British Food Journal

Profiling consumer olive oil preferences: shopping behaviours, health orientations and green values

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Received 1 April 2025
Revised 14 August 2025
2 September 2025
Accepted 20 September 2025

Abstract

Purpose – Despite the cultural and nutritional importance of olive oil in Mediterranean diets, consumer preferences in emerging, nontraditional markets remain underexamined. Existing research has largely prioritized sensory qualities, certification schemes and price sensitivity, often neglecting the broader cultural and systemic drivers of food choice – such as sustainability concerns and health-oriented values. This study examines the influence of current food-related lifestyles on consumer segmentation and preferences for extra virgin olive oil in Albania.

Design/methodology/approach – The study applies the adjusted Food-Related Lifestyle framework in the context of extra virgin olive oil consumption to segment consumers based on their attitudes, shopping behaviours and value orientations. Using survey data, exploratory factor analysis was conducted to identify underlying lifestyle dimensions, followed by hierarchical (Ward's method) and K-means clustering to derive distinct consumer profiles.

Findings – Four consumer segments were identified, Health-conscious eco-advocates, Value seekers, Quality-focused traditionalists and Price-sensitive consumers. These groups exhibit varying priorities, from sustainability and health to affordability and tradition. The results indicate that younger, educated and higher-income consumers are more likely to emphasize health and environmental factors, while older and lower-income individuals prioritize price and traditional preference. Perceived quality plays a key role across segments, reinforcing its relevance for targeted marketing.

Originality/value – This study is the first to apply the FRL framework to olive oil consumer research, offering a more comprehensive understanding of how lifestyle, health and environmental values intersect with purchasing preferences. By focusing on Albania, a nontraditional but culturally rooted olive oil market, it expands the literature on food consumer segmentation and provides practical insights for producers, retailers and policymakers, aiming to align marketing strategies with emerging consumer trends.

Keywords Extra virgin olive oil, Consumer preferences, Health, Food-related lifestyle, Sustainability concerns

Paper type Research article

1. Introduction

Olives and olive oil have historically played a central role in Mediterranean countries, including Albania, where they are deeply embedded in food and cultural traditions. As a basis of the Mediterranean diet, olive oil is widely recognized for its health benefits, particularly its potential to reduce the risk of cardiovascular diseases (Guasch-Ferré *et al.*, 2020). Given these well-documented health advantages, consumer interest in olive oil extends beyond tradition to various quality, health considerations, and purchasing factors, making consumer behaviour an important area of study.

British Food Journal
Emerald Publishing Limited
e-ISSN: 1758-4108
p-ISSN: 0007-070X
DOI 10.1108/BFJ-04-2025-0378

Consumer preferences for olive oil are shaped by a complex interplay of sensory appeal, health perceptions, and sustainability considerations. Across both traditional and non-traditional olive oil markets, when making their choices consumers consistently prioritize attributes such as type, price, previous experience, and country of origin, followed by secondary attributes like packaging, label design, and branding (Chrysochou *et al*., 2022; Di Vita *et al*., 2021a). Socio-demographic variables, knowledge levels, and attention to labelling also play a crucial role in shaping preferences, particularly regarding certifications and origin-based trust factors (Sgroi *et al*., 2023).

Sensory attributes, particularly colour, smell, taste, and texture—are key determinants of consumer choice, especially in traditional olive oil markets, where taste is the most critical factor (Latino *et al*., 2022). Notably, the presence of bitterness in extra virgin olive oil (EVOO) is associated with health benefits but may be perceived differently by consumers depending on their familiarity with EVOO (Tarabanis *et al*., 2023). While some consumers, especially those in non-traditional markets, tend to reject bitterness (Delgado and Guinard, 2011; Mtimet *et al*., 2013), others particularly those with greater exposure to EVOO—develop a preference for it over time (Vecchio *et al*., 2019). In producing countries like Italy, Spain, and Tunisia, generational knowledge transfer plays a key role in shaping sensory preferences, as consumers develop a tolerance for EVOO's bitterness and pungency through early exposure and family traditions (Di Vita *et al*., 2021a).

While sensory attributes dominate preferences in traditional markets, consumer motivations in non-traditional markets are shifting, as rising incomes, increased urbanization, and health awareness drive greater demand for high-quality olive oil products (Mili and Bouhaddane, 2021). Health benefits, particularly those related to cardiovascular health, cholesterol reduction, and antioxidant properties, have become a major factor in increasing olive oil consumption (Ilak Peršurić and Težak Damijanić, 2021).

Additionally, sustainability-conscious consumers increasingly associate organic olive oil with both personal well-being and environmental responsibility (Boncinelli *et al*., 2017).

Sustainability in olive oil production is gaining importance, with an increasing number of consumers seeking environmentally friendly production methods and ethical sourcing. While certifications such as Protected Designation of Origin (PDO) and organic labels enhance consumer trust, studies suggest that excessive labelling can sometimes lead to confusion, reducing the willingness to pay (Spognardi *et al*., 2021). Moreover, consumers in producing regions tend to have a stronger awareness of olive oil's extrinsic attributes, such as its environmental impact, contribution to rural livelihoods, and cultural heritage, whereas consumers in non-producing regions prioritize intrinsic quality factors like taste and health benefits (Giannoccaro *et al*., 2019).

To better understand these preferences, consumer research often employs segmentation and cluster analysis, including factor analysis, to identify consumer profiles based on shared characteristics. Various segmentation techniques—such as hierarchical clustering (Di Vita *et al*., 2021b), two-step clustering (Imami *et al*., 2013), and conjoint/latent class analysis (Chan-Halbrendt *et al*., 2010) have been applied to analyse olive oil consumer behaviour.

Another widely used approach is the Food-Related Lifestyle (FRL) framework. It offers a multidimensional lens for understanding how underlying values, habits and attitudes drive food choice—and, when tailored to olive oil consumption choices, it reveals the complex interplay of health, sustainability and sensory motives that single-attribute approaches miss (Grunert *et al*., 2011). This framework consists of multiple dimensions, including purchasing motives, quality aspects, cooking habits, shopping behaviour, and consumption patterns (Brunsø *et al*., 2021). Consumers are categorized into distinct groups based on their attitudes toward these dimensions, which helps in understanding how lifestyle factors shape food-related decisions. This segmentation allows marketers and researchers to tailor their strategies to different consumer profiles by considering how these traits align with specific food categories (Lazo *et al*., 2022). FRL has been applied to study consumer attitudes and food preferences, including food safety and health-conscious behaviour, while various studies

apply FRL in conjunction to specific products or categories of products such as dairy, meat, fruits, vegetables (Ahmadi Kaliji *et al*., 2022; Haas *et al*., 2016), fish (Stancu *et al*., 2022), drinks (Lazo *et al*., 2022) or even at the microalgae (Weinrich *et al*., 2023). However, FRL has not been applied in olive oil research, despite consumer preferences for olive oil having been a focus of study for a long time (Chkoniya *et al*., 2024). Since the FRL instrument allows a consumer's behaviour towards a food product to be understood, in this study, we selected it as a methodological approach to assess its relation to olive oil preferences.

This study contributes to the literature by being the first to apply the FRL framework to analyse olive oil consumer preferences. Unlike previous studies that focus primarily on sensory attributes, certification, or price sensitivity, this research takes a broader approach by integrating lifestyle-related factors that influence consumer behaviour. Moreover, the study provides novel insights into the Albanian olive oil market, a producing region characterised by a non-traditional market where preferences are shaped by a combination of local traditions, rising health awareness, and sustainability considerations. By segmenting consumers based on their FRL profiles, this research sheds light on the interplay between health consciousness, purchasing behaviour, and sustainability concerns, offering a more comprehensive understanding of the evolving olive oil market. Therefore, the research questions (RQ) are as follows:

RQ1. To what extent do health consciousness and sustainability concerns shape consumer preferences for olive oil in an emerging economy?

RQ2. How does perceived quality influence consumer segmentation in the olive oil market?

RQ3. How do different consumer segments, based on the FRL framework, influence olive oil purchasing preferences in Albania?

The next section provides the theoretical background and context of the study. The third section outlines the research methods, followed by the presentation of results in the fourth section. Finally, the paper concludes with key findings and implications.

2. Theoretical framework and context of the study

To strengthen the theoretical foundation linking FRL orientations, health beliefs, and sustainability preferences to consumer behaviour, this study proposes a conceptual framework that integrates multiple value-based drivers of olive oil choice. FRL framework categorises consumers based on their attitudes toward food purchasing, preparation, and consumption, where each group may have a different lifestyle or behaviour toward certain food segments (Camanzi *et al*., 2024). By clustering consumers on these integrated lifestyle dimensions (rather than on single attributes like price or sensory alone), FRL segmentation identifies consumer profiles (Saba *et al*., 2019). When applied to olive oil, these dimensions map directly onto the attributes that drive purchase decisions in both traditional and non-traditional markets. Health consciousness, sustainability orientation, and subjective knowledge emerge as interrelated dimensions influencing consumer decisions, especially in non-traditional olive oil markets. This multidimensional approach uncovers how dose–response knowledge, framing effects, sustainability ethics, provenance trust, and habitual behaviours co-evolve to shape olive oil preferences, insights that single-attribute or demographic methods cannot fully capture (Brunsø *et al*., 2021; Chen and House, 2022).

Health-related values significantly influence consumer interest in EVOO. Compared with other dietary fats and low-fat diets, EVOO, due to its polyphenol content rather than the monounsaturated fat content is considered superior in the management of clinical biomarkers (Flynn *et al*., 2023; Isaakidis *et al*., 2023). Over the past five years, a growing body of work, including recent meta-analyses—has unpacked how specific bioactive compounds in olive oil shape consumer purchase motives and willingness-to-pay. For example, consumers

demonstrate higher willingness to pay for olive oil enriched with vitamins or polyphenols, as they associate these attributes with disease prevention and improved well-being (Hamam *et al*., 2022; Zanchini *et al*., 2022). This aligns with findings that self-perceived nutritional knowledge and subjective health awareness shape the perception of olive oil as a functional food (Di Vita *et al*., 2020), while the presence of health claims increases their value of sensory attributes (Bou Fakhreddine and Sánchez, 2023). Consumer reactions to health claims vary depending on regulatory focus and claim framing (Pichierri *et al*., 2020).

EVOO consumers, especially those having preferences for organic olive oil define olive oil as a natural and pure product, free of additives and chemical residues. Olive oil healthiness is strengthened using origin certifications (Latino *et al*., 2022). In addition, Boncinelli *et al*. (2017) reveal the interaction of health claims in organic olive oil, which is significantly influenced by the certification labels. Nevertheless, many consumers still face challenges in understanding health claims on olive oil packaging, underscoring the importance of nutrition literacy and communication clarity (Lombardi *et al*., 2021).

Sustainability concerns are increasingly influencing consumer demand for food in general (Liu and McCarthy, 2023) and olive oil in particular (Carzedda *et al*., 2021). Consumers are more aware of the environmental impacts of their choices, including effects on input use, water, land, and biodiversity. While once closely associated with organic production, sustainability now encompasses a broader set of practices and values.

Consumers show growing interest in various sustainability labels, including organic (y Pérez and Gracia, 2023), ecolabels (Giannoccaro *et al*., 2019; Grunert *et al*., 2014), and ethical logos (Camanzi *et al*., 2024). This shift is reflected in a greater willingness to pay for olive oil with sustainability attributes such as organic certification, geographical indications, and local sourcing (Carzedda *et al*., 2021; Marozzo *et al*., 2023). Trust and communication within local supply chains further shape consumer perceptions, highlighting the importance of producer–consumer information exchange (Polenzani *et al*., 2020).

These insights support the application of the FRL framework as a structuring tool to capture how these value orientations—health, sustainability, and knowledge—translate into distinct consumer segments (Brunsø *et al*., 2021; Lazo *et al*., 2022). The integration of attitudinal, motivational, and behavioural aspects offers a useful approach to analyse the complex decision-making mechanisms that guide olive oil choice in non-traditional markets. Albania serves as a suitable case study for analysing consumer preferences for olive oil, given its long history of olive cultivation, favourable climatic and geographical conditions. Olives and olive oil are deeply embedded in Albanian food culture, playing a central role in daily consumption. Despite its increasing local production, which dominates the domestic demand the sector faces evolving consumer expectations, shaped by both traditional preferences and emerging trends related to health and sustainability. Over recent years, domestic demand for olive oil has been growing due to rising incomes, urbanization, and heightened awareness of health benefits but is still lower than in other Mediteranenan countries (AGT-DSA, 2021).

Despite the sector's importance, research on consumer preferences for olive oil in Albania remains limited. Existing studies indicate a strong preference for local olive oil, with consumers often willing to pay a premium due to perceived quality (Chan-Halbrendt *et al*., 2010; Imami *et al*., 2013). Price and origin are key purchasing factors, and consumers generally favour pungent and bitter flavours. Additionally, regional differences exist, with olive oil from areas such as Berat, Vlora and Tirana being particularly valued. This presents opportunities for regional branding and certification, such as Geographical Indication (GI) or Protected Designation of Origin (PDO) (AGT-DSA, 2021).

Health concerns are increasingly shaping food choices in Albania, where food safety regulations and quality assurance mechanisms remain underdeveloped. In such contexts, consumers tend to rely on direct purchases from farmers or products with a known origin. Organic products, perceived as safer, are often preferred for health reasons, while environmental considerations are far less important (Imami *et al*., 2017). However, growing awareness of the environmental impacts of conventional production methods (Stojcheska

et al., 2024) has contributed to a rising preference for organic food in the Western Balkans region including also Albania (Canavari *et al*., 2017; Miftari *et al*., 2022).

Given market shifts, rising incomes, and evolving consumer awareness, it is essential to reassess olive oil preferences through a segmentation approach in the context of broader food-related habits. This is missing in previous studies (e.g. Imami *et al*., 2013). We hypothesize that consumers' food-related personality traits, purchasing habits, and lifestyles influence their preferences for extra virgin olive oil. Hence, this study aims to segment consumers based on their FRL profiles, identifying key behavioural and socio-demographic characteristics that shape demand. Using factor extraction and cluster analysis, the research provides a useful understanding of consumer segments, offering valuable insights for targeted marketing and policy interventions (Figure 1).

3. Materials and methods

3.1 Data collection

This study is based on a structured, face-to-face survey conducted with a convenience sample of 236 consumers in Tirana, Albania. The survey targeted individuals residing in urban areas, ensuring a diverse representation of consumer demographics. Tirana, the capital of Albania, was chosen due to its status as Albania's economic, cultural, and demographic hub, making it a crucial market centre that reflects broader urban consumption patterns.

Data collection took place over a two-month period, from April to May 2023, using a systematic approach to maximize representativeness. Surveys were administered on different weekdays and at various times of the day to capture variations in consumer availability and shopping behaviours. To enhance diversity in responses, data was collected across multiple locations, including open-air markets, supermarkets, shopping centres, and dense

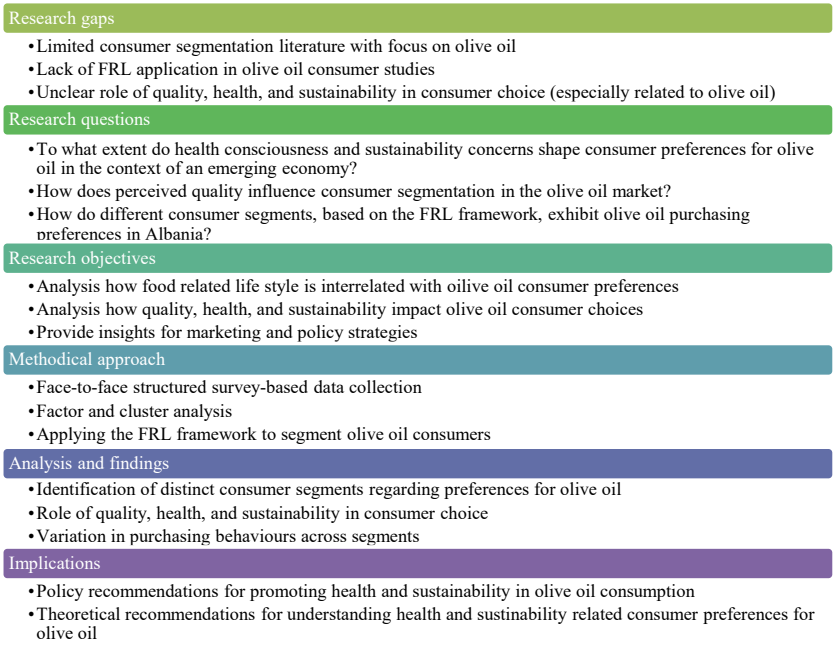

Figure 1. Research design overview. Source: Authors' own work

neighbourhood crossroads, ensuring the inclusion of consumers with different purchasing habits and socioeconomic backgrounds.

3.2 Survey design

The questionnaire was designed based on an extensive literature review and covered various aspects of olive oil consumption and food-related lifestyle behaviours.

The structure and content of the questionnaire are grounded in the FRL framework (Brunsø *et al*., 2021), which provides a valid basis for capturing consumers' underlying value systems, habits, and attitudes related to food choices. By aligning the survey design with established constructs such as health orientation, food preparation habits, and green values, the instrument ensures both theoretical coherence and comparability with similar segmentation studies in food marketing. The inclusion of olive oil–specific attributes further contextualise the FRL dimensions within the domain of edible oils, enhancing the instrument's relevance to the study objectives and the Albanian market context.

Responses were collected using a 5-point Likert scale, to assess consumer attitudes and preferences. By structuring the questionnaire around these five dimensions and utilizing a 5-point Likert scale, the survey provides a framework for measuring consumer attitudes and preferences related to olive oil consumption.

The detailed factors explored in the questionnaire are structured as follows:

Factor 1. Food decision-making and preparation habits:

This factor examined consumer habits related to food purchasing and preparation. It included questions on the importance of product information (e.g. labelling, origin, branding), meal planning routines, grocery list preparation, and food exploration, reflecting consumers' engagement in informed and planned purchasing behaviours.

Factor 2. Health orientation in food and olive oil:

This factor assessed the role of health considerations in food choices, particularly in relation to olive oil consumption. It measured the importance of health in food selection, preferences for healthy foods, and awareness of olive oil's health benefits, including its role in cholesterol regulation and overall well-being.

Factor 3. Olive oil quality perception:

This factor explored consumer perceptions of olive oil quality and taste. It included questions on taste preferences, overall olive oil consumption preferences, neutral vs. strong flavour preferences, and attitudes toward flavoured vs. plain olive oil.

Factor 4. Consumer green values:

To assess environmental consciousness in purchasing decisions, this factor focused on consumers' interest in sustainability, awareness of the environmental impact of food choices, and behaviours such as avoiding polluting products and boycotting companies with poor environmental practices.

Factor 5. Price sensitivity and purchasing behaviour:

This factor evaluated consumer attitudes toward pricing and purchasing strategies. It included questions on price comparison habits, preferences for special offers, checking for low-cost products, and waiting for discounts before making a purchase.

3.3 Analysis

Consumer segmentation based on FRL profiles was conducted using a classical two-stage methodology, with all analyses performed using RStudio (2024.12.0) software. The first stage involved Exploratory Factor Analysis (EFA), an unsupervised statistical technique aimed at

uncovering latent factors in the data without imposing predefined structures. This method provides a comprehensive framework to characterize consumer behaviours and FRL profiles (Hair *et al*., 2010). In the second stage, cluster analysis was applied to categorize individuals into distinct consumer groups based on the identified factors.

To extract the key dimensions influencing consumer behaviour, Principal Component Analysis (PCA) with Varimax rotation and Kaiser Normalization was utilized (Jolliffe and Cadima, 2016). PCA reduces the complexity of the dataset by transforming correlated variables into a smaller set of uncorrelated components, making it easier to interpret. During the analysis, only items with factor loadings of 0.40 or higher and eigenvalues exceeding 1 were retained for further exploration, ensuring that the extracted factors were both meaningful and statistically robust (Yeo *et al*., 2020). Items falling below these thresholds were excluded from subsequent steps to maintain the reliability and clarity of the results.

Following factor extraction, a two-stage clustering process was implemented to classify consumers into distinct segments. The initial phase involved hierarchical clustering, specifically using Ward's method (Ward, 1963), which minimizes the variance within clusters and helps determine the optimal number of clusters. Once the cluster structure was identified, the K-means clustering algorithm was applied to fine-tune the groupings and ensure cohesive and well-separated clusters (Hair *et al*., 2010). The resulting clusters reflected variations in consumers' FRL profiles, capturing distinct behavioural patterns and preferences.

4. Results

Prior to factor extraction, we assessed the adequacy of the dataset for EFA using the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy (KMO = 0.745) and Bartlett's Test of Sphericity ($\chi^2 = 186.48$, df = 100, $p < 0.001$), indicating that the data were suitable for factor analysis. The five retained factors accounted for a total of 47.2% of the explained variance.

The factor analysis revealed five key factors influencing olive oil consumption and food-related behaviours (see Table 1). The first factor, food decision-making and preparation habits, emphasized the importance of product information and meal planning, with factor loadings of 0.608 for meal planning habits and 0.429 for the importance of product information. The second factor, health orientation in food and olive oil, highlighted health-consciousness, with the highest loadings of 0.842 for the importance of health and 0.892 for healthy food preference. The third factor, olive oil quality perception, was driven by taste preferences and consumption habits, with loadings of 0.505 for neutral taste preference and 0.517 for flavoured versus plain olive oil preference. The fourth factor, consumer green value, reflected a commitment to sustainability, with the highest loadings of 0.646 for avoidance of polluting products and 0.623 for boycotting polluting companies. Lastly, price sensitivity captured consumers' tendencies to compare prices and seek discounts, with the highest loadings of 0.741 for price comparison habits and 0.685 for price checking for low-cost products.

4.1 Results of cluster analysis

The optimal number of clusters was determined through visual inspection of the dendrogram produced by hierarchical clustering using Ward's method. The dendrogram revealed a distinct separation into four groups before a major jump in linkage distance, indicating that four clusters gave enough detail to capture important differences between consumers (granularity), without being too complex to make sense of or explain (interpretability). These clusters reflect varying priorities, from health and sustainability to practicality and price sensitivity.

The results of cluster profiles based on consumer preferences are shown in Table 2. Cluster 1 (Health-conscious eco-advocates) consists of consumers who are highly health-conscious and deeply committed to sustainability. These individuals prioritize health benefits in their

Table 1. Factor analysis of consumer behaviours and preferences related to olive oil consumption

Factors/Items		Factor loadings	Eigenvalues
F1. Food decision-making and preparation habits			2.085
F1.1. Importance of product information	Product information is very important to me. I need to know what is in the product	0.429	
F1.2. Meal planning habit	I always plan a few days in advance what we are going to eat	0.608	
F1.3. Grocery list preparation	Before I go grocery shopping, I make a list of everything I need	0.407	
F1.4. Food experimentation	I like trying new foods that I have never tasted before	0.477	
F2. Health orientation in food/Olive oil			1.764
F2.1. Importance of health	Health is very important to me	0.842	
F2.2. Healthy food preference	I really value healthy food	0.892	
F2.3. Olive oil health benefits	Olive oil is good for health	0.638	
F2.4. Olive oil and cholesterol regulation	Olive oil regulates the level of cholesterol in the blood	0.478	
F3. Olive oil quality perception			1.707
F3.1. Taste preference for olive oil	I prefer the taste of olive oil to other oils/fats	0.358	
F3.2. Olive oil consumption preference	Olive oil is best consumed as it is, while other oils/fats are best cooked	0.373	
F3.3. Neutral taste preference for olive oil	I prefer that the olive oil does not affect the taste of the food	0.505	
F3.4. Flavoured vs. plain olive oil preference	I prefer the flavour of flavoured olive oil to plain olive oil	0.517	
F4. Consumer green value			1.695
F4.1. Interest in sustainability	I am interested in environmental sustainability	0.515	
F4.2. Environmental impact of food choices	By consuming food I can protect the environment	0.590	
F4.3. Avoidance of polluting products	I do not buy products that are known to cause pollution	0.646	
F4.4. Boycotting polluting companies	I would be willing to stop buying products from companies that harm the environment even though it might be inconvenient	0.623	
F5. Price sensitivity			1.327
F5.1. Price comparison habit	When I'm in a store, I'll always check the prices for alternatives before I buy	0.741	
F5.2. Preference for special offers	When I buy or shop, I look for special offers	0.633	
F5.3. Price checking for low-cost products	In a store, I check the prices even when I'm going to buy cheap products	0.685	
F5.4. Waiting for discounts	I often wait before buying certain products until I buy them on offer	0.595	

Note(s): Test of the hypothesis that 5 factors are sufficient. The chi square statistic is 186.48 on 100 degrees of freedom. The *p*-value is 3.52e−07

Source(s): Authors' own work

food choices, particularly valuing olive oil's health properties, such as its role in cholesterol regulation. Their decision-making is strongly influenced by the availability of product information, as they prefer to be well-informed about the food they consume. They are also open to food experimentation, suggesting an interest in discovering healthier alternatives.

Table 2. Cluster profiles based on consumer preferences-mode (percentage)

Factors/Items	Cluster 1 (n = 53, 22.5%)	Cluster 2 (n = 66, 28%)	Cluster 3 (n = 31, 13.3%)	Cluster 4 (n = 85, 36.2%)
F1. Food decision-making and preparation habits				
F1.1. Importance of product information	5(51.02%)	4(62.3%)	5(62.07%)	4(81.01%)
F1.2. Meal planning habit	4(32.65%)	2(60.66%)	1(79.31%)	2(56.96%)
F1.3. Grocery list preparation	4(42.86%)	4(47.54%)	2(34.48%)	4(75.95%)
F1.4. Food experimentation	4(57.14%)	2(47.54%)	1(68.97%)	2(67.09%)
F2. Health orientation in food/Olive oil				
F2.1. Importance of health	5(87.76%)	4(81.97%)	5(75.86%)	4(86.08%)
F2.2. Healthy food preference	5(65.31%)	4(73.77%)	5(75.86%)	4(77.22%)
F2.3. Olive oil health benefits	5(55.1%)	4(88.52%)	5(89.66%)	4(91.14%)
F2.4. Olive oil and cholesterol regulation	4(48.98%)	4(73.77%)	5(79.31%)	4(87.34%)
F3. Olive oil quality perception				
F3.1. Taste preference for olive oil	4(48.98%)	4(49.18%)	5(65.52%)	4(83.54%)
F3.2. Olive oil consumption preference	4(57.14%)	4(68.85%)	5(37.93%)	4(92.41%)
F3.3. Neutral taste preference for olive oil	2(40.82%)	2(67.21%)	4(34.48%)	2(87.34%)
F3.4. Flavoured vs. plain olive oil preference	2(44.9%)	2(68.85%)	1(37.93%)	2(75.95%)
F4. Consumer green value				
F4.1. Interest in sustainability	4(73.47%)	4(72.13%)	4(55.17%)	4(70.89%)
F4.2. Environmental impact of food choices	4(71.43%)	4(68.85%)	4(44.83%)	4(69.62%)
F4.3. Avoidance of polluting products	4(53.06%)	4(40.98%)	2(41.38%)	3(44.3%)
F4.4. Boycotting polluting companies	4(61.22%)	4(72.13%)	4(41.38%)	4(79.75%)
F5. Price sensitivity				
F5.1. Price comparison habit	4(61.22%)	4(45.9%)	4(41.38%)	4(82.28%)
F5.2. Preference for special offers	4(63.27%)	4(37.7%)	4(27.59%)	4(77.22%)
F5.3. Price checking for low-cost products	4(63.27%)	2(50.82%)	3(31.03%)	4(58.23%)
F5.4. Waiting for discounts	4(30.61%)	2(70.49%)	1(44.83%)	2(67.09%)

Source(s): Authors' own work

Additionally, they demonstrate significant environmental awareness, actively avoiding products that contribute to pollution and supporting brands that align with their green values.

Cluster 2 (Value seekers) is composed of consumers who are highly organized and practical in their food-related behaviours. These individuals prioritize meal planning and grocery list preparation, reflecting a structured and goal-oriented approach to food purchases and preparation. Their motivation is largely driven by a desire for efficiency and value, with a notable emphasis on seeking special offers and comparing prices for low-cost products. Although they exhibit some interest in sustainability, such as avoiding polluting companies, their primary focus is on practicality and value for money. For this group, eco-friendly choices are often considered only when they align with their budget constraints.

Cluster 3 (Quality-focused traditionalists) includes consumers who are quality-driven and place a strong emphasis on traditional food preferences. Their focus is on the taste and quality of food, particularly olive oil, where they show a clear preference for familiar, high-quality products. They are less experimental with new food options, favouring trusted brands and established purchasing habits. While this group acknowledges the importance of sustainability, their environmental concerns are moderate and secondary to their emphasis on product quality. These consumers value the sensory aspects of food, particularly taste and quality, and are less motivated by health or environmental considerations when making food choices.

Cluster 4 (Price-sensitive consumers) is defined by consumers who are primarily price-sensitive and motivated by finding the best deal. This group is highly focused on cost-saving, frequently seeking discounts and special offers, and comparing prices for alternatives before making a purchase. While they do show some interest in sustainability, such as boycotting polluting companies, their primary decision-making factor is affordability. They are more likely to make eco-conscious choices only when these options come at a low cost, balancing their desire for value with occasional consideration for environmental factors. This cluster represents bargain hunters who prioritize budget-friendly options while remaining aware of sustainability when it doesn't compromise cost.

4.2 Socio-demographic characteristics of clusters

The socio-demographic characteristics of the consumer clusters highlight distinct differences in age, income, and education, which align with their purchasing behaviours and decision-making priorities (Table 3). Cluster 1 (Health-conscious eco-advocates) is dominated by female (89.80%), composed mainly of younger (51.02%) and middle-aged (42.86%) consumers, with a high proportion of university-educated individuals (46.94%) and a notable share of high-income earners (44.90%). This demographic profile supports their strong engagement with health and sustainability, as well as their preference for well-informed choices.

Cluster 2 (Value seekers) consists predominantly of young consumers (62.30%), most of whom belong to the middle-income category (73.77%). Their educational background is more diverse, with a substantial portion having university degrees (42.62%), while others have high school or elementary education. Their structured and practical approach to food purchases aligns with their emphasis on affordability and efficiency, with sustainability considerations playing a secondary role. This cluster has a higher proportion of female consumers (67.21%) compared to males (32.79%).

Cluster 3 (Quality-focused traditionalists) is primarily composed of middle-aged consumers (55.17%) who exhibit a strong preference for traditional, high-quality food products. While they acknowledge sustainability, their purchasing decisions are driven by

Table 3. Socio-demographic characteristics of consumers' clusters

	Cluster 1	Cluster 2	Cluster 3	Cluster 4
Age				
young age	25(51.02)	38(62.30)	13(44.83)	33(41.77)
middle age	21(42.86)	21(34.43)	16(55.17)	42(53.16)
old age	3(6.12)	2(3.28)	0	4(5.06)
Gender				
male	5(10.20)	20(32.79)	10(34.48)	54(68.35)
female	44(89.80)	41(67.21)	19(65.52)	25(31.65)
Income				
low income	8(16.33)	2(3.28)	5(17.24)	5(6.33)
middle income	19(38.78)	45(73.77)	17(58.62)	57(72.15)
high income	22(44.90)	14(22.95)	7(24.14)	17(21.52)
Education				
elementary (8–9) years	13(26.53)	14(22.95)	6(20.69)	36(45.57)
high school (12 years)	13(26.53)	21(34.43)	15(51.72)	24(30.38)
university	23(46.94)	26(42.62)	8(27.59	19(24.05)

Note(s): Results are presented as number (percentage)

Source(s): Authors' own work

taste and familiarity. The majority fall into the middle-income category (58.62%), and more than half (51.72%) have completed high school education, suggesting a preference for established brands and conventional food choices. In terms of gender distribution, Cluster 3 is mostly female (65.52%).

Lastly, Cluster 4 (Price-sensitive Consumers) is largely represented by middle-aged individuals (53.16%), with a notable proportion of low and middle-income earners (6.33 and 72.15%, respectively). They show the highest percentage of elementary-level education (45.57%), which may contribute to their strong emphasis on affordability. Their purchasing decisions are primarily driven by cost-saving considerations, with sustainability playing a role only when it aligns with budget constraints. Unlike the other clusters, Cluster 4 has a male majority (68.35%). These demographic insights reveal how different consumer segments prioritize health, quality, and affordability based on their socio-economic backgrounds, influencing their engagement with sustainability and food choices.

5. Discussion

This study provides valuable insights into Albanian consumer preferences for olive oil, highlighting the impact of health orientations, green values, and shopping behaviours on purchasing decisions. By applying the FRL framework for the first time to olive oil research, this paper contributes to a more comprehensive understanding of consumer behaviour in this domain, particularly in a non-traditional market like Albania. This section discusses the findings in relation to existing literature, emphasizing the key contributions of the study and how they advance our understanding of olive oil consumption.

The five factors identified through factor analysis—food decision-making and preparation habits, health orientation, olive oil quality perception, consumer green values, and price sensitivity—reflect the interplay of motivations guiding consumer choices. These results are in line with previous research, which has established that health consciousness and sustainability are key drivers of olive oil preferences in both traditional and non-traditional markets (Giannoccaro *et al*., 2019; Ilak Peršurić and Težak Damijanić, 2021). However, this study contributes additional insights by incorporating food-related lifestyle factors into the analysis, providing consumer profiling of olive oil preferences and a broader perspective on consumer behaviour beyond mere product attributes (Table 4).

The health-conscious consumers in this study, categorized as "Health-conscious eco-advocates" consumers, align with findings from (Perito *et al*., 2019), who emphasized the importance of cardiovascular benefits and the role of olive oil in a health-conscious diet. However, our study uniquely highlights how these consumers not only prioritize health but also demonstrate a strong commitment to sustainability. This reflects the growing trend, as seen in other European markets, where health and environmental concerns are interconnected (Boncinelli *et al*., 2017). This cluster's demographic composition, primarily younger and middle-aged, with a high proportion of university-educated and high-income individuals, suggests that well-informed and financially capable consumers are more likely to integrate sustainability into their purchasing choices. In Albania, as in other Mediterranean countries like Italy and Spain, the preference for olive oil's health benefits, particularly for cholesterol regulation, indicates an established market space for health-driven olive oil consumption. These findings also mirror those of Mili and Bouhaddane (2021), who observed a shift towards health-oriented consumption in non-traditional markets.

In contrast, "Value seekers" consumers in this study exhibits practical shopping behaviours, where meal planning and cost efficiency drive purchasing decisions. This group is predominantly composed of young consumers, with a diverse educational background and a strong representation of middle-income individuals. While these consumers show interest in sustainability, their primary motivation is value for money. This cluster's behaviour closely resembles findings from Di Vita *et al*. (2021a), who identified that price sensitivity often overrides environmental considerations, particularly among younger

Table 4. Profiling consumer olive oil preferences

	Description	Purchase drivers	Demographic characteristics
Health-conscious eco-advocates	Consumers highly conscious of health and sustainability. They prioritize olive oil's health benefits and avoid products linked to pollution. They also seek detailed product information and are open to food exploration	Health benefits (cholesterol regulation, nutrition) Environmental awareness (avoid pollution-linked products) Need for transparency (detailed product information) Willingness to explore healthier alternatives	Age Group: Young (51.02%); and Middle-aged (42.86%) Gender: Mostly Female (89.80%) Education Level: High (University or above - 46.94%) Income Level: High (44.90%)
Value seekers	Organized and practical consumers who focus on efficiency and value in food purchases. They emphasize structured meal planning, special offers, and affordability, considering sustainability only when budget allows	Meal planning and structured food purchases Price comparison and budget optimization Occasional sustainability considerations when aligned with affordability	Age Group: Mostly Young (62.30%) Gender: Mostly Female (67.21%) Education Level: Diverse (University - 42.62%, High school or elementary–remainder) Income Level: Middle (73.77%)
Quality-focused traditionalists	Quality-driven consumers who emphasize taste and tradition. They prefer familiar, high-quality olive oil brands and are less experimental. While sustainability matters, it is secondary to product quality	Emphasis on taste and high product quality Preference for familiar brands and traditional food choices Moderate environmental concern, but secondary to quality and taste Low willingness to try new food options	Age Group: Mostly Middle-aged (55.17%) Gender: Mostly Female (65.52%) Education Level: Medium (High school - 51.72%) Income Level: Middle (58.62%)
Price-sensitive consumers	Highly price-sensitive consumers who seek discounts and compare prices before purchasing. They occasionally consider sustainability but prioritize affordability	Strong focus on cost-saving and finding the best deals High sensitivity to price fluctuations Some awareness of sustainability but not a primary motivator Eco-friendly choices made only if they are cost-effective	Age Group: Mostly Middle-aged (53.16%) Gender: Mostly Male (68.35%) Education Level: Low (Elementary - 45.57%) Income Level: Low and Middle (6.33% low, 72.15% middle)

Source(s): Authors' own work

consumers managing limited financial resources. The "Price-sensitive consumers" similarly reflect this tendency, confirming that, even in markets with increasing awareness of environmental issues, price remains a decisive factor for many consumers, as also noted by Papoutsi (2023). This cluster's high percentage of elementary-level education and strong representation of low-to middle-income earners further reinforces the idea that affordability is a dominant driver of food choices, with sustainability considerations secondary to cost-saving needs.

While the segmentation identified both "Value seekers" and "Price-sensitive consumers" as distinct clusters, it is important to acknowledge the potential for conceptual overlap given their shared emphasis on cost-consciousness. Our study adds depth by distinguishing between those who are price-sensitive and those who, despite seeking deals, are also motivated by values like sustainability when cost-effective options are available. Both groups actively engage in price comparisons and seek discounts; however, a closer examination reveals important behavioural differences. "Value seekers" tend to adopt a structured and efficiency-oriented approach to food purchasing, characterized by planned shopping and meal preparation. In contrast, "Price-sensitive consumers" are primarily driven by immediate affordability, often engaging in more reactive, short-term purchasing decisions. This distinction aligns with the FRL framework, where in value-seeking reflects deliberate planning and evaluation, while price sensitivity denotes a narrower focus on minimizing cost (Camanzi *et al*., 2024). Additionally, socio-demographic differences—such as education level and gender composition—further support the meaningful differentiation between these clusters. The "Quality-focused traditionalists" consumers in this study represent consumers who place strong emphasis on product quality and taste, with less concern for health and sustainability. This cluster is primarily middle-aged, with a majority having a high school education and belonging to the middle-income group. Their behaviour reflects the findings of Latino *et al*. (2022), who addressed the sensory importance of taste in traditional olive oil markets, especially among consumers in producing regions. However, the limited attention paid to health and environmental aspects by this cluster is noteworthy, suggesting that middle-aged consumers with established purchasing habits are more likely to prioritize sensory and quality-related attributes over emerging concerns such as sustainability and health. This finding aligns with Giannoccaro *et al*. (2019), who highlighted how traditional markets may focus primarily on intrinsic product qualities, leaving external factors like sustainability secondary in consumer preferences.

The study's segmentation approach provides further insights into the dynamic landscape of olive oil preferences in Albania, contributing to the literature on segmentation in food markets. The results underline the shifting nature of consumer preferences in Albania, as the growing awareness of health benefits and sustainability increasingly influences purchasing behaviour, even in traditionally price-driven markets. This change is reflected in the interplay between consumers that demonstrate a complex balance of health, sustainability, and price sensitivity. This finding is consistent with broader trends observed in Mediterranean countries, where economic growth, increased health awareness, and concerns about environmental impacts are shaping new consumer profiles (Miftari *et al*., 2022).

In line with the conceptual foundations outlined in our theoretical framework, the interpretation of consumer segments is grounded in the behavioural drivers of olive oil choice—namely, health consciousness, sustainability orientation, and subjective knowledge. Each segment reflects a distinct combination of these dimensions. The "Health-conscious eco-advocates" demonstrate high health awareness and strong environmental concern, consistent with evidence that subjective nutritional knowledge and health-oriented values increase willingness to pay for enriched or organic olive oils (Di Vita *et al*., 2020; Hamam *et al*., 2022; Zanchini *et al*., 2022). Their behaviour also aligns with a preference for credible and transparent product information (Lombardi *et al*., 2021). The "Value seekers" exhibit moderate sustainability interest but place greater emphasis on practical behaviours such as meal planning, price comparison, and budget-consciousness. For this group, environmental values are conditional, pursued when aligned with economic efficiency. In contrast, "Price-sensitive consumers" are driven primarily by affordability and show limited engagement with health or sustainability attributes, a pattern that may be linked to lower levels of nutritional literacy and limited trust in labelling, particularly in contexts where quality assurance mechanisms are underdeveloped (Imami *et al*., 2017). Lastly, the "Quality-focused traditionalists" prioritize taste and familiarity, reflecting the persistence of cultural consumption habits and sensory expectations observed in traditional olive oil

markets (Di Vita *et al*., 2020). This theoretical framing enhances the explanatory power of the segmentation results and provides a more comprehensive understanding of how value-based and contextual factors shape consumer behaviour in emerging Mediterranean markets.

6. Conclusion

This study provides a comprehensive analysis of the Albanian olive oil market, revealing the underlying factors influencing purchasing behaviour. By identifying key consumer groups, Health-Conscious Eco-Advocates, Value Seekers, Quality-Focused Traditionalists, and Price-Sensitive Consumers, this research highlights the diverse motivations shaping purchasing decisions and underscores the need for tailored market strategies aligned with each segment's socio-demographic characteristics.

6.1 Theoretical implications

The findings contribute to the broader literature on consumer behaviour by applying the FRL framework in a non-traditional market setting, demonstrating its applicability in understanding consumer preferences in a non-traditional olive oil market. This study expands the scope of segmentation research by incorporating health orientation, sustainability consciousness, and price sensitivity into a structured analytical approach. Additionally, it provides empirical evidence on the evolving role of environmental concerns in food choice behaviour, reinforcing the importance of sustainability in consumer decision-making.

6.2 Managerial implications

This study has clear takeaways for researchers, practitioners, and society. For researchers, it shows that the FRL framework is a suitable analytical tool also in the context of non-traditional markets. Furthermore, FRL can be tested in various contexts/countries related to different products and over time to refine the tools and theories about how values affect food choices. The findings suggest that health and sustainability considerations are key drivers for younger, highly educated, and high-income consumers, whereas affordability and traditional product preferences dominate purchasing decisions among middle-aged and lower-income groups.

As the Albanian olive oil market continues to evolve, targeted interventions by producers, retailers, and policymakers can enhance both consumer engagement and market competitiveness. Policymakers can use our results to shape clearer nutrition labels and sustainability certifications, making it easier to design focused education campaigns. For the wider public, understanding how health and environmental values influence buying habits can help frame awareness programmes that promote healthier diets and greener choices, ultimately supporting better well-being and more sustainable food systems. For instance, marketing strategies should emphasize health and sustainability credentials for eco-conscious consumers while ensuring affordability and value-based messaging for price-sensitive and value-driven buyers.

In light of the four consumer segments identified, stakeholders can adopt targeted actions to maximise both market impact and policy effectiveness. Producers, for example, may introduce and promote differentiated product lines—such as certified organic extra-virgin olive oil aimed at "Health-conscious eco-advocates" alongside competitively priced blends for "Value seekers" and "Price-sensitive consumers"—while highlighting regional origins (e.g. Berat, Vlorë) to attract "Quality-focused traditionalists". Retailers can refine merchandising and communications by segment: emphasising health-benefit labels and sustainability certifications at the point of sale for "Health-conscious eco-advocates", offering bundled discounts or loyalty incentives for "Value Seekers", and promoting economy-sized multi-packs for "Price-sensitive" shoppers. Public authorities, in turn, should pursue consumer education campaigns—such as clear labelling guidelines and

community workshops on nutrition and environmental benefits—and provide targeted support for small producers through certification subsidies and streamlined GI/PDO registration processes.

To align with these diverse consumer needs, stakeholders should focus on strengthening transparency in product labelling, offering more accessible certification schemes, and implementing cost-effective sustainability initiatives that resonate with different income groups. Additionally, educational campaigns on the health and environmental benefits of olive oil could help bridge the gap for segments that currently prioritize price and taste over sustainability. Retailers and policymakers should explore targeted subsidies, and certification-based incentives to encourage sustainable purchasing behaviours among price-sensitive consumers.

6.3 Limitations

The study has several limitations. Our segmentation analysis is based on a modest sample of 236 urban consumers; however, this approach is consistent with other FRL studies that have successfully employed similar or even smaller samples to derive meaningful consumer clusters. For instance, Ahmadi Kaliji *et al*. (2022) applied the FRL instrument to a sample of comparable size in their segmentation of fruit consumers, achieving robust profiles despite the small dataset. Conversely, Choi (2016) demonstrated that even more limited samples can yield valuable insights into nutrition-information behaviours using the same framework. Nonetheless, we acknowledge that a larger sample would enhance statistical power and the precision of cluster boundaries; future research should therefore aim to replicate our findings with broader and more diverse participant pools to confirm the stability of these segments.

While Albania offers a rich setting for studying olive oil preferences—with its unique cultural, production, and consumption traditions as a Mediterranean country and emerging economy—our findings may not directly translate elsewhere. For example, most Western Balkan nations have a continental climate, where olive oil production is scarce or non-existent, with distinct consumer cultures, while other Mediterranean countries like Greece and Italy differ markedly in socio-economic conditions and value-chain structures. Consequently, these segments reflect the Albanian context and may vary in production regions and non-traditional markets with different levels of consumer education, certification schemes, or shopping behaviours. We therefore recommend that future research apply the FRL framework across both traditional and non-traditional olive oil markets to determine whether similar consumer segments emerge under diverse socio-economic and cultural conditions.

6.4 Future research directions

Future research should assess the effectiveness of targeted marketing and policy interventions in encouraging sustainable and informed consumer choices. Time-series research could further explore shifts in consumer preferences over time, particularly as economic conditions and environmental awareness are dynamic. Additionally, experimental studies and consumer behaviour simulations could provide deeper insights into the causal mechanisms driving segmentation patterns. By addressing these dimensions, this study provides a foundation for industry stakeholders and policymakers to foster a more sustainable, competitive, and consumer-responsive olive oil market in Albania.

Acknowledgments

The authors are grateful to the anonymous reviewers for their helpful comments and to John Whittle for his valuable feedback and for editing the paper.

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