

Segmenting Young Wine Consumers: An Attribute-Based Approach with Factor, Cluster, and Decision Tree Analysis

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Abstract

This study examines the factors influencing wine purchasing behaviour among young Albanian consumers, focusing on Millennials and Generation Z. Using an attribute-based segmentation approach, data from 316 respondents were analysed through Principal Component Analysis (PCA), hierarchical and K-means clustering, and a CHAID (Chi-squared Automatic Interaction Detector) decision-tree model. The results identified seven distinct consumer segments differing in their preferences for sweetness, taste, safety, and origin-attributes that together define both hedonic and trust-based decision patterns. Millennials emerged as more authenticity- and quality-oriented, while Generation Z displayed pragmatic, exploratory, and trend-sensitive behaviours. The CHAID model confirmed the segmentation's robustness and highlighted sweetness as the primary discriminating factor. The study contributes methodologically by demonstrating the value of attribute-based segmentation alongside traditional choice experiments. Practical implications emphasise transparent communication, balanced sensory profiles, and targeted marketing strategies to engage younger generations in emerging wine markets.

Keywords: Young Consumers; Wine Segmentation; Attribute-Based Preferences; Self-Perceived Expertise; Generation Z and Millennials; Decision Tree (CHAID)

1 Introduction

The wine market has been traditionally characterised by older, more well-established consumers who have developed their preferences over many years (Banks & Overton, 2010). However, young people have recently emerged as an important and influential segment of the wine consumption market (Schaefer et al., 2018). Usually aged

between 21 and 35, this group represents a new segment of wine enthusiasts whose preferences and consumption patterns are still in the developmental stages (Barbe et al., 2021; Becker et al., 2011; Bruwer et al., 2017; Garcia et al., 2013; Ritchie, 2011). In this regard, wine producers and marketers need to understand the attributes of wine that appeal to this group to attract and retain their interest.

Several wine studies analysing consumer behaviour have been based on a multi-attribute framework (Brata et al., 2022; Jantzi et al., 2020; Lanfranchi et al., 2020; Schlägel & Sarstedt, 2016; Spence, 2024) rooted in the Lancasterian approach to consumer economics. According to Lancaster (n.d.), products possess a multitude of characteristics, a concept further developed by Nelson (1970) and Darby and Karni (1973). When buying wine, consumers evaluate a complex set of intrinsic and extrinsic attributes (Alebaiki et al., 2015; Küster et al., 2019; Mateen Khan, 2018; Migliore et al., 2020; Schaefer et al., 2018). While intrinsic cues usually dominate food choices (Becker et al., 2011), this pattern may not fully apply to wine (Dimara et al., 2001). The combination of intrinsic and extrinsic attributes in wine selection makes consumer behaviour particularly complex (d’Hauteville et al., 2007; Sáenz-Navajas et al., 2013). Studies in different geographical contexts have highlighted key decision-making attributes such as tasting the wine previously, food matching, origin, brand familiarity, recommendations, grape variety, awards, label attractiveness, and alcohol content (Casini et al., 2009; Cohen & Ben-Nun, 2009; Dimara et al., 2001; DuPuis & Goodman, 2005; Lockshin & Cohen, 2011; Picard et al., 2015). The growing number of wine brands and sub-brands has made wine selection in retail environments increasingly challenging. Consumers face a wide variety of options, price diversity, and confusing label cues (d’Hauteville et al., 2007; Perrouy et al., 2006), often leading to confusion and hesitation. Moreover, wine’s strong social connotation elevates its perceived purchase importance, regardless of price (Barber et al., 2006, 2008).

Understanding young adults’ wine behaviour requires analysing the attributes they consider when purchasing, such as sensory cues, origin, price, packaging and external recommendations. Building on this context, the following part of the introduction reviews previous studies examining the key wine attributes considered in this research.

1.1 Sensory Cues and Wine Behaviour among Young Adults

The sensory characteristics of wine, including appearance, aroma, taste, and mouthfeel, play a crucial role in influencing young consumers’ choices (Barbe et al., 2021; Mora et al., 2018). Similarly, sensorial factors such as smell, sweetness, colour, taste, and fruit flavour were identified among the most valued attributes, indicating that sensory perception shapes emotional responses and purchase behaviour (Gomis-Bellmunt et al., 2024; Yang & Lee, 2020). Multi-attribute evaluations that combine colour, aroma, and taste are particularly important for Millennials and Gen Z, who seek pleasurable and memorable consumption experiences (Barbe et al., 2021; Nandorfy et al., 2023).

1.2 Origin Effects in Young Adult Wine Preferences

Origin is widely recognised as a key quality indicator (Foroudi et al., 2019; Perrouy et al., 2006; Zhllima et al., 2012, 2020). Attributes such as origin, PDO (Protected Denomination of Origin) certification, and producer or winery name were among the most important for respondents, highlighting the relevance of origin information, even among younger, less experienced consumers. Although previous studies suggest that Millennials and Gen Z may prioritise well-known wine-producing countries (Dias & Mendes, 2018; Nasivera et al., 2020). Recent trends in Albania show emerging ethnocentric preferences favouring domestic wines (Miftari et al., 2021). Nevertheless, the country-of-origin effect interacts with factors such as price and grape variety, suggesting a multidimensional evaluation process among young consumers.

1.3 Price and Young Adults’ Wine Choices

Price is another crucial attribute that impacts consumer choices; a high product price is perceived as a proxy for overall quality (Olbrich &

Christian Jansen, 2014). Several authors show that when a consumer cannot assess the quality of the product based on intrinsic clues, they view price as a distinctive quality indicator (Olbrich & Christian Jansen, 2014; Völckner & Hofmann, 2007). Researches show also that low-experienced participants tended to use price, while moderately familiar participants with the product tended to employ intrinsic cues (quality-related information) to assess product quality (Blake et al., 2021; Yanguí et al., 2025). Young adults are more price-sensitive than older generations, and higher prices can lead to reduced consumption, especially among younger drinkers (Lunardo, 2009). Young adults are also more health-conscious and may be put off by the perceived adverse health effects of wine consumption (Xu & Chaloupka, 2011). Higher prices may further discourage occasional wine consumption, thereby affecting their willingness to pay. Young adults are also more likely to prioritise quality over price and are willing to pay more for higher quality wines, which may influence their purchasing decisions (Bazzani et al., 2019).

1.4 Packaging and Other Marketing Cues

Packaging and other marketing cues are considered as vehicles of communication that play an essential role in consumer buying likelihood and affect sustainability perceptions and perceived taste and quality in young adults (Lanfranchi et al., 2020). Young adult consumers often rely on visual cues on packaging because of their limited experience and involvement in wine purchasing. Packaging elements, such as bottle shape, label attractiveness, and design, influence perceptions of quality and behavioural responses to the product (Barber et al., 2009; Henley et al., 2011). These preferences are in line with traditional associations, where specific bottle shapes evoke certain quality expectations (Jorge, 2023). Thus, the combination of bottle and label shape can either enhance or detract from the perceived quality and attractiveness of the wine. Similarly, attractive packaging that evokes positive feelings can be a stronger determinant of purchase intention than perceived quality alone (Mateen Khan,

2018).

1.5 External Recommendations and Trust Sources

In addition, external recommendations play an essential role for less involved consumers (Parsons & Thompson, 2009). For young adults, recommendations from friends, retailers and family members are crucial in shaping their wine choices (Jaud et al., 2023). These recommendations serve as reliable sources of information, compensating for their limited knowledge of wine attributes. Peer recommendations are very influential among young people, as they often share similar tastes and preferences (Jaud et al., 2023). A friend's positive experience with a particular wine can significantly increase a young person's willingness to try it and reduce the uncertainty associated with the purchase (Hristov & Kuhar, 2014).

Similarly, retailers, especially those with wine expertise, are valuable guides for new consumers (Parsons & Thompson, 2009). Their advice can help demystify wine characteristics, making it easier for young people to make informed choices. Family members, especially those with a history of wine consumption, serve as role models and trustworthy advisors. Their preferences and suggestions can greatly influence young people and provide a sense of security and familiarity when choosing wines (Jaud et al., 2023). Integrating these external influences is essential for young adult wine consumers, as it bridges the gap between their reliance on packaging cues and the intrinsic attributes that more involved consumers prioritise.

Although consumer behaviour toward food products has been extensively examined, research focusing on wine consumption in Albania remains limited. Previous studies have primarily explored the effect of origin on consumer preferences for wine (Kapaj et al., 2021; Zhllima et al., 2020). Building on this foundation, the present study broadens the scope by analysing additional wine attributes that influence purchasing decisions among young Albanian consumers. Millennials (born 1981–1996) and Generation Z (born 1997–2012) are of particular interest, as they ex-

hibit distinct consumption patterns that emphasise authenticity, sustainability, health, and experiential value. An attribute-based segmentation approach is employed to identify the key drivers of their purchasing behaviour. The remainder of the paper is structured as follows: Section 2 outlines the methodological framework; Section 3 presents the empirical results; Section 4 discusses the findings in relation to the existing literature and methodological insights; and Section 5 concludes with the main findings, managerial implications, and directions for future research.

2 Materials and methods

Insights from the focus groups and literature review led to the identification of 32 relevant wine attributes. These attributes were then organised into six thematic dimensions: Sensory Cues, Origin and Certification, Price Sensitivity, Packaging and Marketing Cues, External Recommendations, and Consumer Experience. This classification enhances interpretability by distinguishing between intrinsic factors (e.g., taste, aroma) and extrinsic factors (e.g., price, label, origin) that influence consumer decision-making.

Consumers typically integrate both experiential cues (such as sensory feedback and emotional reassurance) and analytical cues (such as origin, price, and label information) when evaluating wine. Grouping the attributes into conceptually coherent categories provides a more transparent structure for analysing how these factors jointly shape preferences.

The attribute “*alcohol percentage*” was classified under the Price Sensitivity dimension, as consumers often associate alcohol content with perceived value and product strength, using it in conjunction with price-related cues to evaluate the wine’s overall quality-to-price ratio (see Table 1). This framework serves as the basis for subsequent segmentation analysis and for interpreting consumer profiles.

2.1 Data Collection and Survey Design

Previous studies have proposed various methods for collecting data on wine consumer preferences, often employing rating scales to assess the relative importance of product attributes (Casini et al., 2009; Lockshin & Corsi, 2020). In line with these approaches, the Millennial and Generation Z Wine Attributes Survey was conducted in Tirana, Albania, between April and June 2023, yielding 316 valid responses. The survey consisted of three sections: (1) demographic information (gender, age, residence, employment), (2) wine consumption behaviour (self-efficacy and frequency of consumption), and (3) evaluation of 32 wine attributes using a 5-point Likert scale (1 = No influence at all, 5 = High influence).

Before data collection, two focus groups were organised with 20 students (12 males and 8 females) from the Agricultural University of Tirana, enrolled in the courses Wine Marketing, Geographical Indication, and Food Product Development. All participants were wine consumers and discussed the factors they considered most important when purchasing wine. Their insights were used to refine and validate the final list of attributes included in the questionnaire. Table 2 presents the sample’s demographic characteristics, while Table 3 summarises the mean importance assigned to each attribute considered in the segmentation analysis.

2.2 Sample Characteristics

The survey sample was predominantly male, with 69% of respondents identifying as male and 31% as female. While this gender imbalance may reflect sampling variation, it is also possible that the study design influenced participation patterns. For example, in previous studies on climate change and pro-environmental behaviour in Albania, female respondents have often been more actively engaged, suggesting a gender-based responsiveness to environmental topics (Kaçani et al., 2024; Kokthi et al., 2025). In wine-related research, a tendency for male overrepresentation is also observed, depending on the framing of the topic or the perceived be-

Table 1: Categorisation of wine choice attributes evaluated among young adult consumers

Dimension	Selected Attributes
Sensory Cues	Smell, Sweetness, Colour, Taste, Fruit Flavour
Origin and Certification	Origin, PDO, Winery Name, Producer, Imported Wine, Albanian wine
Price Sensitivity	Price, Price lower than 10 EUR, Alcohol percentage
Packaging and Marketing Cues	Packaging, Attractive Bottle, Attractive Label, Back-Label Info, Medals/Awards, Interesting Ads, Feeling confused by many bottles
External Recommendations	Friend Recommendation, Retailer Recommendation, Waiter, Expert Media Recommendation, Best-Selling Wine Info
Consumer Experience	Previous Experience, Degustation, Safety, Health Concerns, Preference for red over white wine

Table 2: Demographics and wine consumption (N=316)

Variable	Value	Frequency %
Gender	Female	31.0
	Male	69.0
Age	18-24	64.1
	25-34	13.1
	35-44	9.9
	45-54	9.3
	55+	3.5
Employment status	Employed	95.0
	Students	5.0
Residence	Urban	88.2
	Rural	11.8
Consume wine	Yes	82.2
	No	17.8
I have good knowledge of wine	Yes	31.4
	No	30.5
	Don't know	38.1
Consumption frequency	Every day	2.1
	Occasionally on weekends	23.0
	When having guests at home	13.7
	Occasionally when dining out in restaurants	13.4
	On special occasions	37.9
	Occasionally 2 to 3 times a week	9.9

Source: Author elaboration

havioural relevance (Ferreira et al., 2019; Galais & Livat, 2024). Therefore, while contextual or cultural factors may partly influence the male predominance in this sample, further investigation is needed to understand better these dynamics and their impact on the generalizability of the findings. Additionally, the age distribution was skewed toward younger individuals, which aligns with the study's focus and objectives. The largest group comprises Generation Z (aged 18–24), representing 64.1% of respondents, followed by Millennials (aged 25–44) at 23%, and Generation X (aged 45–54) at 9.3%. Respondents aged 55 and older accounted for 3.5% of the sample. Employment status shows that most respondents (95%) are employed, with only 5% identifying as students. This high employment rate suggests that most participants likely have disposable income, which could influence their purchasing behaviour and wine preferences. Regarding place of residence, 88.2% of participants live in urban areas, while 11.8% reside in rural locations. The urban predominance likely reflects greater accessibility and exposure to various wine products, which may shape consumption patterns. Regarding wine consumption behaviour, 82.2% of respondents reported consuming wine, providing a solid basis for analysing preferences. Self-assessed wine knowledge varied: 31.4% of respondents considered themselves knowledgeable about wine, 30.5% reported limited knowledge, and 38.1% were unsure. This variation indicates a diverse range of consumer profiles in terms of wine expertise.

2.3 Attribute List and Categorisation

As previously stated, based on the literature review and insights from focus groups, the 32 attributes evaluated in this study were organised into six conceptual categories to provide a structured framework for the segmentation analysis (Table 3). Sensory Cues include intrinsic product characteristics such as taste, smell, sweetness, colour, and fruit flavour, which are critical drivers of consumer preference. Origin and Certification encompass attributes related to geographical origin, PDO certification, and the win-

ery or producer's name, reflecting perceived quality and authenticity. Price Sensitivity captures consumers' evaluations of wine price and alcohol content, often used as external indicators of value and quality. Packaging and Marketing Cues involve visual and informational elements such as packaging design, label attractiveness, and medals displayed on the bottle, which can significantly influence consumer perceptions, particularly among less experienced buyers. External Recommendations account for the impact of peer, retailer, waiter, and media advice on purchasing behaviour, acknowledging the social dimension of wine choice. Finally, the Consumer Experience encompasses factors such as prior positive wine experiences, opportunities for degustation, and perceptions of safety and health. This categorisation enabled a systematic examination of the drivers of young adults' wine purchasing decisions and served as the analytical foundation for subsequent segmentation procedures.

2.4 Statistical analysis and validation

Given the importance of understanding the diversity among young wine consumers, a three-step analytical procedure was applied in this study. In the first step, Factor Analysis (FA) was conducted to reduce the 32 evaluated attribute variables into smaller underlying factors. Principal Component Analysis (PCA) with Varimax rotation was employed to address multicollinearity among variables and enhance the robustness of the subsequent clustering process (Hair et al., 2013). Only factors with eigenvalues greater than one were retained, and items with loadings above 0.5 were considered significant for interpretation. Cluster Analysis (CA) was performed in the second step to identify distinct consumer segments. Initially, hierarchical cluster analysis using Ward's method and squared Euclidean distance was applied to determine the optimal number of clusters. Subsequently, a non-hierarchical K-means clustering procedure was used to refine the cluster membership. The combination of hierarchical and non-hierarchical approaches has been shown to provide stronger segmentation

Table 3: Wine attributes evaluated, grouped by dimension

Dimension	Attribute	Mean	Std. Dev.
Sensory Cues	How it smells	3.92	0.986
	Sweetness	3.80	0.975
	Colour	3.86	0.950
	Taste	4.14	0.924
	Fruit flavour	3.68	0.959
Origin and Certification	Origin	3.98	1.023
	PDO (Protected Designation of Origin)	3.59	1.010
	Name of winery/producer	3.63	0.995
	Producer	3.69	1.090
	Preference for Albanian wine	3.50	1.033
	Preference for imported wine	3.53	1.041
Price Sensitivity	Price	3.11	1.047
	Price lower than 10 EUR	2.96	0.954
	Price over 15 EUR	3.16	1.065
	Alcohol percentage	3.84	0.986
Packaging and Marketing Cues	Packaging	3.18	1.056
	Attractive bottles (colour and shape)	3.10	0.941
	Attractive label	3.07	0.911
	The medal won is shown on the bottle label	3.31	0.940
	Interesting advertisements	3.08	0.952
	Abundant information on the back label	3.56	0.990
External Recommendations	Friend recommendation	3.46	1.019
	Retailer recommendation	2.98	0.939
	Waiter recommendation	3.05	0.927
	Suggested by experts in the media	3.16	0.942
	Information about the best-selling wine	3.19	0.977
Consumer Experience	Previous positive experience	3.93	0.988
	Health concerns	3.90	1.025
	Safety perception	4.27	0.941
	Degustation experience	3.50	1.042
	Feeling confused by many bottles	2.90	1.392
	A preference for red over white wine	3.61	1.230

Source: Author elaboration

validity (Kim & Boyd, 2004). In the third step, a Post-Cluster Classification was carried out using a Chi-squared Automatic Interaction Detection (CHAID) decision tree. This method validated and predicted cluster membership by identifying the most significant attributes influencing segmentation, with the application of CHAID enhancing cluster interpretability and providing valuable insights for targeted marketing strategies (Baker & Burnham, 2001; Baker & Crosbie, 1993; Gil et al., 2000; Kim & Boyd, 2004).

3 Empirical results

3.1 Attribute Preferences

The analysis identified three distinct levels of attribute importance based on respondents' average scores: high-preference attributes (mean > 4.0), medium-preference attributes (mean = 3.0–4.0), and low-preference attributes (mean < 3.0). High-priority attributes included safety ($M = 4.27$) and taste ($M = 4.14$), indicating that trust in product safety and the sensory experience of wine are key determinants of young adults' purchase decisions. Attributes in the medium-preference category encompassed smell (3.92), sweetness (3.80), colour (3.86), and fruit flavour (3.68), confirming the relevance of sensory cues. Within the Origin and Certification dimension, "origin" (3.98) scored higher than the specific indicators PDO (3.59), winery name (3.63), and producer (3.69). Price Sensitivity items showed varied results: alcohol percentage (3.84) was more influential than price itself (3.11). In the Packaging and Marketing Cues dimension, packaging (3.18), attractive bottle (3.10), and label (3.07) scored moderately, while back-label information (3.56) was valued more highly. External Recommendations recorded the lowest means, with friends (3.46) ranking higher than retailer (2.98) or expert media (3.16). Finally, within Consumer Experience, previous positive experience (3.93) and health concerns (3.90) were strong drivers, whereas confusion caused by many bottles (2.90) was the least influential factor. Overall, these findings show that young Albanian consumers prioritise intrinsic and credibility-related cues over exter-

nal advice or visual marketing stimuli.

3.2 Results of Factor and Cluster Analysis

To validate the dataset's suitability for factor analysis, two standard statistical tests were conducted: the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy and Bartlett's test of sphericity. The KMO value of 0.908 exceeded the recommended threshold of 0.5, confirming the adequacy of correlations among variables, while Bartlett's test was highly significant ($\chi^2 = 5624.266$; $df = 630$; $p < 0.01$), indicating that the data were appropriate for factor analysis.

Following Principal Component Analysis (PCA) with Varimax rotation, eight components were extracted according to the Guttman-Kaiser criterion (eigenvalues > 1) (Iraizoz et al., 2007; Köbrich et al., 2003). Together, these components explained 66.33% of the total variance (see Table 4), a satisfactory level comparable to that reported in similar consumer studies (Iraizoz et al., 2007). The rotated component matrix (Table 7) displayed meaningful loadings corresponding to dimensions such as sensory perceptions, origin cues, price sensitivity, packaging and marketing influences, and external recommendations.

Subsequently, a hierarchical cluster analysis (Ward's method, squared Euclidean distance) was employed to determine the optimal number of clusters. Examination of the dendrogram and agglomeration schedule suggested a seven-cluster solution that balances parsimony and interpretability. A non-hierarchical K-means cluster analysis was then performed using this solution as the starting point. The ANOVA results (Table 5) showed that most variables were statistically significant ($p < 0.01$), confirming meaningful differentiation across clusters. Attributes such as taste, safety, aroma, origin, and sweetness were the most discriminating factors, while external cues such as friend recommendation and the attractiveness of packaging contributed to a lesser extent. This analytical procedure produced seven distinct consumer clusters, each characterised by unique patterns of wine preference, consumption behaviour, knowledge, and demographics. These results provide a

nuanced understanding of young Albanian consumers and form the basis for the segmentation analysis discussed in the following sections.

The results indicate that most of the evaluated attributes significantly differentiate between consumer clusters at the 1% significance level ($p\text{-value} < 0.01$). Attributes such as taste, aroma, safety, colour, origin, and sweetness exhibited the highest F-values, suggesting that they are the most influential factors in segmenting the young wine consumer market. In contrast, attributes such as a preference for imported wine showed lower significance levels. These findings confirm that intrinsic product characteristics, along with specific extrinsic cues, play a central role in shaping the distinct profiles of consumer segments. The high explanatory power of these key attributes supports the robustness of the cluster solution and highlights the multidimensional nature of wine purchasing behaviour among Millennials and Generation Z consumers.

3.3 Consumer segments characteristics

This methodological approach has yielded seven clusters with distinct patterns in the attributes most influencing their behaviour. In addition to demographics, wine knowledge, consumption patterns, preferences, and levels of interest and behaviours, expressed through ratings across multiple attributes, are used to indicate the names of the clusters (6).

Cluster 1: Casual sippers (N=54)

This group of consumers primarily consists of males aged 25 or older living in urban areas. They rate their understanding of wine quality as low, with an average score of around 2.5, suggesting limited knowledge and experience. They consume wine on special occasions rather than regularly and do not strongly prefer domestic or imported wine or red or white wine. This group of consumers also shows moderate interest in various attributes such as origin, grape variety, brand, year of production, flavour, sweetness, colour, low alcohol content and previous experience. Their moderate ratings on multiple

attributes suggest a casual approach to wine buying, with no focus on specific qualities or characteristics. While these consumers appreciate various aspects of wine, they do not deeply examine the wine quality information.

Cluster 2: Occasional explorers (N=51)

This cluster is predominantly comprised of Gen Z males living in urban areas. They consider themselves inexperienced when it comes to choosing wine and are often confused by the wide range of options. They consume wine on special occasions rather than regularly. As with Cluster 1, this consumer group does not strongly prefer domestic or imported wine, nor does it have a strong preference between red and white wine. However, unlike Cluster 1, the average indicators are above 3.5, indicating a higher level of interest. This group's most highly rated indicators are safety, taste and origin, highlighting their concern for these aspects even with limited knowledge. Their moderate to high ratings on several attributes indicate a willingness to explore and try different wines, although with caution and a focus on key quality indicators. In conclusion, the name reflects their occasional wine consumption and openness to exploration while emphasising safety, taste and origin as key factors in their choices.

Cluster 3: Perceptive Connoisseurs (N=28, 10%)

Perceptive Connoisseurs are mainly male Millennials living in urban areas, characterised by high wine knowledge and frequent wine consumption, often in restaurants. They show strong preferences for intrinsic and extrinsic quality indicators, such as origin, price, brand, safety, and year of production. Their behaviour reflects a thorough and informed approach to wine selection, carefully evaluating multiple attributes before purchase. Although they are highly involved, a moderate level of confusion with retail shelf abundance remains. Their high engagement suggests that marketing efforts focusing on authentic storytelling, premium quality indicators, and appellations would resonate well with this segment.

Table 4: Variance explained by the eight components extracted through PCA

Component	Initial Eigenvalues	% of Variance	Cumulative %
1	11.545	32.986	32.986
2	3.368	9.623	42.609
3	2.018	5.767	48.377
4	1.627	4.648	53.025
5	1.312	3.749	56.773
6	1.198	3.422	60.196
7	1.093	3.122	63.317
8	1.054	3.011	66.328

Source: Author elaboration

Table 5: K-means clustering Anova results

Attribute	F-value	Significance (p-value)
Taste	70.722	.000
How it smells (Aroma)	63.229	.000
Safety	62.788	.000
Colour	46.486	.000
Origin	43.890	.000
Attractive Label	41.445	.000
Suggested by experts in the media	41.211	.000
Info about the best-selling wine	45.283	.000
Sweetness	44.493	.000
Fruit Flavour	37.153	.000
Health Impact	38.269	.000
Previous Experience (re-purchase)	36.632	.000

Source: Author elaboration

Table 6: **Q2** Cluster typologies, characteristics, and preference drivers

Cluster Name	Main Characteristics	Preference Drivers
Casual Sippers (19%)	Men 25+, Urban, Low wine knowledge, Special occasion drinkers	Broad moderate interest (origin, grape variety, brand, year)
Occasional Explorers (18%)	Gen Z, Urban, Low experience, High confusion	Safety, Taste, Origin
Perceptive Connoisseurs (10%)	Millennial Males, Urban, High expertise	Origin, Price, Brand, Safety
Loyal Aficionados (15%)	Men 35-45, Urban, brand loyal	Safety, Aroma, Previous Experience
Health-Conscious Tasters (16%)	Women 25-35, Urban, Health-focused	Taste, Health, Sweetness
Trend-Occasionalists (18%)	Men 35+, Urban, Trend-driven	Packaging, Price, Sweetness
Young Gourmets (16%)	Men <25, Urban, High knowledge	Taste, Aroma, Producer, Safety

Source: Author's elaboration

Cluster 4: Loyal Aficionados (N=42, 15%)

Loyal Aficionados are predominantly men aged 35-45 residing in urban areas. They are experienced and consistent wine consumers, primarily favouring imported wines, especially from France and Italy. Prior positive experiences, brand loyalty, and trust in recognised quality markers such as safety, taste, and aroma influence their choices. They exhibit little confusion during purchasing, suggesting high confidence in their established preferences. Their loyalty to specific brands and origin countries indicates that maintaining a consistent brand image and emphasising provenance could be key to attracting and retaining this consumer group.

Cluster 5: Health-Conscious Tasters (N=45, 16%)

This segment consists mainly of urban women aged 25-35 who prioritise health and sensory attributes when choosing wine. They are knowledgeable, confident buyers who prefer wine consumption in dining settings rather than in retail settings. Their strongest drivers are taste, health considerations, and sweetness, leading them to prefer wines perceived as lighter or healthier. They are less influenced by marketing cues or brand image and more by intrinsic qualities and perceived well-being. Marketing strategies targeting this group should emphasise health-related benefits, lighter styles, and positive sensory experiences.

Cluster 6: Trend-Occasionalists (N=51, 18%)

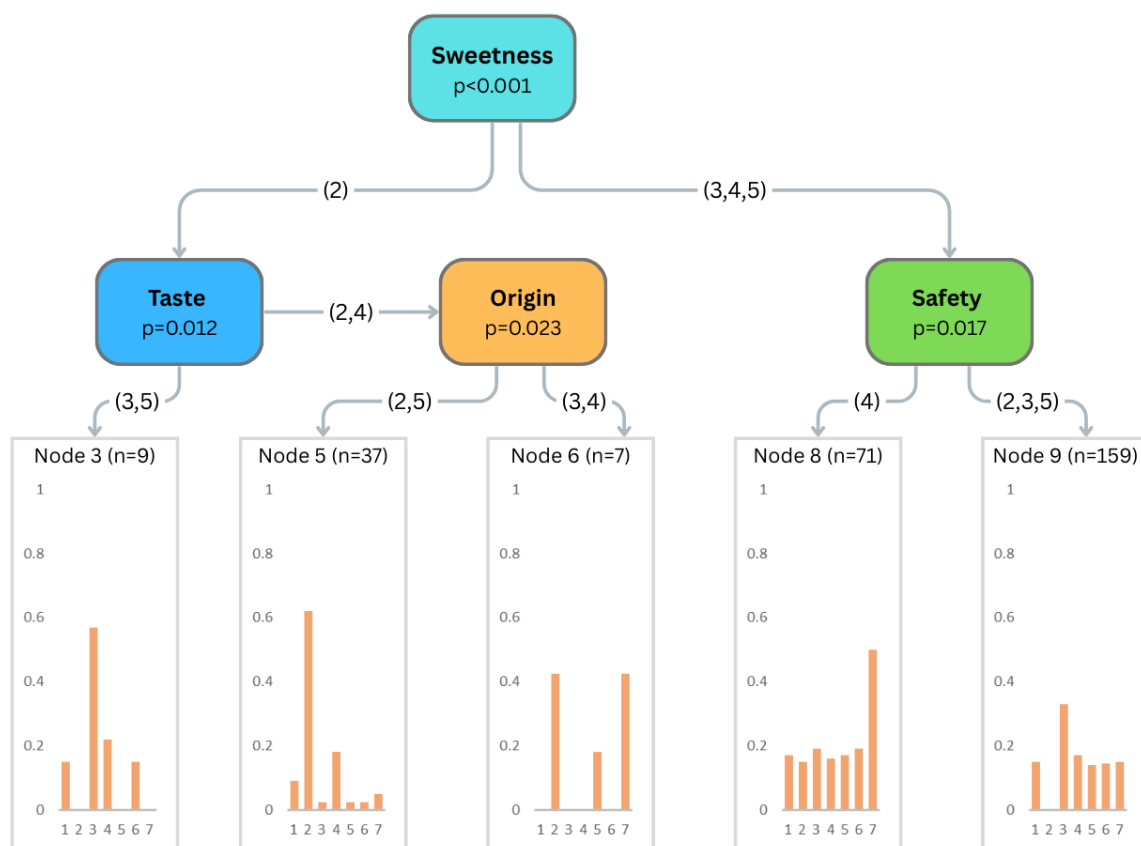
Trend-Occasionalists are mainly urban males over 35 who consume wine primarily on special occasions. Visual and promotional cues, including attractive packaging, interesting advertising, and sweeter taste profiles, heavily influence their purchasing decisions. Despite lower wine expertise, they strongly respond to branding and trend-driven marketing. Their behaviour suggests that wine selections driven by visual appeal and promotional campaigns could be highly effective with this group.

Cluster 7: Young Gourmets (N=44, 16%)

Young Gourmets are urban males under 25 who, despite their youth, display a sophisticated, knowledgeable approach to wine. They prioritise quality indicators such as producer reputation, vintage, taste, and aroma. Safety also remains a strong determinant. Unlike Trend-Occasionalists, this group is less influenced by marketing and more by intrinsic and informational cues. Their behaviour highlights an informed, holistic approach to wine, suggesting that targeting them through education, detailed back labels, and authentic brand storytelling would be highly effective.

3.4 Post-Clustering Validation: Decision Tree Analysis (CHAID)

Following the segmentation procedure, a Classification Tree based on the Chi-Square Automatic Interaction Detector (CHAID) algorithm was applied to validate the seven-cluster solution and identify the most discriminating wine attributes influencing cluster membership (Fig. 1). The CHAID model achieved strong predictive accuracy, confirming the internal robustness of the segmentation framework. The decision tree identified Sweetness as the primary discriminating variable ($p < 0.001$). This result indicates that perceived sweetness is the most influential factor distinguishing consumer clusters, particularly among younger, trend-sensitive groups. Subsequent splits revealed Taste ($p = 0.012$) and Safety ($p = 0.017$) as the following most significant predictors, confirming the centrality of sensory pleasure and perceived trustworthiness in shaping purchasing behaviour. At deeper levels of the tree, Origin ($p = 0.023$) emerged as an additional differentiating attribute, particularly among consumers with higher wine familiarity and involvement. This suggests that as knowledge and engagement increase, geographical provenance becomes a more salient cue for assessing quality. Overall, the CHAID procedure identified four key attributes-Sweetness, Taste, Safety, and Origin-as the main variables explain-



Note: Numeric identifiers correspond to the variable codes used in the dataset:

1 = Sweetness, 2 = Taste, 3 = Aroma, 4 = Origin, 5 = PDO (Protected Designation of Origin), 6 = Price, 7 = Safety. The decision tree identifies the most influential attributes differentiating wine consumer clusters. The root node (Sweetness, $p < 0.001$) indicates that sweetness perception is the strongest discriminator among young consumers. The next level splits into Taste ($p = 0.012$) and Safety ($p = 0.017$), showing that sensory pleasure and perceived product safety further distinguish consumer groups. Within the taste branch, Origin ($p = 0.023$) emerges as a secondary differentiator, reflecting the role of geographical cues among more knowledgeable consumers. Terminal nodes (Nodes 3-9) represent the final consumer clusters, each defined by distinct preference profiles and sample sizes ($n = 9$ -159). The model confirms that sweetness, taste, safety, and origin are the most critical attributes shaping young Albanians' wine preferences.

Figure 1: Decision tree analysis (CHAID)

ing cluster differentiation. These findings reinforce the segmentation results and provide a statistically validated hierarchy of attribute importance. The model's visual representation (Fig. 1) and summary statistics confirm the reliability of the decision rules used to classify young wine consumers into seven distinct clusters.

4 Discussion

The findings of this study provide an integrated view of how young Albanian consumers—Millennials and Generation Z—evaluate, select, and experience wine. The analysis revealed that intrinsic and trust-related attributes, such as sweetness, taste, and safety, dominate decision-making. At the same time, extrinsic and social cues play a secondary yet meaningful role. This hierarchy of attributes aligns with the broader evolution of wine markets, where younger

cohorts increasingly demand products that are at once enjoyable, authentic, and reassuring. In transitional economies such as Albania, where institutional confidence in food quality systems is still consolidating, perceptions of safety and authenticity are central to consumer trust and consequently shape the entire evaluative process. Sweetness emerged as the most critical driver of differentiation across segments, as confirmed by both descriptive results and the CHAID decision-tree analysis. This aligns with research showing that younger consumers tend to prefer wines with fruitier, sweeter profiles, reflecting a preference for immediate sensory gratification and approachability over complexity or dryness (Bruwer et al., 2017; Li et al., 2011). Taste followed as a secondary determinant, underscoring that hedonic satisfaction remains an essential component of the wine experience. At the same time, the consistent salience of safety illustrates that young consumers are not purely hedonistic. Even within an indulgence category like wine, they evaluate products through a dual lens that balances pleasure with caution. This finding supports recent work suggesting that health and risk-related considerations are increasingly integrated into beverage choice among younger generations (Boncinelli et al., 2021; Macht et al., 2022). The attribute origin gained importance at deeper branches of the decision tree, suggesting that as wine familiarity grows, geographical provenance becomes a cognitive cue for authenticity and quality. This pattern mirrors earlier evidence that consumers move from affective, sensory reasoning to more analytical assessment as they gain product knowledge (Gomis-Bellmunt et al., 2024). In the Albanian context, the near parity between preferences for domestic and imported wines indicates a market in transition: local producers are achieving recognition, but foreign wines still benefit from established reputations and perceived sophistication (Orth, 2001).

The coexistence of these cues—sweetness, taste, safety, and origin—demonstrates that young adults combine intuitive and analytical decision processes, echoing Kahneman's (2011) dual-system framework (Kannengiesser & Gero, 2019).

The segmentation analysis further revealed

seven distinct consumer clusters—*Casual Sippers*, *Occasional Explorers*, *Perceptive Connoisseurs*, *Trend-Occasionalists*, *Health-Conscious Tasters*, *Experience Seekers/Young Gourmets*, and *Balanced Pragmatists*—each representing unique configurations of motivations and cognitive styles. The heterogeneity among these clusters confirms that Millennials and Generation Z cannot be treated as homogeneous groups. Instead, they navigate wine choice through different psychological pathways: some are guided by sensory immediacy and social validation, others by authenticity and health considerations, and a few by reflective appreciation of provenance and craftsmanship.

The *Perceptive Connoisseurs* and *Health-Conscious Tasters* are dominated by Millennials, who exhibit a more established, quality-driven approach to wine consumption. Their emphasis on origin, safety, and well-being reflects maturity in lifestyle orientation and is consistent with international findings that Millennials integrate ethical and experiential value into wine evaluation (Nassivera et al., 2020). In contrast, *Casual Sippers* and *Occasional Explorers*, primarily representing Generation Z, display flexible, low-involvement patterns marked by experimentation, affordability, and peer influence. These results parallel studies describing Gen Z as pragmatic and digitally social, relying on simplified heuristics and peer recommendations to manage choice overload (Koksal, 2019; Nikolić et al., 2022). The *Trend-Occasionalists*, bridging both generations, highlight the growing role of aesthetic cues and online brand communication, while *Young Gourmets*—a niche Gen Z segment—demonstrate emerging connoisseurship, signalling that expertise development is occurring earlier in the consumer life cycle.

Compared with studies in established wine regions, where quality cues such as vintage, terroir, and brand heritage dominate, Albanian Millennials and Gen Z consumers appear to rely more on sensory and credibility cues. Their focus on taste and safety rather than prestige or label complexity reflects both their developmental stage as wine consumers and the institutional context of an emerging market. Nonetheless, the coexistence of *Young Gourmets* and *Perceptive Connoisseurs* suggests that a

knowledgeable subculture is forming, much like the “new wine generation” identified in Southern Europe (Brata et al., 2022; Spence, 2024). This convergence toward authenticity and mindful enjoyment demonstrates that even in youthful markets, wine is increasingly consumed as a lifestyle product connected to self-expression and social identity.

From a theoretical perspective, CHAID validation strengthens the segmentation’s explanatory power by demonstrating that behavioural differentiation follows a hierarchical logic: sweetness and taste drive early involvement, safety shapes trust, and origin consolidates expertise. This hierarchy mirrors the cognitive progression outlined in consumer learning theory, where sensory gratification precedes informational reasoning (Vallerand et al., 1992). It also confirms that both hedonic and epistemic values coexist in shaping young consumers’ engagement with wine. The robustness of the model supported by a high KMO value (0.908) and eight principal components that explain 66.3% of the variance adds methodological credibility and aligns with best practices in food-consumer segmentation (Iraizoz et al., 2007; Köbrich et al., 2003). In addition to traditional choice experiments, the attribute-based segmentation approach holds methodological value, as it uncovers how multiple product cues jointly shape coherent consumer typologies, offering a more holistic view of decision-making than isolated attribute trade-offs.

The results have important implications for both academia and industry. For theory, the study contributes to the literature on generational food behaviour by demonstrating that age cohorts differ not only in attribute salience but also in cognitive processing modes. Millennials exhibit higher integration of analytical cues, while Generation Z relies more on practical and social heuristics. For practitioners, the findings highlight the need for differentiated marketing strategies tailored to these cognitive and motivational differences. Producers should prioritise balanced sweetness and sensory richness without compromising authenticity to appeal to trend-sensitive Gen Z consumers, while maintaining product credibility through clear communication of safety and origin to retain Millennial

trust. Marketing narratives should shift from abstract heritage claims to concrete expressions of transparency and experiences showing where the wine comes from, how it is made, and why it is safe. Packaging remains a powerful medium: minimalist, modern, and informative designs resonate strongly with *Trend-Occasionalists* and *Casual Sippers*, whereas eco-ethical cues appeal to *Health-Conscious Tasters*. Digital engagement represents another critical level. Collaborations with influencers, peer-to-peer review systems, and experiential online storytelling can effectively reach Generation Z, whose purchase decisions are shaped by social validation. Millennials, in turn, respond better to long-form storytelling that emphasises sustainability and provenance. The findings suggest that integrated campaigns combining sensory cues (taste, aroma, sweetness) with credibility cues (safety, origin, ethics) will achieve the best resonance across both cohorts.

At the policy level, the study also has implications for institutional trust-building in emerging wine markets. The salience of safety as a decision factor implies that regulatory transparency and certification visibility can play a strategic role in stimulating domestic demand. Investments in traceability systems and communication campaigns about national quality standards could enhance consumer confidence and strengthen the positioning of Albanian wines in both local and regional markets.

Despite its comprehensive scope, the study is not without limitations. The sample, although substantial, was geographically concentrated in Tirana and other urban areas, which may limit the generalisability of findings to rural populations or smaller towns where wine culture and purchasing power differ. However, this focus remains highly relevant, as Tirana accounts for nearly 70% of Albania’s active urban population and represents the country’s primary consumption and cultural hub. Therefore, while rural perspectives merit future inclusion, the present study provides an accurate reflection of the dominant behavioural patterns shaping the national wine market among young adults. Moreover, the data were self-reported, potentially introducing social desirability and overconfidence biases common in survey-based studies.

Future research should therefore expand to rural and regional contexts to capture the diversity of Albania's wine consumption landscape and apply longitudinal designs to track how preferences evolve as Generation Z matures and gains purchasing power. Experimental methods such as choice-based conjoint analysis, eye-tracking, or sensory-blind tasting could provide more direct evidence of the causal mechanisms underlying attribute importance. Moreover, given the growing relevance of sustainability and digital communication, future studies could examine how eco-labels, influencer marketing, and social-media storytelling shape perceptions of authenticity and trust among younger consumers. Comparative studies across Western Balkan and European Union markets would further elucidate how institutional and cultural environments mediate the interplay between hedonism, health consciousness, and authenticity in wine behaviour.

5 Conclusion

This study provides a systematic analysis of wine consumption behaviour among young Albanian adults, integrating attribute-based segmentation, generational profiling, and decision-tree validation. By focusing on Millennials and Generation Z-two cohorts reshaping the global food and beverage landscape-the study identifies the cognitive and emotional drivers of their wine preferences and purchasing patterns.

The results reveal that young consumers prioritise sweetness, taste, safety, and origin, combining hedonic enjoyment with trust and authenticity considerations. These findings highlight that even in an indulgent product like wine, younger consumers evaluate quality through both sensory satisfaction and perceived product integrity. Sweetness and taste represent intuitive, experience-based cues, while safety and origin operate as rational and symbolic assurances of reliability. This dual orientation reflects the coexistence of affective and analytical reasoning, consistent with dual-process models of decision-making.

The seven consumer segments derived from cluster analysis-ranging from *Casual Sippers*

and *Trend-Occasionalists* to *Health-Conscious Tasters* and *Perceptive Connoisseurs*-illustrate the heterogeneity of young wine consumers. Millennials appear more stable and authenticity-oriented, while Generation Z displays pragmatic and exploratory tendencies. However, both generations converge in valuing transparency, well-being, and meaningful experiences. The CHAID decision-tree analysis confirmed the robustness of these findings, identifying sweetness, taste, safety, and origin as the primary discriminating attributes explaining cluster differentiation.

From a managerial standpoint, these results offer actionable guidance for wine producers and marketers. Strategies should prioritise the development of balanced sweetness profiles, transparent communication about safety and provenance, and modern packaging and digital storytelling tailored to distinct generational segments. Producers can enhance engagement by integrating experiential marketing, tasting events, collaboration with influencers, and peer-driven online campaigns that align with the social and aesthetic preferences of younger audiences. Moreover, strengthening certification systems and promoting quality labels could reinforce consumer trust in domestic wines, contributing to the competitiveness of the Albanian wine sector. The study also advances theoretical understanding by linking attribute-based decision-making, generational theory, and consumer segmentation in an emerging-market context. Nonetheless, limitations such as the urban concentration of the sample and reliance on self-reported data highlight the need for broader, longitudinal, and experimental research. Future studies could examine the roles of digital engagement, sustainability cues, and emotional branding in shaping young consumers' evolving relationship with wine. This study underscores a generational shift toward pleasure with purpose-where enjoyment, authenticity, and trust are combined as defining features of contemporary wine consumption. Understanding this balance is essential for both scholars and practitioners seeking to understand the future of wine markets in Albania and comparable emerging economies.

Table 7: Rotated Component Matrix

Wine attributes	Components							
	1	2	3	4	5	6	7	8
Age	.093	-.004	-.353	.630	.073	.158	-.188	-.144
Gender	-.033	.198	.464	-.535	-.152	.023	.237	.040
I prefer to consume Albanian wine	.160	-.190	-.234	.131	.213	-.206	.671	.065
I prefer to consume imported wine	.265	-.108	-.109	.178	.609	.039	.167	.086
I like red wine better than white wine	-.101	.353	.270	-.160	-.030	-.191	.094	-.104
Many bottles on the shelf confuse me and I often leave without buying any wine	.369	.355	.204	.425	-.285	.195	-.039	-.114
Price	.427	.365	.294	.295	-.101	-.020	.075	-.071
Packaging	.687	-.253	.078	.243	-.244	-.015	.135	.162
Origin	.578	-.243	.012	.232	-.342	.009	.218	.323
Grape variety	.594	-.109	.138	.100	-.287	-.161	.253	.276
Brand	.701	-.361	.010	.049	-.124	-.070	.034	-.197
Safety	.619	-.144	-.239	-.156	-.092	-.172	-.253	.310
Producer	.605	-.423	-.006	-.193	.012	-.129	-.164	.053
Year of production	.713	-.390	.204	-.114	.145	.086	-.102	-.014
How it smells	.700	-.217	.324	-.051	.248	.106	-.090	-.120
Sweetness	.692	-.211	.305	-.062	.158	.056	-.071	.022
Colour	.722	-.339	.246	-.022	.049	.139	.023	-.087
Taste	.647	-.242	.196	-.123	.209	.226	-.161	.241
Fruit flavour	.641	-.230	.131	-.095	-.049	.211	-.058	-.073
Alcohol percentage	.646	-.251	-.020	-.091	-.031	.124	.102	-.308
Health impact	.616	.089	-.092	-.062	-.057	.312	.192	-.146
Degustation	.466	.436	-.266	-.314	.074	.319	.189	.151
Suggested by friends	.494	.450	-.359	-.159	.109	.274	.104	.182
Suggested by retailer	.502	.428	-.427	-.147	-.055	.178	-.046	-.034
Suggested by waiter in the restaurant	.625	.206	-.430	-.183	.059	-.037	-.046	-.093
Suggested by experts in the media	.666	-.032	-.259	-.109	-.153	.001	.085	-.325
Info about the best-selling wine of the year from the seller	.698	-.117	-.352	-.021	-.194	-.179	-.063	.104
Abundant information on the back label of the bottle	.644	-.187	-.123	.006	-.136	-.134	.100	-.363
Name of winery (producer)	.606	.405	.171	.001	.182	-.296	-.118	-.002
Previous experience	.550	.528	.148	-.008	.119	-.312	.077	-.086
Attractive bottles colour and shape	.588	.524	.229	.027	.107	-.282	.020	-.046
Interesting ads	.619	.330	-.099	.015	.103	-.264	-.101	-.098
Attractive label	.679	-.003	-.221	.000	-.039	-.322	-.266	.149
Medal won shown on bottle label	.460	.559	.211	.157	-.022	.190	-.064	.095
PDO label	.482	.431	.201	.180	-.100	.230	-.115	.144

Source: Author's elaboration

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This study was conducted in accordance with ethical research standards. Participation was voluntary, and informed consent was obtained from all respondents. No personal or sensitive information was collected. The study involved anonymous survey responses, which did not collect identifiable or sensitive data; therefore, formal ethical approval was not required under institutional guidelines. All participants were informed of the study's purpose, and their anonymity and confidentiality were strictly protected.

The authors declare that they have no known competing financial interests or personal relationships that could have influenced the work reported in this paper.

Informed consent was obtained from all participants before their involvement in the study. Participants were informed that their participation was voluntary and that they could withdraw at any time without consequence. The study involved completing a questionnaire, and participants were assured that their data would be kept confidential and used solely for research purposes. Anonymity was guaranteed, and no identifying information was collected or disclosed. The data supporting this study's findings are available from the corresponding author upon reasonable request.

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