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Tell me about your culture, to predict your tourism activity preferences and evaluations: cross-country evidence based on user-generated content

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Citation:

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Published online: 15 Dec 2023.

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Tell me about your culture, to predict your tourism activity preferences and evaluations: cross-country evidence based on user-generated content

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ABSTRACT

This study extracts user-generated content from Tripadvisor to understand the relation between national culture with tourists' preferences and evaluations of activities at destinations. Travel reviews were analyzed to measure the tourists' preferences for three types of tourism activities using machine learning methods. Multiple regression analysis was used to investigate the relations between Hofstede's cultural dimensions, tourists' preference and evaluation of tourism activities. Findings show that national culture significantly relates to tourists' preferences for only one type of activity (i.e. participatory), while it does significantly relate to tourists' evaluations of all three types of tourism activity (sightseeing, participatory, and ancillary activity). Tourists' cultural dimensions are found to have differential relations with tourists' evaluations of tourism activities. Power distance, individualism, and masculinity have positive relationships with tourist evaluation. Conversely, uncertainty avoidance, long-term orientation, and indulgence are negatively related to tourist evaluation. The study concludes by discussing the theoretical and practical implications.

Introduction

Culture is regarded as the "*collective programming of the mind which distinguishes the members of one group or category of people from another*" (Hofstede, 1997, p. 5). Individuals from different cultures have different cognitive styles, behavioral rules, and values. These unique differences may influence individuals' lifestyles, work patterns, and their consumption behavioral patterns (Rinuastuti et al., 2014). Travelling to a new place often comes with experiencing a cross-cultural encounter (Manrai & Manrai, 2011). Tourists from different cultural backgrounds may exhibit different preferences and consumer behaviors in planning a trip and experiencing a destination. For example, tourists from high uncertainty

avoidance cultures prefer to collect information more widely (Filimonau & Perez, 2019) and tend to obtain information from marketing channels (such as travel agencies) rather than personal sources or mass media (Money & Crotts, 2003).

However, existing research investigating the role of culture on tourists' travel behavior is generally based on evidence from surveys or interviews (Chatterjee & Mandal, 2020; Jia, 2020; Ruan et al., 2023). Although these studies produce thought-provoking results, their findings are less generalizable due to small sample sizes (Jia, 2020; Tang, 2017) and the limited cross-country comparisons (Chatterjee & Mandal, 2020; Pan & Shang, 2023). In principle, the more data available (i.e. big data), the more accurate

the generalization can be (Guo et al., 2017). Thus, this study aims to investigate the relation between the tourists' cultural background and their preferences and evaluations of destination activities by analysing user-generated content (UGC) (known as big data) extracted from Tripadvisor. UGC is characterized by two major features that justify their usefulness in this research inquiry: UGC is characterized by large-scale, which can ensure sufficient research samples (Guo et al., 2017); and UGC provides access to a global research sample (Jia, 2020), which allows far more cross-country comparisons. Thus, it is proposed that UGC represent a much wider and diversified international sample of tourists, hence utilizing UGC can elicit a deeper understanding of tourists' behavioral differences that are related to culture.

Additionally, tourists from the same socio-cultural backgrounds may behave differently in online and offline environments. UGC is generated by tourists in an anonymous and user-induced way; this makes writing reviews a relatively private behavior (Krumm et al., 2007). However, survey and interview data are frequently collected manually and are inevitably affected by the investigator or enumerators. Therefore, answering questionnaires or interviews is relatively a public behavior. People's cultural orientation (individualistic vs collectivistic, see Hofstede, 2011) can affect their behavior towards public-and-private-oriented data collection methods (Johnson et al., 2005). For example, people from collectivist cultures stress belonging and pay more attention to social performance and harmony, which are group behaviors (Hofstede, 2011). It indicates that they will try to match their survey answers to publicly accepted and expected responses (Johnson et al., 2005). Thus, it is evident that the use of UGC for investigating consumer/tourist behavior may produce different results from studies employing surveys and interviews.

The study uses Langkawi Island in Malaysia as its research context. Due to its international appeal, Langkawi receives rich multi-cultural UGC, which is required for exploring any relations between tourists' culture and their activity preferences and evaluations. Overall, the study aims to answer the following two main research questions:

i. Are there any relations between the cultural dimensions of international tourists visiting Langkawi Island and their preferences of tourism activities preferences?

ii. Are there any relations between the cultural dimensions of international tourists visiting Langkawi Island and their evaluations of tourism activities?

Using UGC, this study has examined the relations between the cultural dimensions of tourists with their preferences and evaluations in an online environment and found that cultural dimensions (such as individualistic vs. collectivistic) can influence the tourists' behavior differently online and offline. This finding can provide inspiration for subsequent offline and online comparative analyses of cultural role – relation on tourist behavior in other tourism contexts. With regard to methodology, this study is one of the first studies to adopt review texts to assess tourist preference at the level of tourism activity using the LDA topic model. Hence, the findings of this study provide useful guidelines and benchmarks for future studies on the topic. The findings also provide useful on how managers can design and promote various types of tourism activities for appealing and attracting tourists from different cultural backgrounds. The findings also offer a basis for monitoring and managing satisfaction with tourism activities across tourists from various cultural backgrounds.

Literature review

Cross-cultural analysis of tourists' behavior

National culture is an important concept that cannot be ignored in explaining tourists' consumption behavior, as culture is found to approximately explain 8–10% of the total variance of the tourists' satisfaction (Huang & Crotts, 2019). As a result, cross-cultural research has always been a hot topic in the hospitality and tourism context. Evidently, a plethora of frameworks have been developed aiming to measure the national cultural dimensions, such as: Hofstede (1980), Schwartz (1994) and Steenkamp (2001). Among these cultural dimension theories, the most frequently cited and used is Hofstede's cultural framework (Hsu et al., 2013; Litvin, 2019). Despite its internal appeal and use, Hofstede's framework has also been criticized, specifically because of the following issues (Filimonau & Perez, 2019; Ng & Lim, 2019): the country is not the best unit to study culture; the data is outdated; and several dimensions are insufficient to measure culture. However, Hofstede (2011) argued that his theory would be valid until

2100 or later because culture changes very slowly. Nevertheless, this framework is the most influential conceptual model in cross-cultural studies and holds the highest validity (Filimonau & Perez, 2019; Hsu et al., 2013). Initially, Hofstede (1980) constructed the cultural framework by investigating IBM employees from 40 countries. Recently, the dimensions of Hofstede's framework have been expanded to six (Hofstede, 2011):

i. *Power Distance: the degree to which people accept power inequality.*
ii. *Uncertainty Avoidance: people's tolerance for uncertainty and ambiguous situations.*
iii. *Individualism versus Collectivism: the degree to which people integrate into groups.*
iv. *Masculinity versus Femininity: people's preference for achievement, ambition, and material rewards.*
v. *Long-Term versus Short-Term Orientation: the degree of people's attitudes towards the time delay in meeting their material, emotional and social needs.*
vi. *Indulgence versus Restraint: the degree of acceptance of society's basic needs and desire to enjoy life.*

Inspired by Hofstede (2011), existing research provides evidence so far of the influence of culture on two dimensions of tourists' behavior, namely tourist satisfaction (e.g. Chatterjee & Mandal, 2020; Jia, 2020; Ladhari et al., 2011) and tourist evaluation behavior (e.g. Jia, 2020; Kim & Aggarwal, 2016; Mattila, 1999). Since customer satisfaction is regarded as the result of comparisons between customers' pre-purchase expectations and post-purchase evaluations (Gronroos, 1988), some researchers (e.g. Chatterjee & Mandal, 2020; Jia, 2020; Ladhari et al., 2011) argued that culture can affect tourists' satisfaction by influencing their product or service expectations. According to Chatterjee and Mandal (2020), differences in tourists' preferences and satisfaction with various service attributes from different cultures depend on the degree to which tourists match their expectations with price and quality assurance of the attributes. In particular, Jia (2020) and Ladhari et al. (2011) found that consumers from countries with a low power distance have higher expectations for service quality because they are less tolerant of power inequality.

In terms of tourists' evaluation of destinations, Mattila (1999) found that the evaluation behaviors of Asian and Western tourists were significantly different. Western tourists tend to pay more attention to efficiency while Asian tourists prioritize interpersonal relationships more. Jia (2020) compared the differences between Chinese and American tourists' restaurant services. Since Chinese tourists place greater emphasis on harmony and praise more and criticize less, their ratings are higher than those of American tourists. Kim and Aggarwal (2016) believed that compared with Western tourists, tourists from the East have stricter evaluation standards for services, which leads them to give lower ratings.

As concern research investigating the influence of culture on tourists' preferences, most of the studies are mainly conducted at an overall destination level, such as tourists' choice of destination (e.g. Filimonau & Perez, 2019; Hsu & Kang, 2003; Money & Crotts, 2003). Kim and Lee (2000) argued that tourists from individualistic cultures tend to choose novel destinations, while tourists from collectivist cultures tend to follow the destination choices of their families. In addition, tourists coming from cultures with high uncertainty avoidance prefer packaged tours and visit fewer destinations (Money & Crotts, 2003) as well as they are more inclined to choose well-known destinations (Filimonau & Perez, 2019). Conversely, tourists with low uncertainty avoidance tend to avoid well-known destinations (Filimonau & Perez, 2019).

In addition, there is some research discussing the impact of culture on the tourists' travel duration, consumption preference, and revisit behavior. Woodside et al. (2011) argued that compared with campgrounds and motels, tourists from high-uncertainty avoidance cultures prefer hotel accommodations because professional services can increase safety and reduce uncertainty. In collectivist cultures, tourists are more inclined to choose public transportation (Dingil et al., 2019) and are more willing to buy gifts for relatives or friends (Hsu et al., 2013). As concerns revisitation, research provides more controversial conclusions. Hsu and Kang (2003) believed that in relation to Asian tourists, Western tourists are less willing to revisit destinations. On the other hand, Filimonau and Perez (2019) argued that tourists from different cultures have no discernible differences in their willingness to revisit and they are more likely to choose new tourist destinations.

Overall, although there is a plethora of studies investigating the tourists' experience preferences and evaluations from a cross-cultural perspective, they are constrained by the limitations of research

methodology (surveys and interviews) (e.g. Filimonau & Perez, 2019; Woodside et al., 2011), selection of countries (mainly Western and Eastern) (e.g. Kim & Aggarwal, 2016; Mattila, 1999), and the number of different cultures included (e.g. Buafai & Khunon, 2016; Jia, 2020). On the other hand, most of the existing studies on the influence of culture on tourists' preferences and behaviors were analyzed by using destination as the cross-comparison tool (i.e. comparing tourists' preferences of activities across destinations) (e.g. Filimonau & Perez, 2019; Hsu & Kang, 2003; Money & Crotts, 2003), but there are limited studies using tourism activity as the level of analysis to investigate whether tourists' preferences and evaluations differ or not across various types of tourism activities. Research investigating the interrelations of culture with the tourists' preferences and evaluation of specific tourism activities can provide a deeper understanding of the "subjective" and culturally constructed way in which tourists conceptualize, select, and evaluate destinations. In addition, it can provide more practical and specific guidelines to destination managers on how to strategize the design and development of their tourism activities, so that they can differentiate and customize their destination experiences to satisfy and appeal to the multi-cultural tourism audience.

Methods for analyzing UGC

Ratings and reviews are the two most common forms of data analyzed by studies using UGC (Jia, 2020). Ratings represent a quantitative measurement of consumers' satisfaction with products or services by using scales of different levels (e.g. five of seven scale) (Anderson & Magruder, 2012). In tourism research, ratings are considered good indicators of tourist satisfaction (Bi et al., 2019), and so, they are incorporated into studies as a good proxy of the later construct. For example, various studies have used ratings to investigate their impact (i.e. the impact of tourist satisfaction) on the hotel room sales (Ye et al., 2009) and hotel performance (Xie et al., 2014). There are also studies using ratings in order to identify the factors determining hotel guest satisfaction (Bi et al., 2019; Wong et al., 2020).

Reviews are mainly textual, and so, they represent qualitative data. Nowadays, the main quantitative analysis methods of text data are topic models. Topic models are based on the co-occurrence of words to extract the topic in the text and calculate its corresponding weight (Blei et al., 2003). In particular, the Latent Dirichlet Allocation (LDA) model is the most widely used model that can extract potential topics in the text (e.g. Guo et al., 2017; Taecharungroj, 2022; Xiang et al., 2017). Simultaneously, the topic model can also be used to identify the texts with the highest contribution to each topic, and the contribution rate of these texts to the topic (Xiang et al., 2017). Several studies have used the weight of topic terms and the frequency of texts belonging to the topic as good proxies for measuring the consumers' perceived importance of products or services (Luo et al., 2021; Wu et al., 2018).

Theoretical underpinnings and hypothesis development

To answer the proposed research questions, this section develops the following hypotheses regarding how cultural dimensions predict tourists' activity preferences and evaluations. Evaluation in this study refers to tourist satisfaction as well as habits and willingness to express satisfaction. Following previous research (e.g. Gronroos, 1988), satisfaction is regarded as the difference between expectations and post-purchase experience. Although there are a plethora of frameworks for measuring cultural dimensions, Hofstede's framework is the most comprehensive and frequently used in cross-cultural research (Filimonau & Perez, 2019; Hsu et al., 2013). In addition, Hofstede's framework shows the highest validity in many cultural studies (Magnusson et al., 2008), such as hospitality (Kim, 2019), restaurant (Jia, 2020), and airline service (Chatterjee & Mandal, 2020). Hence, this study also adopts Hofstede's cultural framework.

The influence of cultural dimensions on tourists' preference for tourism activities

In societies with high power distance, individuals have a higher acceptance of uneven power distribution (Hofstede, 2011), and strive to obtain a status rank in a hierarchical power structure (Woodside et al., 2011). Attaining and maintaining a position within a hierarchical power structure necessitates consistent physical presence to reinforce the established social distance (Woodside et al., 2011). To achieve this and enhance their social status, they prefer to participate in well-known, unique, high-end, and luxurious tourism activities that people in their hometowns have fewer opportunities to engage in (Woodside et al., 2011; Filimonau & Perez, 2019). The reason is

that sharing such experiences with others serves to strengthen high-status rankings, which is particularly valued in countries with high power distance cultures. Therefore, the following hypothesis was proposed:

H1: Tourists from high power distance cultures prefer luxurious tourism activities.

According to Hofstede (2011), in collectivist cultures, societies pay more attention to group goals and share closer family relations. Traveling with family and friends can help tourists gain social recognition, which is more valued in this society (Woodside et al., 2011). Therefore, tourists from collectivist cultures prefer group travel (Filimonau & Perez, 2019). Additionally, individualists tend to make decisions and act independently, while collectivists are more inclined to seek approval from others when making decisions (Hofstede, 2011). Therefore, the choice of destination and tourism activities can also be affected by the dimension of individualism versus collectivism (Filimonau & Perez, 2019; Jackson, 2001). In collectivist societies, decision-making is jointly decided by the collective to maintain group harmony and satisfaction (Reisinger & Crotts, 2010), which may lead tourists from collectivist cultures to be more inclined to choose tourism activities that are suitable for most of their members. Accordingly, the following hypothesis was proposed:

H2: Tourists from high collectivism cultures prefer group tourism activities.

In high uncertainty avoidance societies, uncertainty is regarded as a threat (Hofstede, 2011). Tourists from such cultures are likely to have a low threshold for uncertainty (Manrai & Manrai, 2011) and to prefer standards and norms that allow them to anticipate reactions and control their surroundings (Ng & Lim, 2019). To avoid risky and ambiguous situations, these tourists make thorough travel plans, choose group travel, take short trips, and visit a few destinations (Money & Crotts, 2003; Woodside et al., 2011). In terms of tourism activities, Pizam et al. (2005) have proven that tourists from low uncertainty cultures prefer dynamic and active tourist activities more than those from high uncertainty cultures. Therefore, it was hypothesized that:

H3: Tourists from high uncertainty avoidance cultures are reluctant to experience unknown or risky tourism activities.

Individuals in cultures with a long-term orientation believe that both the past and the future are

important, and do not attach great value to short-term effects that occur in the present (Hofstede, 2011). Therefore, they are willing to put more effort to achieve expected goals (Hofstede & Minkov, 2010). In terms of consumer behavior, a long-term orientation may lead to frugal consumption, but if consumers have a strong interest in future results, their consumption will increase instead (Park et al., 2013). As a result, tourists with a long-term orientation may pay more attention to their travel experience and may not be price sensitive. Existing research shows that experiencing something new, unique, or different can lead to strong and long-lasting memories of travel (Toral et al., 2018). Therefore, tourists from long-term orientation cultures may tend to pursue unique experiences without much concern about the costs. It was thereby posited that:

H4: Tourists from long-term orientation cultures prefer unique tourism activities in a destination.

Indulgence represents a society that is relatively free to enjoy life and leisure (Hofstede, 2011). For tourists from high indulgence cultures, pleasure, satisfaction, and hedonic benefits are the main purposes of a holiday (Filimonau & Perez, 2019). Therefore, when these tourists select their preferred destinations, the ability to enjoy and/or relax plays a major aspect in motivating their travel choices (Filimonau & Perez, 2019). Conversely, individuals from high restraint cultures are more moderate in their decision-making and have limited desires (Hofstede, 2011; Koc et al., 2017). As a result, these tourists are less engaged and involved in activities related to leisure, fun, and pleasure (Koc et al., 2017). Additionally, these tourists spend less while traveling because they tend to restrain their wants and desires (Gholipour & Tajaddini, 2014). Accordingly, the following hypothesis was postulated:

H5: Tourists from indulgence cultures prefer tourism activities with high hedonic benefits.

In masculine cultures, societies emphasize achievement and promote competition (Hofstede, 2011). Tourists from high masculinity cultures tend to prefer outdoor and sports activities, because participating in such activities awards them a greater sense of personal achievement (Woodside et al., 2011). However, escaping one's routine environment is also a generally important tourist motivation (Robinson et al., 2011). Therefore, tourists from high masculinity cultures may wish to pursue leisure and

entertainment to escape the pressure of competition and achievement. Accordingly, the following hypothesis was proposed:

H6: Tourists from high masculinity cultures prefer leisurely tourism activities.

The influence of cultural dimensions on tourists' evaluation of tourism activities

According to Hofstede (2011), power distance reflects the tolerance of the unequal distribution of power. In the service industry, the impact of power distance on customer evaluation depends on the relative power between the service provider and the customer (Mariani et al., 2019). In banking and consulting, service providers are more powerful based on asymmetries because of their expertise, whereas in industries like hospitality, the providers have low status and power (Mariani et al., 2019; Mattila, 1999). As a result, customers from low power distance cultures have high expectations of service quality and expect responsive and reliable service (Donthu & Yoo, 1998). In tourism activities at destinations, some service providers possess professional knowledge (e.g. tour guides and water sports coaches) and/or important positions (e.g. security guards and immigration officers), which may lead to tourists from high power distance cultures being more tolerant of poor service. Therefore, the following hypothesis was proposed:

H7: Power distance affects tourists' evaluations positively.

In high individualism societies, individuals view themselves as an essential unit and accord priority to their own interests (Hofstede, 2011). Individualistic consumers prioritize their personal interests over the interests of service providers (Donthu & Yoo, 1998). Therefore, compared to collectivists, individualists are less tolerant of poor service (Furrer et al., 2000) and have higher expectations of service quality (Stamolampros et al., 2019). Collectivists, meanwhile, are more concerned about their social performance (Hofstede, 2011) and try to avoid conflict or public complaints (Patterson et al., 2006). Therefore, collectivists tend to write fewer negative reviews (Koh et al., 2010); instead, they give more positive ratings (Jia, 2020). Accordingly, the following hypothesis was put forth:

H8: Individualism affects tourists' evaluations negatively.

In high uncertainty avoidance cultures, consumers tend to search for more information and make more plans to reduce ambiguity and risk (Kim, 2019). Since these tourists have made sufficient preparations before traveling, they have higher expectations of products or services, which leads to lower satisfaction (Chatterjee & Mandal, 2020). In addition, individuals from high uncertainty avoidance cultures are often risk averse; as such, when a product or service fails to meet expectations, they are likely to provide a lower rating (Litvin, 2019). Therefore, it was hypothesized that:

H9: Uncertainty avoidance affects tourists' evaluations negatively.

In long-term orientation societies, individuals tend to work towards long-term goals (Hofstede, 2011). Individuals with long-term orientation cultures are less likely to provide negative feedback about service experiences because they are unwilling to risk damaging long-term relationships with service providers (Mazaheri et al., 2011; Stamolampros et al., 2019). Additionally, by carefully making purchase plans, they are less likely to spend impulsively (Park et al., 2013) and are more frugal in consumption (Hofstede, 2011). As a result, for the same amount spent, these tourists may have higher expectations of products or services and consequently, make stricter evaluations. Therefore, the following hypothesis was developed:

H10: Long-term orientation affects tourists' evaluations negatively.

High indulgence cultures encourage the expression of opinions and participation in leisure activities to feel happier (Woodside et al., 2011). The pre-determination to feel happier when traveling may lead tourists from high indulgence cultures to hold higher expectations of their travel experiences; subsequently, they are more likely to have lower evaluations. Research also shows that individuals from high indulgence cultures are more inclined to use and communicate through online social networks (Stump & Gong, 2017). Hence, it is expected that individuals from these cultures would tend to express their dissatisfaction online when their expectations are not met. Accordingly, the hypothesis was postulated as follows:

H11: Indulgence affects tourists' evaluations negatively.

In feminine societies, individuals pay more attention to harmony and inclusiveness; as a result, they tend to show more positive emotion in their reviews (Fang et al., 2013). In contrast, individuals from highly masculine cultures have a lower tolerance for service failures because they are more concerned with

responsiveness and reliability (Mariani et al., 2019). Furthermore, individuals that are in highly masculine societies, are more willing to express dissatisfaction, meaning they are also more willing to give lower evaluations (Yuksel et al., 2006). Therefore, it was hypothesized that:

H12: Masculinity affects tourists' evaluations negatively.

Methodology

This study aimed to explore the relations between national culture, tourist preferences and evaluations of tourism activities about their tourism experiences. Hofstede's framework was used to measure tourists' cultural dimensions in the current study. In many past studies (e.g. Chatterjee & Mandal, 2020; Huang & Crotts, 2019; Kim, 2019), tourists' nationality was used to represent their culture. However, Crotts and Litvin (2003) argued that the country of residence of tourists can better explain traveler attitudes and behaviors. Thus, the current study used the country of residence of tourists as the proxy of their culture which was provided by TripAdvisor. The LDA model was employed to extract the tourism activities mentioned in online reviews, and subsequently, to measure tourists' preference towards each tourism activity. Rating scores were regarded as tourist evaluations, which were directly extracted from TripAdvisor. Finally, multiple regression analysis was used to detect any effect of Hofstede's cultural dimensions on tourists' preferences and evaluations towards tourism activities. The framework and process of the research are shown in Figure 1.

Data collection

Tripadvisor is the largest travel virtual community (Liu et al., 2020) containing tourist reviews for attractions, hotels, and restaurants (Guo et al., 2017). It has been extensively used in previous hospitality (Bi et al., 2019; D'Acunto et al., 2023) and tourism (e.g. Liu et al., 2022; Luo et al., 2021) studies. Tripadvisor was selected for collecting the UGC for several reasons. First, although there are many review platforms, most of them rarely include reviews about attractions. For example, Expedia and Booking are specialized in flight and hotel bookings, and data about attractions is very limited. Instead, Tripadvisor is known to be rich in UGC about tourist attractions. Second, Tripadvisor has strict UGC publishing guidelines, which ensure the quality of data. Hence, it is not surprising that many studies have used Tripadvisor data to assure their research reliability (see Guo et al., 2017; Luo et al., 2021).

The study uses Langkawi Island in Malaysia as its research context. Langkawi is an archipelago of 99 islands located on Malaysia's west coast, with an area of approximately 526 squares kilometre. The island is endowed with spectacular features befitting an attractive tourism destination, such as beautiful beaches, natural flora and fauna, and a tropical climate (Omar et al., 2014). Langkawi is a world-class and popular destination attracting an increasing number of international tourists from 2015 to 2018 (LADA, 2019). Due to its international tourism appeal, Langkawi receives rich multi-cultural UGC. Because of these, Langkawi Island is an appropriate context to use UGC to study any relations between the tourists' culture and their activity preferences and evaluations.

Data collection was conducted in October 2022. The Octoparse software (a web crawler software) was used to extract text reviews and ratings about attractions in Langkawi. Unlike international tourists, native tourists live in the culture and environment, meaning that their preferences and evaluations of tourism activities may be influenced by factors (e.g. psychological factors, socioeconomic factors, etc.) other than the
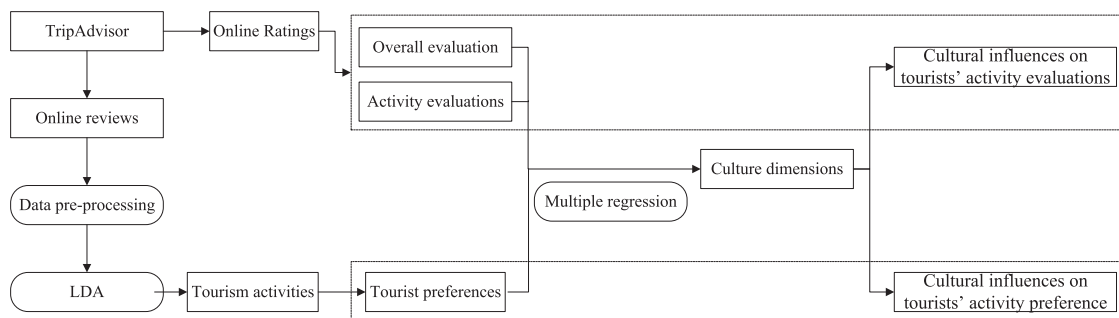

Figure 1. Research framework and process.

Table 1. Number of reviews on TripAdvisor across attractions in Langkawi.

	Attraction							
	Sights and Landmarks			**Nature Parks**			**Zoos and Aquariums**	
1	Sky Cab	5568	1	Kilim Karst Geoforest Park	925	1	Underwater World	985
2	Sky Bridge	1939	2	TelagaTujuh Waterfalls	621	2	Langkawi Wildlife Park	472
3	Eagle Square	633	3	PulauPayar Marine Park	368	3	Crocodile Adventureland	449
4	Langkawi Ferry	232	4	Temurun Waterfall	258		Total Reviews	1906
	Total Reviews	8372	5	Gunung Raya	209		**Business District**	
	Islands and Beaches		6	MARDI Langkawi Agro Technology Park	176	1	Art In Paradise	358
1	Cenang Beach	2094	7	Durian Perangin Waterfall	108	2	Oriental Village	324
2	TanjungRhu Beach	485	8	Langkawi Coral	68	3	Cenang Mall	234
3	BerasBasah Island	186	9	Langkawi Geopark	53	4	Night Market	217
4	Tengah Beach	175	10	Legend Park	51	5	GaleriaPerdana	76
5	Black Sand Beach	150		Total Reviews	2837	6	LamanPadi	73
6	PasirTengkorak Beach	112				7	Rice Museum	71
	Total Reviews	3202				8	Parade MegaMall	57
						9	Ayer Hangat Village	48
							Total Reviews	1457

national culture (Jia, 2020). Thus, reviews from local tourists in Malaysia were not included in the study. Extracted reviews that lacked any identification of tourists' nationality (see Table 1) were also removed from the analyses. A total of 17,774 reviews were ultimately extracted, encompassing the following destination attractions: sights and landmarks (8,372 reviews), islands and beaches (3,202 reviews), nature parks (2,837 reviews), zoos and aquariums (1,906 reviews), and business district (1,457 reviews).

Data pre-processing

To extract key information more accurately, noise (i.e. punctuation marks, conjunctions, etc.) should be removed as much as possible when constructing the LDA model. Therefore, to extract tourism activities, this study first pre-processed the data following several steps that mirror those taken in past studies, namely: (1) removing stopwords (e.g. is, that, to); (2) forming bigrams or trigrams; (3) lemmatization (e.g. "tourists" will change to "tourist" after lemmatization); and (4) part-of-speech tagging (POS). Under POS tagging, only nouns and verbs representing tourism activities were retained. The data pre-processing steps were conducted using the Natural Language Toolkit (NLTK) package in Python programming.

Mining of tourism activities from online reviews

In the current study, the LDA model is used to mine the tourism activities from online reviews, as it has been widely applied in previous hospitality and tourism research (Bi et al., 2019; Guo et al., 2017; Jia, 2020).

LDA is a supervised machine learning technique that can be used to identify hidden topics in large-scale document collections or corpus (Blei et al., 2003). There are three levels of structure in the LDA model, namely words, topics, and documents. Documents are viewed as a mixture of various topics, and the topics are composed of words that represent a certain meaning, such as a product or service (Bi et al., 2019). The LDA model can be used to obtain the topic distribution of each review and the word distributions in each topic (Xiang et al., 2017). The process of using LDA to generate topics is as follows:

(1) Choose $\theta_d \sim Dir(a)$, where $d \in \{1, \cdots, D\}$, D represents the number of documents, θ_d is the topic distribution of document d, $Dir(a)$ is a Dirichlet distribution with the priori parameter α.
(2) Choose $\varphi_k \sim Dir(\beta)$, where $k \in \{1, \cdots, k\}$, K represents the number of topics, φ_k is the word distribution of topic k, β is the priori parameter of φ_{dn}.
(3) For the nth word in the dth document, where $n \in \{1, \cdots, N\}$, N refers to the number of words in the given document, and where $d \in \{1, \cdots, D\}$.
(4) Choose a topic $z_{dn} \sim Multinomial(\phi_d)$.
(5) Choose a word $w_{dn} \sim Multinomial(\phi_{dn})$.

The joint distribution of LDA model is expressed in Equation 1. In this function, w_{dn} are the only observable variables, and the rest are latent variables.

$$p(W, Z, \theta, \phi, \alpha, \beta) = \prod_{k=1}^{K} p(\varphi_k; \beta) \prod_{d=1}^{D} P(\theta_d; \alpha) \prod_{n=1}^{N} p(z_{dn}|\theta_d)p(w_{dn}|\varphi z_{dn})$$

In the current study, we determine the topic numbers by using the coherence measure. Particularly, the

coherence measure is based on the hypothesis that words with similar meanings tend to appear in similar contexts (Syed & Spruit, 2017). Hence, coherence can be measured by the co-occurrence frequency of the words in original corpus (Ding et al., 2020). A high coherence indicates a great similarity amongst words on the same topic and this makes it easier to interpret the topics (Mimno et al., 2011).

Determining tourist's preference and evaluation of tourism activities

When tourists have a preference for certain attributes of a product or service, they will pay more attention to this attribute by posting more relevant content about it in their reviews (Vu et al., 2017). That is, in online reviews, tourists tend to generate content related to the attributes of the products or services that they care about (Jia, 2020). Therefore, the contribution of reviews to tourism activities can be a good proxy of the tourists' tourism activity preferences. As described in 3.3, the contribution can be measured according to the likelihood of a topic to occur in a specific review calculated by using the LDA (Xiang et al., 2017).

Tourist evaluation is extracted from the rating scores given to attractions by the tourists on the Tripadvisor platform. Tripadvisor allows tourists to rate attractions on a 5-point level scale with 1 being the lowest evaluation and 5 being the highest evaluation. Many past studies have also used Tripadvisor's rating scores as proxies of tourists' experience evaluations (e.g. Jia, 2020).

The current study examines the tourists' evaluations at a tourism activity level. In this vein, the study first allocates/assigns reviews to a specific tourism activity by identifying and calculating the reviews contributing the most to the relevant topic (i.e. tourism activity). Then, the study uses the rating scores of each review as a proxy of the tourists' evaluation given to the tourism activity that is mostly represented in this review.

Analysis and discussion of the findings

Tourism activities extracted from online reviews

To determine the appropriate number of dimensions, following the previous research (Taecharungroj & Mathayomchan, 2019), the number of topics was set from 2 to 10 for each type of attraction, and the coherence of each topic was calculated separately. When coherence reached its maximum, the optimal topic model was obtained. In this study, the maximum coherence values of "sights and landmarks", "business district", "island and beach", "nature parks" and "zoo and aquarium" were 0.463, 0.458, 0.492, 0.562, and 0.532, respectively, with corresponding topic numbers of four, three, three, three, and two (see Figure 2).

For the five types of attractions, a total of 15 topics (i.e. tourism activities) are extracted from the reviews, and within each topic showed top-10 topic words. The activities were named according to the words in the topic (Guo et al., 2017; Jia, 2020). Referring to previous studies (Song, 2017; Su et al., 2020), we classified the extracted tourism activities into sightseeing activities, participation activities, and auxiliary activities according to the way tourists engage in the activities. For the sightseeing activity, tourists mainly travel by viewing and excursion, such as "art museum", "island view", "nature view", "beach view", "animal show" and "waterfall". Participatory activity refers to tourism activities where tourists interact with tourism resources or people, including "food market", "duty-free mall", "sky bridge walk", "snorkeling", "animal feeding" and "water sport". Ancillary activity refers to tourism activities that help tourists achieve their travel goals, such as "ticket purchasing", "amenity" and "service". The specific classification is shown in Table 2.

Tourists' preferences and evaluations

We calculated (by using the LDA topic model) the number of contributions to specific tourism activities written within the tourists' reviews (named the tourism activity preference degree) in order to measure the tourists' preferences towards tourism activities (see Table 3). The tourism activities attracting the greatest number of contributions (i.e. representing the tourism activities with the highest tourists' preference) include animal feeding, waterfall, and snorkeling (with average values of contributions of 0.773 0.766, and 0.719, respectively). The tourism activities reflecting the least tourists' preference include the sky bridge walk (0.574), food market (0.565), and duty-free mall (0.524).

For evaluations, tourists tend to give higher ratings to view-related tourism activities but lower ratings to service-related ones. As shown in Table 4, the tourism activities with relatively high rating score evaluations were nature view, island view, and sky bridge walk, with means of 4.487, 4.469, and 4.411, respectively. However, the rating scores of service,
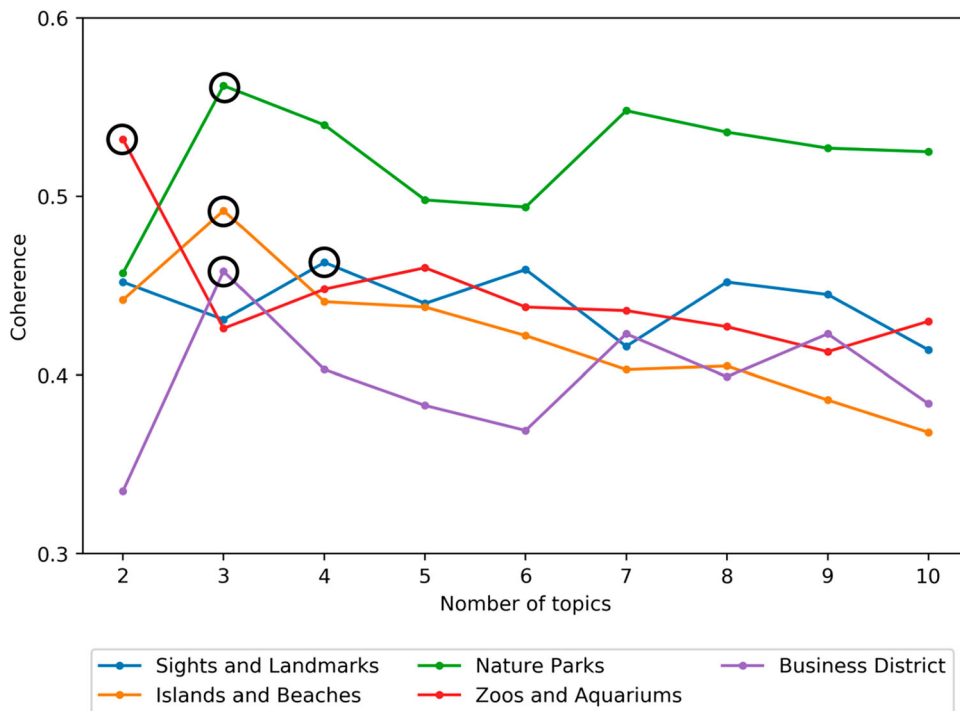
Figure 2. Coherence of selective topic model solutions.

food market, anima show, and duty-free mall were relatively low, with mean values of 3.868, 3.700, 3.612, and 3.430, respectively.

National culture and tourists' preferences and evaluations

National culture and tourists' preference

Multiple regression was conducted to examine potential relationships between Hofstede's cultural dimensions and tourists' preferences towards the 15 tourism activities. Of the 15 regression models analyzed, 7 were statistically significant (Table 5). Five out of the seven tourism activities that were found to significantly relate to cultural dimensions (namely animal feeding, duty-free mall, sky bridge walk, snorkelling and water sport) relate to tourism activities reflecting a participatory activity, while the other two tourism activities relate to a sightseeing type of tourism activity.

Table 2. Classification of the extracted tourism activities into type of activities.

Tourism Activity	Type of Activity	Type of Attraction	Topic word
Art museum	Sightseeing activity	Business District	art, museum, photo, picture, ticket, gift, fun, rice, painting, gallery
Island view		Sights and Landmarks	view, experience, mountain, weather, photo, cable car, picture, cloud, sky bridge, top
Nature view		Nature Parks	mangrove, watch, nature, view, sea, wildlife, island, lunch, scenery, bird
Beach view		Islands and Beaches	sand, beach, view, enjoy, island, sunset, walk, monkey, relax, resort
Animal show		Zoos and Aquariums	fish, penguin, aquarium, seal, display, creature, shark, exhibit, water, underwater
Waterfall		Nature Parks	water, walk, view, waterfall, climb, step, pool, rock, swim, rain
Food market	Participatory activity	Business District	food, market, eat, village, drink, fish, stall, clothe, souvenir, restaurant
Duty-free Mall		Business District	mall, activity, duty-free, chocolate, toilet, alcohol, souvenir, massage, stuff, pool
Sky bridge Walk		Sights and Landmarks	sky bridge, walk, station, step, queue, ticket, bridge, cable car, lift, stair
Snorkeling		Nature Parks	fish, water, snorkeling, beach, platform, lunch, food, shark, coral, snorkeler
Animal feeding		Zoos and Aquariums	animal, crocodile, bird, staff, food, park, feeding, photo, farm, picture
Water sport		Islands and Beaches	water, beach, activity, sport, parasail, restaurant, bar, sunset, sand, swim
Ticket purchasing	Ancillary activity	Sights and Landmarks	ticket, wait, purchase, line, price, queue, experience, cable car, book, buy
Amenity		Sights and Landmarks	ferry, seat, shop, food, water, travel, tourist, toilet, restaurant, boat
Service		Islands and Beaches	beach, food, shop, hotel, restaurant, drink, walk, tourist, road, price

Table 3. Tourists' preferences towards tourism activities.

Tourism activity	Min	Max	Mean	Std Deviation
Animal feeding	0.502	0.976	0.773	0.117
Waterfall	0.336	0.982	0.766	0.147
Snorkeling	0.250	0.981	0.719	0.195
Animal show	0.500	0.967	0.711	0.127
Nature view	0.346	0.978	0.708	0.140
Water sport	0.355	0.944	0.641	0.126
Service	0.346	0.952	0.633	0.139
Beach view	0.333	0.965	0.606	0.141
Ticket Purchasing	0.283	0.965	0.606	0.148
Island view	0.262	0.934	0.593	0.132
Art museum	0.289	0.921	0.582	0.120
Amenity	0.271	0.959	0.580	0.149
Skybridge walk	0.250	0.955	0.574	0.149
Food market	0.250	0.906	0.565	0.184
Duty free mall	0.262	0.840	0.524	0.125

Note: The activity preference degree = calculated as the number of con-tributions referring to specific destination attributions written within reviews.

In particular, the regression coefficients between power distance and duty-free mall ($\beta = 0.258$, $p < 0.05$), snorkeling ($\beta = 0.210$, $p < 0.05$), as well as water sport ($\beta = 0.123$, $p < 0.05$), are positive. Individualism correlated with animal feeding ($\beta = -0.164$, $p < 0.001$) and art museum ($\beta = -0.256$, $p < 0.05$) negatively while correlated with snorkeling ($\beta = 0.275$, $p < 0.01$) and water sport ($\beta = 0.136$, $p < 0.05$) positively. Uncertainty avoidance related to sky bridge walk ($\beta = -0.184$, $p < 0.001$), snorkeling ($\beta = -0.210$, $p < 0.001$), and water sport ($\beta = -0.102$, $p < 0.01$). Long-term orientation was only significantly correlated with snorkeling with 0.189 ($p < 0.001$). Indulgence exhibited a positive relationship with animal feeding ($\beta = 0.141$, $p < 0.001$) but negative relationships with sky bridge walk ($\beta = -0.120$, $p < 0.01$) and water sport ($\beta = -0.129$, $p < 0.05$). Masculinity is negatively related to water sport ($\beta = -0.061$, $p < 0.05$) while positively related to the waterfall ($\beta = 0.179$, $p < 0.001$).

Table 4. Rating score on tourism activities.

Tourism activity	Min	Max	Mean	Std Deviation
Nature view	1	5	4.487	0.740
Island view	1	5	4.469	0.706
Sky bridge walk	1	5	4.411	0.789
Art museum	1	5	4.379	0.799
Water sport	1	5	4.129	0.822
Waterfall	1	5	4.117	0.935
Beach view	1	5	3.997	1.021
Amenity	1	5	3.952	1.116
Ticket purchasing	1	5	3.946	0.941
Animal feeding	1	5	3.913	1.119
Snorkeling	1	5	3.905	1.200
Service	1	5	3.868	1.055
Food market	1	5	3.700	1.117
Animal show	1	5	3.612	1.032
Duty free mall	1	5	3.430	1.136

Cultural dimensions and tourists' evaluations at an overall level

When regressing cultural dimensions on overall evaluations, the cultural dimensions explained about 7.00% ($R^2 = 0.070$) of the total variance in overall evaluations. As shown in Table 6, all six culture dimensions are significantly related to overall evaluation: Power Distance ($\beta = 0.131$, $p < 0.001$), Individualism ($\beta = 0.246$, $p < 0.001$), Uncertainty Avoidance ($\beta = -0.102$, $p < 0.001$), Long-Term Orientation ($\beta = -0.182$, $p < 0.01$), Indulgence ($\beta = -0.276$, $p < 0.001$), and Masculinity ($\beta = 0.128$, $p < 0.001$).

Out of 15 tourism activities, 11 regression models were significant when cultural dimensions were regressed along with tourist evaluation. The 11 significant tourism activities covered three tourism activity aspects quite evenly with four sightseeing activity aspects (animal show, art museum, island view, and nature view), four participatory activity aspects (village activity, food market, snorkeling, and water-fall) and three ancillary activity aspects (amenities, ticket purchasing, and service). The polarities of the relationships between the cultural dimensions and most of the tourism activity evaluation are consistent with that of the overall evaluation. Only the polarity of the relationship between Uncertainty Avoidance and animal show ($\beta = 0.134$, $p < 0.001$) is opposite to the overall (see Table 6).

Discussions and implications

Discussions

From the utilization of both qualitative text reviews and quantitative rating scores, it enables us to explore and predict the relationships between Hofstede's cultural dimensions on both tourists' preferences and evaluations. The results show that cultural dimensions have a significant relationship with tourists' preferences for tourism activities in participatory activity aspects, while having a less significant relationship with tourism activities in sightseeing activity as well as ancillary activity aspects (see Table 5). All six cultural dimensions have a significant impact on tourists' evaluation. However, the polarity of the relationship between most attributes and national culture is consistent with the polarity of the relationship between overall evaluation and national culture; this means that the impact of national culture on evaluation will not be different due to tourism activity. The specific findings are shown in Table 7.

Table 5. Regressing cultural dimensions with tourism activity preferences.

Dependent variables	Animal feeding	Art museum	Duty free mall	Sky bridge walk	Snorkeling	Water sport	Waterfall
Simple Size	854	451	291	2594	610	1422	968
R^2	0.016	0.097	0.120	0.056	0.102	0.027	0.033
Coefficients							
Power Distance	−0.049	0.157	**0.258***	0.086	**0.210***	**0.123***	−0.117
Individualism	**−0.164***	**−0.256***	0.036	0.045	**0.275****	**0.136***	−0.140
Uncertainty Avoidance	−0.007	−0.052	−0.139	**−0.184***	**−0.210***	**−0.102****	−0.028
Long-Term Orientation	0.013	−0.059	0.060	0.035	**0.189***	−0.029	−0.026
Indulgence	**0.141***	0.065	−0.041	**−0.120****	−0.075	**−0.129***	0.041
Masculinity	−0.028	0.069	0.018	−0.014	0.002	**−0.061***	**0.179***

Note: Bold means significant; ***means $p < 0.001$; ** means $p < 0.01$; * means $p < 0.05$.

National culture and tourists' preference

Power distance is positively related to tourists' preference for snorkeling and water sport. These activities require more equipment support and professional guidance, leading to the cost being relatively high (e.g. parasail). In other words, snorkeling and water sport in Langkawi are relatively luxurious tourism activities. Therefore, H1 is supported, which posits that tourists from high Power Distance cultures prefer luxurious tourism activities.

Individualism is negatively related to animal feeding and art museum. Animal feeding and art museum are tourism activities that are popular with children, and the tourists are family-based. Hence, the hypothesis of H2 is supported. In particular, tourists from high collectivism cultures prefer tourism activities taking place within groups.

Uncertainty Avoidance has a negative relationship with tourists' preferences for sky bridge walk, snorkeling, and water sport. The Sky Bridge in Langkawi is a 125-meter curved pedestrian cable-stayed with sections of glass walkway in the middle span. When walking on the bridge, some tourists may feel uneasy or even fearful. Snorkeling and water sport are also tourism activities with high uncertainty, and participating in these activities may encounter certain risks. Therefore, H3 is supported, which posits that tourists from high uncertainty avoidance cultures are reluctant to experience risky tourism activities.

Long-Term Orientation and tourists' preference for snorkelling is positively related. This means that tourists from high Long-Term Orientation cultures prefer snorkelling. For most tourists, snorkelling is a unique tourism activity (Jaafar & Maideen, 2012). Therefore, H4 is supported, which posits that tourists from high Long-Term Orientation prefer unique tourism activities.

Indulgence has a positive relationship with animal feeding and negative relationships with both snorkeling and water sport. It means that tourists from high indulgence cultures tend to prefer relaxed tourism activities (i.e. animal feeding) rather than challenging ones (i.e. snorkeling and water sport). Therefore, H5 is supported.

Masculinity is negatively related to water sport, while positively related to waterfall. Water sport is a challenging tourism activity for tourists, however, the waterfall is static and lacks a challenging one. Therefore, H6 is supported which posits that tourists from high Masculinity cultures prefer leisure tourism activity.

National culture and tourists' evaluation

Uncertainty Avoidance, Long-Term Orientation, and Indulgence negatively relate to tourists' evaluation. Therefore, H7, H9, H10 and H11 are supported. As discussed in the hypothesis, tourists from high uncertainty avoidance, long-term orientation, and indulgence cultures usually have higher expectations and tend to give lower evaluations. For power distance, since coaches and tour guides have professional knowledge, tourists from high power distance cultures are more tolerant of poor service provided compared to those from low power distance cultures. Therefore, tourists from high power distance cultures have a higher tolerance for poor service and have higher evaluations.

In the current study, we found that Individualism and Masculinity relate positively to tourists' evaluation. However, the above conclusions are contrary to the hypotheses. Therefore, H8 and H12 are not supported. Meanwhile, tourists from collectivist societies pay more attention to their social performance and are unwilling to complain publicly (Manrai & Manrai, 2011). Hence in traditional research using survey data, individualism is usually negatively correlated with tourist satisfaction. However, studies have shown that individuals in a collectivist culture are more inclined to complain privately (Ngai et al.,

Table 6. Regressing cultural dimensions with tourists' evaluation of tourism activities.

Dependent variables	Overall rating	Amenity	Animal show	Art museum	Food market	Island view	Nature view	Service	Sky bridge walk	Snorkeling	Ticket purchasing	Water sport
Simple Size	17774	1493	1161	451	463	2618	948	1053	2594	610	1786	1422
R^2	0.070	0.036	0.034	0.055	0.030	0.033	0.046	0.038	0.019	0.030	0.023	0.013
Coefficients												
Power Distance	**0.131*****	0.112	**0.268*****	0.093	0.009	0.017	**0.170*****	0.069	**0.098*****	0.14	**0.178****	0.07
Individualism	**0.246*****	0.114	**0.280*****	**0.342****	0.069	**0.095***	0.07	0.128	**0.163*****	**0.234***	**0.192****	**0.168****
Uncertainty Avoidance	**−0.102*****	**−0.132*****	**0.134*****	0.02	0.093	**−0.163*****	−0.039	−0.066	**−0.054*****	−0.014	0.005	−0.06
Long-Term Orientation	**−0.182*****	**−0.168*****	0.002	0.045	0.07	**−0.167*****	−0.07	**−0.102****	**−0.085*****	−0.103	−0.033	0.061
Indulgence	**−0.276*****	**−0.138***	−0.085	**−0.274****	0.015	**−0.133****	−0.038	**−0.220*****	**−0.135*****	**−0.163***	**−0.126****	−0.06
Masculinity	**0.128*****	0.021	−0.016	0.076	**0.134***	**0.063****	**0.180*****	0.065	0.029	−0.016	−0.006	0.018

Note: Bold means significant; *** means $p < 0.001$; ** means $p < 0.01$; * means $p < 0.05$.

Table 7. Hypothesis testing summary.

Research Question	Hypothesis	Finding
RQ1	H1: Tourists from high Power Distance cultures prefer luxurious tourism activities.	Supported
	H2: Tourists from high Collectivism cultures prefer group tourism activities	Supported
	H3: Tourists from high Uncertainty Avoidance cultures are reluctant to experience unknown or risky tourism activities.	Supported
	H4: Tourists from Long-Term Orientation cultures prefer unique tourism activities in a destination.	Supported
	H5: Tourists from Indulgence cultures prefer tourism activities with high hedonic benefits.	Supported
	H6: Tourists from high Masculinity cultures prefer leisurely style tourism activities.	Supported
RQ2	H7: Power Distance affects the tourists' evaluations positively.	Supported
	H8: Individualism affects tourists' evaluations negatively	Rejected
	H9: Uncertainty Avoidance affects tourists' evaluations negatively	Supported
	H10: Long-Term Orientation affects tourists' evaluations negatively.	Supported
	H11: Indulgence affects tourist's evaluations negatively.	Supported
	H12: Masculinity affects tourists' evaluations negatively	Rejected

2007; Chapa et al., 2014), and are more inclined to express their dissatisfaction through word of mouth (Gözde Seval Ergün, 2018). Online reviews are regarded as electronic word-of-mouth, generated by consumers themselves, and belong to private actions. Therefore, collectivist tourists may be more inclined to use online reviews to express their dissatisfaction. On the contrary, tourists from individualistic cultures tend to give relatively high scores, that is, Individualism is positively correlated with evaluation.

From the perspective of evaluation behavior, individuals from Masculinity cultures are generally considered to have stricter evaluation standards for products (Manrai and Manrai, 2011; Gao et al., 2018). However, in this study, masculinity showed a positive relationship with the evaluation of tourists, that is, the tourists from higher masculinity tend to assign higher ratings. This may be explained from the perspective of tourist satisfaction. The tourists from Masculinity culture are also found more preferring static, less challenging tourism activities, and tend to give a higher evaluation of these activities, such as food market, nature view, and island view (as shown in Table 7).

Implications of the findings

Theoretical implications

First, this study focuses on the role of Hofstede's cultural dimensions in tourists' activity preferences and evaluation in the online environment. Most studies use surveys as a data collection method, and so, they are constrained by a certain degree of bias and limitations in the findings (Chatterjee & Mandal, 2020; Jia, 2020). Tourists usually express their opinions freely, anonymously and without "researcher guidance". Therefore, the impact of culture on online

and offline evaluation behavior of tourists may be different. For example, tourists from collectivist cultures tend to express dissatisfaction in private. As a result, in the online environment, individualism positively relates to tourists' evaluation, contrary to the conclusion drawn from survey data.

Second, the current study utilizes big data providing a good measurement metric of tourists' preferences and evaluation of tourism activities because they include both qualitative and quantitative tourists' self-provided data, namely text reviews and rating scores. Although existing studies have adopted rating scores to analyze the impact of culture on tourist evaluation, there are still relatively few studies on tourist evaluations at the level of tourism activity using review texts. In relation to structured ratings, review texts contain more details about tourists' travel experiences. However, it is difficult to mine and quantify the key tourism experience information from the review texts, which limits the research about the impact of national culture on tourists' behavior in detail, especially on tourists' preferences. This study uses the LDA model to quantify the tourist preferences for tourism activities at a particular destination (i.e. Langkawi Island), which in turn also expands the possibilities and approaches for conducting future research.

Practical implications

The findings confirm and provide useful guidelines on how tourism managers of Langkawi Island can design and promote tourism offerings that address and appeal to tourists according to their cultural backgrounds. This study shows that tourists from high power distance culture prefer well-known attractions and luxurious tourism activities, hence these tourists can be recommended for high-end attractions or

tourism activities, such as snorkeling, water sport and duty-free mall. Specifically, with respect to snorkeling and water sports, more professional or personalized equipment and service can be provided to tourists to enhance their experience. In the duty-free mall, more luxury and high-end products can be provided to tourists to cater to their shopping requirements. For tourists with collectivist culture, it is advisable that tourism offerings should be suitable for and address family travel requirements for Langkawi Island. For family trips, children play a vital role in determining tourism destinations (Li et al., 2017); therefore, tourism activities designed to be suitable for children will be more attractive to these tourists, such as animal feeding and art museums.

This study also provides a basis for the management of tourist satisfaction in Langkawi Island. The study found strong relations between the cultural dimensions and the evaluation of tourism activities by tourists. Hence, this highlights the need to optimally allocate and customize tourism resources and offerings based on tourists' cultural dimensions to improve their satisfaction. The influence of individualism and indulgence on tourist evaluation is much higher than the other four dimensions. Tourist evaluation has a positive relationship with individualism and a negative relationship with indulgence. According to previous research (e.g. Gözde Seval Ergün, 2018; Chapa et al., 2014), individuals from collectivist cultures tend to express their discontent through private channels such as word of mouth. Hence, managers should establish exclusive communication channels for such tourists to provide feedback and voice their grievances, rather than allowing them to express their discontent through online reviews. The results of this study proved that tourists from high-indulgence cultures usually have high expectations for tourism activities. Thus, improving the consistency between promotional information and tourism activity performance for these tourists can effectively improve their satisfaction (Li et al., 2023).

For specific tourism activities, individualism has a greater impact on art museum and animal shows, while indulgence has a greater impact on the art museum, service, and snorkeling. Therefore, managers should focus on improving the satisfaction of tourists from low individualism and high indifference cultures, by providing them with interesting tourism activities such as animal performance shows, museum tours and art galleries, excellent hospitality and services, and creating adventurous snorkeling activities. All these activities can effectively improve tourist satisfaction on Langkawi Island.

Conclusions, limitations, and ideas for future research

National culture is one of the important socioeconomic variables for understanding tourist behavior. This study first extracted tourism activities from UGC and quantified both tourists' activity preferences and evaluations by rating. Subsequently, the study examined the impact of national culture on tourists' preferences and evaluations of tourism activities.

This study has several limitations. First, this study takes only one tourist destination as the study context, thus the generalization of findings to other destinations remains to be further studied. Secondly, only English reviews were used in the study. Although some tourists from non-English speaking countries have posted reviews in English, these tourists may be influenced by the culture of English-speaking countries, and these samples may not be representative, thus, upcoming studies are advised to incorporate non-English data as well. Thirdly, individuals from the same culture may have different personality characteristics, hence only assigning the scores of Hofstede's cultural dimensions to individuals as evaluation indicators may not be accurate. Thus, future studies are suggested to take into consideration of different individual variables.

Finally, in examining the relationship between cultural dimensions and evaluation, this study only utilized quantitative ratings, neglecting the significance of textual reviews as valuable sources of information. Future research can concentrate on the utilization of textual reviews provided by tourists to generate insights regarding the impact of national culture on tourists' evaluations.

Disclosure statement

Data availability statement

Ethics statement

At the time of data collection, the University did not require a review of publicly accessible data. All data were anonymized prior to analysis.

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