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Consumer preferences for olive oil in the Iberian Peninsula

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ABSTRACT

This study aims to analyse consumer preferences in the Iberian Peninsula by comparing two important European Union-producing countries. In order to be able to make valid cross-cultural comparisons, we used the Best-Worst Scaling (BWS) methodology. We also performed segmentation using Latent Cluster Analysis (LCA), including all consumers analysed, regardless of country of origin, to obtain three different segments. Comparing both consumers, the significant differences obtained refer to the quality-price ratio, willingness to pay and attributes considered at the time of purchase of olive oil. Owing to the BWS methodology, we observe that the number of attributes that establish significant differences between the three segments (taste, brand name and packaging) is higher than in the analysis performed by country (brand name). The 3 segments obtained ("Type-experience consumers," "External cues consumers" and "Taste seekers") prioritise the proposed attributes differently and there are significant differences between them in terms of olive oil consumption (place of purchase and average weekly consumption). These conclusions have implications at the business level for the design and development of marketing strategies in the olive oil sector in both countries.

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1. Introduction

Olive oil is an agricultural product produced mainly in the Mediterranean Basin and is part of the Mediterranean diet (Willett et al., 1995). The consumption of olive oil is increasing in many countries owing to increased consumer information and the search for healthier foods. Consumers are seeking health benefits from olive oil, which are well known (Fabiani et al., 2002; Gorzynik-Debicka et al., 2018) and are related to their chemical composition, the nature of the fatty acids (mainly monounsaturated) and the richness of antioxidative molecules (Hamam et al., 2022; Lombardi et al., 2021; Pichierri et al., 2020). The European Union is the leading producer of olive oil, as well as the largest consumer and exporter. In 2022/2023, European countries produced 54.48% of the world's olive oil. The total European Union production is 1,392,000 tonnes of 2,555,000 tonnes produced worldwide (European Commission, 2023). The main Member States involved were Spain (47.81%), Greece (24.81%), Italy (17.30%) and Portugal (9.03%), followed by Albania, France and Croatia with lower percentages (European Commission, 2023).

In 2022/2023, the distribution of production in the Iberian Peninsula was between 125,698 tonnes in Portugal and 665,515 tonnes in Spain, with a different consumption compared to the 61,000 tonnes consumed by Portugal. Spain needs 78,515 tonnes to cover its consumption (European Commission, 2023). Thus, we expect to surpass Portuguese production and a deficit in Spanish production. However, we do not know whether consumer preferences differ between both countries. The study of consumer preferences for olive oil is essential and has been the subject of several previous studies (Dekhili et al., 2011; Krystallis & Ness, 2005; Peršurić, 2020; Van Der Lans et al., 2001), most of which have been conducted with consumers from olive oil-producing countries (mainly Greece, Italy and France) and other countries (such as Tunisia, the USA, Denmark, German and the UK). In this situation, we note that an

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in-depth comparison of Spain and Portugal within the same cultural region has been missing. Moreover, there have been few attempts to explore cross-cultural differences across countries (Baourakis & Baltas, 2003; Dekhili et al., 2011; Nielsen et al., 1998). Within the Iberian Peninsula, there is a lack of cross-cultural analysis and a limited focus on specific consumer segments for olive oil. It is important to know the consumers' tastes, but it is even more important to explore their preferences for extra virgin olive oil to consolidate and provide our producers with a coherent analysis of the preferences of olive oil consumers in the Iberian Peninsula.

All areas involved in the production, processing and marketing of olive oil are aware of a large number of oil attributes that are clear preferences of regular olive oil consumers, such as type of olive (extra virgin, virgin, olive only), price, country/region of production and/or processing, taste, colour, certification, production method (traditional, integrated production and/or organic), packaging and brand (Dekhili et al., 2011). The type of oil is the attribute most known and preferred by consumers (Jiménez-Guerrero et al., 2012). However, other attributes are more relevant in certain countries owing to market conditions, culinary practices and consumer knowledge of olive oil. This should be correlated with higher or lower oil production in a consumer's country of origin. It is well known that the region of origin is more important for consumers in producing countries who have more knowledge of these regions and their typical varieties (Kopsahelis et al., 2024; Perito et al., 2019), but even in highly producing areas, the influence of the brand is above the type of oil (Erraach et al., 2014), influenced by the advertising of those brands in each country. However, the sector has many brands with lower production that are unknown to consumers (Martínez-Flórez et al., 2002; Tempesta & Vecchiato, 2019). Knowledge of consumers' preferences for these brands is very important. It is worth noting that the brand influences the preferences of consumers with high product knowledge, both in the Spanish and Italian markets (Contini et al., 2016; Espejel et al., 2008b).

Another aspect to consider is the importance that producing countries give to the price of oil (Del Giudice et al., 2015), and the extent to which it is part of our Mediterranean diet, which makes the price paid for the oil not so influential. Owing to the loyalty that the consumer has for a traditional product like this, it sometimes influences the quality of the product (Perrea et al., 2017). This valuation also implies a greater knowledge of the product (Espejel et al., 2008a), but sometimes a biased and incomplete knowledge of all the aptitudes that extra virgin olive oil has compared to other types of oil. However, in previous segmentation studies, price makes significant differences between segments according to individual preferences, as in the case of a producing country such as Italy (Carzedda et al., 2021; Liberatore et al., 2018). The packaging of olive oil, whether plastic, glass or can, also influences consumers' perceptions of the quality of the product. In fact, if a container is made of glass, it is considered a sign of quality compared to plastic (Ballco & Gracia, 2020; Carlucci et al., 2014; Peršurić, 2020). Due to this type of consumer consideration, packaging has a significant impact on the price of olive oil (Roselli et al., 2016). Plastic may be chosen by low-income families because of its lower price (Erraach et al., 2014). Plastic may also be chosen because of its low risk of breakage during household use compared to glass bottles, or because of its usual larger size (Cavallo et al., 2018).

Another attribute to consider is the label, from the point of view of the information it provides and its attractive design. This approach is used in studies analysing consumer preferences in the wine sector (Goodman, 2009; Pomarici et al., 2017) and in some specific cases of olive oil (Chrysochou et al., 2022). In the absence of studies, more research is needed on the role of label information on olive oil (Latino et al., 2022). Experience can also play a key role in consumer preference. That is, whether or not the product has been purchased and tested beforehand. This relates to consumers' consumption habits and loyalty to the product (Goodman, 2009; Tempesta & Vecchiato, 2019). The final attribute included in the study was taste. Peršurić (2020) highlighted the importance of the sensory attributes (smell and taste) of olive oil for both German and English. Dekhili et al. (2011) found taste to be the most important attribute for French and Tunisian consumers and Chousou et al. (2018) found the same results for Greeks. However, taste preferences depend on knowledge and familiarity with the product, influenced by the tradition of cultivation in the country (Zamuz et al., 2020). In the case of wine, the variable "I like the taste" is the one used by Loose and Lockshin (2013) in a research similar to ours.

Due to the lack of comparative studies in the Iberian Peninsula and the long list of attributes considered, the research questions we aim to solve are:

RQ1: What are the primary factors that influence consumer preferences for olive oil in Spain versus Portugal?

RQ2: How do different consumer segments within the Iberian Peninsula vary in terms of preferences for intrinsic (e.g., taste, type) and extrinsic (e.g., packaging, brand) attributes?

In short, the study objectives are: (i) To analyse and compare olive oil preferences among Spanish and Portuguese consumers. (ii) To segment the Iberian Peninsula consumers based on their preferences and identify the characteristics of each segment. (iii) To provide practical recommendations for olive oil marketers based on the identified segments and cross-cultural differences. This research is one of the first to conduct a cross-cultural analysis between Spain and Portugal, two significant olive oil-producing countries in the Iberian Peninsula. Few studies have compared highly producing countries with large areas under cultivation with countries with less productive areas. This proximity yet distinct consumer behaviour offers a unique angle, especially within the Mediterranean context. The findings will contribute to consumer behaviour theory, particularly in food product marketing where both intrinsic and extrinsic factors affect purchasing decisions. From a managerial perspective, the chosen method of segmentation (Latent Cluster Analysis based on Best-Worst Scaling data) offers a nuanced understanding of consumer types within the region, beyond typical demographic or geographic segmentation. These insights could help the industry tailor marketing strategies effectively.

2. Material and methods

2.1. Participants

In total, 376 participants were included in this study. A total of 260 consumers were from Spain and 116 were from Portugal. The questionnaire was prepared and translated into Spanish and Portuguese by native speakers. As a convenience sample, quotas were established according to sex and number of household members, following the recommendations of Ares (2018). Data were collected during August and September 2023. The sample was larger, but some questionnaires were discarded because of errors in answering the questions by the interviewees. Preliminary qualitative studies in each country were conducted to test the validity of the questionnaire and check the equivalent understanding of the terms (Ares, 2018). Specifically, interviews were conducted with subject matter experts in June and July 2023. Written informed consent was obtained from all subjects participating in the study. The questionnaire was divided into 6 sections: purchasing habits, consumption habits, purchasing criteria, willingness to pay, attitudes toward olive oil and identification data. The questions are closed-ended and some of them are Likert questions. The complete questionnaire can be found in the Annex.

2.2. Best-Worst scaling method

When attempting to investigate cross-cultural issues, the biggest problem we face is the validity of measurement instruments. Sometimes, the differences found may be due to the type of scale used, rather than the differences between consumers (Ares, 2018; Grunert, 2019). Compared to the usual ratio-based measurement scales (e.g., Likert), it is recommended to use ranking and BWS to minimise differences in response style (Auger et al., 2007; Finn & Louviere, 1992; Harzing, 2006; Marley & Louviere, 2005). As no scale was used to choose the two most distant objects, there was no response style factor (Jaeger et al., 2008; Lockshin & Cohen, 2011). Compared to conjoint analysis, the BWS simplifies respondents' cognitive load because it focuses on individual attributes rather than combinations of attributes. However, it should be noted that this method does not capture the absolute importance of attributes or the interactions between them, but it does provide a ranking of all attributes considered. Using the BWS, participants were asked to indicate the most (best) and least (worst) important attributes from among subsets of all the attributes considered. Cohen (2009) and Jaeger et al. (2009) state that, generally, respondents can undertake up to 20 subsets, although there are indications that boredom sets in after approximately 10–12 subsets.

In this study, respondents were asked to indicate which product attributes most and least influenced their choice the last time they purchased olive oil. The seven attributes considered were label, experience (I purchased it previously), brand name, price, packaging, taste and type of olive oil (extra virgin, virgin). These attributes were combined into seven choice sets of three items, each following a balanced incomplete block design. In this way, it is ensured that each product attribute appears the same number of times (i.e., three times) in all choice sets, and that, within each choice set, each pair of product attributes appears only once (Bernabéu et al., 2012; Chrysochou et al., 2012, 2022).

The level of importance of each attribute, also called the BWS score, was obtained by subtracting the number of times an attribute is chosen as the least important from the number of times the attribute is chosen as the most important. Dividing this value by the number of respondents yields the average BWS score assigned to each attribute (Cohen,

2009; Loose & Lockshin, 2013). In this case, the individual BWS scores range from -3 to +3. A negative value for a BWS score does not indicate the negative importance of the attribute but a low or below-average importance. To facilitate interpretation, these scores were standardised according to the most important attributes. The standardised ratio scale and standardised importance weights were calculated following Loose and Lockshin (2013) explanations.

2.3. Latent cluster analysis

The participants were classified based on their individual BWS scores. The methodology used was LCA and the software used was XLSTAT. The objective of LCA is to extract several relatively homogeneous groups of participants from the heterogeneous data (Lockshin & Cohen, 2011; Vermunt, 2010). This entails the construction of latent classes that are unobserved (latent) subgroups or participant segments. Latent classes were constructed from the observed (manifest) responses of the participants to a set of indicator variables. Participants in the same latent class were homogeneous in their responses to these indicators, whereas participants in different latent classes differed in their response patterns (Garrett & Zeger, 2000; Moors & Vermunt, 2007; Patterson et al., 2002). In this study, these indicators were the best and worst scores for each attribute in olive oil selection.

Unlike traditional cluster models, in LCA the model selection criteria can be defined and the classification is based on probabilities. Depending on the importance of different attributes, membership probabilities were estimated and used to assign participants to different classes or segments. Instead of the exact assignment of response variables to clusters, LCA provides a weight for each variable for each cluster solution (Magidson & Vermunt, 2001; Vermunt, 2010). Thus, each segment differs in its preference structure when olive oil is selected.

Different criteria were used to assess the different models obtained. First, the log-likelihood (LL); second, the Bayesian Information Criterion (BIC_{LL}) and Akaike Information Criterion (AIC_{LL}), both based on the log-likelihood; third, the number of parameters; fourth, the *p*-value, assuming that L^2 follows a chi-square distribution; fifth, the classification error based on modal assignment. All of these criteria were considered when deciding the final model. On the one hand, the p-value should be greater than 0.05. On the other, the BIC_{LL}, AIC_{LL}, number of parameters and classification error should be as low as possible in comparison to other models (the lower the value, the better the model) (Ruto et al., 2008; Weller et al., 2020).

3. Results

3.1. Sample description

Table 1 describes the sample analysed, taking into account gender, age, the number of family members, whether there are children or not, the level of income and education, and, finally, the type of habitat where they live. Table 2 describes the relationship between the samples and olive oil. In an exploratory manner, a series of statements about interest, familiarity and attitudes towards olive oil were asked, using a Likert scale, where 1 = completely disagree and 5 = completely agree. Observing the data, it can be deduced that for all of them, it is higher than 4, except for "The price of extra virgin olive oil is higher than other oils", which is the only statement in which there are significant differences. The Portuguese rate this statement lower on average (3.83) than the Spaniards' score (4.15).

Analysing the question of price in depth, significant differences were also observed in Table 3 using chi-square statistics. Portuguese consumers are willing to pay more money for a litre of quality oil than their Spanish counterparts. Of the Spaniards, 74.62% would be willing to pay less than 10 euros, compared to 52.59% of Portuguese. If the price is between 10 and 15 euros, the percentage of Spaniards is 18.46%, while that of Portuguese rises to 36.21%. 5% of Spaniards and 6.90% of Portuguese would be willing to pay between 15.1 and 20 euros per litre for quality oil. If the price was higher than 20, only 1.92% of Spaniards would be willing, compared to 4.31% of Portuguese. However, Spaniards would change their choice of olive oil brand if they were offered at a slightly higher price, but with better quality to a greater extent (63.08% for "Yes, definitely" (13.46%) and "Probably yes" (49.62%)) than the Portuguese (41.38% for both statements: 5.17% for "Yes, definitely" and 36.21% for "Probably yes").

3.2. Average Best-Worse scores

Table 4 presents the results of the BWS method for Spain, Portugal and both countries (Total). Following the instructions of Loose and Lockshin (2013), a standardised ratio scale and standardised importance weights were calculated for a better understanding of the results. As these authors pointed out, the B-W scores and ratios do not necessarily completely agree

Table 1. Description of the sample.

Variable		Total (*N* = 376)		Spain (*N* = 260)		Portugal (*N* = 116)	
		N	%	*N*	%	*N*	%
Gender	Male	186	49.47	120	46.15	66	56.89
	Female	190	50.53	140	53.85	50	43.11
Age	<25 y old	18	4.79	12	4.62	6	5.17
	25–34 y old	44	11.70	34	13.08	10	8.62
	35–44 y old	53	14.10	31	11.92	22	18.97
	45–54 y old	121	32.18	88	33.85	33	28.45
	55–64 y old	102	27.13	74	28.46	28	24.14
	>65 y old	38	10.11	21	8.08	17	14.66
Family members	Only the respondent	47	12.50	33	12.69	14	12.07
	Two	119	31.65	79	30.38	40	34.48
	Three	81	21.54	60	23.08	21	18.10
	Four	107	28.46	72	27.69	35	30.17
	More than 4	22	5.85	16	6.15	6	5.17
Children (<18) living in the household	Yes	131	34.84	90	34.62	41	35.34
	No	245	65.16	170	65.38	75	64.66
Income	<1,000 euros	15	3.99	10	3.85	5	4.31
	1,000–1,999	84	22.34	68	26.15	16	13.79
	2,000–2,999	125	33.24	82	31.54	43	37.07
	3,000–3,999	78	20.74	53	20.38	25	21.55
	>4,000	74	19.68	47	18.08	27	23.28
Education	Primary	11	2.93	10	3.85	1	0.86
	Secondary	47	12.50	40	15.38	7	6.03
	University	318	84.57	210	80.77	108	93.10
Habitat	<10,000 hab	60	15.96	49	18.85	11	9.48
	10,000–50,000 hab	135	35.90	77	29.62	58	50.00
	50,001–100,000 hab	40	10.64	29	11.15	11	9.48
	100,001–500,000 hab	42	11.17	24	9.23	18	15.52
	>500,000 hab	99	26.33	81	31.15	18	15.52

Table 2. Relationship of the sample with olive oil.

Variable	Total mean (SD)	Spain mean (SD)	Portugal mean (SD)	*F*	*p*-value
Interest and familiarity					
In general, I have a strong interest in olive oil	4.26 (0.97)	4.23 (1.04)	4.30 (0.79)	0.38	0.54
Olive oil is a product that is familiar to me	4.58 (0.88)	4.55 (0.98)	4.66 (0.61)	1.23	0.27
Attitudes					
I consider olive oil to be a tasty product	4.58 (0.88)	4.53 (0.97)	4.69 (0.64)	2.62	0.11
Olive oil is a healthy product	4.56 (0.91)	4.53 (0.97)	4.63 (0.77)	1.01	0.32
The price of extra virgin olive oil is higher than other oils	4.05 (1.15)	4.15[a] (1.17)	3.83[b] (1.07)	6.25	**0.01**
I consider that olive oil enhances the taste of food	4.61 (0.87)	4.57 (0.96)	4.70 (0.61)	1.78	0.18

Note: Values with different letters are significantly different at $p \leq 0.05$ Tukey (HSD).

Table 3. Willingness to pay for a litre of quality olive oil.

Variable	Spain		Portugal		*p*-value
	N	%	*N*	%	
How much would you be willing to pay for a litre of quality olive oil?					**0.00**
Less than 10 euros	194	74.62	61	52.59	
Between 10 and 15 euros	48	18.46	42	36.21	
Between 15.1 and 20 euros	13	5.00	8	6.90	
More than 20 euros	5	1.92	5	4.31	
Would you change your choice of olive oil brand if it were offered at a slightly higher price, but with better quality?					**0.00**
Yes, definitely	35	13.46	6	5.17	
Probably yes	129	49.62	42	36.21	
Not sure	51	19.62	19	16.38	
Probably not	34	13.08	35	30.17	
Definitely no	11	4.23	14	12.07	

Note: Chi-square statistics at $p \leq 0.05$.

in the relative attribute ranking. This is due to the respondents' different choices for each attribute. This only occurred for the total sample in attributes 1 and 2 (type and taste). For the total sample, the most important attributes (in order from most important to least important) were type (1.03), taste (0.91), experience (0.84), price (−0.09), brand name (−0.41), packaging (−0.79) and label (−1.48). Spaniards had similar scores and were of the same order as the total sample. However, for the Portuguese, taste was the most important attribute (0.97), followed by type (0.87), experience (0.77), brand name (0.01), price (−0.36), packaging (−0.71) and label (−1.54). Significant differences were observed in brand name

Table 4. Average individual Best-Worse scores of olive oil product attributes across countries.

	Total				Spain				Portugal					
Product attribute	Score	Rank	Standardised ratio scale	Standardised importance weights	Score	Rank	Standardised ratio scale	Standardised importance weights	Score	Rank	Standardised ratio scale	Standardised importance weights	*F*	*p*-value
Type (i.e., virgin, extra virgin)	1.03	1	97.68	21.73	1.10	1	100.00	22.28	0.87	2	89.70	20.46	1.66	0.20
Taste	0.91	2	100.00	22.24	0.88	2	98.56	21.95	0.97	1	100.00	22.82	0.28	0.60
Experience (I bought it before)	0.84	3	82.57	18.36	0.87	3	83.08	18.51	0.77	3	78.90	18.00	0.23	0.63
Price	−0.09	4	56.20	12.50	0.03	4	58.59	13.05	−0.36	5	49.55	11.30	2.80	0.09
Brand name	−0.41	5	50.45	11.22	−0.60[b]	5	46.81	10.43	0.01[a]	4	57.56	13.13	8.14	**0.00**
Packaging	−0.79	6	38.74	8.62	−0.83	6	37.80	8.42	−0.71	6	39.66	9.05	0.57	0.45
Label (attractiveness and information)	−1.48	7	23.96	5.33	−1.45	7	24.09	5.37	−1.54	7	22.93	5.23	0.45	0.50

Note: Values with different letters are significantly different at $p \leq 0.05$ Tukey (HSD).

scores. For Portuguese consumers, the brand name is more important than for Spaniards.

3.3. Cross-national segmentation

Once the BWS scores were obtained, segmentation of all respondents was performed using LCA. Table 5 lists the criteria considered when selecting the model. Considering all of these, a model offering three clusters was chosen. This model had a p-value greater than 0.05, and the values of BIC_{LL}, AIC_{LL}, number of parameters and classification error were lower than those of other models. This is the most interpretable solution.

Table 6 reports the information on the 3 segments obtained. Segment 1, labelled as "Type-experience consumers", rates type (0.94), taste (0.94) and experience (0.91) as the most important product attributes. The least important attributes for this segment are price (−0.21), packaging (−0.91) and label (−1.48). For segment 2, labelled as "External cues consumers", the most important attributes are type (1.46), price (0.46) and experience (0.40).

Of the three segments, this one gives the highest score to price. The least valued attributes were packaging (−0.42), brand name (−0.60) and label (−1.44). Segment 2 values taste the least and values brand name and packaging the most. Based on these significant differences, segments 1 and 2 give the highest value to the brand. However, segment 1 is the one that values packaging the least and is the second in valuing taste. Segment 2 values taste the least compared to the other segments.

Segment 3 is the segment that gives the highest score to the taste, which is why it has been labelled as "Taste seekers." In second and third places were type (1.15) and experience (0.89). The lowest rated attributes were packaging (−0.19), label (−1.48) and brand name (−2.52). According to the significant differences obtained, segment 3 gave the highest score to the taste of the three segments and the one that valued the brand name the least.

Segment 1 ("Type-experience consumers") represents 79% of the sample, segment 2 ("External cues consumers") represents 13.83% and segment 3 ("Taste seekers") represents 7.17%. There were no significant differences in sociodemographic characteristics (Table 7). However, there were significant differences with respect to "place of purchase" and "average weekly consumption" (Table 8). Segment 1 ("Type-experience consumers") buys olive oil in supermarkets or hypermarkets (44.11%), and at origin (36.70%). Segment 2 ("External cues consumers")

Table 5. Description of the different latent class cluster models obtained.

Nbr clusters	LL	BIC_{LL}	AIC_{LL}	Number of parameters	L^2	DF	*p*-value	Class. Err
1	−1655.01	3375.25	3332.02	11	125.51	88	0.01	0.00
2	−1642.15	3420.67	3330.29	23	99.78	76	0.04	0.15
3	−1630.41	3468.35	3330.82	35	76.30	64	0.14	0.15
4	−1622.83	3524.35	3339.66	47	61.14	52	0.18	0.17
5	−1615.78	3581.40	3349.56	59	47.04	40	0.21	0.24

also goes to the same places (34.62 and 40.38%, respectively). However, it is the segment that resorts the most to the traditional store for its purchase (7.69%). Finally, segment 3 ("Taste seekers") buys the least in supermarkets or hypermarkets (11.11%) and buys the most at origin (48.15%) and produces its own olive oil (37.04%). Regarding consumption, segment 3 consumes the most of all per week, and segment 1 has the highest percentage of consumers for less than half a litre (59.26%).

4. Discussion

Within the European Union, consumer preferences between Spain and Portugal show significant differences. These differences refer to the quality-price ratio, the willingness to pay and attributes considered at the time of purchase of olive oil. Spaniards perceive the price of virgin olive oil to be higher than that of other oils. However, they were willing to pay a higher price for better quality olive oil.

In terms of attributes, the type of olive oil is highly valued by consumers. This result is in line with those of previous studies (Chrysochou et al., 2022; Dekhili et al., 2011). However, Chrysochou et al. (2022) found that the type of olive oil is the most important attribute in Denmark, France, Tunisia and the United States. In our case, this attribute competes for the first place with taste, as is the case for Portuguese consumers and the first ("Type-experience consumers") and third segments ("Taste seekers"). The fact that taste is one of the main attributes for Portuguese and the first and third segments coincides with the results obtained byEspejel et al. (2008b). Analysing oil in Spain, they found that the main factors explaining consumer satisfaction and loyalty were the perceived quality of intrinsic attributes (colour, appearance, taste, etc.). Other authors have also emphasised the importance of the sensory properties of olive oil (Caporale et al., 2006).

Experience ranked third in all rankings. Experience is closely linked to loyalty and habit because olive oil is a traditional product of the Mediterranean diet and has been shown to be very healthy (Tempesta & Vecchiato, 2019). It is also true that having previously tested the product reduces the risk and guarantees quality to the consumer (Goodman, 2009). Price usually ranks fourth or fifth in the rankings, except for segment 2 ("External cues consumers"), which ranks second. The results obtained are in line with those of Dekhili et al. (2011) and contrast with those of Baourakis and Baltas (2003), Chrysochou et al. (2022), Del Giudice et al. (2015) and Tempesta and Vecchiato (2019). The latter authors found that price is an important attribute when choosing olive oil. In contrast, Dekhili et al. (2011), found that consumers give less importance to price, which is what we find in Spain and Portugal. This may be due to the fact that olive oil is part of the Mediterranean diet and is a fundamental food in both countries. Greater product knowledge may mean that price has less influence on consumers' decisions (Espejel et al., 2008a; Perrea et al., 2017).

Branding was an important factor. Brand name is the only attribute that marks significant differences between Spanish and Portuguese consumers, with the latter valuing this attribute more highly. When obtaining the three segments, this attribute again established significant differences between them, with the third segment ("Taste seekers") being the one that valued it the least. In recent years, the role of private labels has gained great strategic value. Indeed, national and international brands of major retailers have acquired great strategic value in recent years. Thanks to their reputation, the national and international brands of major retailers are able to offer consumers a guarantee not only of organoleptic quality and food safety but also of respect for the environment (Del Giudice et al., 2015). In this sense, the brand name could reinforce the healthy attributes of olive oil to gain consumers' attention and loyalty (Ilicic & Brennan, 2023; Ma & Li, 2023).

Packaging is one of the three attributes that has established significant differences between segments. Segment 1 ("Type-experience consumers") had the lowest score. Roselli et al. (2016) indicated that packaging influences consumers' willingness to pay. They proposed the use of more expensive small containers to enhance the image of high-quality olive oils and

Table 6. Average individual Best-Worse scores of olive oil product attributes across segments.

	Class 1 "Type-experience consumers"				Class 2 "External cues consumers"				Class 3 "Taste seekers"					
Product attribute	Score	Rank	Standardised ratio scale	Standardised importance weights	Score	Rank	Standardised ratio scale	Standardised importance weights	Score	Rank	Standardised ratio scale	Standardised importance weights	*F*	*p*-value
Type (i.e., regular, extra virgin)	0.94	2	93.91	20.98	1.46	1	100.00	26.77	1.15	2	44.44	18.32	2.44	0.09
Taste	0.94[b]	1	100.00	22.34	0.13[c]	4	55.83	14.94	2.04[a]	1	100.00	41.23	19.23	**0.00**
Experience (I bought it before)	0.91	3	84.89	18.96	0.40	3	59.84	16.02	0.89	3	33.29	13.72	1.69	0.19
Price	−0.21	5	53.77	12.01	0.46	2	57.25	15.33	0.11	4	24.47	10.09	2.37	0.09
Brand name	−0.19[a]	4	54.68	12.21	−0.60[a]	6	40.40	10.81	−2.52[b]	7	9.93	4.09	19.85	**0.00**
Packaging	−0.91[b]	6	36.45	8.14	−0.42[a]	5	39.96	10.70	−0.19[a]	5	20.69	8.53	5.32	**0.01**
Label (attractiveness and information)	−1.48	7	23.99	5.36	−1.44	7	20.31	5.44	−1.48	6	9.75	4.02	0.03	0.97

Note: Values with different letters are significantly different at $p \leq 0.05$ Tukey (HSD).

reserved large containers only for cheaper olive oils, which are used mainly for cooking. However, this attribute and label were found to be among the least important in almost all cases, which is in line with other studies (Dekhili et al., 2011; Perito et al., 2019). Chrysochou et al. (2022) proposed that managers should not disregard both attributes. The explanation is that consumers explicitly underestimate the importance of these attributes when choosing a product, while their effect is more implicit. However, recent research highlights some points that influence consumer decisions and that could be taken into account in the sector. For example, the importance of simple packaging design (Ton et al., 2024), green-coloured packaging and nature-evoking images (Boncinelli et al., 2023), returnable packaging (Magnier & Gil-Pérez, 2023), the perceived environmental friendliness of product packaging (Poonia et al., 2022; Sokolova et al., 2023) and packaging waste management (Yang et al., 2023).

Although no significant differences were detected in terms of sociodemographic characteristics between the three segments, significant differences were observed with respect to the description of consumption. The differences between segments with respect to place of purchase and consumption are consistent with those obtained by Peršurić (2020). In this study, the author obtained three segments that differed significantly with regard to purchase and consumption patterns. In our case, the "Taste seekers" segment, the smallest segment of all, is the one that consumes the largest amount of olive oil per week on average and the one that buys at origin and produces its own olive oil. This is consistent with the ranking of attributes, the high importance given to taste, and the low importance given to brand name compared with the other two segments. The fact that high oil consumption is associated with bulk purchase is in line with previous studies (Mtimet et al., 2013; Romo-Muñoz et al., 2017). The "External cues consumers" segment is the one that gives less importance to taste compared to the other 2 segments and considers price as the second attribute in its ranking. This may be related to the fact that this segment buys more in traditional stores, looking for a cheaper price. Chrysochou et al. (2022) also obtained a similar segment in their cross-cultural study in Denmark, France, Tunisia and USA. The "Type-experience consumers" segment, the largest, is the one that gives less importance to packaging compared to the other two and, in its ranking, brand ranks fourth and price ranks fifth. This may be the reason why it is the segment that purchases the

Table 7. Sociodemographic description of the segments.

	Class 1 "Type-experience consumers" ($n=297$)		Class 2 "External cues consumers" ($n=52$)		Class 3 "Taste seekers" (n=27)		
Variable	*N*	%	*N*	%	*N*	%	*p*-value
Country							0.108
Spain	198	66.67	42	80.77	20	74.07	
Portugal	99	33.33	10	19.23	7	25.93	
Gender							0.792
Male	145	48.82	28	53.85	13	48.15	
Female	152	51.18	24	46.15	14	51.85	
Age							0.572
<25 y old	13	4.38	2	3.85	3	11.11	
25–34 y old	39	13.13	3	5.77	2	7.41	
35–44 y old	40	13.47	10	19.23	3	11.11	
45–54 y old	92	30.98	19	36.54	10	37.04	
55–64 y old	80	26.94	14	26.92	8	29.63	
>65 y old	33	11.11	4	7.69	1	3.70	
Family members							*0.055*
Only the respondent	37	12.46	8	15.38	2	7.41	
Two	103	34.68	10	19.23	6	22.22	
Three	60	20.20	11	21.15	10	37.04	
Four	82	27.61	20	38.46	5	18.52	
More than 4	15	5.05	3	5.77	4	14.81	
Children (<18) living in the household							0.442
Yes	99	33.33	22	42.31	10	37.04	
No	198	66.67	30	57.69	17	62.96	
Income							0.374
<1,000 euros	12	4.04	3	5.77	0	0.00	
1,000–1,999	64	21.55	10	19.23	10	37.04	
2,000–2,999	94	31.65	23	44.23	8	29.63	
3,000–3,999	65	21.89	8	15.38	5	18.52	
>4,000	62	20.88	8	15.38	4	14.81	
Education							0.077
Primary	9	3.03	1	1.92	1	3.70	
Secondary	32	10.77	7	13.46	8	29.63	
University	256	86.20	44	84.62	18	66.67	
Habitat							0.585
<10,000 hab	42	14.14	10	19.23	8	29.63	
10,000–50,000 hab	106	35.69	19	36.54	10	37.04	
50,001–100,000 hab	33	11.11	5	9.62	2	7.41	
100,001–500,000 hab	33	11.11	7	13.46	2	7.41	
>500,000 hab	83	27.95	11	21.15	5	18.52	

Note: Chi-square statistics at $p \leq 0.05$.

Table 8. Description of segment consumption.

	Class 1 "Type-experience consumers"		Class 2 "External cues consumers"		Class 3 "Taste seekers"		
Variable	N	%	N	%	N	%	*p*-value
Place of purchase							**0.01**
Traditional stores	9	3.03	4	7.69	1	3.70	
Supermarkets or hypermarkets	131	44.11	18	34.62	3	11.11	
At origin (from the producer, at the mill)	109	36.70	21	40.38	13	48.15	
I produce my own olive oil	48	16.16	9	17.31	10	37.04	
Average weekly consumption							**0.01**
Less than half a litre	176	*59.26*	24	46.15	13	48.15	
Between half a litre and 1 litre	103	34.68	24	46.15	11	40.74	
Between 1.1 litre and 2 litres	17	5.72	2	3.85	1	3.70	
More than 2 litres	1	0.34	2	3.85	2	7.41	
Frequency of consumption							0.72
Daily	260	87.54	49	94.23	24	88.89	
Several times a week	36	12.12	3	5.77	3	11.11	
Once a week	1	0.34	0	0.00	0	0.00	

Note: Chi-square statistics at $p \leq 0.05$.

most in supermarkets and hypermarkets, using the brand (whether manufacturer or private) as a quality indicator (Ballco & Gracia, 2020), and the segment that buys the least at origin. It is also the segment that consumes the least amount on average per week.

From a theoretical perspective, the results contribute to a better insight into consumer behaviour, particularly in food product marketing where both intrinsic and extrinsic factors affect purchasing decisions. The analysis of purchasing factors in the olive

oil sector contributes to a better understanding of the consumer and how he/she values each attribute. The managerial implications derive in the knowledge of the consumer in a deeper way and in the elaboration of more personalised products and strategies for each type of consumer identified in the 3 segments obtained. For example, to connect with the "Taste seekers" segment, you can use stories (via storytelling) that show the process and place of production, highlighting the details of the region and traditional methods. They can be offered exclusive events at origin to increase engagement and loyalty. In these events, they can taste different oils and obtain bulk purchase options or special offers to produce their own olive oil. It is important to highlight authenticity and traceability in communication strategies and on the product label. Taste could also be highlighted with messages such as "authentic Mediterranean flavour" or "rich flavour". For the "External cues consumers" segment, it is important to focus on competitive pricing strategies, develop commodity products with low prices, offer discounts in traditional stores and use simple labelling highlighting value for money, as well as any other features (certifications, origin…) that add value at a reasonable price. Finally, for the "Type-experience consumers" segment, loyalty programmes could be developed with supermarkets and hypermarkets or other types of collaboration where repeat purchases are rewarded. An agreement could also be reached with them to place the product in high-traffic areas. Perhaps it would be interesting to develop smaller packages for households with lower consumption, highlighting the convenience (little space) and the freshness and durability of the product. In communication strategies, it would be interesting to highlight the health benefits and versatile uses of olive oil in order to increase its consumption.

5. Conclusions

This study provides a systematic measure of the perceived importance of olive oil product attributes between highly producing countries with a large area under cultivation and countries with less productive areas. The difference between the attributes most valued by Spanish and Portuguese consumers can be attributed to the fact that in Spain (the country with the highest olive oil production), marketing has focused on the type of oil as a concept of quality, seeking knowledge of the defects in olive oil. The Portuguese consumer (a country with lower olive oil production) chooses mainly on the basis of tasting knowledge linked to the characteristics of the variety, an aspect that is not important in Spanish consumption. Spanish consumers have a different perception of the concept of quality, as demonstrated by the fact that if quality improves, they are willing to pay more for olive oil. This may also be due to the fact that extra virgin olive oil is more expensive than other oils, associating quality with this attribute derived from the market's commercial effort. Portuguese consumers, on the other hand, associate this quality with the taste of the oil and its varietal characteristics.

In order to be able to conduct valid cross-cultural comparisons, we used the BWS methodology. We also performed a segmentation using LCA, including all consumers analysed, regardless of country of origin, obtaining three different segments. Owing to the BWS methodology, we observed that the number of attributes that establish significant differences between the three segments (taste, brand name, and packaging) is higher than in the analysis performed by country (brand name). The 3 segments obtained ("Type-experience consumers," "External cues consumers" and "Taste seekers") prioritise the proposed attributes differently and there were significant differences between them in terms of olive oil consumption (place of purchase and average weekly consumption). The distribution of these segments in both countries does not differ significantly and can therefore be assumed to be homogeneous. This may be due to the emergence of global consumer segments as a result of globalisation. However, differences were observed between Spanish and Portuguese consumers.

These conclusions have implications at the business level for the design and development of marketing strategies in the olive oil sector in both countries. The message of the communication campaign, the information on the label or the type of packaging cannot be the same, as the attributes considered by consumers are distinct. Therefore, they must be adapted to each country and type of consumer because of their differences. It should be noted that since the sample size was small and non-representative, the study was exploratory and the results were limited to the conditions tested. Future research should achieve a representative sample using probability sampling methods. This study constitutes a first step towards a better understanding of the importance of quality and external cues in consumer choices in Spain and Portugal. A larger number of attributes could also be studied, or

attributes other than those in this study could be considered, such as protected designations of geographical origin/original designation (PDO), country of origin, sustainable-related attributes or safety and health-related statements. From a theoretical and managerial perspective, this topic is of great importance, and further research is required.

Ethical Statement

This study was approved by the Research Ethics Committee of the Universitat Politècnica de València (UPV) (approval no. P07_13_01_22).

Informed consent statement

Informed consent was obtained from all subjects involved in the study.

Author contributions

CRediT: **Amparo Baviera Puig**: Data curation, Formal analysis, Writing – original draft; **Isabel López-Cortés**: Conceptualization, Investigation, Writing – review & editing; **José Alberto Pereira**: Conceptualization, Supervision, Writing – review & editing; **Nuno Rodrigues**: Investigation, Methodology, Resources.

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Data availability

The data supporting the findings of this study are available from the corresponding author upon reasonable request.

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