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Reach for the stars: The impact on consumer preferences of introducing a new top-tier typology into a PDO wine

Gabriele Scozzafava*, Francesca Gerini, Andrea Dominici, Caterina Contini, Leonardo Casini

GESAAF – University of Firenze, Italy

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Abstract

In a world characterized by a significant evolution in wine consumption, Protected Designations of Origin (PDO) wines have constituted a valid strategy of marketing and competitiveness for producers. In 2014, the Consorzio Vino Chianti Classico created the "Chianti Classico Gran Selezione" DOCG (Denominazione di Origine Controllata e Garantita) to strengthen and expand the quality range of its productions. This is a new typology of Chianti Classico placed at the top of the quality production pyramid. The aim of this study is to verify whether the introduction of a higher-tier certification within a PDO denomination can represent an effective strategy to leverage brand value and strengthen the relationship between quality production and territory. With this purpose in mind, we performed a choice experiment on Italian wine consumers. A Latent Class Model allowed us to identify three distinct classes of consumers that differ in their preferences for price and PDO. Moreover, we performed a Chi-squared Automatic Interaction Detection technique and a Principal Component Factor Analysis for describing these classes according to consumers' attitudes and personal characteristics. Our results show the existence of a segment that appreciates the introduction of the new label and therefore support the effectiveness of developing this strategy.

Keywords: Choice experiment; Segmentation; PDO wine; Chianti; Market share

1. Introduction

In recent years, the Italian wine sector has faced radical changes in terms of market demand (Bernetti et al., 2006; Corsi et al., 2018; Sellers and Alampi-Sottini, 2016), due to the variations in domestic wine consumption habits and consumers' increasing interest toward competitive product, i.e. beer or soft drink (Di Vita et al., 2014). The wine consumption has fallen from the average annum consumption of 39.7 million of hectoliters and an average per capita of 70.3 litres in the 80's (Anderson and Pinilla, 2017), to a total value of 21.4 million of hectolitres and a per capita consumption equal to 41.5 litres in 2015 (OIV, 2017). These high declining trends have been accompanied by a redefinition of the demand shifted towards higher-quality wines (Corsi et al., 2004). In fact, the decrement of the consumption of wine has been accompanied by an increase in Protected Designations of Origin (PDOs) wine consumption (Corsi et al., 2018) and a growth in their quota sales, greater than wines without certification (Contini et al., 2015a). In this scenario, quality can represent a key element in marketing and competitiveness for wine producers if it is spread to consumers through recognizable signs (Giacomarra et al., 2016; Rubini et al., 2013). By linking the concept of quality to the territory, it is possible to create a wine/territory relationship that is immediately perceivable as a sign of typicality and excellence by consumers (Camanzi et al., 2017; Scozzafava et al., 2016a).

The legislative framework of the European Union defined PDO as "the name of a region, a specific place or, in exceptional cases, a country used to describe a product that

*Corresponding author.
E-mail addresses: gabriele.scozzafava@unifi.it (G. Scozzafava), francesca.gerini@unifi.it (F. Gerini), andrea.dominici@unifi.it (A. Dominici), caterina.contini@unifi.it (C. Contini), leonardo.casini@unifi.it (L. Casini).
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complies with the following requirements: (*i*) the wine's quality and characteristics are essentially or exclusively due to a particular geographical environment with its inherent natural and human factors; (*ii*) the grapes from which it is produced come exclusively from this geographical area; (*iii*) its production takes place in this geographical area" (Council of The European Union, 2008, p. 17). In accordance with the European classification, the Italian wine classification system (Italian Law 238/2016) recognizes, within the PDO certification, designation of controlled origin (*Denominazione di Origine Controllata*, DOC) and designation of controlled and protected origin (*Denominazione di Origine Controllata e Garantita*, DOCG). Both DOC and DOCG designations indicate quality wines produced in delimitated areas following a specific regulation, including i.e. the grape varieties the wine is obtained from, the maximum yields per hectare and the specific oenological practices used to make the wine, as well as the relevant production restrictions. DOCG wines are subjected to stricter requirements and have to follow more rigid production rules than the DOC wines. For example, the maximum yields per hectare for DOCG wines are smaller compared to DOCs. Furthermore, the recognition of the DOCG is reserved for the wines already considered DOC for at least seven years.

The past years have witnessed a debate on the PDO wine system in Italy, particularly with regard to the rapid proliferation of the number of denominations. Several wine appellations, with different standards, might confuse consumers and render the certification system useless (Castriota, 2015). Furthermore, an excessive use of this designation strategy within the same territory could bring "brand inflation" to the marketplace and, with it, diminished consumer awareness (Adinolfi et al., 2011).

In order to overcome these criticisms and to valorize the positive quality reputation of wine products (Marchini et al., 2014), the Consorzio Vino Chianti Classico (i.e. the authority that groups most Chianti Classico DOCG producers) approved a series of changes to the production regulation, by introducing the "Chianti Classico DOCG Gran Selezione" in 2013. "Gran Selezione" is a new premium typology of Chianti Classico produced with grapes harvested only from the winery's own vineyards, aged for a minimum of 30 months, and identified by certain chemical-physical and organoleptic characteristics (MiPAAF, 2014)[1]. The Consortium placed the "Gran Selezione" at the top of the production pyramid, above vintage "Chianti Classico DOCG" wine and above the "Chianti Classico Riserva DOCG" reserve category. The aim is to increase the overall demand and market share for Chianti Classico (Caldieraro et al., 2015), by means of intercepting a new segment of consumers who are seeking premium quality products, especially for special occasions.

[1]The definition "Gran Selezione", introduced by the Consorzio Vino Chianti Classico in the wine production regulation of the "Chianti Classico DOCG" in 2013, can now be used for all DOCG wines according to the rules specified by "Testo unico della vite e del vino" (Italian Law 238/2016, art. 31, comma 6).

The introduction of a higher-tier certification inside a pre-existent PDO is a novelty in the Italian wine sector and is a way for firms both to leverage the value of their brands and to strengthen the relationship between quality production and territory. In fact, this horizontal expansion within a PDO is different from other implemented strategies, such as the system of geographical sub-zoning of Barolo DOCG or Etna DOC wine, or to the French "cru" classification characterized by a pyramidal qualitative diversification.

Starting from Chianti Classico DOCG as case of study, the purpose of this research is to verify whether the introduction of a qualitative diversification of production within a PDO denomination can represent an effective strategy to promote wines of a premium winegrowing region. Hence, this research will test the following hypotheses:

Hypothesis 1. The introduction of a higher-tier typology of premium wine within a PDO is appreciated by consumers.

Hypothesis 2. The preferences for a higher-tier typology within a PDO vary according to socio-demographic characteristics and personal attitudes and involvement with wine.

In order to answer these questions, we have investigated the preferences of Italian wine consumers by means of a discrete choice experiment (DCE). In particular, we developed a latent class model (LCM) (Mueller et al., 2010) in order to investigate consumer preference heterogeneity. Finally, we performed a Chi-squared Automatic Interaction Detection (CHAID) technique and a Principal Component Factor Analysis (PCA) for describing these classes according to consumers' attitudes and personal characteristics.

After this introduction, the following section intends to propose an overview of the relationship between consumer behavior and wine attributes useful for the implementation of our case study. Section 3 describes the "Case study" and in Section 4 "Materials and methods" we illustrate the theoretical framework of the choice experiment and focus on the development of our approach. The results of our research allowed us to highlight how consumers respond differently to the strategy of increasing the quality pyramid within an existing certification. In the last section, we discuss the results in order to better define the implications of the strategy undertaken by the Consortium and to provide insights to strengthen the success of the new label.

2. Consumer behavior and wine attributes

The action of choosing a bottle of wine is difficult and confusing for many consumers, due principally to the high number of attributes that are associated with wine (Lockshin et al., 2006).

However, some wine quality attributes can not be directly evaluated before the act of consumption, such as gustatory and olfactory characteristics. In fact, often there is not the opportunity to taste the wine before buying it. According to Nelson (1970, 1974) statements, these attributes are considered

experience properties for goods, namely features that can only be discerned after the purchase or during the consumption. In addition to the concept of experience attributes, other authors have introduced the classification of *credence* and *search* attributes. *Credence* attributes (Darby and Karni, 1973) can not be ascertained even after consumption, such as alcohol content, organic or place of origin. Thus, consumers have to choose the bottle of wine using the available information they have before the purchase, namely *search* attributes. *Search* attribute are indicators of products quality that can be distinguished in intrinsic and extrinsic (Orrego et al., 2012; Galati et al., 2017). Intrinsic attributes are directly related to the physical-chemical aspects of the product, such as color, alcohol content, flavor, which cannot be altered without changing the product itself (Lockshin and Hall, 2003). Extrinsic attributes are lower level cues that can be modified without changing the product, and include brand, price, packaging, and denomination of origin (Cicia et al., 2013; Sáenz-Navajas et al., 2013).

Several scientific articles have consistently demonstrated the importance of denomination of origin as an extrinsic attribute that orients consumer wine purchasing. Carsana and Jolibert (2017) observed that for French consumers, the AOC label (the French wine denomination system) is the most important attribute for choosing wine. Skuras and Vakrou (2002) estimated a greater willingness to pay for a certified wine than for one without certification. The value of PDO wine was recognized by consumers of Northern Ireland (Keown and Casey, 1995), of Greece (Tzimitra-Kalogianni et al., 1999), of Spain (Mtimet and Albisu, 2006), and of Italy (Caracciolo et al., 2013; Lai et al., 2006; Scarpa et al., 2006). The importance of the PDO certification was also measured on the Millennial generation: De Magistris et al. (2011), in an analysis on Millennials of the USA and Spain, stressed that Spanish Millennials attributed more importance to the designation of origin than their American counterparts. Furthermore, consumers' preferences are influenced by the place of purchase: Martínez et al. (2006) pointed out that PDO certification is the attribute with the greatest relative importance when wine is purchased in restaurants, whereas shop purchase is influenced by other attributes.

Like PDO certification, price too has always been considered one of the most important attributes for consumers' choices, and wine is not an exception (Corsi et al., 2012). Jenster and Jenster (1993) estimated that price was one of the overriding criteria in making the wine purchase decision among European wine consumers. Similarly, Batt and Dean (2000) found that price was the most important factor that influences the consumer's decision to purchase wine from retail liquor stores in Australia. Bruwer and Buller (2012) showed that Japanese consumers consider price one of the five significant cues that influence the wine buying decision.

Consumers consider price as an indicator of the level of quality (Dodds et al., 1991), and this goes for the educated as well as for the neophyte wine buyer (Quester and Smart, 1998), especially to reduce the perceived risk of a purchase (Mitchell and Greatorex, 1989).

3. Case study

An interesting winemaking reality in Italy is Chianti Classico DOCG, a historical denomination with one of the most popular geographical names in the world (Brunori and Rossi, 2007). In 2016, vineyards registered as Chianti Classico covered 7200 ha (Consorzio Vino Chianti Classico, 2017) and the certified wine output amounted to 294,233 hectoliters (FEDERDOC, 2016). Currently, the Consorzio Vino Chianti Classico counts 580 members, equal to 96% of Chianti Classico DOCG wine producers (Consorzio Vino Chianti Classico, 2017).

The first notarial document in which Chianti refers to the wine produced in this area dates back to 1398 (Rubini et al., 2013). In 1716 Cosimo III de' Medici, the Grand Duke of Tuscany, for the first time in history decided to issue an edict to define the boundaries of several areas particularly well-suited to the production of fine quality wines, including the Chianti area. The success of Chianti wine grew so much that in 1924 the Consortium of Protection was instituted, and in 1932 a specific ministerial decree was issued to officially delimit the boundaries of Chianti. Furthermore, that decree distinguished the original production area from the rest of Chianti territory by adding the adjective "Classico" (represented by the famous black rooster). In 1984, Chianti obtained the DOCG status, within which Chianti Classico was simply considered a typology with more selective characteristics, and only in 1996 did Chianti Classico become an independent DOCG (Consorzio Vino Chianti Classico, 2017).

In 2013 Consorzio Vino Chianti Classico opened its procedural guideline to embrace "Chianti Classico DOCG Gran Selezione", a high-tier wine typology with strict territorial and production characteristics. The objective of this novelty is an upward stratification of the Chianti Classico offer, aimed at consumers interested in premium quality wines.

The innovations introduced over the years, combined with its long history, make the Chianti Classico one of the most produced PDO wine and appreciated by consumers. In 2016, Chianti Classico, with almost 430 thousands of hectoliters, was the third most produced PDO Italian red wine, following Montepulciano d'Abruzzo DOCG and Chianti DOCG (ISMEA, 2018). However, in the same year, it is the PDO red wine with the higher economic production value, equal to 112 thousands of Euro (ISMEA, 2018). These data underline the centrality of Chianti Classico in the Italian wine scene, making it an interesting case of study and a benchmark for the whole sector.

4. Materials and methods

4.1. The sample

The questionnaires were administered on line in summer 2014 to a sample of 250 individuals. Respondents were recruited by a specialized marketing company (Toluna, Inc.) using its own panel of Italian consumers. The sample is representative of the Italian population for regional

Table 1
Sample composition.

Variables	Number of respondents	Sample (%)	Italian population (%)[a]
Gender			
Female	121	48	49
Male	129	52	51
Age			
18–24	20	8	9
25–34	35	14	14
35–44	64	26	18
45–54	57	23	21
Over 55	74	29	38
Location of residence			
North-West Italy	70	28	27
North-East Italy	41	16	19
Central Italy	58	23	20
South and Insular Italy	81	33	34
Marital status			
Single/Separated/ Divorced	82	33	
Married/ Cohabiting	163	65	
Widowed	5	2	
Household monthly income			
Less than € 500	13	5	
€ 501–1000	22	9	
€ 1001–1500	50	20	
€ 1501–2000	51	21	
€ 2001–3000	65	26	
€ 3001–4000	25	10	
€ 4001-5000	16	6	
More than € 5001	8	3	
Frequency of red wine consumption			
Everyday	88	35	
At least 2 times a week	85	34	
At least 1 time a week	65	26	
1 time per month	12	5	
Rarely or never	0	0	
Total	250	100	100

[a]Note: Data of the Italian population are retrieved from the Italian National Institute of Statistics (ISTAT, 2017).

distribution, age, and gender (Table 1). The sample was limited to Italian consumers responsible for wine purchase and who drank red wine at least one time per month.

After initial screening questions about consumption behaviors (i.e. purchase and consumption frequency of wine), each respondent replied to the part of the questionnaire that concerned the choice experiment. Another part of the questionnaire surveyed the consumer's familiarity with the wines presented in the experiment, particularly if they knew the labels considered in the choice and whether had previously tasted or purchased these. Furthermore, subjective wine knowledge was measured through a self-assessment with a 10-point Likert scale, ranging from 0 (low) to 10 (high). We also asked the participants to evaluate a list of 14 attributes, chosen among those recurrent in literature. The respondents were asked to indicate how some product attributes orient their decision to buy red wine on a 5-point Likert scale, anchored between 1 (I do not agree at all) and 5 (I completely agree). The list of chosen attributes included certification, region of origin, consumption occasion, previous experience, vintage, grape variety, packaging, organic label, brand, back-label information, promotion sales and price. The last section of the questionnaire concerned socio-demographic information, family income, and food expenditure.

All respondents were over 18 years of age. About 64% of the interviewees declared to have a higher than average competence in the wine sector.

4.2. Experimental design

Consumers' preferences were studied through a DCE. This method for analyzing the value of attributes has been used in consumer research about food in general (Alfnes et al., 2006; Casini et al., 2014; Contini et al., 2015b; Gerini et al., 2016) and wine specifically (Boncinelli et al., 2019; Lockshin et al., 2006; Troiano et al., 2016; Williamson et al., 2016).

Basing ourselves on previous literature, we opted for a labeled DCE in order to analyze the impacts on consumer behavior after the introduction of a higher-tier certification within a well-established PDO such as Chianti Classico DOCG. The labeled DCE concerns 5 PDO wine labels, each with different price levels.

In the DCE, consumers were requested to select a bottle of wine they would choose to buy among five bottles of wine and a no-choice option, both for a special occasion and for daily consumption. The chosen five labels include three types of Chianti Classico DOCG (Chianti Classico, Chianti Classico Riserva, Chianti Classico Gran Selezione), a Chianti DOCG and a Brunello di Montalcino DOCG. This choice intends to investigate the possible consequences of introducing the new typology of Chianti Classico, both in terms of internal cannibalization and in comparison with two competitors, namely Chianti DOCG and Brunello di Montalcino DOCG. In fact, all the labels chosen are red wines from Tuscany, with a prevalent content of the "Sangiovese" grape variety and are strongly oriented towards quality. In particular, Chianti DOCG is produced from at least 70% of "Sangiovese" and requires minimum 3 months of ageing before purchase. In Chianti

Table 2
Price levels for each wine label.

Chianti D.O.C.G.	Chianti Classico D.O.C.G.	Chianti Classico Riserva D.O.C.G.	Chianti Classico Gran Selezione D.O.C.G.	Brunello di Montalcino D.O.C.G.
€ 4.20	€ 9.10	€ 14.00	€ 17.50	€ 21.00
€ 5.40	€ 11.70	€ 18.00	€ 22.50	€ 27.00
€ 6.60	€ 14.30	€ 22.00	€ 27.50	€ 33.00
€ 7.80	€ 16.90	€ 26.00	€ 32.50	€ 39.00

	Chianti Classico Riserva D.O.C.G.	Brunello di Montalcino D.O.C.G.	Chianti Classico D.O.C.G.	Chianti D.O.C.G.	Chianti Classico Gran Selezione D.O.C.G.	None
	€ 18.00	€ 39.00	€ 9.10	€ 6.60	€ 22.50	
Daily consumption	□	□	□	□	□	□
Consumption for a special occasion (anniversary, gift, birthday, etc.)	□	□	□	□	□	□

Fig. 1. Example of choice set.

Classico DOCG, Sangiovese accounts for at least 80%, and minimum ageing varies among typologies: 10 months for the Chianti Classico, 24 months for the Riserva type, and 30 months for the Gran Selezione type. Brunello di Montalcino DOCG is produced only from "Sangiovese" and its minimum ageing period is 60 months. The no-choice option was offered because consumers, under forced-choice, may often produce biased or incomplete findings that lead to incorrect conclusions (Dhar and Simonson, 2003).

For each label, we proposed four specific levels of price: starting from the median market price (€ 6.00 for Chianti, € 13.00 for Chianti Classico, € 20.00 for Chianti Classico Riserva, € 25.00 for Chianti Classico Gran Selezione, € 30.00 for Brunello di Montalcino; our elaboration on data provided by IRI-Infoscan, 2015), they were identified incrementing or reducing these values by 10% and 30% (Scozzafava et al., 2016b) (Table 2).

Taking into consideration labels and prices, the result is a factorial design of $4^5 = 1024$ possible choice situations. With an orthogonal fractional factorial design, we reduced the number of choice sets using Ngene© (Choice-Metrics, www.choice-metrics.com). The selection of the orthogonal design instead of presenting all possible product combinations limits the information only to the main effects of the attributes. This method ignores interactions between attributes, but has advantages in terms of simplicity and efficiency (Louviere et al., 2000; Kirk, 2012). For each respondent, the orthogonal design produced 12 choice situations with five profiles each, plus the no-choice alternative. For each choice set (see Fig. 1) respondents were asked to carefully choose one wine from five alternatives or the no-choice option.

Before participating in the experiment, consumers viewed an information sheet with the definition of DOCG certification, the meaning and use of terms "Riserva" and "Gran Selezione" in Chianti Classico wine, and a brief description of each label appearing in the DCE. The information sheet is included in the Appendix A.

The DCE was introduced to participants with the following instructions: "Imagine buying a bottle (750 ml) of Tuscan red wine for a daily consumption and for a special occasion. Wines are characterized by a PDO certification and price. Please choose your preferred bottle. If you would not like to buy any of these, you can select the no-choice option."

4.3. Econometric specification

The DCE method derives from the theory of Lancaster (1966), according to which the utility of a good is derived from the sum of the value of all its attributes, and on the McFadden (1974)'s random utility theory.

In particular, in this study the *i*-th consumer's utility of choosing a product, in our case a wine label *j*, is represented by the utility function:

$$U_{ij} = \beta_0(NONE)_j + \beta_{02}ChiantiClassico_j + \beta_{03}ChiantiClassicoRiserva_j + \beta_{04}ChiantiClassicoGranSelezione_j + \beta_{05}BrunellodiMontalcino_j + \beta_1 PriceA_j + \beta_2 PriceB_j + \varepsilon_{ij} \quad (1)$$

where β_0 is the "output" alternative (Costanigro et al., 2017), β_{0j} are alternative specific constants between a reference label, Chianti DOCG, and the other wine bottles, and $PriceA_j$ and $PriceB_j$ are two variables defined as follows:

$$PriceA_j = Price_j \times \left[Chianti_j + ChiantiClassico_j\right] \quad (2)$$

$$PriceB_j = Price_j \times [ChiantiClassicoRiserva_j + ChiantiClassicoGranSelezione_j + BrunellodiMontalcino_j] \quad (3)$$

where $PriceA_j$ is the coefficient for the lower-priced wines and $PriceB_j$ is the coefficient for the higher-priced wine.

To investigate the heterogeneity caused by individual differences, we performed a *post hoc* market segmentation. Indeed, given that as far as wine consumers are concerned it is more usual to find groups of individuals with similar preferences than consumers with unique preferences (Mueller et al., 2010), a LCM was chosen, which allowed us to group consumers with similar preferences and behavior (Hagenaars and McCutcheon, 2002; Swait, 1994). The LCM assumes that the population consists of a number of latent classes *S* that differ in their preferences (which are latent) but are similar within the classes. An individual's belonging to a Class *s* (1, 2, 3…*S*) is not assigned by researchers but detected by the model (Boncinelli et al., 2017), limiting the risk of subjective interpretation. The LCM simultaneously estimates parameters

Table 3
Statistics for determining the optimal number of consumer segments for a special occasion.

Model	LL	BIC(LL)	AIC(LL)	CAIC(LL)	$R^2(0)$	Npar
1-Cluster model	−4364.3722	8767.3947	8742.7444	8774.3946	0.1440	7
2-Cluster model	−3662.867	7408.5558	7355.7340	7423.5559	0.2685	15
3-Cluster model	−3409.6545	6946.3025	6865.3090	6969.3026	0.3566	23
4-Cluster model	–3256.3146	6683.7946	6574.6292	6714.7945	0.3786	31
5-Cluster model	−3177.0639	6569.4648	6432.1278	6608.4648	0.4189	39
6-Cluster model	−3106.067	6471.6427	6306.1340	6518.6427	0.4397	47
7-Cluster model	−3050.1003	6403.881	6210.2006	6458.8810	0.4551	55
8-Cluster model	−3000.8148	6349.4816	6127.6296	6412.4816	0.4819	63

Note: LL = Log-Likelihood; BIC(LL) = Bayesian Information Criterion based on Log-Likelihood; AIC(LL) = Akaike Information Criterion based on Log-Likelihood; CAIC(LL) = Consistent Akaike Information Criterion based on Log-Likelihood; $R^2(0)$ = Squared error; Npar = number of estimated parameters.

Table 4
Estimates of parameters of the latent class model with three segments for a special occasion.

Attributes	Brunello Lovers Class 1	Gran Selezione Inclination Class 2	Price Sensitive Class 3
Label			
Chianti DOCG	0	0	0
Chianti Classico DOCG	0.19	1.07*	1.00***
Chianti Classico Riserva DOCG	−0.34	4.80***	1.47***
Chianti Classico Gran Selezione DOCG	0.80	5.45***	1.16**
Brunello di Montalcino DOCG	2.04**	5.18***	1.57***
Price			
PriceA	−0.02	0.09	−0.04
PriceB	0.10***	−0.04***	−0.10***
Choice	0	0	0
No choice	−2.58**	−2.93***	−1.56***
Class size	42%	38%	20%

R^2 = 0,2484; LL = −3409,6545, BIC(LL) = 6683,7946, *npar* = 23.
Note: *, ** and *** denote significance at the 10%, 5% and 1% level, respectively.

for each class and individual class membership probabilities. A complete mathematical derivation of the LCM can be found in Louviere et al. (2000), Boxall and Adamowicz (2002), and Swait (1994).

The classes of consumers obtained by applying the LCM were further analyzed with the technique of CHAID, using the SI-CHAID software, which is integrated with Latent Gold. The CHAID analysis (Kass, 1980) is a segmentation approach for obtaining a quick but meaningful profile of consumers described in terms of demographic or other variables that are predictive of a single categorical criterion variable (Magidson and Vermunt, 2005).

Lastly, to explore the attitudes and beliefs that affect wine consumption of the respondents, we performed a PCA on 14 wine attributes described in the Section 4.1. This technique was implemented for summarizing a set of variables into a smaller number of new dimensions without losing information (Hair et al., 2006). We performed the PCA on these attributes by using STATA 14.2 software, with Varimax rotation. Then, we estimated the mean factor scores for each class emerged from the LCM, in order to evaluate the importance of the wine attributes for consumers belonging to each class and to better profile them according to their attitude and characteristics.

5. Results and discussion

5.1. Latent class analysis

In order to examine the differences between respondent choice patterns, we applied a LCM analysis by using Latent Gold 5.1 software. In the analysis of the results of the choice experiment on the wines for daily consumption, as expected, the impact of the top quality wines is not significant. In our analysis, we therefore consider only the case of the special occasion.

Even though there are not conventional rules, the choice of the number of classes should be driven by simplicity and judgement (Boxall and Adamowicz, 2002). As many authors suggest, we used a set of statistical indicators, and in particular we analyzed BIC (Bayesan Information Criterion) and AIC (Akaike Information Criterion). The best model should be the one that minimize these two indicators (Boxall and Adamowicz, 2002; Gupta and Chintagunta, 1994; Kamakura and Russell, 1989). However, the higher is the number of classes proposed, the lower is the significance of parameter, particularly for classes with low probability of membership (Scarpa and Thiene, 2005). In this sense, in the selection of the number of classes researchers must also consider the significance and sign of estimated parameters, as Scarpa and Thiene (2005) suggested. According to these criteria, the model that best suits the interpretation of consumers' behaviour is the 3-classes model (Table 3). Table 4 contains the results from the LCM (the sociodemographic characteristics relative to the three classes are shown in Appendix B).

Findings of the LCM suggest that, for a special occasion, consumers choose PDO wine with a great reputation, such as

Table 5
Market shares for a special occasion.

Wine	Brunello Lovers (size = 42%)	Gran Selezione Inclination (size = 38%)	Price Sensitive (size = 20%)	Total market shares[a] (size = 100%)
Generic Chianti Classico €22[b]	5.10%	/	/	2.00%
Chianti Classico DOCG €14.3	/	0.93%	37.74%	8.00%
Chianti Classico Riserva DOCG €22	/	28.47%	27.96%	16.00%
Chianti Classico Gran Selezione DOCG €27,5	/	43.76%	11.83%	19.00%
Brunello di Montalcino DOCG €33	94.87%	26.81%	10.28%	52.00%
No-choice option	0.03%	0.03%	12.19%	2.00%

[a]Weighted for class size.
[b]Generic Chianti Classico derives from the non-significance differentiation between Chianti labels shown by Class 1 (see Table 4).

Brunello di Montalcino and Chianti Classico Gran Selezione. In particular, Class 1 is the largest group in terms of respondents (42% of the sample). They have a preference for Brunello di Montalcino, thus recognizing it as a quality wine with a great reputation that lends itself to consumption on special occasions. Because of the preference for this wine, we call Class 1 *Brunello Lovers*. The coefficient for PriceB shows a significant positive value, connoting that for this class, price may be an effective quality cue. In particular, price is an important quality cue when the product cannot be evaluated before purchase, when few other cues are available, or when the perceived risk of making a wrong choice is high (Dodds et al., 1991; Mitchell and Greatorex, 1989; Zeithaml, 1988). Class 2, representing 38% of the sample, includes consumers that prefer Chianti Classico Gran Selezione over Brunello di Montalcino, Chianti Classico Riserva and, to a lesser extent, Chianti Classico respectively. This positive inclination for the Grand Selezione brand, from which derives the class name *Gran Selezione Inclination*, supports Hypothesis 1. In fact, this result does not only recognize the role of top premium wine of Chianti Classico Gran Selezione within the Chianti Classico denomination, but also shows how this typology can compete with and, in some cases, may be preferred to Brunello di Montalcino. The negative value of PriceB means that increments in the price variable decrease the associated utility level provided by the choice. This effect is even more evident in Class 3, where this price coefficient has a higher value, much more than double that coefficient of Class 2. Therefore, Class 3 (20% of the sample) includes *Price Sensitive* consumers who primarily make choices considering high-priced bottles: they in fact prefer Brunello di Montalcino, Chianti Classico Riserva, Chianti Classico Gran Selezione and Chianti Classico, which are the denominations with higher mean prices. This behavior can be explained by the fact that for many consumers wine is a difficult and confusing product to choose, especially for non-expert consumers, and its purchase is filled with uncertainty and risk (Gluckman, 1986). In order to reduce the perceived risk, marketing literature suggests several different strategies, for instance using brand reputation (Jiuan Tan, 1999). Therefore, these consumers perceive "Montalcino" as a brand, that is a well-known territorial brand (Charters et al., 2011), to be considered for a special occasion.

The negative coefficient of the no-choice option for all classes indicates the higher utility for consumers in choosing one of the labels proposed.

In light of segmenting the demand by means of the LCM approach, it is interesting to point out the overall performance of the new Chianti Classico Gran Selezione label, simulating the market shares (Mueller Loose et al., 2013; Scozzafava et al., 2017) for each class. Table 5 shows both the market shares relative to each segment and the total market share, weighted for the numerousness of the classes.

Table 5 shows that among the Chianti Classico denomination wines, the new typology is the one preferred, which allows us to glimpse good possibilities of success and development for the strategy the Consortium has undertaken. In fact, though without neglecting to point out how this result might even generate possible internal competition within the denomination, overall the Chianti Classico products succeed in forming an important market alternative for special occasion consumption, attacking a direct competitor like Brunello di Montalcino. Moreover, analyzing the market shares of the individual classes further underlines the role of both the new label and of the entire Chianti Classico denomination, especially regarding Classes 2 and 3.

5.2. CHAID analysis

The three classes of consumers detected by applying the LCM were subjected to the further investigation of CHAID analysis. With this method, it is possible to determine the relationships between socio-demographic characteristics and the wine involvement for the choice of a bottle of PDO wine for a special occasion.

Our analysis confirms the importance of family income and wine involvement in predicting individuals' class membership. This evidence, confirming the Hypothesis 2, provides further support to the wine literature finding that income (Alebaki and Iakovidou, 2011; Dodd and Bigotte, 1997; Seghieri et al., 2007) and wine expertise (Cox, 2009; Lockshin et al., 2001) have a predictive capacity in defining wine consumption behaviour.

In particular, among the socio-demographic characteristics, family income (LR chi square = 15.80; df = 2; p = 0.0026) proves to be a significant predictor of class membership.

Table 6
Principal component analysis of the attributes' importance for the three classes in choosing wine for a special occasion.

	Liking for typicality and experience oriented	Inclination to information and brand design	Attention to price
	Factor 1	**Factor 2**	**Factor 3**
Factor loadings:			
Certification	0.80		
Region of origin	0.69		
Consumption occasion	0.69		
Previous experience	0.68		
Vintage	0.59		
Grape variety	0.56		
Packaging		0.74	
Organic		0.71	
Brand		0.64	
Back label information		0.56	
Promotional sales			0.82
Price			0.80

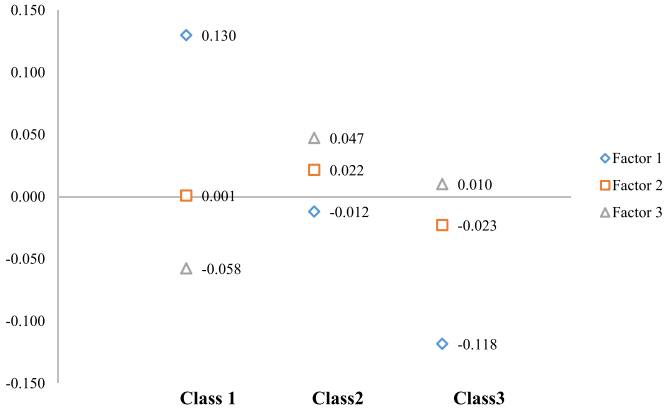

Fig. 2. Factor scores of the three classes for a special occasion.

Brunello Lovers have a high family income, unlike the *Price Sensitive* class, where 78% of respondents have a low family income. *Gran Selezione Inclination (Class 2)* includes consumers with heterogeneous income levels, while half of them have a low income, the others are characterized by a high income.

Moving on to consider information about wine involvement, self-assessment of wine expertise is a significant variable (LR chi square = 16.36; df = 2; $p = 0.0028$). In Class 1, 56% of consumers declare a high level of knowledge in the wine sector, while in Class 3, 78% of members have a low or sufficient level. Class 2 holds an intermediate position between other classes, in which there is a small superiority of consumers with low or sufficient knowledge (54%).

The results of the CHAID analysis are in line with the evidence of previous studies. As emerged in Class 1, high income is correlated with high levels of wine involvement (Brunner and Siegrist, 2011; Bruwer and Buller, 2013). At the same time, low-involved consumers are more price sensitive than high-involved ones (Barber et al., 2007; Lockshin et al., 2001; Lockshin et al., 2006).

5.3. Principal Component Factor Analysis

In order to better profile the segments and to characterize the preferences of each class, we asked the participants to evaluate a list of 14 attributes, described in the 4.1 section. The PCA detected three factors associated with an eigenvalue higher than 1, explaining the 59% of the variance in the responses. Table 6 shows the three factors resulting from the PCA, named for their most salient attributes. Subsequently, the estimation of the mean factor scores for each factor (Fig. 2) allowed us to describe the correlations among the wine attributes importance and consumers' classes.

The first factor extracted explains the 24% of the variance and identifies *Liking for typicality and experience oriented* defined by attributes that accent wine *per-se* features. As illustrated, "Certification", "Region of origin", "Vintage" and "Grape variety" are positively correlated with this factor. Besides these extrinsic attributes, "Consumption occasion" and "Previous experience" also define this factor. Class 1 has a positive correlation with Factor 1: the *Brunello Lovers* class has a particular attention towards extrinsic cue relevant origin, vintage and grape variety (Fig. 2). The attention of this class of consumers towards these quality attributes (Mtimet and Albisu, 2006; Skuras and Vakrou, 2002) provides a further evidence for the preference for high quality products. The sign and coefficient of price level in the LCM, which indicates a perception of price as a quality cue (Dodds et al., 1991; Lockshin et al., 2006), also confirm this behavior. For the other two classes, this factor is the least important one, and it is negatively correlated with both classes.

Factor 2 (19% of the explained variance), described by "Packaging", "Organic", "Brand" and "Back label information", can be interpreted as *Inclination to information and brand design.* It is positively correlated with Class 1 and particularly with Class 2. In this sense, the importance of label information for "*Gran Selezione Inclination*" consumers can support the Hypothesis 2. Consumers with preference for the new typology of Chianti Classico show a dynamic behavior, paying great attention to the novelties introduced in the wine market, such as a new brand, a different packaging or a wine produced following the organic method. These attitudes distinguish them from the other segment of consumers interviewed in this study. Consumers of Class 2 also show a positive connection with Factor 3 (16% of the explained variance), which can be named *Attention to price* for its positive correlation with "Price" and "Promotional sales" attributes.

In Class 3, Factor 3 is the only positive coefficient, underlining the attention of *Price Sensitive* consumers for price. This class resembles the "Price sensitive" class detected by other studies (Pomarici et al., 2017; Seghieri et al., 2007), featured by consumers, with low income and low degree of involvement, who choose a bottle of wine considering only promotion and price. Instead, in Class 1, Factor 3 is the only negative coefficient,

confirming previous studies that identified a wine consumer segment described by high income, high wine involvement and low interest for price (Brunner and Siegrist, 2011).

These results, supporting Hypothesis 2, allow us to weight the importance of wine attributes in the act of purchasing and to gain more insight into the potential differences among consumption behavior of clustered individuals.

6. Conclusions

This research paper intends to analyze the impact on consumers of the recent strategy the Consorzio Vino Chianti Classico has adopted to broaden its offer, inserting a new typology at the peak of the quality pyramid of this denomination. This strategy was developed with the aim of increasing the economic sustainability and market shares of the Chianti Classico denomination with respect to its main competitors, differentiating productions in the highest quality bracket.

The study was conducted implementing a DCE that made it possible to evaluate the new label's impact on consumer purchasing behavior. The first fact that emerges from the analysis is the marked heterogeneity of the consumers' preferences, which made it necessary to proceed with a market segmentation, by means of a LCM approach, and a further investigation on personal attitude with a PCA.

The main finding of this study is represented by the validity of this new strategy in a territory that is esteemed and has been awarded the DOCG certification. A wide segment of consumers (38%) prefers Chianti Classico Gran Selezione, favoring it respect its main competitor, Brunello di Montalcino. The simulation of market shares corroborates this result, which indicates that inserting a new label of excellence in a denomination is a winning policy.

Nevertheless, the greater attention of consumers points towards Brunello di Montalcino, which totals preferences of 62% of respondents. This result underlines the fact that for years now, Brunello di Montalcino is a quality product the consumer recognizes, one identified by a distinct sensory profile, and a strong tie with the territory (Mattiacci and Zampi, 2004).

One aspect of this research, which is worthy of further investigation, concerns how consumers perceive the quality of other typologies within the Chianti Classico denomination after the introduction of Gran Selezione. This strategy might damage consumers' perception of the other products of the denomination, in particular of Chianti Classico Riserva, causing a decrease of its demand.

Segmenting the market and using the PCA have made it possible to describe the characteristics and preferences toward wine of three segments of consumers, providing useful results for Chianti Classico winegrowers, in view of better understanding consumers' behavior and intention of purchasing wine for a special occasion. In this sense, the differences among groups of respondents detected by our study require consistent marketing strategies to meet the heterogeneity of consumers' needs. In particular, producers have to keep in mind the effect of specific attributes grouped in the factor called "*Inclination to information and brand design*" on consumers who prefer Gran Selezione typology. A new bottle packaging for this typology of wine, further information on the back label, or the choice of producing with an organic method could intercept preferences of other consumers and increase the percentage of "*Gran Selezione Lovers*".

For instance, in a market with increasing competitiveness, this additional differentiation of supply might represent a development strategy both to add value to wine production and to tackle a new target of consumers. In order to better showcase this new typology of product and to captivate the market, the Consorzio Vino Chianti Classico should have a primary role in continuing the activity of promotion and valorization. The participation to wine fairs and festivals, with a space devoted to wine tasting, could be an interesting leverage for acquainting the typology Gran Selezione with wine audience and attracting these consumers driven by "experience" wine features. Furthermore, new communication and marketing policies are necessary to guarantee the new type of wine a clear identity of premium quality.

Further reflection rises from the current product specifications, which permit the production of Gran Selezione on a voluntary basis, without indicating a sub-zone inside of the Consortium's distributional area. The next step to better refine and promote the new label more widely could be to identify and select areas particularly well-suited to the birth of wines of excellence within the Chianti Classico production area, following the approach of the French certification system of the "Crus". Indeed, to date, Italian legislation does not contain a hierarchical classification of the "micro-terroirs" analogous to the one that has existed in France for centuries. The introduction of this system of consumer guarantee could permit further qualitative differentiation in the Italian wine offer, increasing its internal and international competitiveness.

A limitation of this paper is the absence in the DCE of at least one "Super Tuscan", a type of premium red wine without PDO certification that does not belong to the regional tradition. These market success products could be further competitors for Gran Selezione, especially among expert consumers with a greater willingness to pay. Furthermore, our study is limited to wine produced in Tuscany: extending analysis to other Italian PDO wines could contribute to expand the field of interest and to better generalize the results.

Conflict of interest

None declared.

Appendix A. Information sheet shown to participants before the choice experiment

DOCG: DOCG wines are regulated by a quality discipline and are characterized by a well-defined area of origin, also with a sub-zoning indication; the area of origin is generally restricted in size and is one of the most suited place for the wine production.

RISERVA: this term indicates a wine aged for a longer minimum period than "Annata" or vintage typology.

CHIANTI CLASSICO D.O.C.G. GRAN SELEZIONE: The "Gran Selezione" wine is a new typology within the Chianti Classico D.O.C.G. certification, introduced by about 600 members of the "Consorzio Vino Chianti Classico", and represents about 10% of the total production. The "Gran Selezione" typology is a wine produced from exclusively estate-grown grapes, in the best-suited vineyards and by applying strict regulations, which make it a high-quality wine.

CHIANTI D.O.C.G.: The Chianti D.O.C.G. wine is produced in the heart of Tuscany region, in the area between the provinces of Arezzo, Firenze, Pisa, Pistoia, Prato and Siena. All the typologies of Chianti D.O.C.G. are produced by the same type of grapes: Sangiovese, Canaiolo, Trebbiano, Malvasia Bianca, Sauvignon e Merlot. However, the percentage of each type of grapes can change among the different typologies, but the production rules set a minimum of 70% of Sangiovese grape.

CHIANTI CLASSICO D.O.C.G.: The Chianti Classico D.O.C.G. wine is produced in Tuscany region in a smaller area compared to Chianti D.O.C.G. wine, and must contain a minimum of 80% of Sangiovese grape. Each batch of wine, for being labelled as Chianti Classico D.O.C.G., must be produced from registered vineyards and must receive eligibility certificate including chemical-physical and sensory tests.

BRUNELLO DI MONTALCINO D.O.C.G.: The Brunello di Montalcino D.O.C.G. wine is produced in Tuscany region, in the Montalcino municipality in the province of Siena. The Brunello di Montalcino D.O.C.G. wine can be considered, along with Barolo D.O.C.G. wine, the Italian red wine with greater longevity. It is produced from 100% Sangiovese grape. For labelling this wine as Brunello di Montalcino D.O.C.G., it must receive eligibility certificate including chemical-physical and sensory tests.

Minimum quality standards for Chianti D.O.C.G., Chianti Classico D.O.C.G., Chianti Classico Riserva D.O.C.G., Chianti Classico Gran Selezione D.O.C.G., Brunello di Montalcino D.O.C.G.:

	Chianti D.O.C.G.	Chianti Classico D.O.C.G.	Chianti Classico D.O.C.G. Riserva	Chianti Classico D.O.C.G. Gran Selezione	Brunello dI Montalcino D.O.C.G.
Area (Hectares)	71,800	7000	7000	700	3600
Maximum production (Ton/Hectare)	9	7.5	7.5	7.5	8
% Sangiovese Grapes (minimum)	70%	80%	80%	80%	100%
Alcohol % (minimum)	12%	12%	12.5%	13%	12%
Aging (minimum)	3 Months	10 Months	24 Months	30 Months	60 Months
Mandatory bottling on premises	No	No	No	Yes	No
Approval by tasting commission	No	No	No	Yes	Yes

Appendix B. Sociodemographic and wine behaviour of the three classes

Variables	**Brunello Lovers Class 1**	**Gran Selezione Inclination Class 2**	**Price Sensitive Class 3**
Gender			
Female	51%	52%	36%
Male	49%	48%	64%
Age			
18-24	7%	7%	12%
25-34	15%	13%	14%
35-44	22%	28%	30%
45-54	26%	20%	20%
Over 55	30%	32%	24%

Location of residence			
North-West Italy	34%	28%	16%
North-East Italy	15%	18%	16%
Central Italy	22%	24%	24%
South and Insular Italy	29%	30%	44%
Marital status			
Single/Separated/Divorced	34%	28%	40%
Married/ Cohabiting	63%	70%	60%
Widowed	3%	2%	0%
Household monthly income			
Less than € 500	6%	1%	12%
€ 501–1000	5%	11%	14%
€ 1001–1500	17%	17%	32%
€ 1501–2000	18%	23%	20%
€ 2001–3000	34%	23%	14%
€ 3001–4000	9%	13%	6%
€ 4001–5000	8%	6%	2%
More than € 5001	3%	5%	0%
Frequency of red wine consumption			
Everyday	33%	45%	22%
At least 2 times a week	35%	27%	46%
At least 1 time a week	27%	23%	28%
1 time per month	5%	5%	4%
Rarely or never	0%	0%	0%
Wine expertise self-assessment			
	6.34 ± 1.83	6.01 ± 1.99	4.94 ± 2.25

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