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Environmental friendly wines: a consumer segmentation study

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Abstract

Our study examines wine consumers stated interest toward eco-friendly wines. A convenience sample of 301 Italian wine drinkers (i.e. over 18 years old and consumers of wine at least once a month) were interviewed by computer aided telephonic interviews (CATI), by a professional agency. Questions investigated respondents shopping patterns, attitude toward environment and general socio-demographic characteristics. Cluster analysis findings reveal that the majority of consumers are poorly interested in environmental-friendly wines (68%). However, the other segment - which includes higher spenders and wine experts - seems a promising target for wineries oriented towards sustainability.

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1. Introduction

The consumer's perspective of sustainability is a topic that grew in importance through years both in food marketing in general and in the wine industry in particular (e.g. Sirieix et al., 2013). Consumers around the world are becoming increasingly concerned with ethical, environmental and health issues associated with conventional production practices (e.g. Lyons et al., 2004, Brugarolas Molla-Bauza et al., 2005, Vermeir and Verbeke, 2006).

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Brugarolas Molla-Bauza and colleagues (2005) noted that these factors are especially important for consumers when they are considering the purchase of food products. In particular, recent food safety scares in Europe have raised consumer awareness of issues arising from intensive production methods, especially the use of synthetic fertilisers and pesticides. The environmental concern is leading consumers to better understand and demand for products that carefully consider the environment, such as organic food (Fransson and Gärling, 1999; Saunders et al., 2004; D'Souza et al., 2006). However, most consumers claim to consider sustainability issues generally important and desirable, but this does not necessarily translate into manifest sustainable consumer (Vermeir and Verbeke, 2006). Indeed, previous research highlights the importance of consumer motivation and consumer knowledge for use of sustainability information on food products, and additionally underlines the importance of trade-offs between sustainability and other product information when making food choices (Grunert et al., 2014). Several recent studies reveal consumer general interest toward environmentally friendly or socially responsible wines (Berghoef and Dodds, 2011; Mueller and Remaud, 2013; Ginon *et al.*, 2014; Pomarici and Vecchio, 2014). Despite a growing amount of research producing insights into consumers' attitude and behaviour toward sustainable wine, the reason behind consumers' adoption of sustainable practices, attitudes, and intention to purchase toward environmental products remains largely unexplored, particularly in the context of wineries. Like other food industries, the wine business has been increasingly impelled by market and regulatory drivers to assess, reduce and communicate environmental and social performances. At the same time there has been growing concern regarding environmental and social problems related to the wine industry, particularly in certain countries with a shorter tradition in winemaking (Australia, New Zealand, U.S.A. and South Africa). In addition, wine companies have realized that sustainability constitutes a means of differentiation, which is crucial for increasing productivity and competitiveness. Consequently, sustainability has developed into a priority in the wine supply chain (Forbes et al., 2009; Gabzdylova et al., 2009). Current consumer awareness of sustainable winegrowing and winemaking is widely acknowledged to be rather limited (Zucca et al., 2009; Forbes et al., 2009). Furthermore, there remain major differences in forecasts of the number of wine drinkers willing to purchase sustainable wines in the near future. Most believe that consumers will not be willing to trade off the quality of a wine for environmental/social features (Lockshin and Corsi, 2012). Hence such wines should be sold at the same price as regular wines. By contrast, it is widely held that sustainability is most likely to become a major competitive advantage in the international arena (Pullman et al., 2010; Bison et al., 2002). The current work contributes to this debate, adding insights on consumers' interest towards eco-friendly wines in order to determine whether the adoption of environmentally sustainable practices will provide a point of difference in the wine marketplace.

2. Materials and Methods

Given some evidence that telephone methods are more successful at eliciting frank responses about sensitive behaviour than face-to-face interviews (Bowling, 2005), a Computer Assisted Telephone Interview (CATI) protocol was used, asking individuals to answer to 29 multiple choice questions. The sample of N=301 regular wine consumers was provided in October 2014 by a professional data gathering company. Overall, the sample can be assumed to be representative for Italian wine consumers that occasionally buy wine. General wine behaviour was assessed through a number of questions in the survey. Other information regarding the importance given to the production zone of the wine, the grape variety, the brand, the frequency of wine consumption and the average price paid for a bottle of wine were also recorded. Before concluding the survey with socio-demographic data, respondents were asked about their interest in eco-friendly wines and the importance they give to environmental and water impact. All items were drawn from previous related studies on wine consumption behaviour and label importance (Lockshin and Corsi, 2012; Sirieix et al., 2013; Vecchio, 2013).

Respondents were screened according to their wine purchasing and drinking habits. To qualify, participants had to drink wine at least once a month (interview did not proceed if respondents stated to drink less often than once per month, and data was not recorded in the final sample).

To identify and highlight any eventual differences between the characteristics observed among individuals a post hoc cluster analysis based on the pattern of individual utilities was applied, using Ward's hierarchical cluster analysis with the Euclidean distance. Cluster analysis is also widely used in wine research in order to provide insights into differences between consumer groups and to link consumers' characteristics with their preferences for

specific wine attributes (Higgins and Llanos, 2015; Marinelli et al., 2014; Sáenz-Navajas et al., 2014).

3. Results

Our sample is composed mainly by female (53%) aged over 60 years old (33%), followed by individuals between 31 and 45 (26%) and individuals between 46-60 (25%). 53% of the sample is married, living mainly in a two components family. With reference to the area of residence our sample is composed by 50% of individuals from southern Italy and islands and 50% from the north and centre.

Examining wine purchasing and drinking habits we can notice that around 47% of respondents are responsible of household wine shopping and 78% does not consider herself/himself as a wine expert. 49% of sample state to drink wine more than six times a month, 21% two-three times a month, 14.5 % four-five times a month while 15% once a month. It is interesting highlights that 56% of the sample has never bought organic wine.

With reference to the price paid on average for a wine bottle for home consumption, around 36% of respondents stated to pay a price between 3 and 5 euro, 25% between 5 and 10 euro, 17% under 3 euro and about 8% over 10 euro. While with reference to the bottle of wine for out of home consumption 50% of the sample stated to pay an average price between 10 and 20 €, followed by a 38% of respondents that state an average price among 20 and 30 € only 6% stated to pay more than 30 €. With reference to the sources of information about wine (Fig. one) our results show that consumers prefer information founded on line (30%) or advices provided by friends or family (25%). Only 18% of the sample state to search information on specialized guides; while 8% state to use wine journals.

Table 1. Sample description

Variable	Category	Percentage of Sample (%)
Age	18-30	15.3
	31-45	26.2
	46-60	25.6
	>60	32.9
Marital status	Married	53.2
	Not Married	46.8
Gender	Male	53.2
	Female	46.8
Area of residence	South and Islands	50.0
	North and Centre	50.0
Wine consumption frequency	Once a month	15.0
	2-3 times a month	21.3
	4-5 times a month	14.5
	>6 times a month	49.2

(Source: Authors' elaboration)

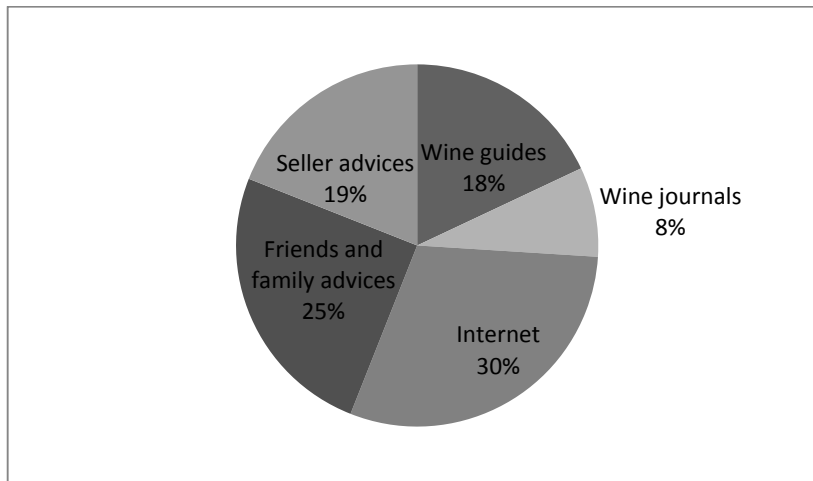


Figure 1. Main source of information for wine purchasing

In order to analyse the importance assigned to the various attributes that characterize the quality of wine at the time of choice, we asked respondents to assign a score (scale ranging from 1 = not at all, to 4 = very much) to a set of attributes (Figure 2). As can be seen from the graph one production area is the attribute to which respondents assigned greater importance in wine choice, indicated in 55% of cases very important, followed by the grape variety (51% very important) and price (57% of cases fairly important and 29% very important). Label aesthetic and manufacturer's name are the attributes considered less important. Taking into account specific aspects related to sustainability and environmental impact of wine production, 46% of respondents attaches great importance to the environmental impact while less attention is given to water consumption in wine production, indicated very important only in 26% of cases.

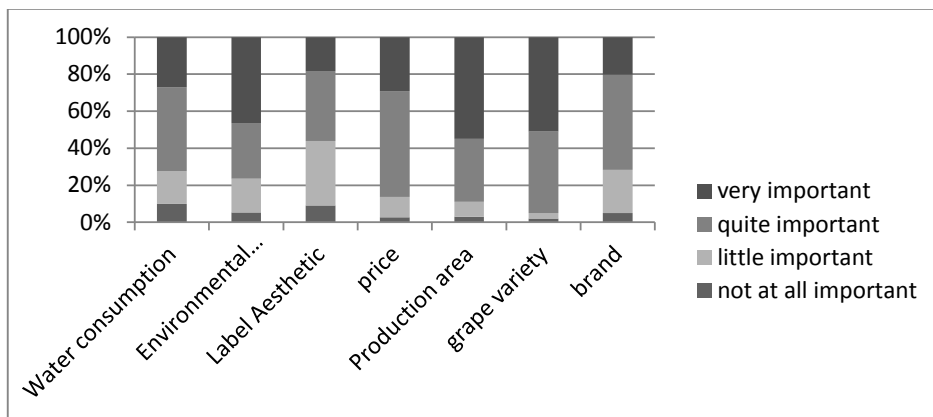


Figure 2. Importance of selected wine attributes

Before focusing attention on the eco-friendly issue we asked individuals to rate their reading frequency of wine back labels when shopping, using a scale ranging from never to always. Outcomes reveal that consumers tend to strongly use this label when selecting a wine on a store shelf. 48 of respondents state they always pay attention to the wine back label, followed by 22% that state they seldom pay attention and 19% often. Only 11% of respondents never pay attention to the back label while selecting a bottle of wine.

Subsequently was asked respondents to express their opinion regarding the interest of society towards food with a low environmental impact and on issues relating to the environmental impact of wine production in particular. With reference to the first question, 30% of respondents believe that society is interested enough to consume food

products with low environmental impact. However, 25% believe that society is not at all interested in this topic. As for the impact of wine production results show that 34% of respondents consider society slightly interested and 21% not at all interested.

In order to evaluate the sensitivity and personal involvement to these issues, it was also asked respondents to indicate their opinion with respect to the need to produce wine preserving natural resources and reducing water consumption. In 46% of cases, consumers find it very important to produce wine preserving natural resources, however, this percentage is reduced to 28% when referring specifically to save water.

Next we explicitly asked interviewees to express their interest in consuming wine with limited environmental impact and with limited water consumption. Figure 3 shows that consumers are more interested in wines with a general limited environmental impact compared to wines with low water impact.

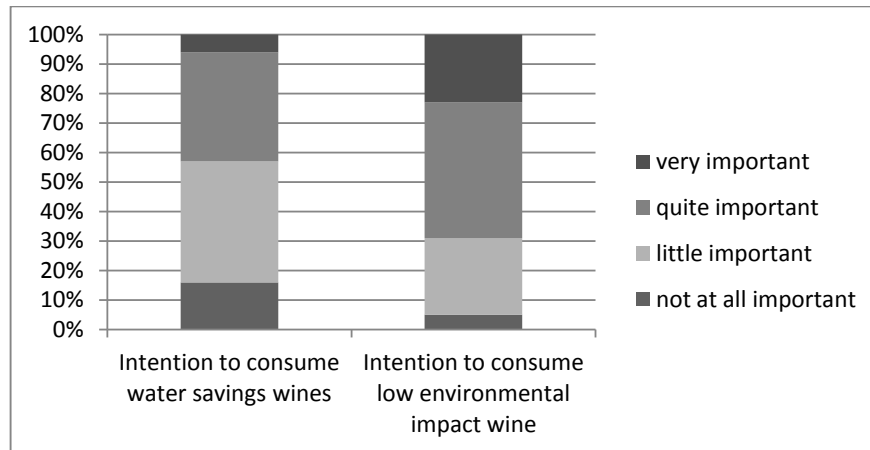


Figure 3. Intention to consume environmental friendly wines

Following a post hoc cluster analysis based on consumers' interest in consuming wine with limited environmental impact and with limited water consumption was applied identifying two different segments of consumers (Table 2). Analysis of variance proved that all segments differed significantly from each other with respect to the variables related to wine sustainability involvement.

The first segment consisting of 68% of the sample and includes consumers which have showed less sensitivity to the environmental impacts of wine production and poor intention to consume wine saving water. On the contrary the second segment, 32% of the sample, includes consumers that are more involved towards the environmental impact of wine production and that show higher interest in consuming wine with low water consumption. Then we made a comparison between the averages of the observed features to research the differences between the observed characteristics of the two groups.

As we can see in Tab. 2, significant differences between the two groups emerged. In particular, individuals in the first group are low involved in wine sustainability and are characterized by a lesser frequency of consumption than second group. In the choices of a bottle of wine this consumer pay attention mainly to the price and the area of production and believe that the preservation of natural resources and water savings are issues less important, comparing with the second cluster. Moreover this segment includes individuals that not consider themselves as wine expert and that reading wine back-label rarely.

The second segment, instead, includes individuals who attach greater importance to the environmental sustainability of wine production and show a greater interest in the consumption of wine with a lower environmental impact and capable to save water. Unlike the previous segment this cluster is characterized by the higher concentration of individuals who consume more frequently wine and which consider themselves as more experienced and spend, on average, more for wines consumed at home. These consumers also pay more attention to the information in the back-label and their wine choices are more affected by grape variety. Considering socio-demographic variables, the two segments are differentiated primarily by the level of education and income. The

second segment, in fact, includes a higher percentage of individuals who have a high level of education and a high income.

Table 2. Cluster comparison

Variable	Cluster one		t-test (p-value)
	Low involved in wine sustainability	High involved in wine sustainability	
Consumption Frequency	3.68	4.07	-2.588**
Importance of Label Aesthetic	2.63	2.69	-0.424
Importance of Price	3.17	3.00	-1.605
Importance of the Production Zone	3.55	3.25	1.843*
Importance of the Grape	3.46	3.80	2.053**
Importance of the Brand	2.77	2.91	-1.290
Wine expert	1.87	2.46	2.098**
Importance of natural resources preservation in wine production	2.86	3.48	5.985***
Importance of water saving in wine production	2.47	2.96	4.423**
Interest in consuming wine with low environmental impact	2.34	3.11	1.435**
Interest in consuming wine with low water consumption	2.06	2.89	1.038*
Reading Back Label	1.78	2.20	2.703*
Average Price for a bottle of wine for home consumption	2.09	3.40	4.423*

Note: *** = 1% significance level; **=5% significance level; *=10% significance level.

(Source: Authors' elaboration)

4. Discussion and conclusions

According to the previous studies water and energy use and the generation of greenhouse gas emissions, the use and management of chemicals in the vineyard and winery, are key issues of environmental concern currently facing the global wine industry (Christ and Burritt, 2013). At the same time it is widely recognized that environmental concern is leading consumers to demand for products which take environment issues into account, such as organic food, carbon neutral products or water-friendly products (Padel and Foster, 2005; Vanclay et al., 2011; Page et al., 2012). Our findings revealed that in general consumers attached more importance to the issues of natural resources than to the water savings in wine production. This result may be related to the fact that consumers are less familiar with the issue of water consumption in food production, and that the concept of water footprint of food is fairly recent, relative to other more known issues, and more debated by the media, such as carbon footprint.

Another interesting result that emerges from current study is that even if most consumers claim to consider sustainability issues generally important and desirable, this does not necessarily translate into manifest sustainable consumption; in sound with literature (Vermeir and Verbeke, 2006). In our work, in fact the intention expressed by respondents to consume wine with a reduced water footprint is not very high.

With reference to the segmentation results, we should notice that the segment concerned with consuming wine with lower water footprint is the smaller. At the same time, the comparison between the two clusters shows that just this second segment is characterized by an increased presence of individuals with a strong involvement with environmental issues, individuals more with higher wine experience and that on average purchase wines belonging

to higher price ranges.

Other research has showed that a small segment of the population is willing to buy sustainable or eco-friendly wines and this segment has been small and has not grown much (Remaud et al., 2008; Mueller and Remaud, 2010). At the same time our data confirming results from Vermeir and Verbeke, 2006 revealing that consumers with higher environmental involvement are more likely to purchase sustainable products and suggested that the level of involvement could be increased through the provision of information.

In this context, wine companies can strengthen the communication of their environmental commitment to consumers through appropriate programs and marketing tools, able to sensitize consumers with low involvement in issues of sustainability of wine; which maybe tend to attach greater importance to extrinsic attributes. Literature suggests that consumers are often unable to make informed purchase decisions because the benefits associated with sustainable products are poorly communicated to them and because they have limited knowledge of sustainable agricultural production practices (Vermeir and Verbeke, 2006; Vecchio, 2013). On the other hand Warner (2007) noted that it is often difficult for producers to communicate complicated farming practices to consumers. In the previously described background, a core role could be played by labelling, as a direct aid instrument in purchasing choices. In particular, wineries could decide to invest in water footprint label programs to effectively communicate their efforts to consumers and obtain a fair premium price.

Limitations of current research should foster new studies. In particular, future research should try to bypass the intrinsic problems of the attitude-behaviour gap adopting non hypothetical and incentive compatible methods as real-choice experiments (e.g. Alfnes et al., 2006) or experimental auctions (e.g. Vecchio, 2013; Pomarici et al., 2014) to elicit true consumer values for environmental-friendly information attached to wines.

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