PAPER

CONSUMERS' WILLINGNESS TO CONSUME SUSTAINABLE AND LOCAL WINE IN ITALY

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ABSTRACT

Wine production is a relevant sector of the Italian economy and recently consumer demand has drastically changed due to their orientation towards new attributes of quality wines. Sustainability aspects are credence attributes that have an effect on consumers' perceived quality. Moreover, local production of wine is seen as a sign of quality. However, much is still to be studied about drivers that can push consumers towards new quality attributes of wine such as sustainability and local production. Profiling consumers could be a first step to better understand consumers' decisions on local and sustainable wine. Thus, the paper has the purpose of understanding the Italian consumers' willingness to consume sustainable and local wine. Data has been collected from a sample of Italian consumers (N=1,099) using a web-based survey. A binary logistic regression model, selected on the basis of the model AIC was used. The findings showed the large majority of the interviewed are willing to consume local and sustainable wine.

Keywords: Italian consumer behavior, local wine, logistic regression, sustainable wine, willingness to consume

1. INTRODUCTION

Consumer demand toward food products has drastically changed in recent years in most developed countries. Consumers take more interest in aspects like quality, origin and organic production and apparently less interest in 'strictly' environmental concerns that are more "altruistic" (with benefits for the society rather than the individual) (DEFRANCESCO *et al*., 2017; LÄHTEENMÄKI, 2013; PERITO *et al*., 2019). In particular, consumers seem more interested in environmental aspects associated with organic production, that have more direct benefits on health than other environmental issues (for example, the use in the production process of less water, fuel, workers' rights, etc.,) (DEFRANCESCO *et al*., 2017; LÄHTEENMÄKI, 2013).

Though in recent decades sustainable food consumption has been extensively studied (VERAIN *et al*., 2012), it is no easy matter to assess the consumer preferences for environmental concerns, combined with other aspects (e.g., brand, origin, price, frequency of consumption, etc.). VAN DAM and VAN TRIJP (2011) pointed out sustainability as an abstract verbal construct with no objective meaning. According to SZOLNOKI (2013), it is still very difficult to define the term sustainability because not only each country, but also each entrepreneur and every individual has a different understanding of sustainability, especially in the wine sector. However, even if it is not feasible to have a unanimously accepted definition of sustainability, a general consensus is focused on a consumption pattern that covers a wide variety of aspects (e.g. environment, health and safety of the food products, rural and local development, …) (VERAIN *et al*., 2012).

Taking in to consideration the wine sector, consumer perception of sustainable wines seems generally associated to the terms such as organic and local (ZUCCA *et al*., 2009; CBI, 2016). The sustainable wine is traditionally considered as superior quality wine, due to the production without pesticides and fertilizers (considered harmful to health) in the vineyard (BERGHOEF and DODDS, 2013) and consumers are not willing to trade off this specific quality of a wine for only environmental/social features (LOCKSHIN and CORSI, 2012). Moreover, consumers pay attention to different issues, such as price, origin, and production process (GALLENTI *et al*., 2019). They seem interested in environmentally friendly matters, but only with organic labels (SOGARI *et al*., 2013; GRANKVIST and BIEL, 2001; MAGNUSSON *et al*., 2003; DEFRANCESCO *et al*., 2017) and geographical indication labels (BONCINELLI *et al*., 2019; SÁENZ-NAVAJAS *et al*., 2013).

As a matter of fact, sustainability aspects are credence attributes because consumers cannot determine by themselves if a wine is produced following sustainable practices (FERNQVIST and EKELUND, 2014; GINON *et al*., 2014; SCHAUFELE and HAMM, 2017) and the expectations that credence attributes have an effect on consumers' perceived quality (FERNQVIST and EKELUND, 2014; SCHAUFELE and HAMM, 2017). Wine is one of the most differentiated products on the market (SCHAUFELE and HAMM, 2017) and the market relies strongly on how consumers perceive wine quality (LOUREIRO, 2003). Sustainability in the wine sector could play an important role in the wine business and it could be a way to both differentiate wines, to deal with food safety constraints and to guarantee the future development of the sector (SELLERS-RUBIO and NICOLAU-GONZALBEZ, 2016; NAIT MOHAND *et al*., 2017). Moreover, eco-labels may offer new attributes for consumers' choices (DELMAS and LESSEM, 2017; KLOHR *et al*., 2013; SCHAUFELE and HAMM, 2017).

As empirical researches pointed out, consumers see vintages, wine producers and the region of origin as signs of quality (DE FRANCESCO *et al*., 2012; GALLENTI *et al*., 2019; JAEGER *et al*., 2013; YANG and PALADINO, 2015; SCHAUFELE and HAMM, 2017). In

particular, origin plays an important role in the European wine sector (LOUREIRO, 2003; VEALE and QUESTER, 2008). According to PERROUTY *et al*. (2006), geographical indication label gives added value to the product and affects both perception of wine quality and its process of purchase (PUCCI *et al*., 2016).
Italy is the first wine producer (European leader of wines certified with geographical indication or organic label[1]) and the second largest consumer country worldwide after France (NOMISMA, 2017). Nevertheless, the Italian wine market has been affected by a deep transformation due to new competitors on the world market (Argentina, Australia, Chile, New Zealand, the United States and South Africa), a constant decrease in the quantities consumed, a lower willingness to pay due to the general economic crisis and a demand for new quality attributes (mainly sustainable and local products) by wine consumers (CRESCIMANNO and GALATI, 2014).
In this framework, despite researches on wine appears to be copious in current literature (see e.g., DAL VECCHIO *et al*., 2018; D'AMICO *et al*., 2016; DI VITA *et al*., 2014; FABBRIZZI *et al*., 2017; MARINELLI *et al*., 2014; MARONE *et al*., 2017; SELLERS-RUBIO and NICOLAU-GONZALBEZ, 2016), to our knowledge, much is still to be studied about on drivers that can push consumers towards both local and sustainable attributes.
Specifically, this paper tries to fill a gap in the literature, with the purpose of understanding the consumers' willingness to consume sustainable and local wine. Specifically, we sought to answer three research questions: What interest do Italian consumers have in sustainable wines? What interest do Italian consumers have in local wines? Which variables are important predictors of consumers' willingness to buy these wines?
To this purpose, the paper is articulated in three sections: sampling procedure and methodological approach, results, discussion and final remarks.

2. MATERIALS AND METHODS

2.1. The questionnaire

In order to explore the drivers of the consumers' inclination to consume sustainable and local wine, a structured survey was developed. Consumers were recruited through invitations to participate in the online survey (performed by Google drive) via social networks (Twitter, Facebook and WhatsApp), University students' networks and email (see e.g. SOGARI *et al*., 2015). Snowball sampling recruitment was also adopted, using interpersonal relations and connections among University students to reach a large number of participants. Data were collected using an online survey between January and July 2015.
Following general studies on food science (e.g. VERBEKE, 2015), in the questionnaire the meaning of sustainable and organic wine used in our survey was explained to respondents.
The online questionnaire[2] consisted of two separate sections.
The first section collected basic socio-demographic information: Gender, Age, Area and Region of residence and education level of respondents.
The second section gathered information on consumption frequencies of wine, type of wine preferred and consumption frequencies of wine out of home. To understand the feelings regarding sustainable wine, according to the literature (D'AMICO *et al*., 2016; SOGARI *et al*., 2016; LOCKSHIN and CORSI, 2012; FORBES *et al*., 2009) the respondents

were asked if an organic label is a guarantee of sustainability of higher quality product, naturalness and food safety with respects the environment. Moreover, it has been asked the willingness to consume sustainable and local wine and the attention paid to wine cellar brand. In addition, to understand the respondent's perceptions concerning local origin of wine, we asked if they thought local origin of wine is a guarantee of territoriality and origin of raw materials (PERITO *et al*., 2019). The last questions collected information on consumer interest towards producer name and nutrition label. It is important to underline that following POMARICI and VECCHIO (2014), most questions of the survey were based on the formula yes/no.

2.2. The sample and data analysis

We surveyed a sample of 1,099 wine consumers in Italy. The questionnaire was validated in a pilot study on a sample of 100 consumers. This pre-test was developed exclusively to discover any possible misinterpretation, error or duplication in the questionnaire.
To explore the drivers of people's inclination to consume sustainable and local wine, and following the current literature (e.g. POMARICI and VECCHIO, 2014; SELLERS, 2016; VERBEKE, 2015) a binary logistic regression model was used. The binary dependent variable yi takes the values "Yes" and "No" and the probability of success $P(Y= Yes|x)$ represents the probability that an individual is willing to consume sustainable and local wine conditioned by variables of the questionnaire. In a first analysis, all potential explanatory variables were included in the logistic model. Many estimated coefficients are associated to non-significant p-values and the relative variables are excluded from the final model. The final model parameterization is selected on the basis of the model AIC, using a mixed "backward" and "forward" stepwise selection strategy.
In formula, the final model is:

$$P(Y=Yes|x) = \beta_0 + \beta_1 Wine + \beta_2 Wine\_out + \beta_3 Lab\_Org + \beta_4 Wine\_company\_name + \beta_5 Local + \beta_6 Market\_name + \beta_7 Nutr \quad (1)$$

Among the parameters of the model, we looked at the β values and at the significance of each factor. The factors were then interpreted according to the odds' ratio, which shows the probability increase/decrease of the wiliness to consume sustainable and local wine when the considered variable increases or decreases.
All computations are carried out using R version 3.5.1 (R DEVELOPMENT CORE TEAM, 2018).

3. RESULTS AND DISCUSSION

3.1. Descriptive results

The sample consists of 564 females and 535 males and 74.4% of people belong to age range 18-45 while, 46.2% of respondents are young (18-35 years) (Table 1). It is important to highlight that the sample analysed in this study is not representative of the whole national population.
About 85% of the respondents come from urban area and 50.41% has a high level of education (i.e. university college or postgraduate degrees).

Table 1. Socio-demographic information of sample (N = 1,099).

Variable		Label	%
Gender			
	Male	gen_m	48.69
	Female	gen_f	51.31
Total			100.00
Age ranges			
		18-25 years	12.83
		26-35 years	33.39
		36-45 years	29.21
		46-55 years	16.20
		56-65 years	6.92
		65 +	1.46
Total			100.00
Area of residence			
	Urban area	urb	84.99
	Rural area	rural	15.01
Total			100.00
Education level			
	Primary or secondary school	low	49.59
	University or postgraduate degree	high	50.41
Total			100.00

*Source: our elaboration on data survey.

The findings show that 88.44% of the sample is inclined to consume organic and local wine and 43.13% of respondents consume wine 2 o 3 times a week. 56.96% prefer red wine and 55.14% of our sample think that the organic label (Lab_Org) is a guarantee of sustainability and a higher quality product. .
Moreover, 51.41% of respondents do not think that the local origin of wine (Local) is a guarantee of territoriality and origin of raw materials. Most respondents do not pay attention to neither wine cellar brand or to producer name. About 51.0% pay attention to nutrition labels when buying wine. Descriptive statistics of the sample are presented in Table 2.

Table 2. Descriptive statistics of sample (N = 1,099).

Variable		Label	%
Readiness to consume sustainable and local wine			
	No	Y	11.56
	Yes		88.44
Total			100.00
Frequency of consumption of wine in terms of times a week or a month		Wine	
	never		0.00

	sometimes a year	1.82
	once a month	4.19
	2 o 3 times a month	11.46
	once a week	35.67
	2 o 3 times a week	43.13
	every day	3.73
Total		100.00
Kind of wine		
	Red	56.96
	White	38.31
	Rosè	4.73
Total		100.00
Frequency of consumption of wine in restaurants, wine bar, etc, in terms of times a week or a month	Wine_out	
	never	4.73
	sometimes a year	18.38
	once a month	17.93
	2 o 3 times a month	19.65
	once a week	18.56
	2 o 3 times a week;	18.38
	every day	2.37
Total		100.00
Do you think that sustainable/organic label is a guarantee of high quality product, naturalness of food, food safety respecting at the same time the environment?	Lab_Org	
	No	44.86
	Yes	55.14
Total		100.00
When you buy wine, do you pay attention to wine cellar brand?	Wine_company_ name	
	No	53.96
	Yes	46.04
Total		100.00
Do you think that local origin of wine is a guarantee of the origin of raw materials supporting at the same time local economies and the culture of landscape?	Local	
	No	51.41
	Yes	48.59
Total		100.00
When you buy wine, do you pay attention to producer name?	Maker name	
	No	67.88
	Yes	32.12
Total		100.00
When you buy wine, do you pay attention to nutrition label?	Nutr	
	No	49.04
	Yes	50.96
Total		100.00

Source: Own elaboration on survey data.

3.2. Model results

Table 3 shows the results of the binary logistic regression model with the estimated coefficients (β), their standard errors (S.E.), Wald X^2-statistics, significance levels, odds ratios (Exp(β)) and goodness-of-fit statistics. The goodness of fit as measured by McFadden's pseudo-R^2 is equal to 0.32. Relatively low value of R^2 is expected for models based on samples with large number of observations (GUJARATI, 2004), as it is happened in our case (1,099 observations). Multi-collinearity was not a major issue in the model as it was tested through Variance Inflation Factors (VIF) (the highest value is equal to 1.19).

Table 3. Parameters of the logistic regression (N = 1,099).

Variable	*β*	S.E.	Wald	Sig.	Exp (*β*)
Intercept	-3.097	0.585	27.977	$1.23\ e^{-07}$	0.045
Wine	0.542	0.109	24.596	$7.07\ e^{-07}$	1.719
Wine_out	0.306	0.085	12.825	0.000342	1.358
Lab_Org	2.709	0.295	84.221	$2\ e^{-16}$	15.018
Wine_company_name	1.883	0.264	50.554	$1.16\ e^{-12}$	6.576
Local	0.971	0.248	15.295	$9.19\ e^{-05}$	2.641
Maker name	0.430	0.271	2.509	0.113	2.509
Nutr	-0.381	0.231	2.705	0.099	2.705
AIC: 553.24					
Pseudo-R^2 = 0.32					
-2Log likelihood statistic = 533.24					

Source: Our elaboration on survey data.

Our findings show that consumers who drink wine frequently (*Wine*) and consume it even outside home (*Wine_out*) are more likely to consume sustainable and local wine, 1.71 times and 1.35 times (respectively), than other people. Therefore, the "wine consume frequency" exerted a positive effect on willingness to consume sustainable and local wine.
Moreover, the *Lab_Org* variable is the most influential factor in the model (Wald X^2 = 84.2) followed by *Wine_company_name* variable with Wald X^2=50.5. This last variable (*Wine_company_name*) is referred to the attention that respondent could have to winery's brand when he/she buys wine. Participants who indicated organic label (*Lab_Org*) as guarantee of sustainable product and other aspects (high quality product, naturalness of food, food safety and environmental feeling) are 15.0 times more likely to consume sustainable and local wine than other consumers. In our sample people that pay attention to wine company name (*Wine_company_name*) are 6.57 times more likely to be ready to consume sustainable and local wine than other consumers. It is generally well known by the literature that producer and brand name should interest more consumers when they buy a bottle of wine (POMARICI *et al*., 2017). In addition, participants who indicated local product (Local) as guarantee of quality are 2.6 times more likely to be ready to consume sustainable wine than other consumers. The results are similar to VEALE and QUESTER's (2008) study where origin of product influences consumers' wine quality assessment.

3.3. Discussion

Our results showed a strong interest in respondents towards sustainable and local wine and highlight some important marketing implications for the Italian wine companies. In fact, the findings suggest that producing and marketing wine with sustainability and local characteristics are promising strategies for quality differentiation (SCHAUFELE and HAMM, 2017) and that could allow catching new niches of Italian wine market.
Another interesting result that emerges from current study is that organic label and local origin variables go towards in the same direction in our model, confirming that, in according to LOUREIRO (2003), if the perceived quality of region (local) is negative, wine organic label is not a useful marketing strategy and the people are unwillingness to consume sustainable and local wine. In accordance with SOGARI *et al*. (2015) our results suggest that consumers who perceive sustainable certification as a guarantee of high quality standards have a more positive attitude towards such wine. In fact, consumers may interpret an organic label as a mark of quality (BONCINELLI *et al*., 2019) because an organic certification is indicative of positive health effects (MANN *et al*., 2012), environmental benefits (MUELLER LOOSE and REMAUD, 2013), and great taste (BONCINELLI *et al*., 2019; KIM and BONN, 2015).
Sustainable labelling certification could be an effective strategy to provide consumers with accurate, understandable and trustworthy information to encourage them to buy sustainable wines (GINON *et al*., 2014). Moreover, it is interesting underline that the consumers of our sample inferred that a product is environmentally sustainable in the presence of logos (GOLAN *et al*., 2001). In fact, organic labels are the most influential factor in our model, followed by winery's brand and local label. Also local labels play an important role in differentiating wines because, when the consumers do not know the winery's brand, they base their choice on labelling of origin as a quality standard (LOUREIRO, 2003). In this situation, the consumer relies on the image of the region (negative or positive) that guarantees and promotes that particular label. (LOUREIRO, 2003) Our results emphasized the need to create eco-labels that communicate clearly both the environmental attributes of wine (DELMAS and LESSEM, 2017) and the benefits associated with them.
Even if our sample is not representative of the whole Italian population, the findings could be useful points on which to reflect if we consider that recently the wine market in Italy has been affected by a deep transformation due to both growing international competition and changing of the internal demand. This last aspect is due to new orientation of consumers towards attributes of quality wines (CRESCIMANNO and GALATI, 2014). For these reasons, our findings could be useful for Italian wine producers that want to enter in the sustainable wine market niche. In particular, Italian wine producers could address their marketing strategies towards an adult who drinks wine frequently and preferably in restaurants, pubs and bars, he/she is environmentally friendly and more interested in the local origin of his/her food choices than other consumers.
In this context, wine producers should focus on the communication of their environmental commitment through appropriate marketing tools (POMARICI *et al*., 2016) that help consumers to identify sustainable products (POMARICI and VECCHIO, 2014). In particular, marketers should focus on wine label information (i.e. organic, local and brand) available when consumers inspect the bottle in order to drive the consumers' inclination to consume sustainable and local wine.

4. CONCLUSIONS

This paper has to be considered as an attempt to contribute to the current literature on the willingness to consume sustainable and local wine by Italian consumers and on the main factors that might affect the readiness of consumers.
Profiling consumers who are willing to consume sustainable and local wine could be a first step towards a better understanding of consumers' decisions on sustainable and local food. Our findings indicated that the large majority of the interviewed Italian consumers are willing to consume sustainable and local wine.
The sustainable and local wine consumer of our survey could be described as an adult, who regularly consumes wine, even outside home, more label-conscious and environmentally friendly.
Our findings are even more important if we consider that the Italian wine market (as world market one) has been affected by a deep transformation due to also new orientation of consumers towards attributes of quality wines. In particular, our results emphasize the need to have sustainable labelling that communicates clearly both the environmental attributes of wine and the benefits associated with them. Moreover, our results might be useful to drive marketing strategies because wineries could benefit by promoting these wines as organic and local. Our findings suggest that wine label information (organic, local and brand) might be a useful tool to promote sustainable and local wine and at the same time help to give a positive perception of the whole Italian wine sector.
However, the present study shows some limitations that could be considered and addressed in future research. First of all, the sample is not representative of the Italian population and it suffers from a smaller degree of self-selection. In particular, the questionnaire, to reach the broadest population, was not directed towards specific targets (e.g., university students) and the survey itself is not based on explicit selection mechanism. An additional limitation is that we opted for verbal descriptors to identify the wine attributes, which might mimic a real market in a less realistic way. To avoid this limitation, further studies should simulate real shopping environments where the choice sets are designed with visual labelling elements, such as images or symbols to increase the accuracy of the results.

NOTES

[1]Italy is the largest producer of wine with Protected Designation of Origin (PDO) certification in Europe (405) and organic wine in the world, with 11.9% of organic wine compared to the total of national production of wine (NOMISMA, 2017).

[2]An extract of the questionnaire is available as electronic supplementary material.

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