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Analysis of the wine consumer's behavior: an inferential statistics approach

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Abstract

Purpose – The purpose of this paper is to attempt to outline the standard profile of the typical wine consumer, by identifying some relevant features that can influence his/her purchasing choices. Therefore, the purpose of the research is to identify the pre-eminent attributes for wine consumers and the different levels of importance that consumers ascribe to the attributes identified at the time of purchase.

Design/methodology/approach – In order to collect the necessary data, an *ad hoc* questionnaire was utilized. The questionnaire, which was anonymous, was directly distributed with the face-to-face method. In total, 1,500 copies of the questionnaire had been prepared. The data collected were processed through the use of the binary logistic regression model and the ordinal logistic regression model. The first binary logistic regression model allows to evaluate the dependence of the dichotomous variable on some potential predictors. The ordinal logistic regression model, known in literature as a cumulative model of proportional quotas, is generally appropriate for situations in which the ordinal response variable has discrete categories.

Findings – The results returned by the elaboration of the binary logistic regression model refer to the influence of the variables sex, age, educational status and income on the "wine consumption" result, which is a dichotomous variable. The only variables found to be statistically significant are gender and educational status. The most significant variables that emerged from the implementation of the ordinary logistic regression model are gender, brand, choice based on price, place of production, harvest and certification. The analysis carried out has shown that with reference to wine as a product, it is essential to focus on several attributes, among which there are of course quality and brand.

Research limitations/implications – Although field experiments are extremely useful for testing behavioral hypotheses, they are often limited by a small sample. Future research in this area might focus on the knowledge level of sustainable wine of the consumer. In relation to the knowledge of the characteristics of the wine, it is possible to estimate the willingness to pay a surplus for a wine produced with sustainable methods by the consumer and the possible level of price premium.

Originality/value – The originality of the research lies mainly in a deeper knowledge of wine consumption trends. This information is useful to better define the wine market and to allow, especially to small businesses, to establish effective marketing strategies in relation to the real preferences of consumers and the decision-making process of choice put in place by them. In order to achieve this, the influence of all the variables on the "satisfaction of wine consumption" result was evaluated. The strength of this paper is the use of an adequate

The work is the result of a full collaboration of the authors. However, Maurizio Lanfranchi, in addition to coordination and setting of the study, designed the research plan, interpretations of data and contributed to the writing and reviewing the manuscript; Carlo Giannetto was involved in data investigation and drafting the manuscript; Agata Zirilli and Angela Alibrandi contributed to the writing-related statistical analysis and to the interpretations of data; Carlo Giannetto and Georgia Sakka wrote the Conclusion.

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statistical approach based on the use of models, typical of inferential statistics, to reach conclusions that can be extended to the entire population of wine growers.

Keywords Consumer behaviour, Wine, Quality, Preferences

Paper type Research paper

Introduction

Wine consumption is often associated with a moment of socialization and sharing of a particular event, even if some targets of ordinary wine consumers are present. Understanding the reasons that prompt the consumer to purchase wine and learning how the decision-making process of wine choice is formed are undoubtedly important aspects for the wine enterprises willing to adopt some efficient marketing strategies (Ellis and Caruana, 2018; Remaud and Forbes, 2012). The occasion of the purchase is a relevant aspect in determining the consumer preference. Indeed, the consumer himself/herself purchases different types of wines depending on the occasion (Sellers-Rubio and Nicolau-Gonzalbez, 2016). This shows that a consumer can belong to different targets of consumer groups, and therefore the analysis of the market segmentation appears to be complex and may entail some limitations concerning the results. According to Boncinelli *et al.* (2019), the consumers behave differently when purchasing a bottle of red wine according to distinct situations; the selection of a bottle of red wine is occasion specific. According to Dobele *et al.* (2018), purchase goal does affect the importance of product value indicators in the decision-making process. According to Pucci *et al.*, place-of-origin influence on price-related product evaluations is country specific. The choice of a bottle of wine is not unrelated to quality and territoriality (Tempere *et al.*, 2019; Mehta and Bhanja, 2018). However, the idea of quality itself is susceptible to several declinations: chemical–physical contents, exterior appearance, color, alcoholic strength, organoleptic factors and the brand's reputation. All these elements represent one aspect of the quality, but they are all elements that differ from one wine to another (Bruwer *et al.*, 2011; Mueller *et al.*, 2010). All of this must be linked to a high degree of information asymmetry to the disadvantage of the consumer. Indeed, the consumer who is not willing to purchase wine directly in the company is not given the possibility to test all the organoleptic parameters that represent subjective indicators of quality for him/her (Galati *et al.*, 2019; Gil and Sánchez, 1997). Consequently, other aspects that are not directly dependent on the taste and the sensory quality of the product, such as brand, labeled indications, origin and territoriality and, last but not least, price, become paramount elements to the consumers when choosing a bottle of wine (Jovanović *et al.*, 2017). Indeed, price acquires importance on special occasions, whereas taste is important in any occasion of purchase. The level of prices and brand are relevant only in particular moments (Barber *et al.*, 2012; Charters and Pettigrew, 2003). According to Sogari *et al.* (2018), combining sensory and consumer methods is becoming an important area of research, and wineries can benefit from this interaction.

Wine market in Italy and Sicily

The wine sector in Italy counts with thousands of manufacturing companies, often ranking as the world's first wine producer and highlighting the value of this field. Although the production data in Italy are very satisfactory, per capita wine consumption has decreased in recent years. Consumption has grown instead in those countries that were not traditionally considered as drinkers and that today, instead, are increasingly conditioned by the western lifestyle and behavioral patterns (Vrontis *et al.*, 2016). According to Juaneda-Ayensa *et al.* (2019), it is possible to identify two types of wine tasters, normal and "right." The "right" wine tasters are more and better able to develop arguments for the innovation and market orientation of the wine. According to Pucci *et al.*, social media usage is positively related to online wine buying, and consumers objective knowledge moderates the relationship between social media usage and online wine purchasing. The world wine market is very fragmented, presenting many small- and medium-sized businesses competing in the

domestic market and, increasingly, in the international markets (Bresciani, 2017). Italy is one of the main wine-producing and wine-consuming countries, which stands out from the other countries for its strong wine-growing tradition rooted in the territory. Over time, a strengthening of the enological industry has been observed due to an evident development of demand and to an increased sophistication of supply (Bresciani *et al.*, 2016). All of this has allowed the sector to grow both from a supply-side point of view, by becoming increasingly complex and differentiated, and in terms of consumption and export of wines with protected designation of origin. The wine product that is being increasingly sold by producers or wineries is the table wine in bulk. With reference to the data on the 2018 Italian winemaking, ISTAT estimates a production equal to 50.43m hectoliters, +15 percent both compared to 2017 and to the 2008–2017 historical average. IGT wines, instead, are slightly below the historical level, with a production equal to 13.3m hectoliters, whereas ordinary wines and table wines are growing 12 and 19 percent above average, with a production of 16.3m hectoliters. To wine production are then added 2.45m hectoliters of musts to reach a total production of 52.9m hectoliters, +15 percent compared to 2017. From a geographical point of view, the two main producing regions are Veneto and Puglia. Among the other great wine regions, the data of Abruzzo, Friuli Venezia Giulia and Emilia Romagna stand out. Essential elements that cannot be neglected in the economy of wine market are import and export. With reference to the Italian export, there are many interesting data. Out of the 2bn of bottled wine exports, PDO wines are growing by 8 percent at 1,059m, with a differing performance from red wines, −2 percent at 673m, and white wines, +29 percent at 386m. PGI wines instead are decreasing by 13 percent at 630m, itself determined by red wines stable at 384m and white wines in decrease of 30 percent at 209m. The picture is completed by 25m varietal wines, +22 percent, and €346m of table wines, +13 percent. The trade surplus in the Italian wine sector has reached €5,858m (+3.3 percent). Over time, the wine market in Sicily has grown remarkably, becoming an economic source of great importance today, producing over 10 percent of Italian wine and becoming the fourth producing region, after Veneto, Puglia and Emilia Romagna. According to the ISTAT data, in 2017, Sicilian wine production declined by 11 percent and 5.4m hectoliters of wine and musts were produced, 11 percent less than 2016 and around 6 percent less than the historical average. Sicily is full of wineries, reaching a total of 290 businesses spread among its nine provinces. The total vineyard area is around 106,600 hectares. Over the last few years, there has been an increase in the wine consumption among youngsters, with a particular focus on Sicilian territory. In 2018, ISTAT data showed a high penetration of wine consumption, equal to 43 percent, owing to a refined quality that characterizes Sicilian production. Sicilian wine is being increasingly appreciated abroad. In 2017, the registered designation of origin Sicily accumulated an export of 21,000 hectoliters at €5.7ms, whose bulk is ascribable to red wine (€4.2m). Two-thirds of Sicilian wines are exported to Germany, USA and UK (Di Vita *et al.*, 2019; Lanfranchi *et al.*, 2018; D'Amico *et al.*, 2016; Borsellino *et al.*, 2016).

Purpose of paper

The purpose of this study is to attempt, in spite of the difficulties emerging while trying to understand consumer preferences, to outline as far as possible a standard profile of the typical consumer, by identifying some relevant features that can influence his/her purchasing choices. A more in-depth knowledge of wine consumption tendencies will provide some useful information to better define wine market and to establish effective marketing strategies in relation to the current consumer preferences. Therefore, the aim of our study is to identify the attributes that are important for wine consumers and the different level of importance that consumers ascribe to the attributes identified at the time of purchase. The strength of this paper is the use of statistical models, to reach conclusions that can be correctly extended to the entire population of wine growers.

Sampling design and tools

In order to collect the necessary data, an *ad hoc* questionnaire was utilized. The questionnaire consisted of 30 questions concerning multiple topics that reflect, globally, all aspects related to wine consumption. The administered questionnaire consisted of several sections: the first section contained questions relating to personal data (age, sex, educational qualifications, employment status and income), the second section was related to wine consumption (type of wine consumed, satisfaction, brand, place of production, vintage, etc.) and the last section was particularly related to the consumption of organic wine. The sampling design was simple random sampling, which is probabilistic. It guarantees representativeness because it is based on the total random enrollment of the statistical units. The reliability of the questionnaire was guaranteed through the administration of a pretest on a small sample of 35 statistical units, selected by random procedure in different areas of the city, trying to maintain the representativeness of sex (19 males and 16 females) and age (mean 35.7±5.3 years). In addition, as a further guarantee of reliability, we inserted some control questions in different part of the questionnaire. In this way, the validity, consistency and reliability of the answers obtained were verified. To carry out the research sample and collect a large catchment area, ensuring the presence of different types of subjects, the questionnaire was administered near very busy places (supermarkets, main squares, theaters, universities and municipal offices) in an absolutely random way within several municipalities in the Messina province. The survey took place between January and April 2019. The questionnaire, which was anonymous, was directly distributed with the face-to-face method (Lanfranchi *et al.*, 2014, 2015). In order to guarantee the representativeness of the sample, the questionnaire was administered in an absolutely random way, near very busy places (supermarkets, main squares, theaters, universities and municipal offices) in several municipalities in the Messina province.

The data

In total, 1,500 copies of the questionnaire had been prepared; of these, 10.8 percent were not used because the subjects invited to compile expressed their dissent to participate in the survey. So, the final sample was composed of 1,338 subjects (43.7 percent male and 56.3 percent female), with an average age of 37.2±11. In this sample of respondents, 85.2 percent stated that they habitually consume alcohol and, in particular, 82 percent consume wine. Figure 1 shows the percentage referred to personal data and Table I shows the absolute frequencies (n) and percentages (%) of the categorical variables.

In order to illustrate the mean satisfaction levels of interviewees for each indicator, a radar chart was used (Figure 2).

From Figure 2, it can be observed that the "price choice" and "wine vintage" indicators are those for which consumers show less satisfaction; however, for remaining indicators, consumers show high and similar levels of satisfaction.

Methodology

Binary logistic regression model

The binary logistic regression model, which is a generalized linear model, allows to evaluate the dependence of the dichotomous variable by some potential predictors (Stock and Watson, 2015). It measures the relationship between a dichotomous outcome variable and one or more independent variables by estimating probabilities and using a logistic function. Through the binary logistic regression, we can estimate the presence or absence of a particular feature.

Let Y be a binary response variable:

- $Y_i=1$ if the characteristic is present in observation i (person, unit, etc.); $Y_i=0$ if the characteristic is not present in observation i; and
- $X=(X_1, X_2, \ldots, X_k)$ represents a set of explicative variables (discrete, continuous or a combination of them). x_i is the observed value of the explanatory variables for observation i.

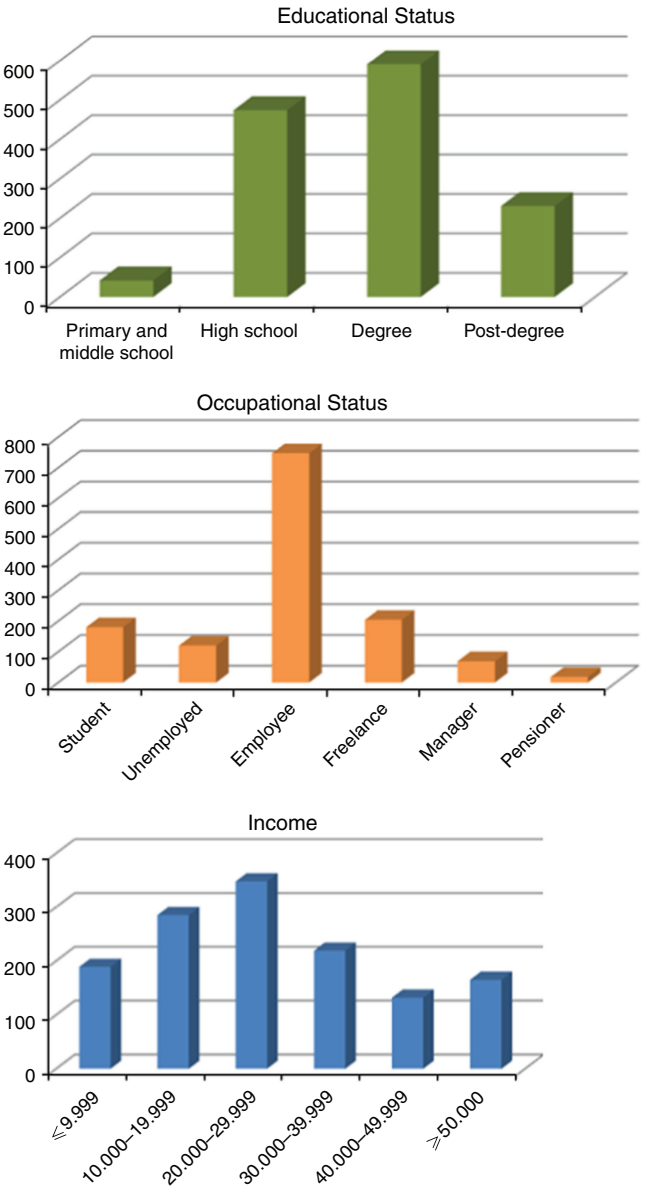

Figure 1.
Percentage distribution of personal data measured on respondents

The purpose of the model is to establish the probability that an observation can generate one or the other value of the dependent variable. Binary logistic regression is based on the following assumptions:

- The data $Y_1, Y_2, \ldots, Y_n$ are independently distributed, that is cases are independent.
- Distribution of Y_i is Bin(n_i, π_i), that is binary logistic regression model assumes binomial distribution of the response. The dependent variable does not need to be

Variable	Categories	*n*	%
Type of wine	No preference	54	4.0
	White	240	17.9
	Sparkling white	162	12.1
	Red	738	55.2
	Sparkling red	36	2.7
	Rosé	57	4.3
	Sparkling rosé	51	3.8
Willingness to spend on wine purchases (in €)	Nothing	93	7.0
	≤3	60	4.5
	3.1–5	312	23.3
	5.1–7	360	26.9
	7.1–14	315	23.5
	>14	198	14.8
Wine satisfaction	Nothing	81	6.1
	Little	234	17.5
	Quite	450	33.6
	Much	384	28.7
	Very much	189	14.1
Brand satisfaction	Nothing	72	5.4
	Little	165	12.3
	Quite	519	38.8
	Much	432	32.3
	Very much	150	11.2
Price choice satisfaction	Nothing	57	4.3
	Little	378	28.3
	Quite	600	44.8
	Much	252	18.8
	Very much	51	3.8
Production place	Nothing	54	4.0
	Little	159	11.9
	Quite	489	36.5
	Much	426	31.8
	Very much	210	15.7
Wine vintage	Nothing	126	9.4
	Little	378	28.3
	Quite	435	32.5
	Much	318	23.8
	Very much	81	6.1
Wine certification	Nothing	75	5.6
	Little	201	15.0
	Quite	414	30.9
	Much	423	31.6
	Very much	225	16.8
Wine additives	Nothing	93	7.0
	Little	198	14.8
	Quite	285	21.3
	Much	402	30.0
	Very much	360	26.9
Biological wine satisfaction	Nothing	132	9.9
	Little	327	24.4
	Quite	348	26.0
	Much	315	23.5
	Very much	723	16.1

Table I.
Frequencies and percentages of categorical variables related to wine consumption

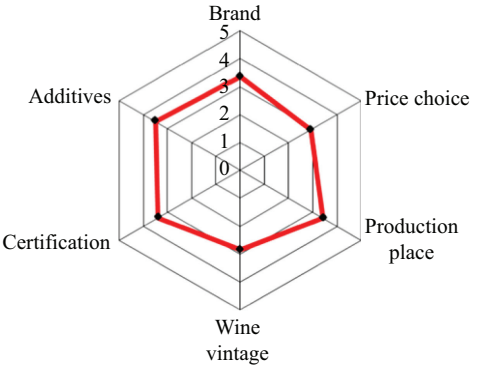

Figure 2.
Radar chart of mean satisfaction levels for indicator of interest

normally distributed, but it typically assumes a distribution from an exponential family (e.g. binomial, Poisson, multinomial, normal, etc.).

- It does not assume a linear relationship between the dependent variable and the independent variables, but it does assume a linear relationship between the logit of the response and the explanatory variables; $\text{logit}(\pi)=\beta_0+\beta X$.
- Independent (explanatory) variables can be even the power terms or some other nonlinear transformations of the original independent variables.
- The homogeneity of variance does not need to be satisfied.
- Errors need to be independent but not normally distributed.
- It uses maximum likelihood estimation rather than ordinary least squares to estimate the parameters, and thus relies on large-sample approximations.
- Goodness-of-fit measures rely on sufficiently large samples, where a heuristic rule is that not more than 20 percent of the expected cells counts are less than 5.

In the case of k explanatory independent variables, the model can be expressed as follows:

$$\text{logit}(\pi_i) = \log\left(\frac{\pi_i}{1-\pi_i}\right) = \beta_0 + \beta_1 x_i = \beta_0 + \beta_1 x_{i1} + \cdots + \beta_k x_{ik},$$

where the binary outcome is modeled as a linear combination of the predictor variables.

Ordinal logistic regression model

The ordinal logistic regression model represents an extension of the general linear model to ordinal categorical data, and it is known in the literature as cumulative proportional odds model (Kleinbaum and Klein, 2010). It is generally appropriate when the ordinal response variable has discrete categories.

The event of interest is to observe a value less than or equal to a score (O'Connell, 2005); for example, for an ordinal variable with three modes, it is possible to define the following odds:

(1) Θ_1=prob (score of 1)/prob (score>1).

(2) Θ_2=prob (score of 1 or 2)/prob (score>2).

(3) Θ_3=prob (score of 1, 2 or 3)/prob (score>3).

The last category has no odds associated, as the probability that a score is less than or equal to the last score is equal to 1. All odds are in the following form:

$$\Theta_j = \text{prob}(\text{score} \leq j)/\text{prob}(\text{score} > j).$$

In the ordinal logistic regression model, the coefficients reveal the extent to which the logit varies on the basis of the values of the predictors. Higher coefficients indicate an association with higher scores. When there is a positive coefficient for a dichotomous factor, the highest scores are to be considered related to the first category. A negative coefficient indicates that the lowest scores are the most likely. For a continuous variable, a positive coefficient indicates that as soon as the values of a variable increase, the probabilities of high scores increase. An association with higher scores expresses a less cumulative probability for lower scores, as they occur less frequently (Norušis, 2009).

In the case of k explanatory independent variables, the model can be expressed as follows:

$$\text{logit}(\pi_i) = \log \frac{P(Y \leq j|x)}{1 - P(Y \leq j|x)} = \beta_0 + \beta_1 x_{i1} + \cdots + \beta_k x_{ik},$$

where the ordinal outcome is modeled as a linear combination of the predictor variables.

Results

In the first model, we evaluated the influence of the gender, age, educational status and income variables on the outcome "wine consumption" that is a dichotomous variable. Due to this reason, we estimated a multivariate binary logistic regression model. In Table II, we reported the results of this model; in particular, we showed the regression coefficient (Coeff.), the exponential of coefficient (Exp B), the 95% confidence interval for Exp (B) and the significance (p-value).

It can be noticed that the only variables that resulted to be statistically significant were gender (the male consumers are more than the female ones) and the educational status (greater years of schooling correspond to a greater probability of wine consumption). In the second model, we evaluated the influence of some variables, such as gender, age, educational status, income, brand, choice based on price, place of production, wine vintage, certification and additives on the outcome "satisfaction of wine consumers" that is an ordinal variable on five levels. Due to this reason, we estimated a multivariate ordinal logistic regression model. In Table III, we reported the results of this model; in particular, we showed the estimation of regression coefficient (estimation), the relative 95% confidence interval (95% CI), the standard error of estimation (SE) and the significance (p-value).

The variables found to be significant are sex (the male consumers are more satisfied than the female ones), brand, chosen according to price, place of production, wine vintage and certification (most of the favorable opinions expressed with referring to these indicators entail higher levels of consumer satisfaction). In the third model (Table IV), we evaluated the

Predictors	Coeff	Exp (B)	95% CI	p
Constant	−0.877	0.416	–	0.246
Gender (M)	0.637	1.892	1.122–3.189	*0.017*
Age	0.001	1.001	0.978–1.025	0.918
Educational status	0.390	1.477	1.050–2.078	*0.025*
Income	0.135	1.145	0.956–1.371	0.142

Notes: Log-Likelihood = 405.187; full model p-value<0.001; Hosmer–Lemeshow = 8.955; p = 0.346; pseudo R^2: Cox Snell = 0.320; Nagelkarke = 0.520

Table II. Binary logistic regression model for wine consumption propensity

Predictors	Estimation	95% CI	SE	*p*
Constant 1	4.493	2.863–6.124	0.832	<0.001
Constant 2	6.976	5.295–8.657	0.858	<0.001
Constant 3	9.169	7.391–10.948	0.907	<0.001
Constant 4	11.127	9.248–13.007	0.959	<0.001
Gender (M)	0.704	0.310–1.098	0.201	*<0.001*
Age	0.010	−0.009–0.029	0.010	0.290
Educational status	0.220	−0.050–0.489	0.138	0.111
Income	−0.007	−0.147–0.133	0.071	0.927
Brand	0.641	0.381–0.900	0.132	*<0.001*
Price choice	0.310	0.069–0.552	0.123	*0.012*
Production place	0.311	0.055–0.566	0.131	*0.017*
Wine vintage	0.358	0.120–0.596	0.121	*0.003*
Certification	0.379	0.124–0.633	0.130	*0.004*
Additives	0.089	−0.114–0.292	0.104	0.390

Notes: Log-Likelihood = 875.584; full model *p*-value<0.001; deviance test: $p = 0.978$; pseudo R^2: Cox Snell = 0.407; Nagelkarke = 0.431; Mc Fadden = 0.172

Table III.
Ordinal logistic regression model for wine consumer satisfaction

Predictors	Estimation	95% CI	SE	*p*
Constant 1	1.867	0.306–3.429	0.797	0.019
Constant 2	4.738	3.117–6.358	0.827	<0.001
Constant 3	6.684	4.988–8.379	0.865	<0.001
Constant 4	8.718	6.945–10.491	0.905	<0.001
Gender (M)	−0.352	−0.748–0.044	0.202	0.081
Age	−0.008	−0.027–0.011	0.010	0.417
Educational status	−0.144	−0.415–0.127	0.138	0.299
Income	0.130	0.010–0.258	0.066	*0.042*
Brand	0.045	−0.210–0.300	0.130	0.730
Price choice	0.060	−0.182–0.302	0.124	0.626
Production place	0.139	−0.118–0.397	0.131	0.289
Wine vintage	0.022	−0.215–0.260	0.121	0.855
Certification	0.427	0.170–0.684	0.131	*0.001*
Additives	1.414	1.163–1.665	0.128	*<0.001*

Notes: Log-Likelihood = 837.616; full model *p*-value<0.001; deviance test: $p = 0.989$; pseudo R^2: Cox Snell = 0.545; Nagelkarke = 0.571; Mc Fadden = 0.256

Table IV.
Ordinal logistic regression model for satisfaction of biological wine consumption

influence of all the variables (gender, age, educational qualification, income, brand, choice based on price, place of production, wine aging, certification and presence of additives) on the outcome "satisfaction of biological wine consumption." The variables found to be significant are income (subjects who receive higher incomes are more satisfied), certification and attention to the presence of additives.

For the three multivariate models, the tests of goodness fit have been estimated and satisfactory results have been obtained, guaranteeing an adequate degree of fit to the data. The highly significant *p*-value of the full model, with respect to the intercept-only model, makes it possible to guarantee that the insertion of the explanatory variables significantly increases the informative and predictive quality of the model. Finally, the non-significance of the deviance test lead us to accept the hypothesis that there are no significant differences between the observed and the theoretical values derived from the estimation of the adopted logistic regression model. Finally, we identified the profile of the "typical consumer" that

emerges from this sample: he/she has an average age ranged between 28 and 34 years (26.5 percent), he/she has a medium high level of education (79 percent), he/she has an income ranged between €20,000 and 30,000 (25.4 percent), he/she is an employee (55.8 percent), he/she drinks mostly red wine (60.9 percent) and spends, on average, between €5 and 7 (29 percent), he/she feels quite satisfied with the wine he/she drinks (33.6 percent), he/she gives quite importance to the brand (83.9 percent), to the place of production (68 percent), to the choice based on price (45.4 percent) and to the wine vintage (33.1 percent); moreover, he/she is very careful to the certification (62.3 percent) and to presence of additives (55 percent). Finally, he/she is more than satisfied with regard to the biological wine (49.5 percent).

Conclusion

The analysis carried out has shown that with reference to wine as a product, it is essential to focus on several attributes, among which there are of course quality and brand. This latter attribute has a key informative function toward the consumer, who will be able to develop a sense of recognizability and memory of a particular bottle of wine. Very often in the wine market, it happens that the name of the wine is improperly considered as a brand, and consequently, it is essential that the producer uses an own-label brand related to him/her. As regards wine as a product, even packaging plays a fundamental role by also performing a communicative function, since it is capable of conveying the product's conceptual characteristics, as well as the physical ones. Therefore, the relevant elements are the bottle, fitted with a cap, packaging and the label. Currently, the bottle design and the material of which it is composed have become crucial, since they communicate to the consumer a particular image. Due to these reasons, it is important to create new types of packaging, ever more complex and evolved over time and aimed at satisfying the consumers' request. As regards the price factor, it is necessary to jointly take into account three elements: the demand, which determines the highest price that the consumer is willing to pay; the competitors' choices; and third, the product's cost (Wolf *et al.*, 2018; Caracciolo *et al.*, 2015). In order to determine the price, in addition to the previously determined variables, it is extremely important to mainly take into account the production chain, which therefore integrates the various activities of grape production, vinification, wine conservation and bottling, thus outlining a very complex reality, at structural, organizational and technical level. In conclusion, we, therefore, point out that it is necessary to develop the entrepreneurship of wine companies. The entrepreneur has to orientate himself/herself toward production and the quality product through a more effective and efficient market orientation, by paying greater attention to the in-depth knowledge of consumers' preferences and behaviors that constantly change over time. Due to these reasons, it is essential to develop suitable skills and marketing professionalism for market analysis and at the level of strategic and operational planning, with the aim of creating a particular agreement with consumers. Especially in current times, competitive advantage is built on strong relationship with both intermediate and final customers and by offering unusual experiences, all made through a strong image attributable to the brand. Indeed, it is possible to state that brand, as well as its correct management, is the outcome resulting from a right knowledge of the market, and it is the fundamental element on which the whole business strategy, as well as the various marketing mix instruments such as product, price, distribution and communication, should be build (Barber *et al.*, 2012). It is important to specify that adopting a both market and marketing orientation does not imply abandoning quality culture, but it represents that extra something for a company willing to be competitive within the market (Wiedmann *et al.*, 2014; Crescimanno and Galati, 2014). Although field experiments are extremely useful for testing behavioral hypotheses, they are often limited by a small sample. Future research in this area might focus on the knowledge level of sustainable wine of the consumer. In relation to the knowledge of the characteristics of the wine, it is possible to estimate the willingness to pay a surplus for a wine produced with sustainable methods by the consumer and the possible level of price premium.

References

Barber, N., Kuo, P.-J., Bishop, M. and Goodman, R. Jr (2012), "Measuring psychographics to assess purchase intention and willingness to pay", *Journal of Consumer Marketing*, Vol. 29 No. 4, pp. 280-292.

Boncinelli, F., Dominici, A., Gerini, F. and Marone, E. (2019), "Consumers wine preferences according to purchase occasion: personal consumption and gift-giving", *Food Quality and Preference*, Vol. 71, pp. 270-278.

Borsellino, V., Pisano, G., Ievoli, C. and Schimmenti, E. (2016), "Is green harvesting a useful instrument to solve market problems in the wine sector? Some lessons from Sicily", *Quality – Access to Success*, Vol. 17 No. 151, pp. 78-84.

Bresciani, S. (2017), "Open, networked and dynamic innovation in the food and beverage industry", *British Food Journal*, Vol. 119 No. 11, pp. 2290-2293.

Bresciani, S., Giacosa, E., Culasso, F. and Broccardo, L. (2016), " 'The family variable in the French and Italian wine sector' EuroMed", *Journal of Business*, Vol. 11 No. 1, pp. 101-118.

Bruwer, J., Saliba, A. and Miller, B. (2011), "Consumer behaviour and sensory preference differences: implications for wine product marketing", *Journal of Consumer Marketing*, Vol. 28 No. 1, pp. 5-18.

Caracciolo, F., Di Vita, G., Lanfranchi, M. and D'Amico, M. (2015), "Determinants of sicilian wine consumption: evidence from a binary response model", *American Journal of Applied Sciences*, Vol. 12 No. 11, pp. 794-801.

Charters, S. and Pettigrew, S. (2003), "I like it but how do I know if it's any good? Quality and preference in wine consumption", *Journal of Research for Consumers*, Vol. 5 No. 5, pp. 1021-1027.

Crescimanno, M. and Galati, A. (2014), "Competitiveness of Italian wines in the international market", *Bulgarian Journal of Agricultural Science*, Vol. 20 No. 1, pp. 12-22.

D'Amico, M., Di Vita, G. and Monaco, L. (2016), "Exploring environmental consciousness and consumer preferences for organic wines without sulfites", *Journal of Cleaner Production*, Vol. 120, pp. 64-71.

Di Vita, G., Caracciolo, F., Brun, F. and D'Amico, M. (2019), "Picking out a wine: consumer motivation behind different quality wines choice", *Wine Economics and Policy*, Vol. 8, No. 1, pp. 16-27.

Dobele, A.R., Greenacre, L. and Fry, J. (2018), "The impact of purchase goal on wine purchase decisions", *International Journal of Wine Business Research*, Vol. 30 No. 1, pp. 19-41.

Ellis, D. and Caruana, A. (2018), "Consumer wine knowledge: components and segments", *International Journal of Wine Business Research*, Vol. 30 No. 3, pp. 277-291.

Galati, A., Schifani, G., Crescimanno, M. and Migliore, G. (2019), " 'Natural wine' consumers and interest in label information: an analysis of willingness to pay in a new Italian wine market segment", *Journal of Cleaner Production*, Vol. 227, pp. 405-413.

Gil, J.M. and Sánchez, M. (1997), "Consumer preferences for wine attributes: a conjoint approach", *British Food Journal*, Vol. 99 No. 1, pp. 3-11.

Jovanović, M.M., Kašćelan, L., Joksimović, M. and Kašćelan, V. (2017), "Decision tree analysis of wine consumers' preferences: evidence from an emerging market", *British Food Journal*, Vol. 119 No. 6, pp. 1349-1361.

Juaneda-Ayensa, E., Olarte-Pascual, C., Reinares-Lara, E. and Reinares-Lara, P. (2019), "The 'right' wine taster: identifying individuals high in emergent nature to develop new market-oriented products", *British Food Journal*, Vol. 121 No. 3, pp. 675-696.

Kleinbaum, D. and Klein, M. (2010), *Logistic Regression: A Self-Learning Text*, Springer.

Lanfranchi, M., Schimmenti, E. and Giannetto, C. (2018), "Economic analysis and energy valorisation of by-products of the wine supply chain: the case of the 'Mamertino wine PDO' ", *International Journal of Environmental Studies*, Vol. 75 No. 5, pp. 800-811.

Lanfranchi, M., Giannetto, C., Alibrandi, A. and Zirilli, A. (2015), "Analysis of the propensity to fruit consumption among young people through the cumulative proportional odds model", *American Journal of Applied Sciences*, Vol. 12 No. 8, pp. 542-548.

Lanfranchi, M., Giannetto, C., Zirilli, A. and Alibrandi, A. (2014), "Analysis of the demand of wine in sicily through ordinal logistic regression model", *Quality – Access to Success*, Vol. 15 No. 139, pp. 87-90.

Mehta, R.E. and Bhanja, N. (2018), "Consumer preferences for wine attributes in an emerging market", *International Journal of Retail and Distribution Management*, Vol. 46 No. 1, pp. 34-48.

Mueller, S., Locksin, L., Saltman, Y. and Blanford, J. (2010), "Message on a bottle: the relative influence of wine back label information on wine choice", *Food Quality and Preferences*, Vol. 21 No. 1, pp. 22-32.

Norušis, M.J. (2009), *PASW Statistic 18. Statistical Procedures Companion*, Pearson Education.

O'Connell, A.A. (2005), *Logistic Regression Models for Ordinal Response Variables, Quantitative Application in the Social Sciences*, Vol. 146, Sage publishing.

Remaud, H. and Forbes, S.L. (2012), "The influence of gender on wine purchasing and consumption: an exploratory study across four nations", *International Journal of Wine Business Research*, Vol. 24 No. 2, pp. 146-159.

Sellers-Rubio, R. and Nicolau-Gonzalbez, J.L. (2016), "Estimating the willingness to pay for a sustainable wine using a heckit model", *Wine Economics and Policy*, Vol. 5 No. 2, pp. 96-104.

Sogari, G., Casprini, E., Devigili, M. and Pucci, T. (2018), "Sensory and consumer sciences: what is their role as a business tool in the wine sector?", in Santini, C. and Cavicchi, A. (Eds), *Case Studies in the Wine Industry*, Woodhead Publishing – Elsevier, Duxford, pp. 47-59.

Stock, J.H. and Watson, M.W. (2015), *Introduction to Econometrics*, Third Update, Global Edition, Pearson Education Limited.

Tempere, S., Pérès, S., Espinoza, A.F., Darriet, P., Giraud-Héraud, E. and Pons, A. (2019), "Consumer preferences for different red wine styles and repeated exposure effects", *Food Quality and Preference*, Vol. 73, pp. 110-116.

Vrontis, D., Bresciani, S. and Giacosa, E. (2016), "Tradition and innovation in Italian wine family businesses", *British Food Journal*, Vol. 118 No. 8, pp. 1883-1897.

Wiedmann, K.-P., Behrens, S., Klarmann, C. and Hennigs, N. (2014), "Customer value perception: cross-generational preferences for wine", *British Food Journal*, Vol. 116 No. 7, pp. 1128-1142.

Wolf, M.M., Higgins, L.M., Wolf, M.J. and Qenani, E. (2018), "Do generations matter for wine segmentation?", *Journal of Wine Research*, Vol. 29 No. 3, pp. 177-189.

Further reading

Barber, N., Taylor, D.C. and Deale, C.S. (2010), "Wine packaging: marketing towards consumer lifestyle to build brand equity and increase revenue", *International Journal of Revenue Management*, Vol. 4, Nos 3-4, pp. 215-237.

Pucci, T., Casprini, E., Nosi, C. and Zanni, L. (2019), "Does social media usage affect online purchasing intention for wine? The moderating role of subjective and objective knowledge", *British Food Journal*, Vol. 121 No. 2, pp. 275-288.

Pucci, T., Casprini, E., Rabino, S. and Zanni, L. (2017), "Place branding-exploring knowledge and positioning choices across national boundaries: the case of an Italian superbrand wine", *British Food Journal*, Vol. 119 No. 8, pp. 1915-1932.

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