Article

Brand Personality Traits of World Heritage Sites: Text Mining Approach

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Abstract: UNESCO World Heritage Sites (WHSs) must necessarily display Outstanding Universal Values (OUVs), as these play a vital role in constructing competitive brand personality (BP) in tourism marketing. However, how these WHS qualities are perceived by visitors still needs substantial investigation. Adopting a visitor-driven approach, this study seeks to explore the intangible attributes of WHSs and, for the first time, uses the BP concept to measure these attributes in cultural attractions. To investigate how visitors perceive WHS personality traits, 5579 visitor-generated reviews of 175 French (39), German (44), Italian (50), and Spanish (42) cultural WHSs on TripAdvisor were analysed using empirical, mixed methods. Results show that four personality dimension categories can be attributed to WHSs: Sophistication, Sincerity, Competence, and Excitement. Moreover, a novel BP lexical technique is presented along with a 222-item personality trait dictionary, which can be used to measure personality traits in cultural attractions. Theoretical and practical implications of the study are also discussed.

Keywords: brand personality; world heritage; attraction traits; text mining; computer-based analysis

1. Introduction

UNESCO WH has moved beyond its original remit and is now perceived as a unique tourism brand in itself [1]. Nonetheless, little published data exists on its qualities as perceived by visitors. Although WHS status is recognized as a magnetic tourism brand, and countries compete to increase their numbers of WH sites [2], existing literature highlights discrepancies in how these sites affect tourism marketing [3]. A number of critics have addressed these conceptual ambiguities [4], claiming that the marketing implications of WHSs are discussed in mere general terms [5]. To date, the majority of research on WH is limited to individual case studies, specific geographical locations, or tourist experience pre-visit; few studies examine visitor knowledge of WHSs [6]. A robust analysis of visitor knowledge of latent attributes of WHSs is lacking, as are insights into the intangible chronological and typological links visitors perceive through their WHS experiences.

Although considerable attention has been paid to BP in marketing research [7], it has not been extended to the field of WHSs. Radler [8] identified five areas of academic interest linked to BP: measurement of BP; dynamics of BP dimensions; direct and indirect effects of BP; BP in brand extensions; and the application of BP to several domains. Two of these dimensions have been the focus of tourism studies: Ekinci and Hosany [9] investigated visitors' perceptions of BP in tourism destinations, and Zhang et al. [10] carried out a study on the direct and indirect effects of BP on visitor behaviour variables. Following from Yang, Xue and Jones [5], who highlighted the influence WHSs have on visitor choice, the main aim of this study is to empirically identify WHS personality attributes perceived by visitors, thus extending BP knowledge within the field of tourism to "attractions".

Brand personification has significant implications for marketing, such as enhancing visitor brand recognition [10] and brand equity [11]. However, its complexity relies on

sophisticated analytical and theoretical methods that formulate personality traits and then transform this qualitative data into desired enumerated statistics. Aaker [11] provided a framework for the first reliable scale to measure BP, rooted in human psychology and developed from the so-called "Big Five" personality dimensions [12]: Excitement, Sincerity, Competence, Sophistication, and Ruggedness. Aaker's BP measure has drawn a great deal of attention in the literature; however, academics agree that it needs developed further [13].

To simplify the BP measure for use in tourism research, Pitt, Opoku, Hultman, Abratt, and Spyropoulou [14] developed a lexical method using a dictionary that de-factorized Aaker's five dimensions into 833 synonyms. Even though Pitt et al. [14]'s methods were an initial path to the development of the BP lexical approach, few studies use the 833 synonyms dictionary [15–19]. The limitations related to the use of the BP dictionary may add to the applicable limitations of the lexical approach. As the dictionary is limited to 833 words that are classified under Aaker's five dimensions, it does not capture any new items [18]. Consequently, a new technique is required to allow for the inclusion of personality items relevant to any study domain.

Despite the importance of Aaker's model, academics have noted important boundary conditions for its successful application [20]. These boundaries relate to the measure's capacity to replicate the five personality dimensions [13] and how cultural differences between brands may influence the generalisability of these dimensions [21]. As the dimensions were not replicable in different cultures, subsequent studies evaluated and extended the stability of this model to fit a variety of settings. The context of cultural attraction within Spanish culture is still missing in the application of BP.

Thus, our study bridges several gaps, as it aims to: first, provide a list of comprehensive personality traits that reflect visitor perceptions of WHSs; second, extend BP to WHSs, which may add to the knowledge to both fields; third, (indirectly) widen the samples in order to obtain more holistic assumptions, given that WH research in tourism marketing indicates a lack of generic conclusions; fourth, further investigate how Aaker's five dimensions can be linked to WH, given that replicating BP is subject to cultural contexts; and finally, develop the BP lexical approach by providing a new technique for including relevant subject-specific traits. In the results, the study develops the BP lexical approach by providing a technique that can be reproducible for other marketing domains. Moreover, we defined the perceived personality of WHSs by expanding BP to the context of WHSs, wherein a 222-item personality dictionary to measure the cultural attraction is customized.

2. Literature Review

2.1. World Heritage Marketing Perspective and Visitor Knowledge

It is well known that inherent qualities of OUV in WHSs show abstractly intrinsic features of tourism attractions [3]. WH branding, therefore, goes beyond its original goals in order to include tourism marketing objectives. The aim of the United Nations Educational, Scientific and Cultural Organization (UNESCO) is to preserve heritage sites of global significance, but many countries seek WHSs in order to attract more visitors (rather than conserve heritage [2]. The growth of international tourist arrivals (before the COVID-19 era) has forced marketing agencies to place greater emphasis on the intangible aspects of tourism products [22]. Thus, WH has come to be perceived as a top brand [3] and a determinant for tourism demands, which has evolved to encompass socioeconomic elements linked to the growth of sustainable tourism [5].

Although several studies claim WHSs stimulate tourism, some academics doubt their ability to enhance visitor attractiveness [23–25]. In a meta-analysis of WHS studies, Yang et al. [5] set out to uncover discrepancies among findings. To do this, conceptual variances in the case studies were classified according to the following criteria: whether the WH nomination was old or new; whether the target samples were domestic or international

visitors; the study methods employed; the size of the site; the type of WHS (cultural or nature-based); whether the WHS was located in rural or accessible areas; whether it was an iconic or a lesser known site; and whether the countries' underlying reasons for nominating the sites could be identified. Many scholars[5,23] highlight that considering these criteria in studies are essential to determine whether the WH brand has potential impacts on visitors. Data for the study came from user-generated reviews of French, German, Italian, and Spanish WHSs encompassing most of these WHS features.

Findings from studies analysing visitor awareness of WH vary, showing poor robustness. The underlying reasons for this may depend on the ability and willingness of host countries to disseminate WH knowledge. Wuepper and Patry [26] linked the added value of being designated a WHS to the heterogeneity of benefits arising from a site's objectives and marketing. Yang and Lin [27] stressed the importance of promotion, claiming that the countries that benefit from nominations are those with effective, aggressive, and constant marketing strategies. Both Adie [28] and Wuepper and Patry[26] urged UNESCO to better inform the public about WH in order to increase visitor awareness. Adie [28] in particular argued that advertising and raising visitor awareness were generally lacking, as UNESCO hands these responsibilities over to the host countries.

Several recent studies have highlighted visitor awareness of WHSs, but no robust conclusions have been drawn [28,29]. Furthermore, several academics believe that the impact of WH is temporary, as visitors may only receive knowledge of it through heightened media exposure during the nomination process [30,31]. Keller [32] acknowledged that brand awareness is core to the success of WHSs and classified awareness influences into three types: recognition, recall, and "top of mind". The last has the most impact on visitor preference as it reflects customer awareness of the intangible, immaterial attributes of brands and has not been measured in the literature so far.

However, a small number of studies have attempted to measure how visitors perceive the intangible attributes of WHS by using a scale with specific terminology reflecting expert opinions. For example, Wang et al. [33] defined OUVs as being magnificent, scenic, beautiful, intact ecosystems with abundant flora and fauna and confirmed that the visitor-perceived authenticity of WHSs aids in their protection. Baral et al. [34] operationalized Wang et al.'s [33] terms, allocating traits such as distinction, uniqueness, impact, legacy, value, and allure to authenticity, and confirming that visitors value these attributes of OUV. In contrast, Poria et al. [35] analysed WH through a visitor's lens and found that WHSs were recognized as culturally famous sites of major significance to humankind, describing them as authentic, must-sees, promising quality, well managed, and expensive. The findings stressed that what visitors found most attractive was immateriality, the WH philosophy, and the concept of cultural significance.

Following from this, Adie [28] called for a deeper understanding of WHS attributes. This article, therefore, investigates WHS attributes from a visitor perspective and uses BP to customize a visitor scale to measure WHS attributes, given its suitability for measuring intangible brand assets.

2.2. Brand Personality Construct

BP is rooted in anthropomorphism, the theory that individuals tend to assign personality features to various contexts, including brands [36]. In marketing research, this animism is developed through the self-congruity theory, based on the logic that the higher the match between a consumer's personality and a brand's characteristics, the higher the preference they will have for the brand [37] . Once marketers recognized the relevance of animism and self-congruity, they imbued brands with personal meanings and lasting, distinct, constructed personal traits through which consumers felt they could express themselves [7]. Aaker [11] stated that the majority of self-congruity studies have elusive conclusions because scholars matched personality characteristics to brands with an aggregate personality, or to just one personality dimension, and failed to identify the specific BP dimensions that could be matched. Aaker [11] therefore went on to develop a well-defined BP with five dimensions resonating with customers' personalities. This personified brands as multidimensional people, a theory which would go on to have a marketing impact on consumer behaviour and overall brand equity [11]. However, Aaker's concept proved unstable when applied in different cultural contexts [21].

Methods for measuring BP are imported from the well-accepted "Big Five" personality criteria in psychology [12]; however, using these to personify brands is extremely complex. Despite academic interest, Aaker's [11] ability to replicate the Big Five dimensions to brands has been debated in the literature [20]. Only the inner characteristics of brands were replicated: Excitement (extroversion), Sincerity (agreeableness), and Competence (Conscientiousness); Sophistication and Ruggedness were added as outer characteristics.

Initially, Aaker [11] ascertained that all five dimensions are applicable to brands, but further research revealed that the BP dimensions showed embedded cultural variances [21]. This prompted several academics to extend Aaker's model to various cultural contexts: countries [38]; destinations [9,10,22] ( ); cities [39]; places [40]; sports clubs[41]; corporations [42]; retail [43]; and product brands in many countries [21]. The outcomes of this research revealed that (1) four of Aaker's dimensions are replicated in several studies [13]; (2) the Ruggedness dimension is not widely applicable [10,44]; and (3) applying BP to different cultural contexts has limitations [45]. Thus, we aim to extend the concept of BP to the context of visitor attractions.

2.3. Concept of Brand Personality in Relation to Brand Identity and Image

Aaker [11] offered the most popular definition of BP in the field of tourism, outlining it as a set of human characteristics that described brands, despite Azoulay and Kapferer's [46] criticism of the loose term "characteristic". This definition creates confusion as it overlaps with the concept of brand identity [46] and BP [47], and the concept of brand image and BP [9,44,48].

In branding communication, brand identity, which is defined as "a unique set of associations that the brand strategist aspires to create or maintain" [49] (p.68), belongs more to the supply side. Brand image, on the other hand, which is defined as "the perception about a brand reflected as associations existing in the memories of the consumers" [32] (p.3), is perceived from the demand side [50]. Tsaur, Yen, and Yan [51] emphasized that a brand's identity and image are perceived as two sides of the same coin, while Aaker's definition puts forward several aspects of supply and demand as one..

Scholars studying branding consider brand identity and brand image as multidimensional and BP as an essential dimension of these two concepts [5,50,52,53]. Azoulay and Kapferer [46] argue that the term "personality characteristic" in Aaker's definition encompasses sociodemographic characteristics, meaning that BP is perceived a whole and not as a part of brand identity. The use of the term "characteristic" in BP includes all non-psychical attributes, such as the functional, utilitarian, and emotional associations of a brand. These attributes overlap with the attributes offered by the supply side and those perceived

by the customers [40,54]. For example, Azoulay and Kapferer [46] explained that items of age and social classes which are included in BP are more related to user imagery or the typical user (the receiver) of a brand, and not to the brand itself. Geuens et al. [47] stated that this loose definition creates uncertainty over what academics are investigating, whether it is the perceived BP (the sender aspect) or the perceived user characteristics (the receiver aspect).

In addition, Azoulay and Kapferer [46] perceived BP as one element of brand identity, arguing that BP is derived from personality studies in the field of psychology. For decades, psychologists agreed on excluding non-behavioural items, such as sociodemographic aspects, and restrict personality to only personality traits, and defined personality as a "systematic description of traits" [55] (P.81). Thus, to avoid conceptual confusion in branding studies, Azoulay and Kapferer [46] (p.153) defined BP as "the unique set of human personality traits both applicable and relevant to brands", using the term "trait" instead of "characteristic". Among the few studies that have used the term "traits" are Geuens, Weijters, and De Wulf [47]; Ye [56], Chen and Phou[57]), and Rojas-Méndez et al. [58].

The confusion over BP and brand image has drawn more attention in tourism studies [48] as the definitions of both concepts tap the soft association of a brand that is perceived by the receiver. Even though scholars agree on the prominence of destination personality in tourism, a controversy arises between the concept of destination image and personality. Crompton [59] classifies the components of destination image as cognitive (visitor's beliefs) and affective (visitor's feelings). In addition, Biel [60] perceived brand image as a group of associations which customers link to brands, wherein these associations may be "hard", based on tangible and functional attributes, or "soft", based on emotional attributes. Biel [60] recognized BP as having a soft association with brand identity.

Zhang et al. [10] summarizes how destination personality academics perceived the state of confusion between the two concept brand personality and brand image. Some academics considered destination personality and image to be one concept which could be used interchangeably [61]; or as different constructs [62–64]; or as different but linked concepts, wherein BP has potential influences on the affective aspects of destination images [10,44]. In general, scholars found that BP mediates effects of brand image on visitor behaviours such as the intention to return [9], to recommend [44,65,66], and to be loyal [63].

In contrast to this confusion between BP and brand identity, Davies et al. (2018) found that the aggregated personality characteristics in the traits of BP dimensions did not affect the overall distribution of dimensions. To date, Aaker's [11] definition is the most widely used in tourism literature [13]. In fact, our study is underpinned by Aaker's construct and follows the findings of Davies et al.; thus, we first follow the stream of literature [10,48] that perceived BP and brand image as two different but related constructs. Second, we bore in mind Aaker's definition of BP and used it to define WHS personalities as having associated human characteristics which fit WH-designated attractions, and are perceived as such by WHS visitors post-visit.

2.4. Brand Personality in Tourism

In destination branding, the complexity of competition among destinations means that marketers pay more attention to the intangible aspects of a destination than to its substitutable physical attributes [22]. Using Aaker's concept, Ekinci and Hosany [9] developed the first destination personality measure; the second was constructed by Kumar and Nayak[22], who defined destination personality as a multidimensional construct of BP applied to tourism. Academics subsequently agreed that attributing destination personality enhances a number of visitor behaviour variables, which strengthen visitor preference for a destination [10,22,67].

Therefore, tourism research concurs that BP is a prominent driver for positioning tourism destinations and that perceived attraction is paramount in shaping the personality of a destination [9,10,22,57]. Culture and history are among a destination's most important attributes [48], wherein a destination's cognitive aspects are measured against tourists' beliefs of the functional attributes of cultural, historical, religious, and spiritual attractions [48]. Ekinci and Hosany [9], on the other hand, asserted that destination personality traits are directly linked to a destination's attractions, as they can identify and measure its personality. Our study acknowledges that BP has been applied to countries, cites, places, and destinations; however, it has yet to be applied to WH attractions. This research fills this gap by adopting lexical methods within BP to extend the personification metaphor to the unique attractions that constitute WHSs.

The BP lexical approach was chosen, as it plays a crucial role in generating destination BP traits and offers practical implications for DMOs. Website BP has also been a focus of attention in the literature. Pitt, et al. [14] pioneered a dictionary containing 833 synonyms of Aaker's 42 traits and used it to measure the tourism website personality of 10 African countries. Several studies subsequently adopted these methods [15–19], using the dictionary as a comprehensive guide to trait synonyms. Papania et al. [18], however, pointed out the limitations of Pitt's dictionary, warning that it needed to be modified to fit the subject of study.

Despite the dictionary being a comprehensive guide, Pitt et al. [14] and subsequent studies failed to include industry-specific traits. Papania et al. [18] explicitly referred to their absence. Churchill and Iacobucci [68] also warned that content validity relies on an adequate number of traits from the original samples. Thus, empirically, establishing content validity was considered essential when generating traits [9–11,22]. In lexical studies, Rojas-Méndez and Hine [69] recognised the importance of content validity in dictionary customization and customized a 533-item dictionary based on their study samples. This study advances Pitt's lexical approach by providing a new technique to include traits from study data.

3. Materials and Methods

3.1. Research Question

In this study, we want to explore the perceived personality qualities from visitors' perspectives through their digital reviews. Moreover, we aim to understand if the existing BP lexical scale can capture the attributes of all WHSs, or if the scale requires modifications. Two main research questions are presented: (1) what are the WHS visitors' perceived personality dimensions and their distribution in relation to the five BP dimensions of Aaker [11]? (2) How can all the items that capture the significant meanings of WHSs be included in the BP Lexical scale?

3.2. Analytical Procedure

The study used the following methods and tools: (1) a machine learning package to extract reviews from TripAdvisor; (2) manual content analysis to prepare relevant data for WHSs; (3) Pitt dictionary analysis to determine primary personality traits and dimensions; (4) text mining pre-processing to define the most relevant dictionary to use as a unique personality scale to measure WHSs, including high-frequency and new personality traits not included in Pitt's dictionary; (5) dictionary analysis to identify the distribution of WH personality dimensions; and (6) correspondence analysis (CA) to demonstrate the practical implications of methods employed in the study.

3.3. Data Preparation

This study follows Aaker [11] and Pitt's [14] concept of "what others say about me" and uses social perception to investigate WH personality using visitor post experience

reviews of all France, Germany, Italy and Spain's cultural WHSs on TripAdvisor. Therefore, our sample depends on how visitors evaluated WHSs on the social network site TripAdvisor. We limited our study to WH cultural sites, as these dominate the list of WHSs; of the 1121 sites registered, 869 (77.5%) are cultural sites [70]. These countries were selected as they have the highest number of sites on the WH list in Europe. These four countries represent 36.29% of the total share of Europe and North American's WHSs (529) [70]: Germany (44), France (45), Italy (55), and Spain (48). The sample of user-generated reviews is limited to the English language and includes visitors from many countries, which may reduce segment bias.

To extract the reviews, the first step was to identify the cultural WHSs related to these four countries on TripAdvisor, as most of the official names of WHSs are not explicitly labelled on the website. Cases in point are the Alhambra, Generalife, and Albayzín. These three sites are combined into one individual WH site on UNESCO URLs but have three separate URLs on TripAdvisor, each with its own webpage. This led to identifying a total of 286 URLs for 175 cultural WHSs. Second, not all visitors who visit WHSs write a review specific to WH. Thus, two TripAdvisor filter options were applied: "English language reviews" and the search engine. The best outcomes were obtained from the term "World Heritage". After analysing all reviews related to 175 URLs for the month of May 2021, we found "World Heritage" mentioned in 5,579 reviews. For example, the Alhambra has 41,810 reviews in total, and reviews in English totalled 15,945, with 357 mentioning WH. Finally, the review title, the text itself, the number of stars given, date, and visitors' countries of origin were extracted.

The data was prepared by performing manual content analysis and text mining pre-processes. First, we were able to omit irrelevant text using manual content analysis, thus assuring that the reviews were specific to WHS. For example, one visitor described the Alhambra as *"beautiful, scenic and with old architecture"* … "*Meet your guide who provides you a convenient ear piece to listen to the commentator." "Have good walking shoes*". Here, the adjectives "*convenient*" and "*good*" refer to ideas that are irrelevant to the site itself. Thus, we manually extracted only the text that directly described the WHSs, avoiding references that were misleading. Of the reviews, 95% were 4 or 5 star; thus, as the probability of negative adjectives is low, double negation was excluded, as in the Alhambra: *"(A World Heritage Site) is such an amazing beautiful place and you just accept my word you will not be disappointed"*.

Computer-based analysis of digital text has gained importance in social science due to the availability of a huge amount of digital text [71]. By text pre-processing in the data mining, we were able to reduce the size and complexity of the vocabulary to allow for computational efficiency and limit irrelevant words [72]. The text pre-processing items used in this study are as follows: lemmatisation, substitution, exclusion list (stop words), and infrequently used term reductions. The English Language Exclusion list was used; this is built into WordStat textual software, which includes irrelevant words such as pronouns. Lemmatisation removes inflectional ends and stemming prunes words to their original dictionary form [72]. Both lemmatisation and stemming are methods that combine and reduce vocabulary, counting words like beautiful, beauty, and beautifully as one. Although Balakrishnan and Lloyd [73] found insignificant differences between lemmatisation and stemming, they did remark that lemmatisation provides more accurate interpretations; therefore, lemmatisation was used in this study. Thus, data preparation provided a unique text relevant to WHSs, which comprised a total number of 324,034 words, from which 134,079 words (41.35%) were excluded.

4. Results

4.1. Dictionary Customisation for WHSs

As the study aimed to construct a robust WH personality scale based on lexical methods, we considered Pitt's 833 synonyms as a first source of scale measurement. In reply to

the second research question, which aims to define all the traits that capture the attributes of WHSs, a lexical analysis based on Pitt's built-in dictionary was conducted using Word-Stat software. This generated a so-called 'included-words' list, which reported the frequencies of all adjectives matching Pitt's dictionary. However, only 223 words in the included list matched Pitts' synonyms, many of them at a low frequency. Therefore, the study depends on the frequency selection criterion in the text-mining method to select relevant WHS traits. The minimum accepted frequency was 0.01%; in text mining, items with frequencies lower than 0.05–1% are considered infrequent [72,74]. In addition, to reduce the complexity of the words, we took under consideration words that were repeated more than 5 times. We selected only 98 personality traits from the total, with a frequency 0.01% of "% processed" text. This frequency percentage was provided by WordStat after the text mining pre-process was carried out.

Moreover, the study added traits suited to the subject of the study, but not found in Pitt's dictionary, by investigating 2563 adjectives in the so-called "leftover word list". To do this, we first filtered 2563 adjectives found in the list by using KNIME analytic software (free open source analytic tool). We used the text pre-processing packages in KNIME, such as Case Convertors and Tokenization "Part of Speech" (POS) to select adjectives only. As a result, this list of 2563 adjectives was reduced to 574 manageable adjectives of significant frequencies by applying the criteria previously mentioned, which relate to word frequency selection, and removes inappropriate words or characters.

Second, to determine which adjectives represented human-like traits, we took Aaker's five personality categories as parameters with which to define adjectives relevant to personality. We then linked the adjectives from the leftover words list to their relevant synonyms to Aaker's [11] BP traits. Here, we rely on the lexical assumption and hypotheses of word representation distribution [75] that each trait shares a large part of its meaning with other synonyms distributed in the same factor structure [76]. Lieven [77] confirmed that adjectives sharing a high number of common synonyms are grouped together in one personality dimension and share few common synonyms with those outside their dimension. The personality traits from the 574 adjectives list were sorted accordingly, and then classified based on their relevant similarity to Aaker's [11] five personality dimensions, 15 facets, and 42 traits.

Pitt et al. [14], was the first to expand Aaker's method for returning and grouping the adjectives to their similar synonyms, and defined the first BP dictionary. Here, the technique lies in expanding Aaker's 42 traits. Pitt et al. [14] (p. 838) compiled 883 synonyms to match Aaker's 42 traits and 5 dimensions using Encyclopedia Britannica's online Thesaurus. De Moya and Jain [15] and Kim and Lehto [78] grouped traits using the same synonym technique. Therefore, classifying the 322 new adjectives, which were not founded in Pitt's 833 synonyms, requires increasing the BP dictionary that complies with Aaker's five dimensions and expands the synonyms.

To create a new dictionary parallel and similar to Pitt's dictionary, we built four unique dictionaries from four online dictionaries: *Power Thesaurus* (www.powerthesaurus.org, accessed on (25/05/2021), *OneLook Thesaurus* (www.onelook.com/thesaurus, accessed on (25/05/2021), *Thesaurus Dictionary*, www.thesaurus.com (accessed on 25 May 2021), and *Merriam Webster* (www.merriam-webster.com, accessed on (25/05/2021). The main idea here is that each dictionary may include more unique words, so using four sources enables us to expand the number of synonyms. It is worth mentioning here that when Aaker's 42 traits were used as a scale in other studies, on most occasions the dimensions Excitement and Competence overlapped [18,76,79].

In these dimensions, the words emerge attached to each other in a graphic representation. This means that some keywords for certain personality categories may be highly similar.The four dictionaries were thus used as a parameter for classifying the adjectives and placing them in the appropriate dimension. For example, in all four dictionaries the word "amazing" is classified as a synonym to Excitement dimension traits. Using these

four dictionaries as parameters, therefore enables us to classify the new adjectives under the five dimensions of Aaker's BP scale.

It is worth noting that, our choice of the four dictionaries used to extract the synonyms for the 42 traits was based on our aim to find a dictionary which could categorize the synonyms of any target keywords based on the level of similarity. The four dictionaries selected are unique in the way they provide similarity rankings for the target keywords. From the four dictionaries 9460 keyword synonyms linked to the 42 traits from the four dictionaries were extracted. This four-dictionary ranking of keywords was beneficial when extracting synonyms for Aaker's items as each synonym is color coded according to where is ranked in relation to a specific keyword. By color-coding the keyword, it can then be placed in Aaker's five dimensions according to its relevance.

The 9460 were colored to show that the closer the similarity to one of the 42 traits in Aaker, the darker the color. Using color in this way is inspired by the way *Thesaurus* and *OneLook* dictionaries prioritize the degree of similarity between synonyms. An example can be found in the following URLs: www.thesaurus.com/browse/unique; www.onelook.com/thesaurus/?s=unique accessed on (25/05/2021). Using colors enables four unique dictionaries to be constructed (hereafter: 4-Thesaurus BP dictionaries), and their entire set of adjectives classified according to the degree of relevance to one of the 42 traits within the five personality categories. These dictionaries first help verify whether a new keyword has synonyms relevant to the Aaker's dimensions or not. If it does, the new adjective is then classified (the 4-Thesaurus BP dictionaries are available from the authors).

Hence, we defined 124 new personality traits, 89 of which have appeared in two, three, or four dictionaries with the same classification categories, while the remaining 35 adjectives have appeared in one or two dictionaries. This process of sorting and classifying the new adjectives increases the number of personality traits relevant to WHSs from 98 words, found in the Pitt BP dictionary, to 222 items. This ensures that each high-frequency term relevant to the WHSs is defined. The final 222-item list of traits was categorised under five personality dimensions as follows: Sincerity 27.47%; Excitement 22.97%; Sophistication 23.42%; Competence 19.3%, and Ruggedness 07.20%. These five dimensions have high frequency and relevant, human-like traits that can be used to measure WHSs (Table 1).

Table 1. World Heritage Customised Personality.

World Heritage Customised Personality Dictionary									
COMPETENCE		**EXCITEMENT**		**SINCERITY**		**RUGGEDNESS**		**SOPHISTICATION**	
	Freq		**Freq**		**Freq**		**Freq**		**Freq**
top	297	well-preserved	952	nice	517	complex	106	beautiful	1479
special	220	amazing	774	ancient	182	hard	60	stunning	352
huge	168	impressive	504	happy	162	difficult	47	picturesque	288
able	113	unique	291	typical	156	massive	41	magnificent	221
complete	73	modern	231	real	111	intricate	36	spectacular	198
perfect	73	free	216	local	103	western	26	famous	178
outstanding	70	fantastic	183	original	102	sunset	25	easy	166
rich	52	incredible	122	major	69	powerful	15	fine	161
holy	48	breathtaking	121	remarkable	59	terrible	12	excellent	160
extraordinary	45	awesome	98	worthy	55	uneven	11	fascinating	125
industrial	38	awe-inspiring	81	live	44	external	10	royal	114
fortified	35	absolute	54	limited	43	outdoor	10	pretty	108
exceptional	31	cool	52	glad	42	wild	9	gorgeous	87
worthwhile	30	peaceful	51	significant	40	outer	8	fabulous	85
golden	29	artistic	36	pleasant	39	challenging	7	grand	67

Word	Freq	Word	Freq	Word	Freq	Word	Freq	Word	Freq
modernist	29	popular	35	accessible	37	rude	7	magical	62
favourite	25	particular	32	natural	35			charming	55
official	25	brilliant	31	helpful	34			quiet	53
knowledgeable	23	aware	25	lucky	34			expensive	48
protected	20	unbelievable	25	clean	33			superb	47
commercial	17	marvelous	24	poor	32			majestic	43
definite	16	unfinished	24	straight	32			enjoyable	33
spiritual	16	alive	20	romantic	30			intact	31
classical	15	colorful	19	sheer	26			astonishing	30
fortunate	15	unexpected	19	urban	26			impressed	30
glorious	15	strange	18	sad	24			splendid	29
reasonable	15	exciting	17	sunny	24			ornate	28
professional	14	incomplete	17	friendly	21			attractive	27
proud	14	recent	17	actual	20			delightful	27
safe	13	overwhelming	15	civil	20			scenic	27
educational	12	individual	14	single	20			elegant	24
notable	11	separate	14	simple	19			extensive	23
suitable	11	astounding	13	standard	18			renowned	23
smart	9	current	13	essential	17			exquisite	22
wealthy	9	intriguing	13	positive	17			enchanting	19
sufficient	8	terrific	13	traditional	17			cute	17
technical	8	excited	12	warm	17			plain	14
adequate	7	specific	12	comfortable	16			magic	13
atmospheric	7	vibrant	12	common	16			calm	12
dominant	7	creative	11	decent	16			delicious	12
solid	7	minor	11	inspired	16			gilded	12
strong	7	colourful	10	international	14			over-whelmed	11
untouched	7	fresh	10	deep	13			careful	10
		contemporary	9	normal	13			female	10
		rare	9	proper	13			photogenic	10
		serene	9	sacred	13			opulent	9
		active	8	concrete	10			precious	9
		crazy	8	convenient	10			lavish	8
		relaxed	8	modest	10			celebrated	7
		ongoing	6	pure	9			regular	7
		unfriendly	6	regional	9			delicate	6
				authentic	8			soft	6
				ordinary	8				
				correct	7				
				legendary	7				
				passionate	7				
				serious	7				
				honest	6				
				prime	6				
				useful	6				

Sum of Keyword Occurrences: (13,619) in 5579 Visitor Post-experience Reviews on TripAdvisor				
1704	4325	2517	430	4643

Keywords % to Total 222-item Scale of WH Personality				
19.4	23.4	23	7.2	27.02

5,579 Reviews Text Frequencies: 324,034 After Text Pre-processing: Numbers, Punctuations, Stop Words Eraser

Note: All Other textual software frequency tables are available from authors.

4.2. World Heritage Personality Distribution on TripAdvisor

In response to the first research question that relates to identifying and measuring WHS personality distribution in the most effective way possible, we used our 222-item personality trait list. The results from the 5-dimensional dictionary in Figure 1 showed that Sophistication was the highest distributed dimension (34.09%), followed by Excitement (31.16%). Competence showed a distribution of 18.48% and Sincerity of 12.51%. Ruggedness was only 3.16%; so not considered applicable to WH. The distribution of WHS personality dimensions is the reflection of a sum of 13,619 occurrences (Table 1) of the most frequent 222-item personality scale assigned specifically to WHSs as cultural attractions. Moreover, these dimensions are post-visit evaluations in the four studied countries. Therefore, defining these WHS personality dimensions converts them into a significant tool for further practical implications.
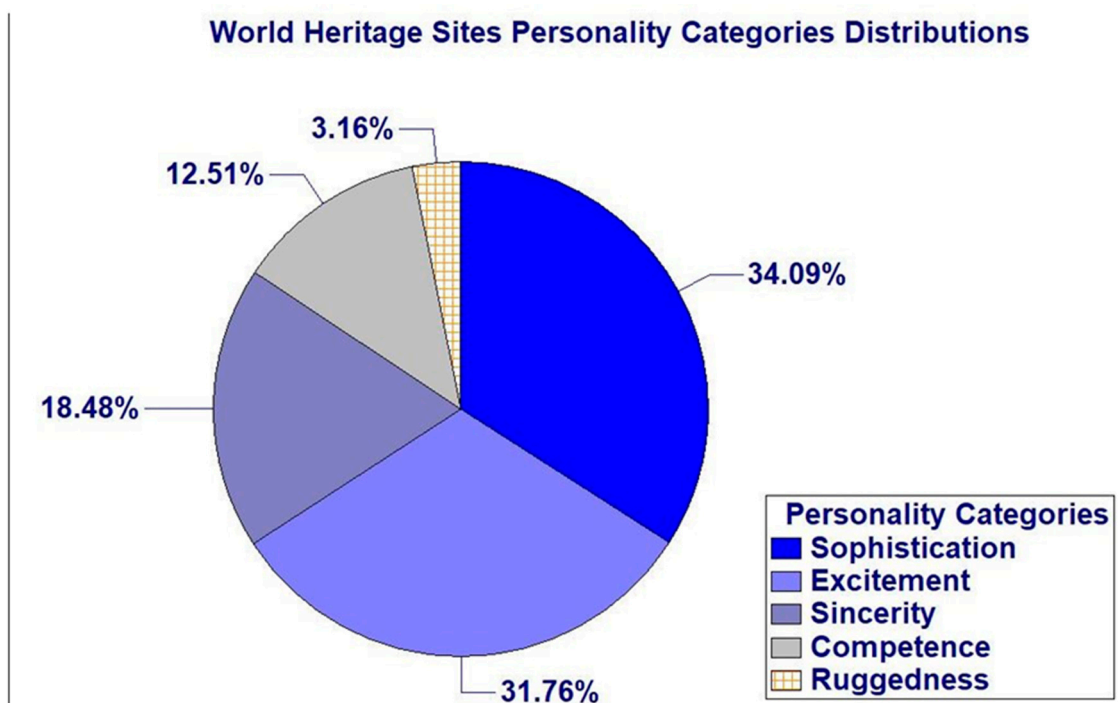
Figure 1. Personality Category Distribution for World Heritage Sites on TripAdvisor.

4.3. Relationship between World Heritage Sites and their Overall Personality Dimensions

One of the implications of using the BP lexical approach is that it enables comparison of countries' tourism websites in order to understand their positioning and competitive advantages [14,69]. WH is an umbra over a chain of sites or "branches" [28], so the present study uses the BP traits and dimensions identified to compare the personalities of individual sites with the overarching personality dimensions of the WH brand, in order to ascertain the degree to which each WHSs consent with the overall personality categories of WH. This helps identify the sites that need to enhance their personality traits for specific categories. Thus, WHSs are not competing with each other but rather sharing unique personality attributes. Our focus of interest, therefore, is to illustrate how the five identified personality dimensions of WH can be used effectively to help practitioners define WHSs lacking suitable personality profiles, or whose attributes were not perceived favourably by visitors.

To effectively compare several WHSs from the 192 sites visitor re-views highlighted as being relevant to the overall WHS personality, we selected 10 WHSs from each country (France, Germany, Italy, and Spain). The selection of these 40 sites (Table 2) was based on the file size, which indicates the number of reviews. Moreover, we selected the sites whose official names are well recognised on TripAdvisor or sites with a maximum of three URLs as in the case of the Alhambra. For each site name, we added initials to the beginning to indicate the country, followed by a number from 1 to 10 (1 refers to a site that has the maximum number of visitor reviews). For example, SP_1_Alhambra (Spain) is the site with the highest number of visitor reviews (336).

In the CA summary, a relationship is confirmed between the personality traits as content variables that are associated with each WHSs and the four WHS personality categories: X^2 was 611.612, with [a]$p < 0.0001$; *df* 156. A two-dimensional symmetric map was employed (Figure 2), which is more appropriate [77] and more widely used in tourism [19,69], as it helps ascertain relationships between sites (rows) and personality categories (columns). Here, the model is explained by the first two dimensions calculated by the sum of cumulative inertia (78.59%). This indicates that 79% of variances are included and that the data can be interpreted through these first two dimensions; furthermore, the quality of the display assessed by accumulative inertia is good (79%).
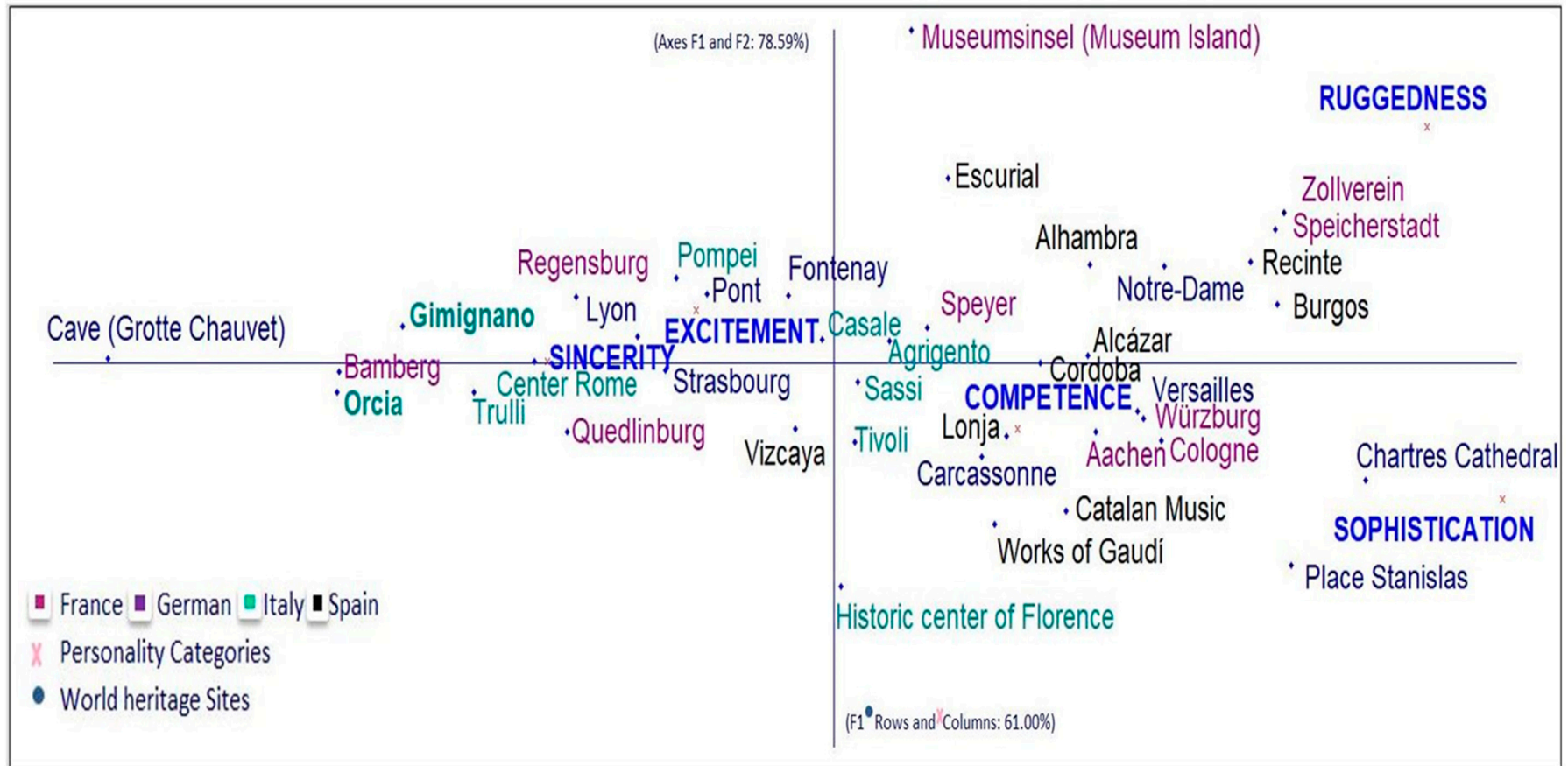
Figure 2. World Heritage Sites Personality Correspondence Map (X^2 was 611.612, with [a] $p < 0.0001$; *df* 156.)

The distances between the personality dimensions and the sites refer to the degree to which sites are linked to each other as well as the specific personality dimension, the degree to which they communicate, and how these dimensions are related (Greenacre, 2017). Figure.1 shows the sites' distances compared with WHS personality categories. In this study, we were more interested in the interpretation of the similarities and differences between WHSs based on the five BP dimensions. This can be explained by the distance between the sites on the two dimensions 1 (X) and 2 (Y) as in the profile of the rows' coordinates (Table 2) and the CA map (Figure 2). For instance, the WHSs Decorated Cave (the site names were shortened on the graph for efficiency of interpretation) in France is shown with the coordinate (−0.744), which is far from being similar to Chartres Cathedral, also in France. Chartres Cathedral (0.544) and Place Stanislas (0.468) share a high similarity on the sophistication dimension, as they are very close on the map., We can also see visually, the historic center of Florence in Italy and the Work of Gaudi in Spain are very close to each other on the map.

Later, we interpreted the positions of Wurzburg and Aachen Cathedral in Germany on the CA map as being very close to Cordoba (Spain) and Alcázar (Spain), which indicates that these four sites share a high similarity of the Competence′s traits. The graph showed that most of the Spanish and German sites are grouped close to the Competence category. Sites located in Italy and France are oriented towards Excitement and Sincerity. This interpretation may be important for the WHSs managers who work in the same countries or other countries. The comparison through the CA map enables site managers to determine the site that received equal visitor evaluations. Consequently, marketing managers can determine how to position their sites based on the personality traits most attributed to their WHSs and which sites include highly competitive intangible attributes to their sites to be borne in mind in market strategies.

The CA in text mining can help determine the site outliers and categories on the graph's edges [77]. Firstly, the graph portrays the Ruggedness on the edge of the first dimension and far from being attached to any WHSs. Secondly, the analysis of the relationship between the WHSs as rows and the personality categories as columns shows that Museum Island and Decorated Cave WHSs are located on the outside of the CA map, Which means that these two sites may need to enhance the study of the available user-generated reviews in order to explore how visitors perceived these sites in the WH personality category.

Another significant observation emerges in the correspondence graph regarding the relationship between the type of attractions and the personality dimensions that can be interpreted. It is obvious that some attractions such as Chartres Cathedral, Cologne Cathedral, Aachen Cathedral, Speyer Cathedral, Cathedral, Alcázar, Burgos Cathedral, and Notre-Dame are all types of buildings classified by TripAdvisor as Sacred and Religious Building. These are grouped near to each other on the first dimensions of the graph in the Competence category. Another example is Pont du Gard and Vizcaya Bridge types of bridges located in Excitement. Centre of Rome, Town of Bamberg, and the Historic Site Lyon are types of Historical Cities. Another observation from the graph is that the WHSs within the same countries share very similar soft associations, for example, the woks of Gaudi and, the Catalan Music Palace in Spain are located near each other; the same applies to Villa Tivoli, Villa Casale, Agrigento, and Sassi in Italy, which are very nearby. The Alhambra, Centre Cordoba, Cathedral, Alcázar in Spain, Zollverein, Speicherstadt, and Würzburg Residence in Germany are also positioned very near each other.

Moreover, from the observations in Figure.2, firstly, it is obvious from the CA map that the Ruggedness dimension is very far from being applicable to any of the forty WHSs. Thus, we recommend not considering this dimension for further analysis related to cultural attractions, as its keywords account is 7.20% of the 222 total scale items and 3.6% of the distribution of WHS categories. However, when we customized the dictionary, even though it was clear from the frequency of the keywords that we should exclude Ruggedness, it has been kept so as to demonstrate visually that it is not applicable to WHSs. Later,

we emphasized that Ruggedness items in the 4-Thesaurus BP dictionaries may be useful to employ in other fields of stud. Secondly, even though Sophistication is the most dominant category in the frequency of WHSs personality categories distributions, the forty WHSs that were selected for comparison are more oriented towards the categories Competence and Excitement. The study highlights Sophistication dimension traits are the most frequent used to describing the 195 WHSs according to visitors' post-experience user-generated content.

Table 2. Symmetrical Normalisation of World Heritage Site Personality.

Principle Coordinate (Rows)				
World Heritage Sites	**Dimension 1**		**Dimension 2**	
	Coord	**Corr**	**Coord**	**Corr**
F 1 Carcassonne	0.151	0.325	−0.196	0.544
F 2 Pont du Gard	−0.130	0.327	0.144	0.398
F 3 Notre-Dame	0.338	0.502	0.203	0.181
F 4 Versailles	0.310	0.851	−0.102	0.092
F 5 Chartres Cathedral	0.544	0.682	−0.246	0.139
F 6 Place Stanislas	0.468	0.549	−0.423	0.447
F 7 Historic Site of Lyon	−0.201	0.165	0.056	0.013
F 8 Decorated Cave	−0.744	0.708	0.009	0.000
F 9 Abbey of Fontenay	−0.047	0.009	0.141	0.081
F 10 Strasbourg	−0.173	0.082	−0.014	0.001
G 1 Cologne Cathedral	0.336	0.517	−0.162	0.121
G 2 Würzburg Residence	0.317	0.807	−0.116	0.108
G 3 Museum Island	0.080	0.013	0.698	0.973
G 4 Town of Bamberg	−0.508	0.997	−0.017	0.001
G 5 Aachen Cathedral	0.268	0.180	−0.144	0.052
G 6 Regensburg	−0.264	0.453	0.140	0.127
G 7 Zollverein	0.452	0.610	0.279	0.233
G 8 Speicherstadt	0.452	0.610	0.279	0.233
G 9 Quedlinburg	−0.274	0.425	−0.145	0.119
G 10 Speyer Cathedral	0.095	0.050	0.073	0.030
IT 1 Trulli Alberobello	−0.369	0.945	−0.061	0.026
IT 2 Pompei	−0.162	0.248	0.178	0.302
1T 3 Centre Rome	−0.307	0.963	0.005	0.000
IT 4 Sassi	0.025	0.037	−0.039	0.094
IT 5 Agrigento	−0.012	0.003	0.051	0.056
IT 6 Villa Casale	0.056	0.251	0.046	0.164
IT 7 Villa Tivoli	0.021	0.009	−0.165	0.533
IT 8 San Gimignano	−0.442	0.959	0.076	0.028
IT 9 Val d'Orcia	−0.510	0.419	−0.060	0.006
IT 10 Centre Florence	0.007	0.000	−0.468	0.312
S 1 Alhambra	0.262	0.589	0.207	0.367
S 2 Cathedral, Alcázar	0.260	0.810	0.015	0.003
S 3 Centre Cordoba	0.211	0.860	0.001	0.000
S 4 Antoni Gaudí Works	0.164	0.159	−0.336	0.665
S 5 Palace catalan Music	0.237	0.293	−0.310	0.502
S 6 Recinte Modernista	0.427	0.653	0.211	0.160
S 7 La Lonja	0.177	0.220	−0.152	0.163
S 8 Burgos Cathedral	0.454	0.831	0.122	0.060
S 9 Vizcaya Bridge	−0.040	0.009	−0.138	0.107

S 10 Escurial	0.116	0.060	0.387	0.667
Active Total		1.000		1.000

a. Symmetrical normalisation.

5. Discussion and Conclusions

5.1. World Heritage Theoretical Contributions

This research determines that visitors perceive WHSs through four personality dimensions which reflect WH values as a top brand. These dimensions are (1) Sophistication: referring to inspiration through such traits as "beautiful", "stunning", and "magnificent"; (2) Excitement: in social activity traits, such as amazing, wonderful, impressive, and unique; (3) Sincerity: conveyed through warmth and acceptance, via such traits as good, nice, original, and real; and (4) Competence: covering traits referring to responsibility, dependability, and security, such as "great", "outstanding", and "complete". The predominate WHS attribute is Sophistication (34.09% frequency). Aaker [11] claimed that brands ascribed Sophistication personality traits had significant value, pointing out the brands Mercedes and Revlon, which use Sophistication traits in their advertising to convey value. Sophistication, introduced to brands by Aaker [11], does not have a counterpart in the Big Five dimensions [12]. Therefore, we ascertain that the visitor-perceived WHS qualities identified concur with findings in previous studies claiming that WH is a top tourism brand [1,3,5].

Our study identified 222 personality traits which include prominent occurrences of personality descriptors congruent with the concepts "authenticity", "integrity" and "criteria of significance" [80]. These 222 visitor-perceived personality traits encompass the WH principles articulated in the UNESCO 1972 Convention and its operational guidelines [80], examples of which are original, authentic, complete, outstanding, unique, and expressional. Moreover, these 222 traits include items used in previous research scales to define the authenticity and integrated perceived quality of OUVs; for example, famous and authentic [35]; magnificent, scenic, beauty, and intact [33]; and eminence, uniqueness, and allure [34]. Thus, visitor acknowledged and assigned personality traits can be linked to perceived authenticity, integrity, and OUVs, which are triggers for increasing visitor numbers.

The study thus concurs with Wang et al.[33], Kim, Oh, Lee and Lee [81], and Nian et al. [82] in that the visitors' perception of authenticity and integrity affords protection and adds economic value to WHS. This notion is supported by the findings of Poria et al. [35] and Wuepper [31], who state that visitors are willing to pay higher entrance fees when they can perceive a WHS's intangible attributes. Thus, the WHS visitor-perceived quality mirrored in the aforementioned 13,619 human-like trait occurrences (clustered within five personality categories with 222 personality traits) can be considered a viable tool for promoting WHSs and similar cultural attractions. Furthermore, this 222-item scale can be used in other studies to measure various aspects of visitor behaviour surrounding WH branding.

5.2. Theoretical Contribution to Brand Personality

BP studies concur that visitors ascribe personality traits to countries, destinations, and places [9,10,40,44,58], but this study extends this animism to WHSs. Psychology studies and Aaker [11] perceived Excitement, Sincerity and Competence as being intrinsic aspects of personality, and Aaker was able to link Sophistication to external aspects of brands. Thus, our study acknowledges Aaker's [11] interpretation of the nature of these personality dimensions, and we link Sophistication to intrinsic aspects of WHSs through such traits as beautiful and magnificent, which visitors admire and that match their own. The other three frequent dimensions Excitement, Sincerity and Competence are related to the extrinsic attributes of WHS, as they exhibit traits such as original and authentic, which reflect UNESCO's internal philosophy.

This study supports previous research on BP stating that Aaker's replication of the five BP dimensions is subject to the specific field of study. In this regard, the four most distributed WHS personality dimensions defined (Sophistication, Excitement, Competence, and Sincerity) are congruent with several studies: Geuens, Weijters, and De Wulf [47] affirmed the replication of the four dimensions in several studies; and Davies et al. [13] noted that these four categories are the most widely explored, even if under different names. In our study, four of Aaker's five personality dimensions are replicated in the cultural context of WHSs, but Ruggedness is not (3.16%). The present study also supports research by Kumar and Nayak[22], Zhang et al. [10], and Davies et al. [13] who claim Ruggedness has come under attack in the context of marketing and tourism, and is not widely applicable [9,57,69]. Thus, we conclude that Aaker's model perceives Ruggedness as a culturally oriented dimension, neither replicated in, nor applicable to, WHSs.

In addition, it is critical that WHSs managers customizing marketing activities related to their WHSs take into consideration and use these 222-items with the five personality categories of WH to determine: firstly, the strongest personality attributes perceived by visitors for their sites; secondly, which other WHSs are perceived as similar to their sites through the lenses of the visitor post-reviews. The new 222-item scale WHSs personality dictionary and the methods applied in this study may be used as a tool to assist WH or other types of cultural attractions site managers to prioritize a list of sites they should consider as important in marketing related activities and knowledge sharing.

5.3. Methodological Contributions

Empirically, the present study advances the BP scale measurement by introducing a new lexical technique to identify and measure BP. We recognize that the dictionary by Pitt et al. [14] is an important antecedent to the BP lexical approach, and that using text mining to modify it moves the study forward. We have therefore built on previous research [14–19], and taken advantage of the vast amount of data on TripAdvisor and advances in text mining [71] to deduce WHS personality traits. These traits are essential criteria for content validity when constructing a BP scale.

Regarding limitations, we tried to reduce bias while customizing the WHS dictionary; however, the methods may have been influenced by using the specific dictionary of Pitt et al. [14] and the context of the sample. A limitation of the Pitt dictionary is that it does not capture a significant number of high-frequency adjectives that are personality traits. Therefore, linking BP to the dictionary approach with advances in natural language processing for text mining opens new avenues for further research, which could add to the body of knowledge on BP theory.

In the context of our study, we expanded the BP dictionary to include the most relevant, and frequent intangible, association with the WHSs. The current study is inspired by the pioneering methods introduced by Pitt et al. [14], who constructed the first BP dictionary; and following on from this, we have established four new BP dictionaries (namely, the 4-Thesaurus BP dictionaries). In these four BP dictionaries, we extend the list of synonyms for the forty-two traits that are components of Aaker's 15 facets and five dimensions. The technique used to establish these four dictionaries is different from that of Pitt et al. in that it takes into consideration how to link the synonyms for the forty-two traits to the five personality dimensions, based on the level of similarity among the synonyms and the forty-two traits. Moreover, these four dictionaries enable synonyms that are more relevant to the forty-two traits to be included. This makes it easier for the current study to classify those new traits not included in the Pitt BP dictionary, and that are important for describing WHSs, under Aaker's five dimensions [11].

Although much effort was made to provide a complete picture of WH visitor perceived qualities, the present study is limited to the context of European French, German, Italian, and Spanish WH, visitor perceptions and English user-generated reviews. Thus, a similar study could be carried out in another continent's countries to further the

knowledge on the WHSs personality. Moreover, a selection of reviews giving visitor perceptions of WHSs on TripAdvisor, or other tourism social networks, in different languages would give a deeper understanding of the intangible attributes of WHSs. This study is also limited to WH cultural sites; thus, identifying the personality of WH natural sites would provide a more complete picture of WHS personality attributes.

Another area that is worth investigating is the relationship between specific types of attractions and the four most distributed WH personality categories. The CA graph shows that there is a relationship pattern between the types of attraction in the WHSs and the four personality categories. As the study highlighted, most of the cathedrals (as an attraction type) are grouped around the Competence dimension and near to each other. TripAdvisor′s search engine for all attractions provides a classification of types of attraction, for example, most of the cathedrals are categorized under Sacred and Religious Buildings. Using TripAdvisor as a data source is extremely important for such a study.

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