that can be applied in practice to devise strategies for economic and socio-cultural sustainability aimed at improving decision-making in museum management.

**Keywords:** attributes; tourist perception; local community; museum; willingness to pay; choice experiment

## 1. Introduction

Visitors' experience of and their relationship to museums are connected to both cognitive and affective aspects, in ways that influence sustainable behavior in visitors [1–3]. The analysis of attributes allows researchers to identify negative tourism experiences, to avoid undesirable consequences derived from them [4] Attributes are part of a comprehensive offer proposed by museums. They produce economic, social, and environmental impacts by attracting audiences at local, national, and international levels [5]. Museum attributes have been analyzed in previous research, considering the perceptions of both tourists and visitors. In addition, the introduction of new techniques of analysis and understanding eWOM is another key aspect [6] in obtaining results on the evaluation of

museum attributes [7]. Previous studies have analyzed the application of willingness to pay and choice experiments in museums [8]. This method allows museums to obtain information on tourists' and residents' preferences, and visitors' perception of their attributes, facilitating the evaluation of perceived subjective economic value [9].

This paper aims to analyze the perception of museum attributes by applying willingness to pay and choice experiment methods through a questionnaire given to both tourists and residents. This methodology is focused on evaluating the perceptions of museum attributes, considering aspects such as the core offerings, external services, and ambiance. This approach considers the exploratory results as an essential tool for proposing sustainable management strategies. The model adapted is tested on a case study, Thyssen-Bornemisza National Museum (Madrid, Spain). It is located at the Paseo del Prado, an area where other museums are located, such as the Museo Nacional del Prado, Museo Nacional Centro de Arte Reina Sofía and the National Museum of Anthropology. This museum had 927,907 visitors in 2018, and most visitors are international (64%) compared to national (36%) [10]. The main characteristic of this museum is that it is a public museum holding a competition for the hiring of communication, marketing, and public relations services, with a budget of EUR 30,000 in 2016 [11]. The research questions of our work arising from this paper's objective are:

1. **RQ1.** How do the choice experiment method and willingness to pay (WTP) allow us to analyze customer valuation and consumption behavior?
2. **RQ2.** What is the subjective value of museum attributes as perceived by interviewed tourists and interviewed local community (Madrid) residents?
3. **RQ3.** Are there differences between the subjective value perceived by interviewed tourists and by interviewed residents?

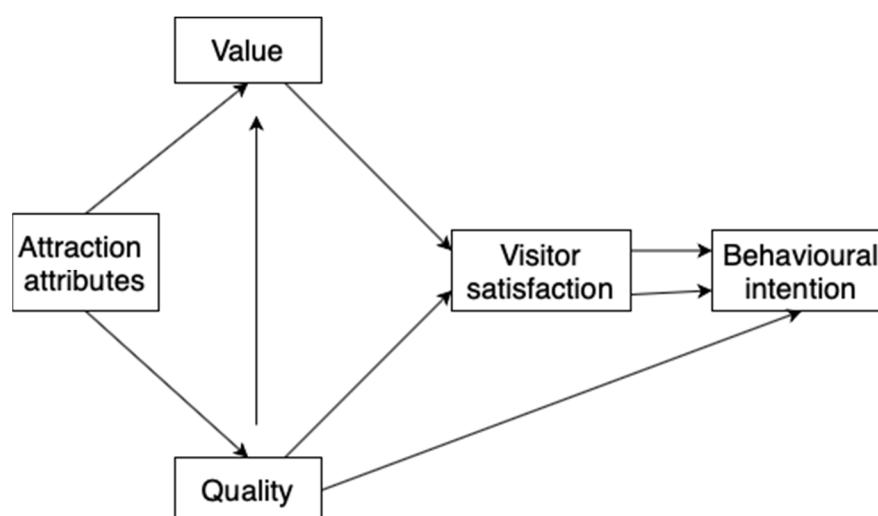
This study presents a twofold contribution. Firstly, we propose a case study for developing an analysis to build a choice-experiment questionnaire and, because of this, a model adapted to interpret the results obtained has been built. Such methods have been previously applied in research on the tourism sector [12,13]. Secondly, the results obtained offer valuable information to improve sustainable management strategies in museums by considering the relevance and determinance of the museum attributes.

This paper is divided into six distinct sections. Section 2 presents the literature review focused on the attributes of value perception, the museum attribute analysis and museum sustainability, as well as the hypotheses. Section 3 contains the methodology developed for this exploratory analysis. Section 4 deals with the results obtained from the data analysis. Section 5 offers a discussion and conclusion. Finally, in Section 6, the practical implications and limitations of this research are presented.

## 2. Theoretical Development and Hypotheses

### 2.1. Attributes and Value Perception

Previous studies have identified that attributes have a more considerable influence on perceived value than on perceived quality [14,15]. Attribute analysis allows us to broaden our knowledge of the quality, value, satisfaction, and behavior derived from visitors' experiences [16,17]. In the field of tourism, it is vital to study satisfaction and perceived quality as a value, since in this way it is possible to interpret the intentions of recommendation and repetition [18]. Oriade and Schofield [19] identify that the perceived values of the attributes of attraction have a more significant influence on the perceived value than on the perceived quality, as shown in Figure 1. Therefore, the attributes are primary aspects when analyzing consumer behavior as well as consumer experience [19]. For that reason, studying the level of value and the perceived quality of the attributes is fundamental to better understand museum performance. Previous studies have analyzed the perspectives of residents and tourists regarding tourism services and destinations, identifying differences in their answers [20,21]. Hence, this model leads to the first hypothesis:

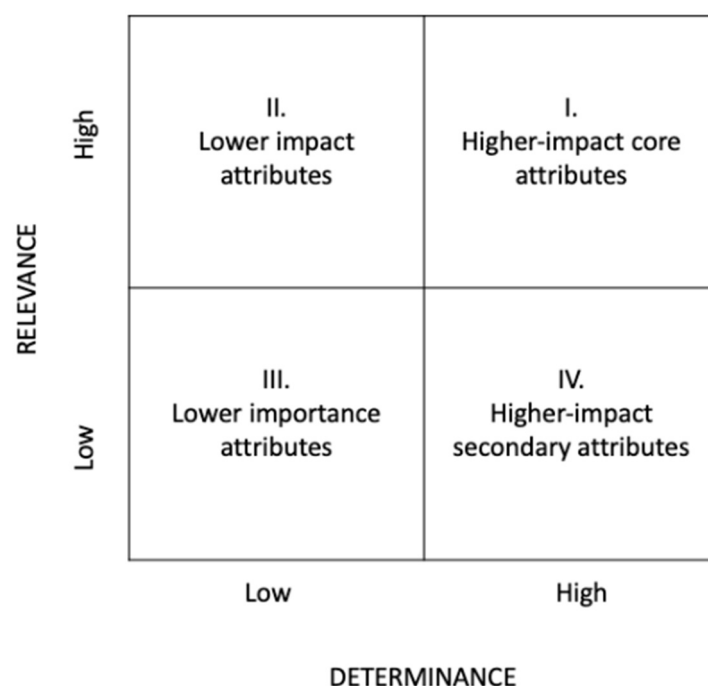


**Figure 1.** Service quality, value, satisfaction, and behavioral intentions model [19].

**H1.** *There are significant differences in the level of value and perceived quality of some attributes as perceived by tourists and residents.*

The value and the evaluation of the attributes relate to attribute classification. Previous research proposes the relevance-determinance analysis model (Figure 2) for classifying attributes [22–24]. This classification is essential in order to analyze the type of attributes that can attract visitors, as previously explained regarding the study of Oriade and Schofield (2019). Mikulić and Prebežac [22] propose this model for interpreting the perceived value of attributes, considering two dimensions: relevance and determinance. The model is a tool designed as an alternative to importance-performance analysis [24]. It aims to address the shortcomings of other similar tools by offering a multidimensional perspective. The model is a quadrant comprising four different levels of relevance and determinance. The first consists of “higher-impact core attributes”, which have a great responsibility in decision-making and the consumer experience, and the second represents “lower-impact core attributes”, which are essential for decision-making but less so for the consumer experience. The third highlights “lower-importance attributes”, stressing that it is not that these attributes lack interest, only that, compared to the rest, they present a lower value from the consumers’ point of view. In the fourth, “higher-impact secondary attributes” have been identified that have a low relevance but high determinacy, being part of the so-called “augmented product”, and which, therefore, affect the consumers’ experience [24]. This model is interesting when extrapolated to museums, to identify the relevance of museum attributes.

The application of attribute analysis in museums has been previously studied by Shih [25]. Through his research, the author concludes that marketing strategies related to museum experience should be focused on paying attention to user experiences [26]. In addition, they highlight the need to study the return on investment of consumers, not only in economic terms but also in emotional ones. Other attributes, such as the convenient location of the museum, are critical factors to consider when choosing which museum to visit. Finally, they consider that building a conducive atmosphere and environment for the establishment is essential, because of its history, image, and experience [27]. This factor has led to the need to carry out studies focused on analyzing the perception of the attributes of museums as well as the subjective or emotional economic value perceived by visitors [9].



**Figure 2.** Relevance-determinance analysis (RDA) matrix [24].

Following the methodology of other papers focused on museum attributes, these can be extracted by analyzing the opinions expressed by visitors on social networks. The eWOM (electronic Word of Mouth) concept allows the analysis of user opinions and consumer perceptions and experiences [6,26]. Museum attributes have been identified through different methodologies, among which the application of eWOM analysis stands out [17,26]. The eWOM analysis facilitates the understanding of user experience, as well as a better understanding of the assessment of attributes and the possibility of designing and using resources more successfully [28].

## 2.2. Museum Attribute Analysis and Sustainability

Sustainable tourism is linked to new marketing strategies that focus on product characteristics to analyze their attributes [29]. In tourist destinations, their quality is based on increasing and promoting the tourist value of the destination's brand [30,31]. This concept is linked to the analysis of attributes related to tourism resources, and destinations allow researchers to develop a better understanding of the perceptions and visit behavior of tourists [32,33].

Sustainability in the case of museums is linked to how they adapt to different political, social, economic, and environmental situations [34]. The orientation of museums toward the implementation of sustainable strategies makes it possible to ensure that economic, socio-cultural, and environmental benefits are obtained [35].

Tourism causes both negative and positive impacts on the destination and also the local community. Museums are significant resources for the communities where they are located and have an outstanding influence relative to their social and cultural aspects [36]. Regarding the positive economic impact, the creation of employment and the businesses related to this activity are significant. As for the socio-cultural impacts, they can also be both positive and negative. The negative ones imply that the tourist activity is not valued as positive by the local population, regardless of the positive effects. Therefore, residents must be placed at the center of the development of sustainable tourism strategies [37]. In addition, tourism impacts the environment since it produces and accelerates its degradation. This is, for instance, due to the impact of international air transport. There is generally an ecological footprint related to tourism activity [38].

The term “responsible tourism” is linked to the concept of sustainability in tourism. These are strategies that are promoted based on sustainability and on the local population developing sustainable actions. In this way, the local population is involved in these strategies [39]. The local community is an essential stakeholder in a tourism destination [37]. Therefore, sustainable tourism development considers ecological processes, creating economic sustainability by causing positive impacts and developing the region, and incorporates the participation of the local community in the development of tourism strategies [40]. Regarding these points, it is necessary to highlight the concept of over-tourism, which relates to the arrival of massive tourist numbers that cause negative impacts and affect the quality of life of the local community. Sustainability in museums depends on their size, material characteristics and human resources.

The measurement of sustainability concerning museums allows us to know their positive and negative impacts, as well as to compare results among different museums [41]. Museums practice market-oriented implementation strategies to promote value for the customer and introduce innovative elements [42]. Museums make efforts to achieve positive economic and socio-cultural impacts, which are connected to sustainability strategies, visitor satisfaction, reputation, and prestige, as well as their connection to tourism [43]. Non-profit museums have a different goal because it is usually not only to obtain economic profits [44]. However, marketing and economic analysis strategies allow the performance of these organizations to be measured, and decision-making to be improved. The management of museums is related to the economic evaluation of their resources and the achievement of results, relative to consumer behavior [45]. Museums must also concentrate their efforts on understanding visitor behavior and satisfaction to implement sustainability measures [46], considering the type of visitor and including the local population in their strategies. Tourists’ perceptions of sustainability measures in museums can also change [47]. The visitor satisfaction analysis relates to the possibility of applying sustainable management strategies [48]. The connection between the study of attributes and sustainability has been studied previously. Prior studies have shown the relationship between the analysis of consumer behavior and the analysis of consumer preferences, and its application in the design of cultural products in museums [49].

Considering the previous literature, the likelihood to purchase, willingness to pay and choice experiment methods can help to analyze museum performance. The analysis of the willingness to pay regarding cultural heritage has been studied earlier, considering the different segments of the tourism market and the application of differentiated pricing policies [50]. The use of mixed methods such as willingness to pay and choice experiments have previously been proposed as a suitable method for analyzing the attributes of museums, due to the possibility it offers of assessing the socio-cultural and economic aspects perceived by visitors [8]. The choice experiment method is used to estimate the monetary value of use and non-use derived from the museum [9]. This method allows obtaining information related to different types of sociodemographic profiles [51], so it is possible to apply it to identify differences between a tourist’s and a resident’s evaluation of attributes. Hence:

**H2.** *There are significant differences between the ratings given by tourists and by residents in the choice experiment and willingness-to-pay questions.*

Therefore, the museum can be valued based on different characteristics, among which are its attributes. These attributes allow us to know visitors’ perceptions regarding the different qualities of the museum, such as the ticket price (EUR 5.50). For this reason, discriminatory pricing regimes are applied in some cases, charging tourists a higher fee [52]. Hence:

**H3.** *The tourists are more likely to purchase if the ticket price is increased, than are the residents.*

Management strategies focused on sustainability by carrying out sustainable actions concerning the environmental and economic environment in hospitality have a positive impact on customer satisfaction, loyalty, and willingness to pay [52]. However, strategies

focused on the socio-cultural dimension harm the willingness to pay, although they do produce an increase in satisfaction [53]. Indeed, the eWOM analysis is linked to the participation of consumers in the creation of experiences, i.e., with the term “co-creation” [4]. In this process of co-creation, it is also essential to consider the assessment and perceptions of the local community [54,55].

### 3. Methodology

The proposed methodology (Figure 3) is divided into three phases. First is the detection of the attributes of the Thyssen-Bornemisza National Museum through eWOM, derived from TripAdvisor. Previous studies analyzed TripAdvisor reviews to learn in depth the opinions and perceptions of the users [24,56]. Second, we developed a survey considering the previous identification of attributes of the museum as perceived by tourists, through a TripAdvisor analysis of eWOM [17]. Linburd et al. [57] suggest that sustainability is linked to co-design strategies, and so the local community’s participation and that of tourists are crucial to this study. Thus, during this phase, a questionnaire to tourists and residents of Madrid was designed to evaluate those attributes previously detected by applying willingness to pay and choice experiments. The previous attribute detection allowed us to introduce a more critical approach to the questionnaire and avoid a bias in questionnaire design. The questionnaire distribution and the analysis of results are conducted during the third phase. A detailed description of each phase is presented below.

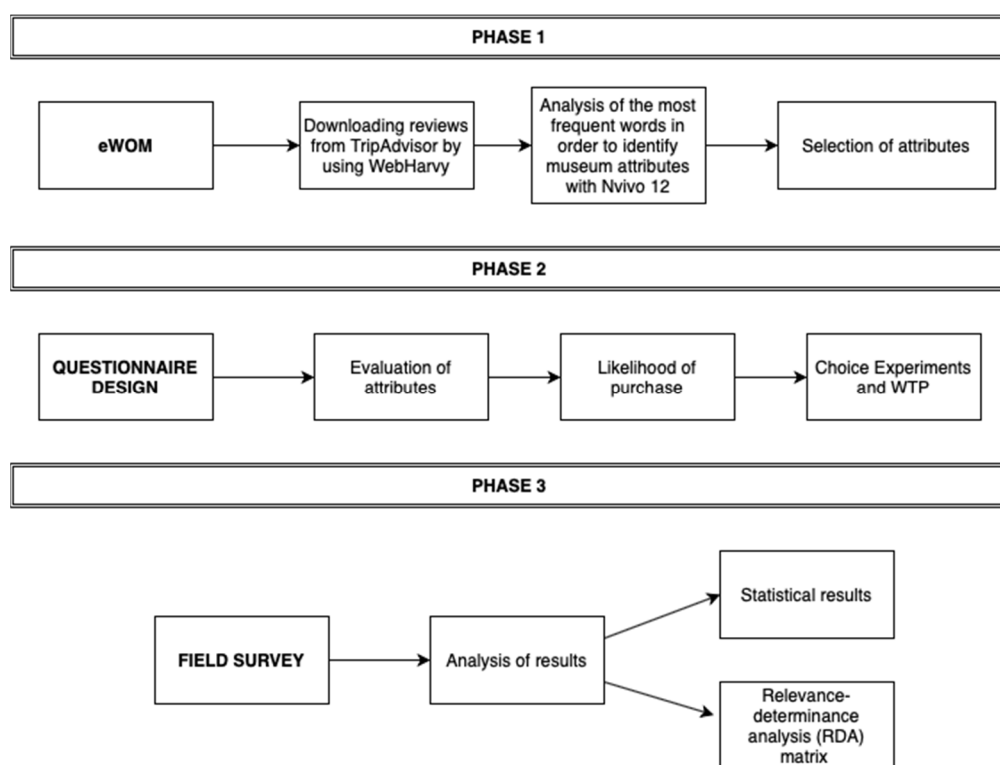


Figure 3. Methodological approach.

The first phase includes a previous study’s identification of attributes by applying text-mining methods. Previous research has used reviews to identify attributes in the field of tourism [58]. The study by Zanibellato et al. [17] presents an essential key aspect of the classification of attributes that we employed to develop this research: (1) core offering; (2) external services; (3) ambiance. This empirical analysis is following this classification. The core offering evaluates the permanent collection and temporary exhibitions. Peripheral services include attributes such as the gift shop, food and beverage (F and B) services, audio, audio-guide, staff, ticketing, and activities. Identification of attributes of



the Thyssen-Bornemisza Museum was carried out by downloading 2500 reviews in English and 2500 reviews in Spanish from TripAdvisor using WebHarvy. From this database, keywords were extracted, and the attributes identified among these keywords were manually coded using Nvivo12. The ambiance is a vital fact, and this category of attributes comprises “queue”, “crowding” and “photos”, among others. The attributes were identified by analyzing the most frequently used words. The results of this consultation were refined to locate the most representative attributes based on those previously proposed by Zanibellato et al. [17]. The identified attributes are: A1—activities; A2—app; A3—building; A4—crowding; A5—F and B services; A6—gift shop; A7—identity; A8—location; A9—permanent collection; A10—public museum; A11—queues; A12—staff; A13—temporary exhibitions; A14—ticket price. Based on these attributes, the design of the questionnaire was carried out.

The second phase comprised the survey design, considering the previous attributes identified in the first phase. It includes a total of 21 questions in four blocks. The questionnaire is based on previous metrics, and it is composed of open and closed questions. The first part of the questionnaire is focused on analyzing the likelihood of purchase related to the price of a ticket for the museum. To evaluate the visitors’ perception of the ticket price (attribute A14), a question is asked regarding the current ticket price (EUR 9–13), and two questions are included, focused on their willingness to pay. For these two questions, a ticket price increase of either EUR 3 or EUR 5 over the general ticket price is presented. This factor takes into account the ticket prices of two other museums that are ranked worldwide in terms of visitors and have a fixed ticket price, the Louvre Museum with 10.2 million visitors in 2018 (Louvre, 2019), and the Metropolitan Museum of Art with 7.4 million visitors in 2018 (Met Museum, 2019). Prices vary at the Louvre from USD 15 to USD 17; and, at the Metropolitan Museum of Art, vary from USD 12 to USD 25. The second part of the questionnaire concerns attribute evaluation using a Likert scale. These attributes were previously selected by analyzing eWom data (5000 reviews). In this way, it was possible to justify the selection of attributes included in the survey. A Bayesian design of attribute sets and attribute levels (Table 1) is performed, employing the combination of choice sets. The full factorial design was combined with utility balance to avoid a dominant alternative. This type of choice experiment design has previously been applied in tourism-focused research [59,60].

**Table 1.** A sample choice set used in this study.

	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
Type of visit	Permanent collection (A9)	Permanent collection (A9)	Permanent collection (A9)	Permanent collection (A9)	Temporary exhibitions (A13)
	Temporary exhibitions (A13)	Temporary exhibitions (A13)	Temporary exhibitions (A13)		
Type of access	Normal (A4; A11)	Normal (A4; A11)	Premium (A4; A11)	Normal (A4; A11)	Normal (A4; A11)
Guide	-	-	-	Customized tour	Customized tour
Duration	-	-	-	1 h	1 h
Extra services	App (A2)	Meal included (A5)	-	-	-

A1—Activities; A2—App; A3—Building; A4—Crowding; A5—F and B services; A6—Gift shop; A7—Identity; A8—Location; A9—Permanent collection; A10—Public Museum; A11—Queues; A12—Staff; A13—Temporary exhibitions; A14—Ticket price.

Therefore, 120 (i.e.,  $5 \times 4 \times 3 \times 2 \times 1$ ) possible permutations are produced. The options were assigned, and then, a preference level (from 1 to 5) is chosen. Participants’ willingness to pay is also assessed based on the different options proposed, evaluated from EUR 0 to 100, considering the price of similar services in worldwide museums that are highly ranked. Finally, the questionnaire presents questions related to a better understanding of the sociodemographic profile of participants.

A total of 775 valid surveys were collected. The questionnaire was applied to both international and national tourists ( $n = 386$ ) and the local community ( $n = 389$ ), in the English and Spanish languages. In the case of the tourist target, it was distributed using Facebook Ads (10.36%) and in situ (89.64%) in Paseo del Prado (Madrid, Spain) by a simple random selection. The use of the Facebook Ads platform is an option that allows combination with offline distribution. This type of approach facilitates reaching audiences that are difficult to access through offline survey distribution. Therefore, online distribution was chosen for the segment. The target selected through this sampling was people living outside Spain who had marked on their social networks (Facebook and Instagram) that they have visited the museums in Madrid. In this way, it was possible to cover a more comprehensive target and collect responses from different nationalities and ages. Previous research used this tool to distribute questionnaires through Facebook [61].

The questionnaires about the local community were distributed using Facebook Ads. This distribution was online because it allowed us to limit our target and collect data from all the different areas of the city of Madrid, based on the city's postal codes. The sampling period was between 11 July and 30 September 2019. Other studies about museum visitors support our sample, such as [62], with a study of 425 valid responses.

The profile of the sample was analyzed, employing univariate analysis so that it was possible to identify the different socio-demographic characteristics of the people surveyed [31]. The main results were assessed through an exploratory analysis and Kruskal–Wallis test application by using SPSS v25. The traditional  $p < 0.05$  and  $p < 0.01$  criteria of statistical significance were employed for all tests. The Kruskal–Wallis test, like a non-parametric test, was applied to analyze the level that being a tourist or a resident influenced the respondent's answer and the evaluation of attributes. This non-parametric test also allowed us to analyze the differences between groups derived from the sociodemographic characteristics. These results are interpreted as the basis of the relevance-determinance analysis (RDA) matrix [20–22]. This matrix is calculated considering the evaluations from 1 to 5 of the attributes identified (A1—activities; A2—app; A3—building; A4—crowding; A5—F and B services; A6—gift shop; A7—identity; A8—location; A9—permanent collection; A10—public museum; A11—queues; A12—staff; A13—temporary exhibitions; A14—ticket price) as given by the tourists and residents interviewed. Following the model of Mikulić et al. (2017), indicators of determinance were obtained with a Spearman rank-order correlation between the ratings of tourists and residents interviewed. The indicators of relevance are based on the arithmetic means of attribute evaluation ratings.

## 4. Data Analysis

### 4.1. Socio-Demographic Characteristics of the Sample Profiles

The analysis of the characteristics of the sample profile makes it possible to understand critical aspects of this research since it is of interest to link the type of response by gender, origin, level of studies and total revenue per month [63].

Table 2 presents the general profile of interviewed tourists who visit the museums located in Paseo del Prado in Madrid. The socio-demographic characteristics of the sample profile of interviewed national and international tourists showed, according to the univariate analysis, that 52.8% are female compared to the 44.0% who are male. The average age of interviewed tourists visiting museums located in this area is 47 years ( $M \pm SD = 47.00 \pm 7.28$ ). The most representative age is over 64 (32.1%), with those aged 25 to 34 years also standing out (21%). Concerning the level of academic studies, 51.8% hold a bachelor's degree. As for the total income received per month, 34.5% responded that it was between EUR 0 and 500.



**Table 2.** Socio-demographic profile of the interviewed residents and tourists.

Variable	Interviewed Tourists		Interviewed Residents	
	<i>n</i>	%	<i>n</i>	%
<b>Gender</b>				
Female	204	52.8	139	35.7
Male	170	44.0	241	62
Other	3	0.8	1	0.3
Prefer not to answer	9	2.3	8	2.1
<b>Country</b>				
Spain	225	58.3	N/A	N/A
Italy	29	7.5	N/A	N/A
United States	18	4.7	N/A	N/A
Portugal	11	2.8	N/A	N/A
Other	103	26.7	N/A	N/A
<b>Age</b>				
18–24	56	14.5	116	29.8
25–34	81	21.0	60	15.4
35–44	61	15.8	55	14.1
45–54	32	8.3	79	20.3
55–64	32	8.3	63	16.2
Above 64	124	32.1	14	4.1
<b>Education</b>				
Comprehensive school	5	1.3	9	2.3
Vocational training	6	1.6	9	2.3
Secondary school	15	3.9	20	5.1
Upper secondary school/matriculation examination	64	16.6	77	19.8
Bachelor's degree	200	51.8	200	51.4
Master's degree or above	81	21.0	65	16.7
Other	15	3.9	2.3	2.3
<b>Employment status</b>				
Full-time employment	177	45.9	143	36.8
Part-time employment	52	13.5	41	10.5
Unemployed	25	6.5	67	17.2
Self-employed	21	5.4	25	6.4
Homemaker	4	1.0	8	2.1
Student	82	21.2	75	19.3
Retired	8	2.1	21	5.4
Military	2	0.5	0	0
Other	15	3.9	9	2.3
<b>Total revenue per month (EUR)</b>				
0–500	133	34.5	145	37.3
500–1000	70	18.1	56	14.4
1000–1500	60	15.5	85	21.9
1500–2000	62	16.1	49	12.6
2000–2500	34	8.8	29	7.4
2500–3000	9	2.3	10	2.6
Over 3000	18	4.7	15	3.9

The socio-demographic profile of the interviewed residents' sample showed that the number of visitors of the masculine gender (62%) stands out compared with those visitors of the feminine gender (35.7%). The mean age of the local population sample is 39 years ( $M \pm SD = 38.80 \pm 2.95$ ). The age with the highest frequency of response was 18 to 24 years old (29.8%) and 45 to 44 years old (20.3%). The most representative educational level was also a bachelor's degree (51.4%). Regarding the total income per month, the most frequent answer was that their salary is from EUR 0 to 500 (37.3%).

#### 4.2. Ticket Price and Likelihood of Purchase

Visitor perception according to the ticket price and likelihood of purchase (Sheng and Chen, 2012) questions (see Table 3) shows that the perception of the museum under study based on the ticket price was that of a private museum, both on the part of interviewed tourists (63.2%) and the interviewed residents (78.1%). However, it is a public museum. As for the questions on the price of admission to the museum, if the price of admission were to rise by EUR 3, more than half of the tourists surveyed would be willing to pay this increase (56.5%). However, in the case of the local population, 65.8% would not pay. Interviewed tourists (65.8%) and interviewed residents (80.5%) would not be likely to purchase with a price ticket increase by EUR 5. Thus, hypothesis H3 was supported.

**Table 3.** Perception according to the ticket price and likelihood of purchase: interviewed tourists and interviewed residents.

Perception and likelihood of purchase	Possible answers	Interviewed Tourists		Interviewed Residents	
		<i>n</i>	%	<i>n</i>	%
Perception according to ticket price	Public museum	142	36.8	85	21.9
	Private museum	244	63.2	304	78.1
Likelihood of purchase if the ticket price is increased by EUR 3	Yes	218	56.5	133	34.2
	No	168	43.5	256	65.8
Likelihood of purchase if the ticket price is increased by EUR 5	Yes	132	34.2	76	19.5
	No	254	65.8	313	80.5

The results obtained (Table 4) allow us to assume that both the tourists and the locals interviewed who were not willing to pay an additional EUR 3 were not willing to pay an additional EUR 5 either. Similarly, we can assume that the interviewees who accepted a EUR 5 increase would have accepted the EUR 3 price increase. Therefore, we can summarize this in the following manner (Table 4).

**Table 4.** Likelihood of purchase: interviewed tourists and interviewed residents.

	Possible answers	Interviewed Tourists		Interviewed Residents	
		<i>n</i>	%	<i>n</i>	%
Likelihood of purchase if the ticket price is increased	No	168	43.52	256	65.98
	EUR 3	86	22.28	56	14.43
	EUR 5	132	34.20	76	19.59

Chi-squared test = 39.211167553688746; *p*-value = 0.000.

Pearson's chi-squared test was used to analyze the statistical significance between a visitor's origin and their intention to pay. Therefore, there is a dependency relationship between the intention to pay and the origin of the user. Due to that fact, the tourists interviewed were willing to pay more for the museum ticket than the residents interviewed.

#### 4.3. Attribute Perception

The importance of the evaluated attributes (see Table 5) is classified in a five-point Likert scale (1—not important; 5—very important). The attributes with the greatest value

for tourists are the location ( $M = 4.37$ ), the building ( $M = 4.2$ ) and the permanent collection. The rest of the attributes have an average evaluation ( $M = < 2.5$ ). In the case of the local community, the attributes perceived as most valuable were location ( $M = 4.6$ ), building ( $M = 4.34$ ), permanent collection ( $M = 4.19$ ) and temporary exhibitions ( $M = 4$ ). However, it is important to note that the attribute with the lowest valuation was the ticket price ( $M = 2.55$ ). There are significant differences between the entries given by tourists interviewed and residents interviewed with respect to the gift shop attribute ( $H = 5324$ ,  $p < 0.05$ ), location ( $H = 16,589$ ,  $p < 0.01$ ) permanent collection ( $H = 11,177$ ,  $p < 0.01$ ) and temporary exhibitions ( $H = 10,841$ ,  $p < 0.01$ ), and ticket price ( $H = 22,923$ ,  $p < 0.01$ ). Thus, hypothesis H1 was supported.

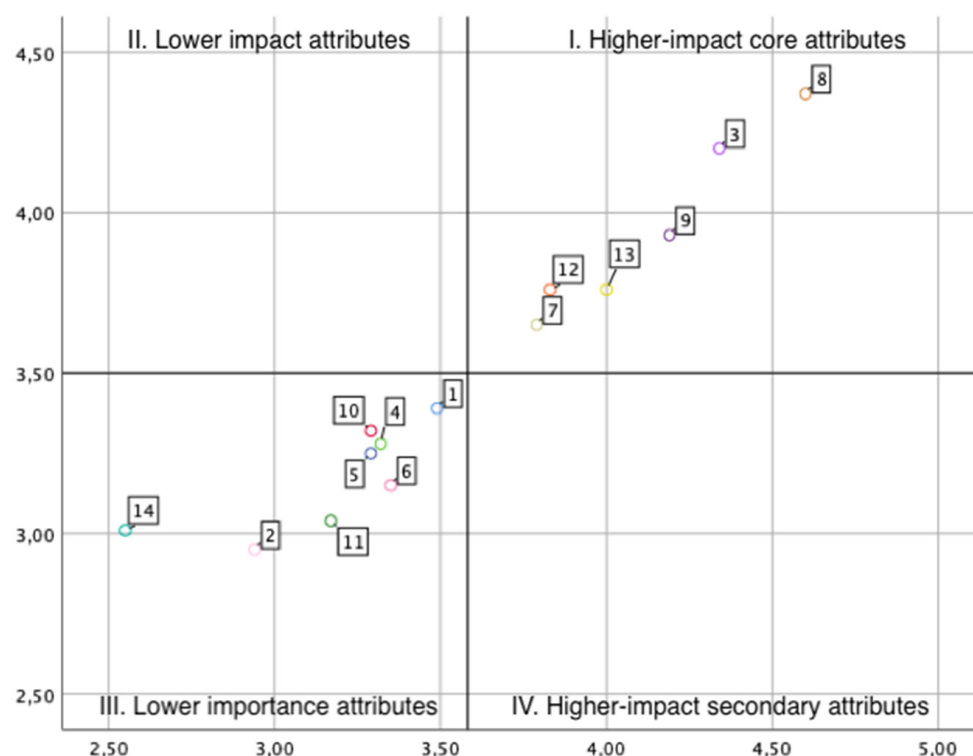
**Table 5.** Level of importance of museum attributes based on quality and value perceived by interviewed tourists and interviewed residents: Kruskal–Wallis Test.

Museum Attributes (a)	Interviewed Tourists (%)							Interviewed Residents (%)							H	Sig.
	1	2	3	4	5	M *	SD *	1	2	3	4	5	M *	SD *		
Activities	7.3	12.7	32.6	29	18.4	3.39	1.139	6.2	10.8	32.1	29.8	21.1	3.49	1.123	1555	0.212
App	17.4	16.1	34.2	18.7	13.7	2.95	1.262	19	11.6	37.8	19.5	12.1	2.94	1.247	0.000	0.986
Building	2.6	3.4	15.8	28	50.3	4.2	0.996	1.3	2.6	12.1	29.3	54.8	4.34	0.881	3003	0.083
Crowding	10.1	13	34.2	24.1	18.7	3.28	1.202	6.7	11.6	40.4	26	15.4	3.32	1.078	0.049	0.825
F and B services	10.1	13.2	38.6	17.9	20.2	3.25	1.21	11.3	11.3	33.7	24.9	18.8	3.29	1.22	0455	0.500
Gift shop	12.7	16.6	32.4	19.7	18.7	3.15	1.264	11.1	13.9	26.7	25.7	22.6	3.35	1.275	5324	0.021 *
Identity	8.3	5.4	28.2	28.8	29.3	3.65	1.192	5.1	8	24.7	27.2	35	3.79	1.156	2507	0.113
Location	2.1	3.1	12.2	21.2	61.4	4.37	0.956	1.3	2.8	5.4	15.7	74.8	4.6	0.821	16,589	0.000 **
Permanent collection	4.9	5.4	20.7	29.3	39.6	3.93	1.124	1.8	4.6	17.2	25.2	51.2	4.19	0.998	11,177	0.001 **
Public museum	13.2	12.7	28	21	25.1	3.32	1.331	13.6	12.6	28.3	22.1	23.4	3.29	1.322	0.109	0.741
Queue	13.7	16.8	36.5	17.1	15.8	3.04	1.234	12.3	23.9	35.2	21.1	17.5	3.17	1.231	2486	0.115
Staff	4.1	5.4	31.3	28.8	30.3	3.76	1.073	6.2	6.7	19.8	32.9	34.4	3.83	1.157	2292	0.130
Temporary exhibitions	4.9	9.3	23.6	29.3	32.9	3.76	1.152	5.4	3.9	19.3	28	43.4	4	1.127	10,841	0.001 **
Ticket price	18.4	14.8	32.4	16.3	18.1	3.01	1.333	29.6	21.6	24.7	12.3	11.8	2.55	1.341	22,923	0.000 **

M: mean; SD: standard deviation. (a): Items classified in a five-point Likert scale from 1 (not important) to 5 (very important); \*\*  $p < 0.01$ ; \*  $p < 0.05$ .

#### 4.4. Relevance-Determinance Analysis (RDA)

After a preliminary analysis of the data obtained regarding the assessment of the attributes, it was possible to apply the relevance-determinance analysis (RDA) model to our results [22–24]. The matrix (Figure 4) shows two types of attributes: higher-impact core attributes (A3, A7, A8, A9, A12, A13) and lower-importance attributes (A1, A2, A4, A5, A6, A10, A11, A14). The attributes located at the point of most significant determination and relevance are the location (A8) and the building (A3). Behind these are the permanent collection (A9) and temporary exhibitions (A13). These attributes are perceived as more important when making visit decisions by museum visitors and have a significant influence on the visitor experience. Therefore, they are vital attributes to be considered in the performance of the museum and the establishment of improvement strategies. As for the lower-importance attributes, the ticket price (A14) is the attribute with the lowest relevance-determination. Next, there is the app (A2) and the so-called queue attribute (A11). These attributes present a minor relationship between relevance and determinance, which means that they are less essential attributes regarding choice and have less influence on the visitor experience [24].



**Figure 4.** Relevance-determination matrix.

#### 4.5. Choice Experiments and Willingness to Pay

The results derived from the analysis of choice experiments and willingness to pay (Table 6) show that option E, which consists of taking a personalized 1-hour guided tour of the temporary exhibitions ( $M = 3.46$ ), stands out as of greater value for the interviewed tourists. This attribute is also the highest result of direct WTP ( $M = 20.212$ ). These data are connected to the attributes of the temporary exhibition (A13) and activities (A3). However, the interviewed residents' perception of the value of the different options differs from the results obtained from the sample of tourists. The local population values option B ( $M = 3.25$ ) and E ( $M = 3.25$ ) equally. The attributes included in option B are the permanent collection (A9), temporary exhibitions (A13), and having a meal included (A5). For option E, these are temporary exhibitions (A13) and activities (A3). The answer referring to WTP shows a different valuation concerning the sample from the local population, the best-valued option being C (24.14), which includes the permanent collection (A9), temporary exhibitions (A13), crowding (A4), queues (A11) and F and B services (A5).

The results obtained show a difference between the responses given by interviewed tourists and interviewed residents. In the case of the value given to each of the different options in the choice experiments, the alternative A (sig. 0.04,  $p < 0.05$ ), B (sig. 0.010,  $p < 0.05$ ), D (sig. 0.038,  $p < 0.05$ ) and E (sig. 0.015,  $p < 0.05$ ) present disparities in the responses. This means that there is a significant difference between the answers given by tourists and the local community for the evaluation of alternatives A, B, D and E. Regarding WTP-related responses, the significance is positive for alternative D (0.016,  $p < 0.05$ ) and E (0.039,  $p < 0.05$ ). There are different answers to the WTP questions between the answers given by interviewed tourists and residents. Thus, hypothesis H2 was supported.

**Table 6.** Choice experiments and direct willingness to pay (WTP) related to attribute levels.

Attribute Level	Average Results from Choice Experiments Perceived Quality (1–5)	Std. Deviation	Average WTP (EUR)	Std. Deviation
Interviewed Tourists				
A9	2.81	1.472	19.12	18.230
A13				
A2				
A9	2.97	1.463	25.88	18.911
A13				
A5				
A9	2.80	1.402	25.26	19.391
A13				
A4				
A11	2.96	1.276	25.55	19.625
A9				
A1				
A13	3.46	1.356	24.91	20.212
A1				
Interviewed residents				
A9	3.13	1.564	17.81	16.008
A13				
A2				
A9	3.25	1.489	26.74	16.962
A13				
A5				
A9	2.61	1.357	24.14	17.093
A13				
A4				
A11	2.77	1.259	22.37	17.451
A9				
A1				
A13	3.25	1.262	21.76	17.393
A1				

## 5. Discussion and Conclusions

Previous researchers have applied choice experiments to estimate the value of museums. The application of choice experiments is proposed as a methodology for evaluating attributes and obtaining information on visitor preferences [9]. The results presented in this paper expand on the information regarding the attributes of museums and introduce the application of WTP. The application of WTP results to promote sustainability in tourism has been tested before [49], as with the choice experiment method [64]. The analysis of the literature allows us to derive from the following proposal an analysis model that would be the basis of the sustainable tourism experience. It arises from the interrelationship of the relevance-determination model [24] and the service quality, value, satisfaction, and behavioral intentions model [19]. Attribute analysis is linked to the quality and per-

ceived value by visitors and is a critical factor in visitor behavior and satisfaction [17]. Therefore, these concepts are related to the experience and the likelihood of recommending or not recommending the tourist attraction [19]. Oviedo-García et al. [47] identified that when linked to tourist satisfaction it is possible to study the different services called dissatisfiers. These types of services can be improved to increase tourist satisfaction and this can provide sustainable tools of management.

Innovation strategies are crucial to museums to guarantee these institutions' sustainability, as [65] detected. For that reason, the theoretical contribution of this paper is to propose a method to identify museum attributes through eWOM, and its corroboration through questionnaires. The questionnaire is based on willingness to pay and choice experiment frameworks, applied to the local population and national and international tourists to improve the users' experiences. The possibility of knowing better the opinion of the potential visitors through innovative methods is linked to the creation of innovative strategies, and it can help to create sustainability [66] in museums.

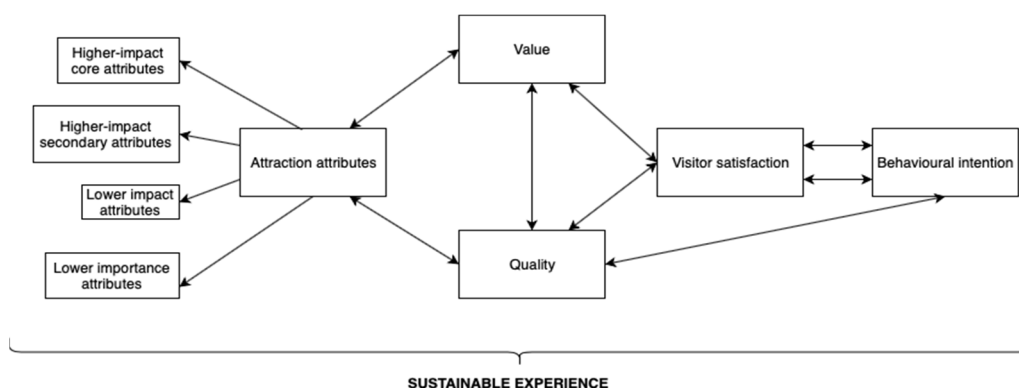
First, the application of the relevance-determination analysis model [24] facilitates the analysis of the attributes of the case study, the Thyssen-Bornemisza National Museum (Madrid, Spain). Applying willingness to pay and choice experiments makes it possible to consider the different market segments, to study their behavior and consumer preferences, to develop co-creation in museums. These methods make it possible to analyze museums' economic and socio-cultural impacts [8]. The results obtained concerning the application of the relevance-determination analysis (RDA) model [24] show that it is possible to classify attributes in the case of museums. However, the attributes of the case study are not represented in two parts of the quadrant (lower impact and higher-impact secondary attributes). The combination of the relevance-determination model with the service quality, value, satisfaction and behavioral intentions model [19] facilitates the identification of attributes in museums as well as interpreting their value through the application of a questionnaire based on the development of a willingness to pay and choice experiment analysis. There are significant differences between the responses given by interviewed tourists and interviewed residents (H1). The evaluation of attributes shows significant differences in the evaluation of "building", "gift shop", "location" and "permanent collection".

Second, regarding the results focused on choice experiments and willingness to pay, tourists show a greater interest in the option comprising a personalized 1-hour guided tour of the temporary exhibitions. The local population shows a higher perception of value concerning the option that includes the visit to the permanent collection and the temporary exhibitions (H2). The attribute that is connected to the willingness to pay of interviewed tourists and interviewed residents is the ticket. This attribute shows a low willingness to pay a higher price than that already established (EUR 13) by the local population. However, interviewed tourists might be willing to pay EUR 3 more than the general ticket price (H3). This result shows a greater subjective appreciation of the museum by interviewed tourists than by interviewed residents.

This paper offers an exploratory analysis of the results obtained by applying the attribute valuation model, adapted to museums. It allows understanding the likelihood of purchase and the perceived value of museum attributes for tourists and residents interviewed, taking into account the choice experiments and willingness to pay. Previous research identified that applying methods such as the likelihood of purchase, willingness to pay and a choice experiment can contribute to developing sustainable management strategies [65,67]. Knowledge of museum attributes as perceived by both tourists and the local community provides us with data of interest for implementing sustainability strategies in museums and improving quality and experience (Figure 5). In addition, the results obtained allowed us to identify the attributes that can be dissatisfiers. Our results are in line with the research carried out by [47] who identified that the reputation of the museum, including the quality, prestige, innovation, and value for money, are linked to sustainability. In addition, we identified the possibility of evaluating attributes to improve museum performance. For that reason, this analysis relates to sustainability because it



allows a better understanding of consumer behavior, and its link to sustainability indicates the importance of these attributes [63].



**Figure 5.** A proposed model: attribute evaluation in museums.

The results obtained allow us to answer the initial research questions proposed, as summarised in Table 7.

**Table 7.** Research questions and responses.

RQ1. How do the choice experiment method and willingness to pay (WTP) allow us to analyze customer valuation and consumption behavior?	Through the application of WTP and choice experiments, it is possible to analyze consumers' behavior and their assessment of services, and improve the experience based on the results obtained.
RQ2. What is the subjective value of museum attributes perceived by tourists and the local community (Madrid residents)?	The application of WTP allows the analysis of the perception of the value of the different attributes of the museum by tourists and local people. Through the analysis of the results, it is possible to position the different attributes based on the relevance-determination model.
RQ3. Are there differences between the value perceived by interviewed tourists and interviewed residents?	The results show that the perception of the value of different attributes is different in some cases. As for the analysis of the results of choice experiments, some differences are also detected between the two segments.

## 6. Practical Implications and Limitations

### 6.1. Practical Implications

The results show that regarding the price of access to the museum, both interviewed tourists and interviewed residents perceive it to be a private museum. This fact may be a disadvantage for the Thyssen-Bornemisza National Museum, as the brand image is affected by this. Therefore, the perception of being a private museum instead of a public one can affect its sociocultural sustainability. The application of the relevance-determination model to analyze the perception of attributes shows that it is necessary to focus on new strategies to promote the sustainability of the attributes located in the lower-importance zone. Among these attributes, the ticket price stands out, which would be the weak point affecting the socio-cultural sustainability of the museum and which transmits an erroneous perception of the museum. The most highly valued attributes are the building, the geographical location of the museum, the pre-stock collection, and the temporary exhibitions. In addition, through this research, it can be seen that it is essential to highlight some attributes linked to technology such as the museum app that can help improve the decision-making process of purchasing products or services [68]. For that reason, the museum app and the website must be considered as essential attributes.

These results make it possible to evaluate the different attributes and their perception by interviewed tourists and residents, so that to manage the museum sustainably, it would be necessary to establish strategies aimed at the local population to enhance the attributes that have a lower subjective valuation. Therefore, it is necessary to integrate these aspects into the museum's strategies for economic and socio-cultural sustainability, so that by combining these attributes with those considered to be less valuable, these can be enhanced. The results obtained provide valuable information for the design and support of new sustainable strategies in this museum. The identification of the attributes and their evaluation allows the subsequent application of the sustainable models in museums, as proposed by [35].

## 6.2. Limitations and Further Research

The main limitation of this work is the application of the surveys. It was carried out during the bicentenary of the Prado National Museum. This affected the profile of interviewed tourists because, during that time, national tourists were more frequent. In addition, the participants of the different groups (gender, age, education, employment status and revenue per month) are small in number, so the confidence interval is affected by this.

Another limitation is the application of choice experiments combined with the willingness to pay. The selection of attributes before the design of the questionnaire through the use of social networks has been previously studied by detecting limitations when choosing the choice experiment model to be applied later. Limitations on the use of choice experiments and WTP should also be taken into account [69], especially the design and the previous selection of attributes that, in some cases, may not be very objective. However, this research is accompanied by a previous selection of attributes through the application of text mining.

Future studies could be focused on developing an in-depth investigation of the results by applying the multinomial logit (MNL) model. In addition, future studies will be focused on analyzing the perception of students of the attributes identified, and the residents' characteristics and perceptions, by applying qualitative methods.

**Author Contributions:** Conceptualization, A.O.-G.; data curation, J.C.-S.; formal analysis, J.C.-S.; investigation, A.O.-G., C.D.-P.-H. and T.V.-G.; methodology, A.O.-G.; software, J.C.-S.; supervision, C.D.-P.-H. and T.V.-G.; validation, A.O.-G. and J.C.-S.; writing—original draft, A.O.-G.; writing—review and editing, A.O.-G. and C.D.-P.-H. All authors have read and agreed to the published version of the manuscript.

**Funding:** This research received no external funding.

**Institutional Review Board Statement:** Ethical review and approval were waived for this study.

**Informed Consent Statement:** Informed consent was obtained from all subjects involved in the study.

**Conflicts of Interest:** The authors declare no conflict of interest.

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