

What services do Muslim tourists want? Uncovering nonlinear relationships and unobserved heterogeneity

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ABSTRACT

Halal tourism is a dynamic emerging market segment that is growing at a notable pace. Understanding the Muslim travelers' needs, interests and behaviors is a key priority for professionals. Therefore, the goals of this study are twofold: first, to examine the linear and nonlinear effects of Islamic physical and nonphysical hotel attributes on Muslim guests' visit intention and willingness to pay extra, and second, to employ an advanced segmentation method for revealing different types of Muslim travelers. Data were randomly collected from 559 Muslim in the United Arab Emirates. The study adopted the finite mixtures partial least squares technique to investigate the question of unobserved heterogeneity among Muslim travelers. The study results reveal important linear and nonlinear relationships and three new Muslim segments. The segment-specific findings offer distinctive insights for managers, policy makers and decision makers in developing long-term strategies for tapping into the Muslim travel market.

1. Introduction

Many countries rely on the hospitality and tourism industry as a key economic activity, given that it creates jobs, boosts exports, and brings prosperity around the globe (WTTC, 2017). Muslim tourist play a significant role in international tourism, constituting 24.1% of the global population (Pew Research Center, 2019) and representing a rapidly growing market (Oktadiana, Pearce, & Chon, 2016). From 25 million arrivals globally in 2005, the number of Muslim visitors reached 131 million in 2017, while this figure is expected to rise to 156 million by the year 2020, making up 10% of the tourist segment (UNWTO, 2018). According to a recent study by Mastercard-Crescent Rating (2019a) and Battour (2019), it is estimated that over 230 million Muslim tourists will travel domestically and abroad by 2026, injecting US\$300 billion into the global economy.

Studies and evidence suggest that halal tourism is the next frontier in the global travel industry, and Muslim travelers represent a highly promising niche market for the global hospitality and tourism industry (Eid & El-Gohary, 2015a, 2015b; MasterCard-CrescentRating, 2018; Ryan, 2016). Additionally, halal tourism is a major alternative source market that international hospitality industry professionals need to target due to its steady annual growth (MasterCard-CrescentRating, 2018; Mastercard-CrescentRating, 2019a). As Muslim tourists are

becoming a dedicated tourism industry market, policymakers and practitioners must comprehend the behaviors and needs of this sensitive new tourism market so that they may design, promote and offer for sale products-services that satisfy their needs (Shafaei, 2017).

However, despite its market potential, halal tourism is still in its infancy as a research subject (Ryan, 2016), and recent studies have argued that, in general, it is still an under-researched area (Han, Al-Ansi, Olya, & Kim, 2019; Henderson, 2016; Vargas-Sánchez & Moral-Moral, 2019b). Further empirical studies are needed to broaden the notion of halal tourism and services and how they match the needs, desires and expectations of Muslim consumers (Alserhan et al., 2018; Boğan & Sarıışık, 2019; Carboni & Idrissi Janati, 2016; Han et al., 2019; Ryan, 2016; Wingett & Turnbull, 2017). More specifically, the extant literature lacks a consolidated understanding of Muslim travelers' needs in terms of Islamic Physical Attributes (IPAs) and Nonphysical Attributes (INPAs) as well as their willingness to pay a premium (WPP) for services and visit intentions (VI). Previous literature has examined only the effects of IPAs and INPAs on customer satisfaction, destination selection (Battour, 2019; Battour, Battor, & Bhatti, 2014; Eid & El-Gohary, 2015a, 2015b; Han et al., 2019; Isa, Chin, & Mohammad, 2018; Wardi, Abror, & Trinanda, 2018) and guest purchase behavior (Jeaheng, Al-Ansi, & Han, 2019). Moreover, no studies have investigated the critical issue of unobserved heterogeneity in Muslim tourists, while important

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studies have highlighted the extreme heterogeneity of the Muslim world (Carboni & Idrissi Janati, 2016; Gómez-Déniz & Pérez-Rodríguez, 2019; Stephenson, 2014). Although recent studies have brought to light the importance of unobserved heterogeneity in tourism, the focus is more on observed (e.g., gender) rather than unobserved heterogeneity (Assaf, Oh, & Tsionas, 2016; Marques & Reis, 2015).

The purpose of this empirical study is to address the aforementioned research gaps by developing a deeper understanding regarding the formation of Muslim travelers' intentions towards IPAs and INPAs (products and services) and by applying a segmentation approach for unearthing different Muslim traveler types. Recent studies have highlighted the importance of market segmentation as it allows a tourism business "to position itself in a unique way" and "to develop a long-term competitive advantage" (Dolnicar, 2019, p. 10; Khoo-Lattimore & Prayag, 2015). The results will initially assist professionals in better understanding the expectations and needs of Muslim customers and formulating more effective and tailored marketing strategies, activities, and measures. It will also help hotel managers use metrics and KPIs to evaluate the implementation of their promotional strategies towards Muslim customers. At the macro level, this research will guide policy and decision-makers towards designing long-term strategies and master plans for the development of the Muslim travel market. To this end, there is an imperative need for both businesses and travel-related entities to proactively develop strategies to engage and attract this segment to their destinations (MasterCard-CrescentRating, 2018).

In line with Ryan's (2016, p. 123) suggestion "to progress from just description and observation of halal tourism to more analytical processes to achieve better understanding of this phenomenon," this research considerably contributes to both the literature and practice:

- First, it makes a theoretical contribution by using complexity theory to investigate the causal interactions of hotel IPAs and INPAs on Muslim guests' intention to visit the hotel and WPP.
- Second, it is the first to investigate the nonlinear effects of IPAs and INPAs on Muslim guests' intention to visit a hotel in a Muslim country and willingness to pay extra.
- Third, this is the first investigation of the unobserved heterogeneity of Muslim travelers and reveals three new important Muslim segments (groups). A multigroup analysis is also conducted to uncover differences among the three newly developed groups.
- Finally, it makes a first attempt to capture the heterogeneous profile of Muslim travelers by applying an importance-performance matrix analysis (IPMA) to get an in-depth understanding of the findings and provide more accurate managerial implications.

2. Literature review

2.1. Islamic nonphysical and physical attributes

The importance of IPAs and INPAs to Muslim travelers and to travel destinations and service providers has been revealed through recent studies and reports (see Table 1 for a summary of the most important qualitative and quantitative research about IPAs and INPA). More specifically, Eid and El-Gohary (2015a) have concluded that the availability of IPAs and INPAs is of great importance when Muslim tourists decide to purchase a product. This is why the Global Muslim Travel Index (GMTI) 2019 (Mastercard-CrescentRating, 2019a) has suggested that Muslim faith-based service needs make up one of the main segments in the Muslim tourism industry. Vargas-Sánchez and Moral-Moral (2019b) noted that the range of interpretations and religious practices of Muslims calls for a need to study Muslim tourists and create services adapted to their needs and expectations. Rahman, Zailani, and Musa (2017) believe that it is essential for tourist destinations to plan, create and deliver Muslim oriented services that accommodate the needs and desires of this particular tourist type while offering security regarding the features of the provided service is a key

aspect of ensuring the tourists' satisfaction and loyalty. Oktadiana et al. (2016) also adhere to the position that services are fundamental to Muslim travelers.

Quantitative studies by Battour, Ismail, and Battor (2011), Battour et al., 2014), Eid and El-Gohary (2015a, 2015b) and (Isa et al., 2018) single out the IPAs from the value of the tourism industry's services and products, including halal drinks and food, prayer facilities (such as prayer rooms, Qibla stickers pointing towards Makkah), availability of the Holy Quran in the hotel room and washrooms/facilities for purification before praying. INPA are intangible services that conform to Sharia regulations, such as segregated services (e.g., swimming pool, gym, spa or hair saloon), Islamic entertainment (e.g., the absence of gambling activities, sex channels on hotel TV channels, or alcoholic beverages), and general Islamic morality (e.g., decoration, work of art without humans or animals depicted). Isa et al., (2018) discovered that the perceptions of IPA-INPAs positively affect Muslim tourist satisfaction in tourist destinations, such as Malaysia, while Eid and El-Gohary (2015a) revealed statistical association only for physical attributes. A different scale of the halal services of a destination, developed by Battour et al. (2014), included "worship facilities," "halalness," "alcohol and gambling free," and "Islamic morality." This study found that all dimensions have a statistically significant effect on overall tourist satisfaction in Malaysia. Wardi et al. (2018) went even further by investigating the influence of attributes of halal tourism on tourists' satisfaction and loyalty (e.g., word of mouth - WOM). The findings indicated a significant influence of halal traits on tourist satisfaction and WOM. Nevertheless, there was no major direct correlation found between halal traits and WOM. Not long ago, Muharam and Asutay (2019) concluded that information about halal food and places, facilities for prayer and family-friendly areas is significant for Muslim tourists and that the promotion of Islamic attributes could help shape a halal-friendly image for the hotel. In the same vein, Jeaheng et al. (2019) also validated that different attributes are paramount in predicting affective and cognitive assessments, which subsequently influence the behavioral intentions of Muslim customers.

2.2. Theory of planned behavior and nonlinear effects

The Theory of Planned Behavior (TPB) has been widely adopted by researchers in tourism to explicate and predict travelers' "intentions to perform a given behavior" (Ajzen, 1991, p. 181). More specifically, TPB has been used in a wide range of tourism studies such as green hotel behavior (Yadav, Balaji, & Jebarajakirthy, 2019), environment-friendly initiatives (Gao, Mattila, & Lee, 2016), luxury cruises (Ioana-Daniela, Lee, Kim, Kang, & Hyun, 2018) etc. A key element of TPB is the behavioral intentions (BIs), which refer to a prospective client's future desire to consume a certain product-service (Han & Hyun, 2017). Numerous scholars have singled out BIs which serve as a functional construct that includes recommendation and revisit intention (e.g., customer loyalty) and buying behavior (e.g., WPP) (e.g., Han et al., 2019; Yadav et al., 2019). In halal tourism literature, BIs have attracted growing attention from researchers in recent years. More specifically, an interesting study conducted by Jeaheng et al., (2019) found a significant influence between halal-friendly services and tourist buying patterns in the hotel industry of Thailand. Han et al., (2019) reported that halal-friendly destination attributes positively impact BIs. Similarly, Al-Ansi and Han (2019) found that halal-friendly destination attributes have a positive and major effect on the destination trust and loyalty of Muslim tourists. Likewise, Ali, Xiaoling, Sherwani, and Ali (2018) stated that perceived brand quality significantly influences consumers' halal brand purchase intention, while Akhtar, Sun, Ahmad, and Akhtar (2019) investigated the effect of nonverbal communication on the interaction, adaptation and purchase intentions of Muslim tourists.

Despite the importance of the subject, there is a significant research gap, namely, identifying the particular halal services that attract

Table 1
Review of Islamic attributes literature.

		Qualitative studies																				Quantitative studies						
		A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	AA	AB	AC	AD	AE	AF
Islamic physical attributes																												
1	Prayer facilities: Prayer room/Qibla Indicator/prayer mat	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
2	Halal Food	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
3	Holy Quran	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
4	Shari'ah-compliant toilets	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Islamic non-physical attributes																												
1	Segregated Services	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
2	Muslim-friendly TV	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
3	Muslim-friendly entertainment:	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
4	Islamic-friendly Decoration/Art		*	*		*	*					*						*				*	*	*	*	*	*	

Notes: A: (Mastercard-CrescentRating, 2019a, 2019b), B: (Alserhan et al., 2018), C: (Stephenson, 2014), D: (Battour & Ismail, 2016), E: (Battour et al., 2011), F: (Henderson, 2010), G: (Mohsin, Ramli, & Alkhulayfi, 2016), H: (Samori, Md Salleh, & Khalid, 2016), I: (Samori & Sabtu, 2014), J: (Şen Küpeli, Koc, & Hassan, 2018), K: (El-Gohary, 2016), L: (Wingett & Turnbull, 2017), M: (Razzaq, Hall, & Prayag, 2016), N: (Yousaf & Xiucheng, 2018), O: (Vargas-Sánchez & Moral-Moral, 2019b), P: (Shakona et al., 2015), Q: (Mannaa, 2019), R: (Rahman et al., 2017), S: (Oktadiana et al., 2016), T: (Muharam & Asutay, 2019), U: (Battour, 2018), AA: (Battour et al., 2014), AB: (Wardi et al., 2018), AC: (Isa et al., 2018), AD: (Eid & El-Gohary, 2015a, 2015b), AE: (Han et al., 2019), AF: (Jeaheng et al., 2019).

Muslim guests to visit and for which they are willing to pay extra. Another under-researched area is the examination of the nonlinear-curveilinear effects of IPAs and INPAs on BIs. Under normal circumstances, researchers assume there are linear relationships between constructs by default. Nevertheless, although linear relationships approximate real relations in general, this may not always be true (Sarstedt et al., 2020). Along the same lines, de Langhe, Puntoni, and Larrick (2017), in his interesting article in the Harvard Business Review, explained the pitfalls of a linear way of thinking in a nonlinear world and the importance of nonlinear analysis in decision-making for management professionals and concluded that “the nonlinear phenomenon also extends to intangibles, like consumer attitudes” (2017, p. 139). Recent studies have expressed the need to shift towards advanced theories and analytical approaches to decode nonlinear, stochastic, asymmetric interactions and complex and heterogeneous patterns of BIs (Han et al., 2019; Nieto-García, Muñoz-Gallego, & González-Benito, 2017; Olya & Al-ansi, 2018). Assuming that a relationship is linear when in reality it is not will inevitably cast doubt on the quality of the findings and interpretation of the results (Rasoolimanesh, Ali, & Jaafar, 2018) and “lead to erroneous strategic decision-making regarding the management and marketing of hotels” (Streukens, Leroi-Werelds, & Willems, 2017, p. 368).

2.3. Complexity theory

The seminal study by Urry (2005) provides an extensive bibliographical review of complexity theory and provides an array of useful insights, such as the following perspective: “Complexity investigates emergent, dynamic and self-organizing systems that interact in ways that heavily influence the probabilities of later events. Systems are irreducible to elementary laws or simple processes” (Urry, 2005, p. 3).

Recently complexity theory was applied in the hospitality and tourism field (e.g., Han et al., 2019; Olya & Al-ansi, 2018; Olya & Mehran, 2017) as the theoretical research framework of models employed to demonstrate the complex and nonlinear behavioral responses of customers (i.e., tourists). Olya and Al-ansi (2018) applied complexity theory to explicate the BI of tourists towards halal products and services because of the intrinsic complexity of the concept. In the same vein, Han et al., (2019) adopted complexity theory to study the attributes of halal-friendly destinations and explain the BIs of Muslim tourists in South Korea. Similarly, Olya and Mehran (2017) viewed complexity theory as a necessary tool for predicting outbound tourism expenditure. Recently, Olya and Akhshik (2019) used complexity theory to explain the heterogeneity issues of the pro-environment BIs of travelers to sea turtle tours in Cyprus.

To this end, complexity theory was deemed as necessary for examining the decision-making process of Muslim guests regarding different IPAs and INPAs provided by hotels, uncovering the nonlinear relationships and unobserved heterogeneity of Muslim travelers, and accurately describing the issue (Kallemeyn, Hall, & Gates, 2020).

2.4. Hypotheses

The primary purpose of this empirical study is to investigate firstly, the linear hypotheses between hotels' IPAs and INPAs on Muslim travelers' VI and WPP for those services. Secondly, an alternative quadratic relationship was postulated for each linear hypothesis (Mohsin, Lengler, & Aguzzoli, 2015).

Hence, the following hypotheses are proposed (Fig. 1 shows the proposed model):

Firstly, we specified linear hypotheses between each antecedent and intention to leave the job. Secondly,

H1. There is a linear effect between IPAs and (a) *Muslim guests' VI* and (b) *Muslim guests' WPP*.

H2. There is a linear effect between INPAs and (a) *Muslim guests' VI* and (b) *Muslim guests' WPP*.

H3_{alternative}. There is a quadratic effect between IPAs and (a) *Muslim guests' VI* and (b) *Muslim guests' WPP*.

H4_{alternative}. There is a quadratic effect between INPAs and (a) *Muslim guests' VI* and (b) *Muslim guests' WPP*.

In addition to proposing the structural model, this study investigates the unobserved heterogeneity of Muslim travelers. Matthews, Sarstedt, Hair, and Ringle (2016) maintained that “unobserved heterogeneity is important to ensure that the results from an aggregate data level analysis are not biased, which would be the case if there were two or more unidentified, dissimilar groups within a data set.” Assuming that data is homogenous at all times could lead to biased or wrong conclusions on many occasions (Assaf et al., 2016; Hair Jr., Sarstedt, Matthews, & Ringle, 2016).

Scholars have identified the heterogeneity of Muslims as a result of their adherence to their faith-based needs (Carboni & Idrissi Janati, 2016; Mastercard-CrescentRating, 2019a; Olya & Al-ansi, 2018; Vargas-Sánchez & Moral-Moral, 2019a) and highlighted the importance of examining the heterogeneous profile of Muslim travelers. Similarly, a very interesting report conducted by the Organization of Islamic Cooperation (OIC, 2017) has suggested that Muslim travelers consist of different groups, each with its own expectations and preferences.

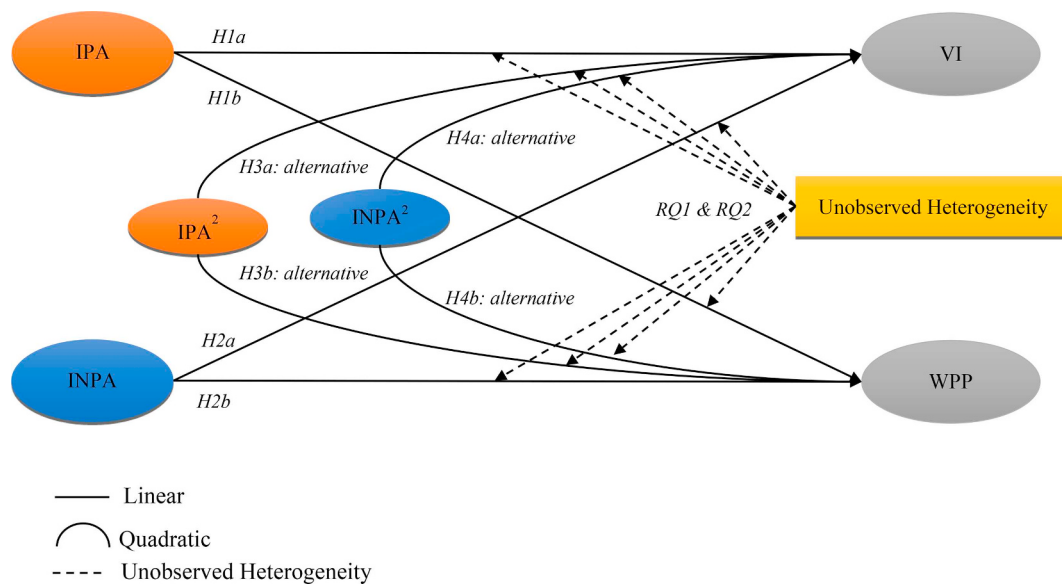


Fig. 1. Conceptual model

Therefore, segmentation is critical for defining the right mix of marketing and promoting strategies. Despite the importance of unobserved heterogeneity in research, however, it has not yet received enough attention from researchers in the tourism field (Latan, 2018).

Thus, this empirical study investigates the undetected heterogeneity among Muslim guests by applying an advanced segmentation approach (RQ1 and Fig. 1). If this assertion is valid, then multigroup analysis will be applied to investigate whether the different Muslim guest types differ significantly (RQ2 and Fig. 1).

3. Research methodology

3.1. Questionnaire, sampling design and data collection

The questionnaire was initially written in English, then translated into Arabic and, finally, translated back into English by two independent bilingual translators, following a combined translation approach to ensure that “the actual translation is equivalent or linguistically appropriate” (Behr, 2017, p. 582). The research questionnaire is provided in Appendix A.

Three screening questions were asked to assure the qualification of the respondents. Only those who were Muslims, over 18 years, and had stayed at a hotel in a Muslim country at least once in the past 12 months for leisure purpose were participated in the survey. Because it was not possible to obtain a fixed-line or mobile phone list of subscribers from telecommunication companies or public services due to data protection legislation, a random multistage sampling approach was applied (through three stages). First, a list with all the street names for the two biggest Emirates (Abu Dhabi and Dubai), which are the major tourist cities in the UAE (Wouter Geerts, 2018), was compiled by geographic.org (Geographic.org, 2018). The streets were given numbers and were then chosen by a number generator randomly (Papastathopoulos, Ahmad, Al Sabri, & Kaminakis, 2019). Second, the data were collected from two randomly selected weekdays, one randomly weekend and randomly selected day times during the last week of December 2018 and the first week of January 2019 in each Emirate. The weather during this period is pleasant with temperatures ranging between 16 °C to 29 °C). In stage three, five research teams were formed, consisting of two well-trained research assistants and one experienced interviewer, to collect data by conducting individual interviews with Muslims who qualified the screening criteria mentioned above. One member of each group was female and thus able to

interview women, as all team members knew of the conservative cultural requirements in the UAE. The trained interviewers invited at random respondents to take part in the survey. This sampling approach has been employed in previous researches in the context of tourism (Carneiro, Eusébio, Caldeira, & Santos, 2019). A total of 1515 persons were asked to participate, 598 accepted (39.5% response rate) and 559 valid questionnaires were obtained (39 were discarded because the participants were unwilling to answer many of the questions and/or reported more than 90% of the same responses across questions) (see Kim, Jun, Walker, & Drane, 2015).

Regarding the sample size, studies have revealed that it can be increased greatly with non-normal data (Bandalos, 2014). One way to overcome the problem of over- or underestimated sample size is Monte Carlo analysis. The analysis was conducted in R (R Development Core Team 2019a) using the “simsem” package, which has been developed for facilitating the simulation and analysis of data within the SEM framework (Pornprasertmanit, Miller, & Schoemann, 2018). Monte Carlo simulation showed that the minimum sample size for this study must be 537 observations (see Appendix B in supplementary materials, for the annotated simulation syntax and power curve).

3.2. Measurement development and pretest of the measures

IPAs and INPAs were both measured using four items, adapted from Eid and El-Gohary (2015a, 2015b) and Isa et al. (2018), respectively. WPP was operationalized using three items from Yadav et al. (2019) and Hwang and Lyu (2018). A 7-point likert scale was used for all items, ranging from 1-strongly disagree to 7-strongly agree (see Table 2).

A pretest was conducted to 35 Muslim guests to verify the validity and reliability of the measurement items and ensure that the contents of the survey were clear and easy to understand. Moreover, a review panel of three faculty members and three practitioners examined the content and face validity respectively. The questionnaire was concluded after taking into account the comments received.

3.3. Data analysis: combining different methods

This study implemented partial least squares structural equation modeling (PLS-SEM) using Smart-PLS 3.2.8 (Ringle, Wende, & Becker, 2015). PLS-SEM is a multivariate nonparametric approach, which is suitable for analyzing complex and nonlinear structural models. Additionally, PLS-SEM was adopted because of the violation of the

Table 2
Test of normality and evaluation of the measurement model.

Constructs and Items	Skewness (kurtosis)	$\bar{X}$ ($\tilde{x}$) [SD]	Convergent validity		Internal Consistency Reliability	
			λ^a (t-value)	AVE	CR, (α)	
Islamic Physical Attributes (IPA)						
IPA1. Availability of prayer facilities	− 1.664 (3.514)	6.450 (7) [0.806]	0.687*** (14.221)	0.539	0.821 (0.828)	
IPA2. Availability of Halal food	− 2.483 (8.775)	6.640 (7) [0.687]	0.870*** (20.986)			
IPA3. Availability of a copy of the Holy Qur'an	− 1.581 (2.502)	6.445 (7) [0.825]	0.730*** (16.308)			
IPA4. Availability Shari'ah-compliant toilets	− 1.187 (1.362)	6.210 (6) [0.894]	0.626*** (11.971)			
Islamic Non-Physical Attributes (INPA)						
INPA1. Availability of segregated services.	− 1.810 (3.943)	6.250 (7) [1.075]	0.824*** (20.281)	0.695	0.872 (0.872)	
INPA2. Availability of Shari'ah-compliant television channels	− 1.234 (1.606)	5.880 (6) [1.205]	0.849*** (25.160)			
INPA3. Availability of Shari'ah-compliant entertainment tools	− 1.263 (1.127)	5.970 (6) [1.221]	0.828*** (22.167)			
INPA4. Availability of art that does not depict human forms	− 0.575 (− 0.556)	4.750 (5) [1.790]	0.553*** (9.075)			
Willingness to Pay Premium (WPP)						
WPP1. It is acceptable for me to pay more for a hotel that offers halal-oriented services	0.208 (− 0.837)	3.320 (3) [1.640]	0.921*** (33.150)	0.852	0.945 (0.950)	
WPP2. I am willing to pay more for a hotel with halal-oriented services	− 0.327 (− 0.685)	4.230 (4) [1.626]	0.944*** (33.952)			
WPP3. I am willing to spend an extra amount of money for a hotel with halal-oriented services	− 0.147 (− 0.773)	3.930 (4) [1.765]	0.904*** (32.854)			
Visit Intention (VI)						
VI1. I am willing to stay at a hotel with halal-oriented services	− 0.994 (0.826)	5.620(6) [1.306]	0.831*** (19.199)	0.691	0.870 (0.870)	
VI2. I plan to stay at a hotel with halal-oriented services	− 0.774 (0.290)	5.160(5) [1.474]	0.827*** (25.768)			
VI3. I will make an effort to stay at a hotel with halal-oriented services	− 0.916 (0.490)	5.280(6) [1.503]	0.835*** (27.032)			
Tests for multivariate normality						
Mardia mSkewness = 23.273	chi2(286) = 2181.884				Prob > chi2 = 0.000	
Mardia mKurtosis = 180.2114	chi2(1) = 676.610				Prob > chi2 = 0.000	
Henze-Zirkler = 3.044	chi2(1) = 31,740.035				Prob > chi2 = 0.000	
Doornik-Hansen	Chi2(22) = 1381.199				Prob > chi2 = 0.000	
Discriminant validity						
	INPA	IPA	VI	WPP		
INPA	0.892^b	0.650 ^d	0.607	0.084		
IPA	0.550 ^c	0.812	0.516	0.560		
VI	0.539	0.520	0.892	0.218		
WPP	0.071	− 0.058	0.21	0.954		

Notes: Three asterisks (***) denote values significant of less than $\alpha = 0.01$; $\bar{X}$ = mean; $\tilde{x}$ = median; SD = standard deviation; λ = factor loadings; AVE = Average Variance Extracted; CR = Composite Reliability; α = Cronbach's alpha.

^a BCa bootstrapping method used for estimating nonparametric confidence intervals, as recommended by Hair et al. (2019); in case of a skewed bootstrap distribution. Test statistics were obtained by 10,000 bootstrap runs.

^b Diagonal elements in bold denote the square root of Average Variance Extracted.

^c Lower triangle: denotes the correlations between the constructs.

^d Upper triangle: denotes the HTMT values.

normality assumption (see Table 2), the predictive purpose of the study and the possibility of a deeper investigation of unobserved heterogeneity, which is one of the purposes of this study (Hair Jr. et al., 2016; Hair, Ringle, & Sarstedt, 2011; Hair, Risher, Sarstedt, & Ringle, 2019).

According to Hair, Sarstedt, Ringle, and Gudergan (2018), PLS-SEM also applies to nonlinear models. After evaluating the measurement and structural models, the nonlinear (quadratic) term is included for the assessment of its significance (see Fig. 1). The squared value of IPAs and INPAs (independent variables) has been used to denote the quadratic term (Streukens et al., 2017).

After evaluation of the predictive relevance of the linear and non-linear hypothesized relationships among the study constructs, the next step was to uncover the unobserved heterogeneity in the structural model. The standard way to treat heterogeneous data structures draws on standard clustering approaches, such as k-means and Ward's method, but previous research has proven that traditional clustering techniques do indeed perform extremely poorly in terms of identifying differences among groups (Ernst & Dolnicar, 2018; Sarstedt & Ringle, 2010). Towards this end, recent studies have urged researchers to adopt more sophisticated segmentation approaches, such as fuzzy

segmentation and k-means algorithm (see e.g., Dolnicar, 2019; Dolnicar, Grün, & Leisch, 2018; D'Urso, Disegna, Massari, & Osti, 2016; Hajibaba, Grün, & Dolnicar, 2019). For instance, Khoo-Lattimore, Prayag, and Disegna (2019) proposed a relatively new and novel clustering procedure, the fuzzy C-medoids (FCM) algorithm, which offers considerable advantages over the traditional clustering methods (D'Urso et al., 2016). In this study, we applied the finite mixtures partial least squares (FIMIX-PLS) algorithm because it is a latent class approach, which simultaneously estimates path coefficients and verifies the data structure's heterogeneity (Matthews et al., 2016). Moreover, as pointed out by Hair et al., (2016, p. 73) "it provides the researcher with likelihood-based information criteria to assist with the selection of the number of segments to avoid under or over-segmenting the data set". It should be noted that the performance of the finite mixture is extremely flexible when fitting models, with skewness and nonstandard distributional traits (Assaf et al., 2016; Rigdon, Ringle, & Sarstedt, 2010), as in the data in this study. Therefore, a major contribution of this study is the division of the overall Muslim traveler population into a number of groups (segments), each representing its own density attributes and describing a variety of meaningful traits of Muslim tourists.

Lastly, using the importance/performance map analysis or priority map (IPMA) complements the results yielded via the FIMIX-PLS segmentation approach. Through the IPMA, the standard reporting of results of path coefficient estimates is extended by using a perspective that takes into account the average values of construct scores (Ringle & Sarstedt, 2016). In our case, the results of IPMA provide the empirical foundation for a better understanding and analysis of the IPAs and INPAs provided by hotels for each different segment of Muslim travelers.

4. Statistical analysis

4.1. Descriptive statistics, data normality tests and assessment of nonlinear effects

The sample was nearly equally split regarding gender (51.3%, $n = 287$ men and 48.7%, $n = 272$ women). The sample was comprised of slightly more high-income travelers (49.2%, $n = 275$) than low-income travelers (42.2%, $n = 236$), while 8.6% of those surveyed stated that they are currently out of work. The vast majority (78.4%, $n = 438$) of the respondents had academic education, were married (63.7%, $n = 356$) and were long-stayers (64.4%, above the average length of stay. According to UNWTO-WTCF (2017), the global average length of stay for 2017 was 8.9 nights. Therefore, the length of stay can be categorized into short-stayers (less than 8.9 nights) and long-stayers (more than 8.9 nights). Regarding age, the vast majority (80.9%, $n = 452$) were Millennials or Generation Y (born in the approximate range of 1977–1994) (Chen & Chou, 2019), and the remaining 19.1% ($n = 107$) were Generation Z (born between 1997 and 2013) (Schroth, 2019).

The univariate normality was assessed using the skewness and kurtosis. Seven values have exceeded the range of -1 to $+1$ indicating violation of univariate normality (see Table 2) (Hair, Sarstedt, Pieper, & Ringle, 2012). To examine multivariate normality, four tests were used: "Mardia's multivariate kurtosis test" and "Mardia's multivariate skewness test" (Mardia, 1970), p. 519; the "Doornik-Hansen omnibus test" (Doornik and Hansen, 2008), p. 927 and "Henze-Zirkler's consistent test" (Henze & Zirkler, 1990, p. 3595). All tests rejected the H_0 (all four $p < .0001$), indicating a violation of multivariate normality (Table 2). To overcome the above shortcoming, this study applies a PLS-SEM approach because it makes no distributional assumptions (Hair et al., 2012).

4.2. Selection and evaluation of the measurement model

One of the fundamental concerns in PLS-SEM analysis is to avoid

measurement model misspecification. This may arise when specifying the measurement model as reflective when in fact, it should be specified as formative (Hair et al., 2018). A confirmatory tetrad analysis (CTA) was employed to empirically evaluate the measurement model type. The results provide support for the original (reflective) measurement specification.

The second step towards evaluating reflective measurement models consists of three criteria: (i) "internal consistency reliability," (ii) "convergent validity," and (iii) "discriminant validity" (Hair, Hult, Ringle, & Sarstedt, 2017, p. 111). The CR and α values are well above the limit of 0.7 (Hair et al., 2019), indicating internal consistency reliability. The average variance extracted (AVE) and the outer loadings of the indicators were used to evaluate the convergent validity. The AVE is above the 0.5 (Bagozzi & Yi, 2012), and the outer loadings of all indicators are statistically significant ($p < .001$), but three factor loadings do not exceed the threshold of 0.708: INPA4 (0.553), IPA1 (0.687) and IPA4 (0.626). The first was dropped and the last two retained because, as suggested by Hair et al., (2017, p. 113), "indicators with outer loadings between 0.40 and 0.70 should be considered for removal from the scale only when deleting the indicator leads to an increase in the composite reliability". In this case, eliminating INPA4 leads to an increase in CR, while eliminating IPA1 and IPA4 does not lead to a decrease in CR. Therefore, IPA1 and IPA4 were retained in the model. Finally, in terms of the Fornell and Larcker (1981) criterion, the data set offers adequate discriminant validity, given that the square roots of AVE scores (see Table 2) are much larger than all of the other correlation coefficients. The heterotrait-monotrait (HTMT) ratio of correlations (Henseler, Ringle, & Sarstedt, 2015) provides additional support with regard to the established discriminant validity. As shown in Table 2, the HTMT values are below the conservative threshold of 0.85, providing strong evidence that each construct is, in fact, distinct from the other constructs (Henseler et al., 2015; Voorhees, Brady, Calantone, & Ramirez, 2016).

Common method bias (CMB) was tested, and the results demonstrate that the model was free from CMB, as all variance inflation factors are less than the criterion value (3.3) (Kock & Lynn, 2012).

4.3. Evaluation of the structural model and quadratic effects

Once sufficient results were obtained from the measurement model evaluation criteria, the next step in assessing PLS-SEM results was evaluating the structural models (linear and nonlinear). According to Hair et al., (2017), there are four standard assessment criteria (for reflective models) that should be considered: (i) structural model path coefficient; (ii) coefficient of determination (R^2); (iii) blindfolding and predictive relevance Q^2 ; and (iv) effect size f^2 and heterogeneity (which is covered in subsection 4.4).

In order to examine potential nonlinearities in the relationships of structural models, we conducted two tests (Sarstedt et al., 2020). First, Ramsey (1969) was used on the latent variable scores extracted on the original model. The results showed that the regression of VI on IPAs and INPAs ($F(3, 553) = 0.29, p = .833$) is not subject to nonlinearity, while the regression of WPP on IPAs and INPAs ($F(3, 553) = 5.22, p = .002$) is subject to nonlinearity. Next, we tested the quadratic effects of IPAs and INPAs on VI and IPAs and INPAs on WPP.

Table 3 presents the results of the structural relationships for each research setting using both algorithms (linear and nonlinear). The results of the linear model revealed significant positive relationships between IPAs and VI ($\beta_{H1a} = 0.215, t = 4.218$), INPAs and WPP ($\beta_{H2b} = 0.147, t = 2.725$) and INPAs and VI ($\beta_{H2a} = 0.411, t = 7.825$). However, the relationship between hotels' IPAs and Muslim travelers' WPPs was found to be significant but negative ($\beta_{H1b} = -0.139, t = 2.985$).

The results of the quadratic model are presented in Table 3ii. In this table, we have included the new values of the linear relationships because both terms' effects (linear and quadratic) must be examined

Table 3
Hypothesis testing results.

i. Linear model						
Hyp.	Path	β (t-values)	Bias corrected 95% C.I.	R^2	f^2	Status
H1a	IPA $\rightarrow$ VI	0.215 (4.218)***	[0.115, 0.313]	$R_{VI}^2 = 0.406$	0.211	Supported
H1b	IPA $\rightarrow$ WPP	-0.139 (2.985)**	[-0.233, -0.038]	$R_{WPP}^2 = 0.211$	0.091	Supported
H2a	INPA $\rightarrow$ VI	0.411 (7.825)***	[0.317, 0.517]		0.282	Supported
H2b	INPA $\rightarrow$ WPP	0.147 (2.725)**	[0.033, 0.251]		0.101	Supported
ii. Quadratic model						
Hyp.	Path	γ (t-values)	Bias corrected 95% C.I.	R^2	f^2	Status
	IPA $\rightarrow$ VI	0.205 (2.806)**	[0.051, 0.340]	$R_{VI}^2 = 0.404$	0.107	
	IPA $\rightarrow$ WPP	-0.257 (3.612)**	[-0.415, -0.130]	$R_{WPP}^2 = 0.309$	0.155	
	INPA $\rightarrow$ VI	0.377 (6.126)***	[0.254, 0.495]		0.127	
	INPA $\rightarrow$ WPP	0.322 (6.071)**	[0.2452, 0.523]		0.201	
H3a: alternative	IPA ² $\rightarrow$ VI	-0.004 (0.159) ^{n.s.}	[-0.069, 0.028]		0.103	Not Supported
H3b: alternative	IPA ² $\rightarrow$ WPP	-0.205 (2.842)***	[-0.372, -0.110]		0.174	Supported
H4a: alternative	INPA ² $\rightarrow$ VI	-0.022 (0.723) ^{n.s.}	[-0.078, 0.031]		0.138	Not Supported
H4b: alternative	INPA ² $\rightarrow$ WPP	-0.128 (1.980)*	[-0.010, -0.249]		0.213	Supported

Notes: i The significances of differences were estimated by bootstrapping samples of 10,000 (Streukens et al., 2017) with Bias-Corrected and Accelerated (BCa) Bootstrapping a 95% confidence interval (C.I.)

ii Calculation method of Quadratic effect = orthogonalization (Henseler & Chin, 2010).

iii R^2 values of 0.25, 0.50, and 0.75 are considered weak, moderate and strong respectively (Hair Jr, & L., & G. Kuppelwieser, V., 2014, p. 113).

iv f^2 values below 0.02 have no substantial effect, values between 0.02 and 0.15 have weak effect, values between 0.15 and 0.35 indicate medium effects and values above 0.35 point large effects (Benitez, Henseler, Castillo, & Schubert, 2019)

v β = regression coefficient of linear model; γ = regression coefficient of quadratic model;

^{n.s.} Not significant

* $p < .05$.

** $p < .01$.

*** $p < .001$.

simultaneously to correctly infer the relationship between variables (Hair et al., 2018, p. 75). The results show that the estimated coefficients of IPAs and INPAs squared on VI are not significant (γ_{H3a} : alternative = -0.004, $t = 0.159$ and γ_{H4a} alternative = -0.022, $t = 0.723$). Therefore, H3a_{alternative} and H4a_{alternative} are not supported and are removed from the model. In contrast, the quadratic effects of IPAs and INPAs on WPP are found to be significant (γ_{H3b} = -0.205, $t = 2.842$ and γ_{H4b} alternative = -0.128, $t = 1.980$, respectively). Thus, we find support for H3b_{alternative} and H4b_{alternative}.

The coefficients of the linear terms in the quadratic model show whether the overall linear relationship between IPAs, INPAs and VI, WPP is positive or negative, while the nonlinear effects (in our case only WPP) determine the direction of the curvature. For example, a positive quadratic term creates a U-shaped or convex curve, while a negative term (such as γ_{H3b} and γ_{H4b}) creates an inverse U-shaped or concave curve (Hair et al., 2018, p. 67). Regarding the “positive quadratic effects, the strength of the exogenous variable's effect on the endogenous variable increases for higher values of the exogenous variable.” Adversely, “higher values in the exogenous variable show a lower effect of the exogenous variable on the endogenous variable for the negative quadratic effects” (Wilden & Gudergan, 2017, p. 822). A visual illustration of the quadratic relationships is shown in Fig. 2. The quadratic relationship between INPA and WPP is positive (dotted line) and inverted U-shaped, while the relationship between IPA and WPP is negative (dotted line) and inverted U-shaped.

The significance of the quadratic effect between IPA, INPA on WPP along with the higher f^2 effect sizes and explained variance (R^2) indicate a nonlinear relationship instead of a linear relationship. In contrast, the results between the exogenous variables and VI clearly indicate a linear relationship rather than a quadratic relationship.

4.3.1. Interpretation of the quadratic effects

The interpretation of the quadratic relationship is different from the interpretation of the linear relationship. For example, in our case, the

linear coefficient $\beta_{H2b} = 0.147$ indicates that every additional unit of INPA increases WPP by 0.147. Taking into consideration the quadratic effects, the formula changes into $WPP = 0.322 \cdot INPA - 0.128 \cdot INPA^2$. The coefficient for the relationship between INPA and WPP changes from 0.147 (linear model) to 0.322 (quadratic model). However, the linear and quadratic coefficients cannot be compared directly, and it would be wrong to assume that the linear effect doubled (from 0.147 to 0.322) or that an increase of one unit of INPA will change WPP by 0.322 because of the existence of $INPA^2$. For example, when adding the values of 0, 1 and 2 into our formula $WPP = 0.322 \cdot INPA - 0.128 \cdot INPA^2$, we have the following results:

$$INPA = 0, WPP = 0.322 \cdot 0 - 0.128 \cdot 0 = 0$$

$$INPA = 1, WPP = 0.322 \cdot 1 - 0.128 \cdot 1 = 0.194$$

$$INPA = 2, WPP = 0.322 \cdot 2 - 0.128 \cdot 2^2 = 0.132$$

As shown here, a one-unit change of INPA from 0 to 1 leads to a change of WPP by 0.194 units, while a one-unit change from 1 to 2 leads to a smaller change of WPP by 0.062 (0.194–0.132) units. Hence, the interpretation of quadratic effects is markedly different than the interpretation of the linear effects. Following the same pattern, a one-unit change of IPA from 0 to 1 leads to a change of WPP by -0.462 units, while a one-unit change from 1 to 2 leads to a significantly larger change of WPP by -0.872 units.

$$IPA = 0, WPP = -0.257 \cdot 0 - 0.205 \cdot 0 = 0$$

$$IPA = 1, WPP = -0.257 \cdot 1 - 0.205 \cdot 1 = -0.462$$

$$IPA = 2, WPP = -0.257 \cdot 2 - 0.205 \cdot 2^2 = -1.334$$

The pattern of the quadratic relationships is shown in Fig. 2.

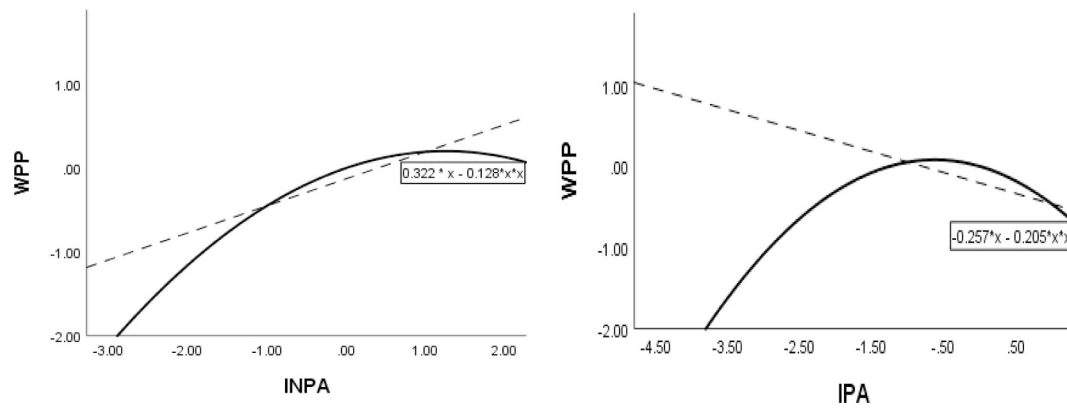


Fig. 2. Quadratic plots.

4.4. Investigating unobserved heterogeneity among Muslim travelers

After the criteria for measurement and structural models are deemed both valid and in support of the underlying theoretical hypotheses on the level of aggregate data, FIMIX-PLS can then be applied. Given that the number of segments is unknown right from the start, researchers must compare the findings with the different segments regarding statistical adequacy and interpretability (Sarstedt, Ringle, & Hair, 2017). The information, classification criteria and relative segment sizes found in Table 4 (i and ii) show that choosing more than three segments does not make much sense. The values of AIC3, BIC, CAIC and EN overwhelmingly support choosing three segments. Moreover, when the number of segments is increased from two to three, the added segment accounted for only 1.9% (11 observations), thus proving that segment 4 is too small for a valid analysis. Therefore, the 559 observations in the aggregated sample are empirically allocated to either group 1 (322) or group 2 (170) or group 3 (67). In this study, the three segments provide fertile ground to make practical and also interpretable conclusions, as will be evidenced later on.

Granted that the three-segment solution is considered the optimal solution, Table 4iii shows the number of respondents belonging to a certain membership probability segment. The lower membership probabilities reveal “the complexity of measuring response-based variables, so probability ranges over 50% are of interest” (Groß, 2018, p. 14). Based upon these findings, all Muslim travelers (519 out of 559) fall within one segment with a probability above 50%, a fact evidencing that the 3-segment solution is quite an effective approximation for grouping Muslim travelers into 3 segments. This answers research question 1.

4.4.1. Evaluation of the measurement and structural model of the three segments

After an optimal segment solution is chosen, the new model structure must be evaluated. Following the aforementioned procedure, the results support the validity and reliability of all segments with the exception of S2, in which the square root of the AVE for INPA is not higher than the values of the correlation between INPA and VI (Fornell & Larcker, 1981), thus indicating that the INPA and VI measures do not discriminate well.

When looking at the structural model assessment, all hypothesized relationships are significant only based on the aggregate model, while this is not to be taken for granted for the three-segment model, where a certain level of heterogeneity is implied. Moreover, the weighted R^2 for the three groups is substantially higher than the R^2 for the global model, and this comprises additional evidence of data bias by unobserved heterogeneity (Table 5).

Table 4

Information, classification criteria, relative segment sizes and membership probabilities.

i. Information and classification criteria ^a for a one - to four - segment solution				
	S1	S2	S3	S4
AIC	2914.52	2904.31	2834.17^b	2849.96
AIC ₃	2927.52	2921.31	2869.17	2873.96
AIC ₄	2940.52	2938.31	2904.17	2897.96
BIC	2970.76	2977.86	2985.59	3000.32
CAIC	2983.76	2994.86	3020.59	3044.32
LnL	-1444.26	-1435.16	-1382.09	-1360.98
EN		0.395	0.68	0.645

ii. Relative segment sizes				
	S1 (No. Observ.)	S2 (No. Observ.)	S3 (No. Observ.)	S4 ^c (No. Observ.)
S2	0.688 (385)	0.312 (174)		
S3	0.576 (322)	0.305 (170)	0.119 (67)^c	
S4	0.661 (369)	0.240 (134)	0.080 (45)	0.019 (11)

iii. Membership probabilities: Two-segment solution				
	S1	S2	S3	Total (Relative)
Segment Share	57.6%	30.5%	11.9%	559 (100%)
50%	298.9	158.0	61.6	519 (92.8%)
60%	218.7	115.6	45.1	379 (67.9%)
70%	152.3	80.5	31.4	264 (47.3%)
80%	120.0	63.4	24.8	208 (37.2%)
90%	86.6	45.8	17.9	150 (26.9%)

^a AIC = Akaike's Information Criterion; AIC₃ = Modified AIC with Factor 3; AIC₄ = Modified AIC with Factor 4; BIC = Bayesian Information Criteria; CAIC = Consistent AIC; LnL = LogLikelihood; EN (Entropy Statistic (Normed)).

^b The bold values denote the optimal value for the recommended information criteria (Sarstedt, Becker, Ringle, & Schwaiger, 2011). When the value of a certain information criterion is smaller, the segmentation solution is better, except for in terms of EN, whereby higher values indicate better separation of the segments. Previous research offers evidence that “EN values over 0.50 allow us a clear classification of data into the predetermined number of segments” (Hair et al., 2018, p. 183).

^c We ended the procedure with a number of segments ($S = 4$) as the information criteria did not show any further improvement. Additionally, the solutions for three or more classes are deemed not admissible. The smallest segment size reaches levels of 0.019, which does not present us with sufficient observations to conduct a reasonable segment-specific PLS path analysis (Sarstedt & Ringle, 2010, p. 1307).

Table 5
Results for the global model and group-segment models.

		Global Model	FIMIX Segmentation ^a		
			S1	S2	S3
Group size (%)		559 (100%)	322 (57.6%)	170 (30.5%)	67 (11.9%)
Hypotheses and Paths					
H1a	IPA → VI	0.205 (2.806)**	0.522 (9.253)***	−0.379 (4.898)***	0.189 (7.635)***
H1b	IPA → WPP	−0.257 (3.612)**	−0.036 (0.687) n.s.	−0.468 (3.499)***	−0.148 (3.083)**
H2a	INPA → VI	0.377 (6.126)***	−0.031 (0.578) n.s.	0.884 (12.644)***	0.870 (42.329)***
H2b	INPA → WPP	0.322 (6.071)**	−0.175 (3.075)**	−0.494 (3.888)***	0.869 (24.981)***
H3b: alternative	IPA ² → WPP	−0.205 (2.842)***	−0.014 (0.475) n.s.	−0.306 (4.413)***	−0.049 (0.683) n.s.
H4b: alternative	INPA ² → WPP	−0.128 (1.980)*	−0.094 (2.609)**	−0.145 (1.067) n.s.	0.233 (4.127)***
Measurement model assessment					
Reliability (CR, α)		+	+	+	+
Convergent validity (λ, AVE)		+	+	+	+
Discriminant validity (HTMT)		+	+	−	+
R²					
VI		0.404	0.322	0.859	0.984
WPP		0.309	0.321	0.582	0.834
Weighted R²					
VI		0.404	0.565		
WPP		0.309	0.462		

Notes: ^a Test statistics were obtained by 10,000 bootstrap runs. Values out of brackets show path coefficients and in brackets their t-values with* p < .05; ** p < .01; *** p < .001; n.s. non-significant (two-sided).

+ / − = measurement model evaluation criterion fulfilled/not fulfilled.

4.5. Multigroup analysis

A multigroup analysis (MGA) is also performed to ascertain whether the three groups of path coefficients that result from the FIMIX-PLS approach are actually significantly different. According to Hair et al., (2018, p. 155), a different procedure must be followed for an MGA of more than two groups, rather than the traditional approach of measurement invariance, which is followed for two groups. For more than two groups, the following two steps must be considered:

1. We must test whether a path coefficient differs between segments-groups: Sarstedt et al., (2011, p. 206) developed the “omnibus test of group differences (OTG),” which “uses bootstrapping, permutation, and random selection's asymptotic properties.” If the OTG pinpoints a significant effect, this is an indication that at least one group's coefficient significantly differs from the others. The results of OTG in Table 6i reveal that at least one path coefficient is different (The R code is provided in Appendix C).
2. If significant differences do occur, then we have to determine for which groups the path coefficient differs (i.e., pairwise comparisons test). Table 6iii demonstrates the differences in three path coefficient estimate comparisons (S1 vs. S2, S2 vs. S3 and S1 vs. S3) and presents the results of multigroup comparisons based on the parametric approach (Keil et al., 2000), the permutation test (Chin & Dibbern, 2010), and the nonparametric PLS-MGA approach (Henseler, Ringle, & Sinkovics, 2009). Similarly, the bias-corrected 95% confidence intervals approach (see Table 6iiii) and multigroup analysis confirm the same significant effects among the paths. According to this approach, when the coefficient for a path of one group (i.e., 0.522 for S1 in IPA on the VI path) “does not fall within the corresponding confidence interval of another group” (i.e., S2 or S3) and vice versa, we can conclude that “the group-specific path coefficients are significantly different” (Sarstedt, Henseler, & Ringle, 2011, p. 212). All four comparisons reveal the same significant effects among the paths, ensuring the validity of the results.

The above answers research question 2.

4.6. IPMA for managerial implications

IPMA is a particularly useful method because it helps researchers

obtain deeper insights into the SEM results and generate more realistic and accurate managerial-strategic decisions (Ringle & Sarstedt, 2016). IPMA is matrix-related grid analysis (Groß, 2018), which contrasts the total effects of a predictor construct resulting from the structural model, in this study IPA and INPA (representing importance scores), with their average value scores representing performance, to explain the target (WPP and VI) to a larger extent. The objective here is to identify exogenous constructs and/or indicators that are relatively more important to the target construct and find noteworthy areas for improvement in management (Ringle & Sarstedt, 2016). Two important additional points of the IPMA method are that it is very useful in contrasting results from a multigroup analysis (Hair et al., 2018) and that it deals with nonlinear relationships without limiting the generalizability of the results (Streukens et al., 2017).

For a better orientation, the two-dimensional plot can be separated into four quadrants by drawing the median lines for each of the two basic dimensions, with different conclusions for managers (Feng, Mangan, Wong, Xu, & Lalwani, 2014). These two extra lines divide the IPMA into four separate areas with under and over average importance and performance values (see Fig. 3a,b,c,d,e and f) (Hair et al., 2018).

5. Discussion and managerial implications

This study is the first to adopt a mix of different SEM extensions and techniques (linear, nonlinear, FIMIX and IPMA) aimed at exploring the IPAs and INPAs offered by hotels to Muslim guests who have visited Muslim countries. Despite the soaring numbers of Muslim travelers (Mastercard-CrescentRating, 2019b), there is a clear gap in the literature regarding the halal services that matter most to Muslim hotel guests.

Considering the above, the present study contributes to the hospitality literature in three important areas. First, it examines Muslim guests' willingness to pay extra and intention to visit based on halal hotel attributes through the lens of linear and nonlinear relationships. Second, the study makes a first attempt to capture the heterogeneous profile of Muslim travelers by uncovering the unobserved heterogeneity among Muslim travelers. Halal tourism is characterized by extreme heterogeneity, and understanding the hidden groups of this critical segment of global tourism will offer sustainable benefits to the tourism industry. Third, this paper applies IPMA to get an in-depth understanding of the new segments that arose from the analysis and

Table 6
OTG and Multigroup comparison results.*

OTG Results					
Paths				F _R	
IPA→VI				302,693.44***	
IPA→WPP				40,327.51***	
INPA→VI				465,442.75***	
INPA→WPP				218,759.72***	
IPA ² → WPP				9919.82***	
INPA ² → WPP				18,377.04***	
i. Multigroup comparison test results					
Paths	Comparisons	diff	t _{parametric}	P _{permutation}	P _{Henseler}
IPA→VI	S1 vs S2	0.901	6.605***	0.009	0.007
	S1 vs S3	0.333	2.541**	0.023	0.019
	S2 vs S3	0.568	7.380***	0.002	0.000
INPA→VI	S1 vs S2	0.915	7.975***	0.000	0.000
	S1 vs S3	0.901	7.593***	0.006	0.005
	S2 vs S3	0.014	1.490	0.026	0.064
IPA ² → WPP	S1 vs S2	0.292	3.505***	0.008	0.001
	S1 vs S3	0.035	0.449	0.587	0.312
	S2 vs S3	0.257	2.500**	0.017	0.001
INPA ² → WPP	S1 vs S2	0.051	0.549	0.351	0.283
	S1 vs S3	0.327	4.858***	0.024	0.000
	S2 vs S3	0.378	2.470**	0.003	0.002
ii. Multigroup comparison results (Bias-corrected 95% C.I.)					
Paths	C.I.			Comparisons	Sig.
	S1 δ (C.I.)	S2 δ (C.I.)	S3 δ (C.I.)		
IPA→VI	0.522	−0.379	0.189	S1 vs S2	Yes
	[0.413,	[−0.491,	[0.144,	S1 vs S3	Yes
	0.607]	−0.292]	0.227]	S2 vs S3	Yes
INPA→VI	−0.031	0.884	0.870	S1 vs S2	Yes
	[−0.129,	[0.797,	[0.835,	S1 vs S3	Yes
	0.049]	0.950]	0.905]	S2 vs S3	No
IPA ² → WPP	−0.014	−0.306	−0.049	S1 vs S2	Yes
	[−0.051,	[−0.368,	[−0.166,	S1 vs S3	No
	0.041]	−0.177]	0.075]	S2 vs S3	Yes
INPA ² → WPP	−0.094	−0.145	0.233	S1 vs S2	No
	[−0.135,	[−0.354,	[0.140,	S1 vs S3	Yes
	−0.046]	0.035]	0.325]	S2 vs S3	Yes

Notes: C.I. = Confidence Intervals; δ = regression coefficient of quadratic model after removing the non-significant quadratic effects (see Table 5).

* p < .05.

** p < .01.

*** p < .001.

recommends specific managerial activities for each one.

Our results showed a strong positive linear relationship between IPAs and INPAs and Muslim guests' VI. Previous studies have focused mainly on the impact of halal attributes of a destination on overall tourism satisfaction (Battour et al., 2014; Eid & El-Gohary, 2015a, 2015b; Isa et al., 2018), destination image (Han et al., 2019), WOM (Wardi et al., 2018), and cognitive and affective evaluation (Jeaheng et al., 2019). Most studies have found positive relationships between Islamic attributes and tourism satisfaction, destination image and WOM, except Eid and El-Gohary (2015a), who found no statistically significant relationship between INPAs and customer satisfaction. Second, important nonlinear relationships have been found between IPAs and INPAs and Muslim travelers' propensity to pay a premium. This is the first study examining the curvilinear relationships of Islamic attributes on WPP; therefore, there are no directly comparable studies. However, several recent studies in tourism have directed their attention to nonlinear relationships (Antón, Camarero, & Laguna-García, 2018;

Jeong, & Jang, S. C. (Shawn), 2019; Marrocu, Paci, & Zara, 2015; Nieto-García et al., 2017; Rasoolimanesh et al., 2018). The quadratic results show that the direct relationship between INPAs and WPP is positive and inverted U-shaped (see Fig. 2), suggesting that Muslim guests' WPP for INPAs increases, but there is a threshold point. Beyond this point, their WPP will decrease. This makes sense because Muslim travelers want to allocate their limited budget to different activities. Undoubtedly, an increase in the range of services offered by the hotels will lead to an increase in cost. Therefore, it is very important to determine the INPAs that Muslim travelers consider to be the most important and are willing to pay more for. Similarly, the quadratic relationship between IPAs and WPP is concave negative overall (see Fig. 2), indicating the reluctance of Muslim guests to pay extra for IPAs, which is reasonable because the survey asked for halal services in a Muslim country where IPAs are readily available. Muslim guests will pay only for the services that they value as more important, possibly in terms of time, effort or convenience. Previous studies have reported that the consumption experience is dynamic, inherently customer-oriented, intangible and subjective (Sweeney & Soutar, 2001; Vargo & Lusch, 2008), and it depends on the perceived value of the customer. In the case of Muslim tourists, it should be stressed that assessing services is much more complicated and depends on a number of interrelated factors, such as social value, emotional value and religious-related value (Battour et al., 2014; Eid & El-Gohary, 2015b; Isa et al., 2018). Last, the higher results of the R² for the nonlinear models compared to the linear models (IPAs and INPAs on WPP) lead us to the conclusion that a nonlinear function for the WPP improves the overall quality of the model and the relationships, which is a significant finding of this study.

The third major contribution of this study is that it revealed three different Muslim traveler segments, supporting previous studies of heterogeneity among Muslim tourists (Boğan & Saruşik, 2019; Carboni & Idrissi Janati, 2016; MasterCard-CrescentRating, 2018; Prayag & Hosany, 2014; Vargas-Sánchez & Moral-Moral, 2019a) and heterogeneous patterns of tourism expenditures (Olya & Mehran, 2017). The three identified Muslim traveler segments may be classified as follows:

Segment 1 is the largest (57.6%). Muslim guests belonging to this group can be described as “*utilitarian Muslim guests*”. Digging into S1, the cross-tabulation analysis revealed that S1 consists mainly of Millennials (53.8%) and Gen X (30.6%), medium or low average income travelers (60.8%), married (68.8%) and long-stayers (54.8%). The main characteristic of the Muslim guests in this segment is their clear preference for physical, practical-oriented services (the results revealed a strong relationship between IPAs and VI) and their apathy towards nonphysical services (the nonsignificant relationship between INPAs and VI). Guests in S1 consider IPA1 “*availability of prayer facilities*” and IPA4 “*Shari'ah-compliant toilets*” of high importance but low performance; thus, hotel managers should make all necessary efforts to improve them because a lack of information regarding these services might lead to customer loss. IPA2 “*availability of halal food*” and marginally IPA3 “*availability of Holy Qur'an*” (on the borderline of Quadrant II) are considered key services, and management's task is to continue offering these services. Managers must realize that *utilitarian Muslim guests* assess services in terms of their availability, approachability, and convenience of use. Thus, the relationship with such services is established on transactional terms, and their perceived value predominantly relies on a calculation of costs and benefits. It is therefore recommended that managers adopt transactional approaches to enhance their customer relationship with this segment (e.g., offering loyal customers discounted rates for using the hotel's halal restaurant).

Segment 2 represents one-third of the sample (30.5%). These travelers can be described as “*independent Muslim guests*”. This designation derives from the fact that S2 considers IPAs to be of low importance. The linear relationship between IPAs and VI is, surprisingly, negative, indicating that the more IPAs the hotel offers, the less these guests are inclined to visit. Similarly, their WPP (both linear and quadratic) is

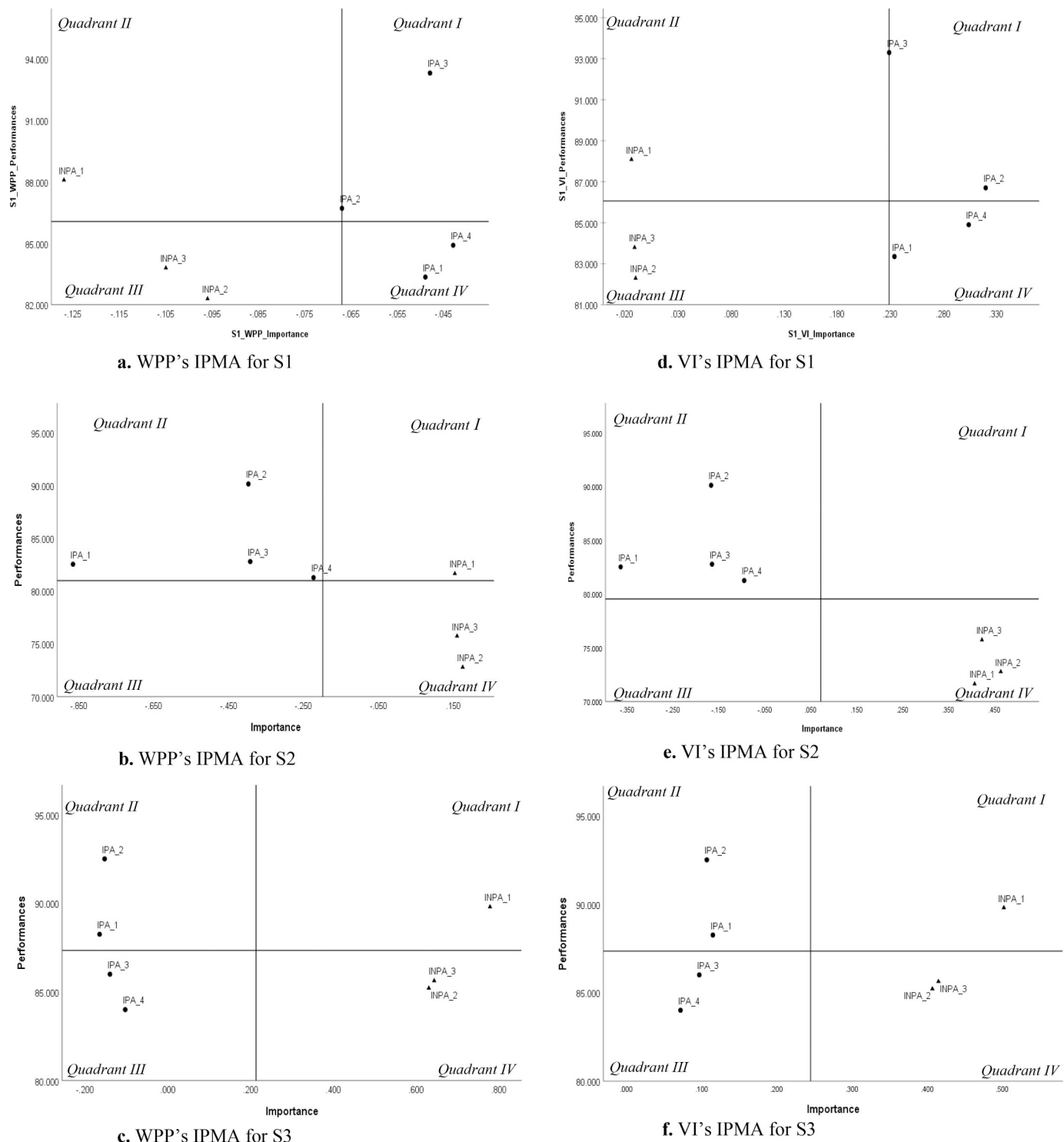


Fig. 3. a. WPP's IPMA for S1. 3b. WPP's IPMA for S2. c. WPP's IPMA for S3. d. VI's IPMA for S1. e. VI's IPMA for S2. f. VI's IPMA for S3.

negative. The second characteristic is that they consider INPAs to be very important but of low performance by hotels, implying a need for management action to improve INPAs. Nevertheless, these guests do not intend to pay extra for those services. The segmentation analysis clearly reveals a niche-independent subsegment with specific characteristics, needs and intentions. To better understand the structure of this segment, a cross-tabulation analysis was performed, which revealed that 61.9% of the participants in this group were single (68.8% female and 40.4% male singles), 30.3% were under 24 (Gen Z) and 49.5% were under 34 (millennials). In addition, 63.4% of these guests

had average or no personal income, most were well-educated (78.5% had academic education), 25.2% were students and most were short-stayers (60.8%), confirming our speculation for the special nature of this segment. Therefore, a possible explanation for their perception of IPA-INPA could be that this group consists of young Muslim travelers, newly married or solo travelers who are interested in more experiential services (Prayag & Hosany, 2014) in their travel escapades. It is possible that they seek more affordable, experiential and impromptu trips (Mastercard-CrescentRating, 2019b). Considering the growing number of young and solo Muslim travelers (Henderson, 2016; Prayag &

Hosany, 2014), both male and female (Mastercard-CrescentRating, 2018b; Vargas-Sánchez & Moral-Moral, 2019b); their high adoption rates and use of digital technologies (Mastercard-CrescentRating, 2018a, 2018b, 2019a); and their demanding nature (Prayag & Hosany, 2014, p. 37), hotel managers must develop dynamic digital communication strategies to attract them. Additionally, managers must place more emphasis on developing digital inbound marketing strategies to approach and eventually decipher this “independent” group.

Segment 3 represents 11.9% of Muslim guests. They could be described as “leisure Muslim guests”. Unlike S1 and S2, S3 revealed a strong positive linear relationship for both IPAs and INPAs and guests' VI. Additionally, S3 is the only segment in which we found positive linear and quadratic relationships between INPAs and WPP. More specifically, the relationship between INPAs and WPP is not inverted U-shaped like the curves for the general model and S1, but it is U-shaped ($WPP = 0.869 \cdot INPAs + 0.233 \cdot INPA^2$), which means that the strength of the effect of INPAs on the WPP increases for higher values of the INPA. In managerial language, this means that hotels incrementally benefit from further investment in INPAs. Going deeper into decoding S3, the cross-tabulation analysis showed that this segment consists mainly of married guests (67.5%), high-income travelers (76.3%), Millennials and older (Millennials 53.8%, Gen X (38–53) 23.8% and 5% over 53 years old) and long-stayers (66.3%). The IPMA (Fig. 3c and f) shows that INPA1, INPA2 and INPA3 have the highest importance among services, but the last two (INPA2 and INPA3) lie in the quadrant of high importance and low performance, indicating that improvement of these attributes must become a top priority for hotel managers. After decoding the demographic profile of the guests of S3, we could conclude that they are likely to be looking for a peaceful environment with faith-based on-site services ideal for vacation, enjoyment and relaxation, and they are willing to pay extra for their leisure.

The above results provide a credible indication of the heterogeneous nature of Muslim travelers and offer significant insight for hoteliers to comprehend the needs, interests, and priorities of their Muslim guests. In our attempt to decode the extremely heterogeneous profile of Muslim tourists, three new segments emerged. The dissimilarity and complexity of these three segments attest to the need for hoteliers to work on designing personalized services. Dynamic digital communication technologies, specialized services for subsegments (e.g., Muslim female travelers, young Muslims), integration of faith-based services across the value chain, family-friendly environments and personalized experiences should be integral parts of the strategy for each hotel that wishes to gain a competitive advantage.

6. Limitations and suggestions for future research

Given that this is the first attempt to fill an important gap in halal services offered by hotels, this study still has several limitations. The first is associated with the measurement of IPA-INPA. Although the Eid and El-Gohary (2015a, 2015b) instrument for measuring IPA-INPA is reliable and relevant and has been used by recent studies (e.g., Isa et al., 2018), it includes a limited number of IPAs and INPAs.

Second, this study explored Muslim travelers' expectations of IPAs and INPAs when visiting a hotel in a Muslim country. In future studies, researchers should focus on which halal services are more important for hotels in non-Muslim countries.

Third, although this study made a first attempt at exploring the nonlinear relationships between IPA-INPA and Muslim guests' BIs, more studies are needed because there is a considerable gap in the current literature.

Finally, follow-up studies need to examine the validity and meaningfulness of the three newly developed types of Muslim tourists in different countries by using different segmentation methods such as the

fuzzy clustering analysis (D'Urso et al., 2016; Khoo-Lattimore et al., 2019).

Declaration of Competing Interest

None.

Appendix A. Supplementary data

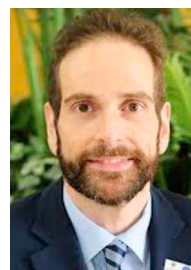
Supplementary data to this article can be found online at <https://doi.org/10.1016/j.tmp.2020.100720>.

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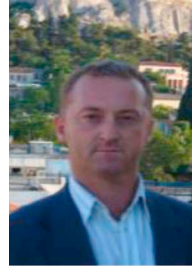
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