

Alma Mater Studiorum Università di Bologna
Archivio istituzionale della ricerca

Italian market of organic wine: A survey on production system characteristics and marketing strategies

This is the final peer-reviewed author's accepted manuscript (postprint) of the following publication:

Published Version:

Italian market of organic wine: A survey on production system characteristics and marketing strategies / Castellini, Alessandra; Mauracher, Christine; Procidano, Isabella; Sacchi, Giovanna. - In: WINE ECONOMICS AND POLICY. - ISSN 2212-9774. - STAMPA. - 3:2(2014), pp. 71-80. [10.1016/j.wep.2014.12.001]

Availability:

This version is available at: <https://hdl.handle.net/11585/529154> since: 2017-06-14

Published:

DOI: <http://doi.org/10.1016/j.wep.2014.12.001>

Terms of use:

Some rights reserved. The terms and conditions for the reuse of this version of the manuscript are specified in the publishing policy. For all terms of use and more information see the publisher's website.

This item was downloaded from IRIS Università di Bologna (<https://cris.unibo.it/>).
When citing, please refer to the published version.

(Article begins on next page)

Italian market of organic wine: a survey on production system characteristics and marketing strategies

Alessandra Castellini^{a}, Christine Mauracher^b Isabella Procidano^b and Giovanna Sacchi^b*

^a Dept. of Agricultural Sciences, Alma Mater Studiorum University of Bologna
viale G. Fanin, 50 – 40127 Bologna, Italy

alessandra.castellini@unibo.it

^{*}(corresponding author; tel. +39/051/2096129 – fax +39/051/2096105)

^b Dept. of Management, Ca' Foscari University of Venice
Cannaregio 873 - 30121 Venice, Italy

christine.mauracher@unive.it

isabella.procidano@unive.it

giovanna.sacchi@unive.it

Italian market of organic wine: a survey on production system characteristics and marketing strategies

1. Introduction

Wine is commonly recognised as a particular type of processed agrifood product, showing several different characteristics. Above all a close relationship seems to exist between wine and land of origin, the environment and the ecosystem in general (including not only natural aspects but also human skills, tradition, etc.) based on a complex web of interrelation between all the involved elements/operators. Since the 70s the interest on “clean wine-growing” has been increasing among the operators; this fact has also caused the development and the improving of organic processes for wine production (Iordachescu et al., 2009). Consumers recognise the close connection between this product and the environment (Thach et al., 2008) and they like to know that the wineries adopt green and clean practices to sustain the environment and support natural habitats and wildlife.

Since 2000 organic regulations of several non-EU countries (Australia, Canada, New Zealand, USA, etc) started to include specific standards for organic wine making (IFOAM, 2012). In Europe for long time the legislation framework on the organic wine regulations has been incomplete and inefficient: EC Reg. 2092/91¹ and afterwards EC Reg. 834/2007² were extremely generic and through these Regulations it has been only possible to certify as “organic” the raw material (grapes from organically growing technique) and not the whole wine-making process. In 2012 the European Commission approved Regulation (EU) No 203 which allows the use of the term “organic wine” for those products complying with specific requirements and standards and with Organic Certification (released by an external figure).. Before Reg. 203/2012 entering into force, it was only possible to use the wording “wine made from organic grapes”. Currently, for *organic wine* it is meant a product obtained from organic raw materials that i) uses products and (if available) substances authorised in Annex VIIIa of Reg. 203/2012, obtained as well from organic raw materials and ii) is subject to processes and oenological treatments provided in Reg. 203. Even before this Regulation, in the wine sector many stakeholders had shown a growing interest for organic production. In Italy, and in many other countries, in recent decades a movement of producers has grown, who have started referring to their wines as “natural”, and to rely on official certification model and Origin Based Labels (PDO and PGI). In recent years European Union has established equivalence arrangements with eleven non-EU countries – Argentina, Australia, Canada, Costa Rica, India, Israel, Japan, Switzerland, Tunisia, USA and New Zealand³ – for the import-export of organic products. With regard to the organic wine sector, regulations of USA and New Zealand have been recognized as equivalent to the European one but only a small number of certification bodies are accepted⁴. Most third-country organic wines have, indeed, to be imported through import authorizations issued by EU member states. Considering for instance the equivalence arrangement established between EU and US⁵, organic certification from EU Reg.

¹ Council Regulation (EEC) No 2092/91 of 24 June 1991 on organic production of agricultural products and indications referring thereto on agricultural products and foodstuffs.

² Council Regulation (EC) No 834/2007 of 28 June 2007 on organic production and labelling of organic products and repealing Regulation (EEC) No 2092/91. It is interesting the point 19) “(whereas...) Organic processed products should be produced by the use of processing methods which guarantee that the organic integrity and vital qualities of the product are maintained through all stages of the production chain” but this proposal has not been further specified for the wine sector.

³ See Annex III of Reg. (EC) No 1235/2008.

⁴ See Annex IV of Reg. (EC) No 1235/2008.

⁵ That means that as long as the terms of the arrangement are met, organic operations certified to the USDA organic or EU organic standards may be labeled and sold as organic in both countries. (www.ams.usda.gov, last access 2013/11/30)

203/2012 is totally accepted from the US market without any kind of further document needed: this is very important for the organic wine export because US consumers appear really interested in organic wine purchase (Vastola and Tanyeri-Abur, 2009; www.winemonitor.it, last access in October 2014). The wine sector interest in the environmental sustainability is also stimulated by the increasing consumers “green attitude” in their purchasing behaviour; the environmentally-friendly characteristic of a product has become a significant marketing tool useful for the differentiation on the market. It must be noted that a “only” environmentally-friendly wine cannot be sold as organic: they are two different beverages.

According to FiBL-IFOAM data, in 2010, worldwide surfaces cultivated with organic vineyards exceeded 217,600 hectares, almost doubled since 2006; more of 88% located in Europe (192,671 ha; +51% since 2006). During the period 2006-2010 North and Latin America registered interesting upward trends: +25% and +23% respectively. Also in other countries, like New Zealand, the organic wine movement is increasing. The NZ organic wine producers declared that in 2020 the 20% of vineyards in their country will be organic, an increase of around 15% considering that in 2011 this surface represented the 4.5% of total vineyard area. Argentina is the country in which organic viticulture is most spread in the world (4,048 ha; 2010). In EU, Italy France and Spain, traditionally wine producers, since 2000 have registered a steadily increase of the organically wine-growing surfaces, despite the lack of a clear legal situation. Nevertheless, at a worldwide level the organically wine-growing sector still represents a small quota of the total wine context. As far as this fact is concerned it could be interesting to remember what Willer has emphasized in 2008 (Willer, 2008): “the share of the organic/in-conversion grape area, however, tends to be lower than that of organic farming general because of the production based problems, the direct payments are not high enough and the competition from Southern countries to the Northern producers. There are signs of a strongly growing market for organic wine in many countries, triggered by a generally growing interest in organic products and growing demand (particularly in Europe and North America)”. National Rural Network data (Bioreport, 2012) show that, in 2010, Italy was the second EU member in terms of organic viticulture surface after Spain, with more than 50.000 hectares and 628 certified wineries processing organic grapes. More recent data from Italian Confederations of Farmers (CIA) show that, in 2012, the Italian organically cultivated vineyards overpassed 52 thousands of hectares, more than 96% of these producing grapes for wine processing. The leading Regions are Sicily (+65.5% from 2009), Apulia (+12% from 2009) and Tuscany (+12.4% from 2009).

2. Background and aims

This paper aims to analyse the main characteristics of Italian organic wine sector before the enforcement of Regulation 203/2012, taking into account also biodynamic and similar productions. In particular the study focuses on marketing practices adopted by wineries both in promotional and in strategic terms. Based on the results obtained by the survey, the potential of European certified organic and biodynamic wine on the Italian market can be defined.

To the best of our knowledge, the literature related to the exploration of the organic wine sector is up to now scarce. Some Authors emphasize a lack of materials and of data (Stolz and Schmidt, 2008; Willer, 2008; Remaud et al. 2008) from different points of view: production, surfaces, yields, distribution channels, consumer expectations and marketing strategies. Before 2012 when an appropriate regulation was still missing, the lack of clarity along the production chain has strengthened the purchaser’s uncertainty about the product (Vastola and Tanyeri-Abur, 2009). An important outcome of the ORWINE project (see next in text) was the Recommendation for EU Rules on Organic Wine comprehending proposals and advices for the elaboration of rules for organic wine production and

labelling in EU Regulation. Currently, the large part of scientific studies focuses on wine “from organically growing grapes”, without a complete certification of the process because of the extremely recent of EC Reg. 203/2013. Furthermore in several research organic wine is often included in a wider class of environmentally-friendly products like biodynamic, “natural”, “true” and other *bio-soundings* (www.teatronaturale.it, last access 2013-05-14) or non-conventional wines (Vastola and Tanyeri-Abur, 2009).

An important work on organic wine sector is the collection of studies originated from the European project named ORWINE (www.orwine.com), which surveyed many different aspects of the sector, concerning technological, economic and sensory analysis issues.

There are two main fields of study in the economic literature on organic wine:

a) Surveys about wine system, mainly addressed to get a clear picture of the sector dimensions for small contexts (Crescimanno et al., 2009; Rossetto, 2002; Brugarolas et al., 2009) or for bigger ones, but in this case sometimes it is possible to register some lack of accuracy or precision in the data (Jonis et al., 2008 and others from 16th IFOAM Orwine Congress). Some interesting studies allow to define the state of the organic wine sector (Jonis et al., 2008 and others from 16th IFOAM Orwine Congress). According to Micheloni and Trioli (2008) at European level, the organic wine-makers present medium-scale activities: only 8% of wine farms produce more than 1,500 hl (nearly 200,000 bottles) while 42% register a production level around 300 hl/year (40,000 bottles). The biggest wine farms are located in France and in Italy, where this kind of production is a traditional heritage. As far as the marketing strategies (especially distribution and price choices) are concerned, in Veneto region small wine growers appear to prefer a wine quality strategy and sell their product through traditional retailing. On the other hand, large-scale wineries pay attention to price and product variety and prefer foreign or domestic supermarket chains or direct selling to final consumers (Rossetto, 2002). Studies related to the analysis of farm profitability (Corsi and Strøm, 2013) enhanced that organic qualitative characteristic seems to influence the components of wine price, like a sort of premium price obtained not only adding a plus value to the price but also acting on the price components; therefore organic wine final price appears higher than the conventional one. A general framework of organic wine market (structures, operators, dimension of the sector, trend of the organic wine market and consumption aspects) derives also from the ORWINE project (particularly Stolz and Schmidt, 2008). This project emphasizes that four main obstacles appear to constrain this sector: low consumer knowledge about organic wines and production, lack of marketing strategies, strong competition deriving from the conventional products and the high price of organic wine.

b) Surveys on organic wine consumer aimed to define his purchasing behaviour (including choice decision elements) and needs. According to recent research, organic characteristics do not generally influence consumers’ preferences, even in countries where organic food are largely common in the market (e.g. Switzerland in Mann et al., 2012). The most important factors determining consumer choice are the country of origin, the blend of grapes and the price (as in the case of the conventional wine market). In particular, price is a fundamental benchmark for consumers because it is considered strictly linked to the quality; price is considered often too high (Jonis et al., 2008) and “healthy” characteristic is not a sufficient reason for this (Iordachescu et al., 2009). In some extreme cases organic certification label has also a negative influence on price causing its reduction; thus some American organically wine-makers do not use this label on the bottle (Delmas and Grant, 2008). Furthermore, US consumers are confused about organic definition; they appear to prefer biodynamic wines seen as “a holistic and friendly approach to the Earth” (www.wine-business-international.com). Also on Australian market the organic attribute receives a low value by the so-called “average Australian wine consumer”; it has a few relationships with consumers’ mind (Remaud et al., 2008; Sirieix et al., 2010). An important obstacle to organic wine spreading is originated by a bad reputation

not only linked to the wine price but also on its taste (Stolz and Schmidt, 2008; Delmas and Grant, 2008). This is enhanced by the literature and it appears widespread, mostly in Italy among the other EU producers (National Rural Network, 2012). According to consumers' judgements "organic wine is good for the environment but not for those who drink it". This may be affected by several factors, e.g the inexperience of the winemakers (National Rural Network, 2012; Delmas and Grant, 2008).

3. The survey

An explorative web survey was conducted in order to collect a set of information aimed at getting a picture of the organic, biodynamic and *natural* wine sector. A questionnaire composed by four sections (34 questions) was sent via mail to a sample of wine producers during summer 2011. The first section of the questionnaire considered the firm in general terms and its products. It is composed by 14 questions (i.e. year of foundation, vineyard areas per production technique, presence of organic/biodynamic certifications etc.). The second section is focused on issues linked to marketing and communication strategies. There were administrated 17 questions ranging from motivation for producing organic/biodynamic/*natural* wine, distribution channels, target markets etc. The third part of the questionnaire investigated more in depth respondents' perception of several organic and biodynamic wine attributes by administrating five questions such as strengths and weaknesses for producing according to organic and biodynamic methods, opinion on organic regulation, the possibility of implementing an organic winemaking regulation. Finally, the last section is focused on the entrepreneurs' personal data. For more details about the questionnaire structure see Table 1.

Table 1 – Structure of the questionnaire

Section	Sentences	Number of options	Question type
1	Q1. <i>Company activity</i>	4	Dichotomous
	Q3. <i>Possess of certification</i>	12	
	Q5. <i>Organic/biodynamic methods adopted before certification?</i>	2	
	Q8. <i>Future production expectation</i>	3	
	Q10. <i>Future number of labels expectation</i>	3	
	Q13. <i>Public subsidies</i>	2	
	Q6. <i>Annual production per methods</i>	3	Multiple choice with text entry
	Q7. <i>Hectares per methods</i>	5	
	Q9. <i>Number of labels</i>	3	
	Q11. <i>Grape varieties</i>	3	
	Q14. <i>Extra cost perception for non-conventional production</i>	5	
	Q2. <i>Foundation year</i>		Open
	Q4. <i>Year of first certified bottle</i>		
	Q12. <i>Turnover</i>		
2	Q18. <i>Main reasons to produce organic/biodynamic</i>	6	Dichotomous
	Q24. <i>Advertising channels for organic and biodynamic labels</i>	8	
	Q27. <i>Organic/biodynamic labels promotion</i>	2	
	Q28. <i>Fairs participation</i>	5	
	Q30. <i>Reasons for not participating in fairs</i>	6	
	Q31. <i>Meetings and wine tasting organization</i>	2	
	Q19. <i>Sale channel distribution weight</i>	6	Multiple choice with text entry
	Q20. <i>Sale markets for organic and biodynamic productions</i>	8	
	Q21. <i>Factors influencing business strategies of wineries</i>	9	5-point Likert scale
	Q15. <i>Number of employees</i>		Open

	Q16. Average age of management team Q17. Year of last change in ownership or management Q22. Average price for organic/biodynamic wine Q25. Percentage investment on turnover Q26. Investment expectation Q29. Annual expenditure for fairs participation		
	Q23. Importance of organic/biodynamic characteristics	8	Rank order
3	Q32. Opinion on production disciplinary of organic grapes Q33. Interest in a Law regulating organic winemaking method Q34. Advantages of organic production Q35. Main problems of organic production Q36. Presence of no-certified organic production	4 2 6 10 2	Dichotomous
4	Q37. Company title Q38. Province of company headquarters Q39. Respondent qualification within the company Q40. Contact details (optional)	7	Dichotomous Open

The sample included both certified organic/biodynamic wineries and producers of *natural* wine (like organic/biodynamic without certification) all around Italy. The first group of firms includes certified companies extracted from Biobank and Sinab⁵ database and the biodynamic units from Demeter database; the arrangement of the second group was more difficult because a specific list of Italian *natural* wine-makers does not exist. Thus, the Authors collected all the firms belonging to specific Associations⁶ and to organic-biodynamic-natural producers consortia; the list was completed with the units found in specialised websites⁷ and finally there have been considered those wineries which participated at least to one specialised trade fair⁸ or exhibition during the last two years. After a further selection⁹, the final sample frame included 891 units, located in different Italian regions. The return rate has been about 21% - 183 filled questionnaires.

4. Results

4.1. Characteristics of production system

Table 2 shows the main characteristics of the final sample.

Over the 70% of the sample declared to cultivate organically part of their vineyards, a surface between 0.5 and nearly 102 hectares. The majority (63.91%) are the areas up to 10 hectares but just six over 50 hectares and almost one third of the interviewed wineries shows intermediate values. The average of the entire sample stood at 10.4 hectares. With regard to biodynamic producers, there are 48 companies that claim to cultivate according to this process. In this case, the hectares average is less than 3 hectares per farm. 39 out of 49 declare to be 100% biodynamic producers; in other words, all wine grapes are grown by this method, while 8 of them claim to cultivate also organic vineyards. Just nine companies claim that grape is obtained according to conventional methods but they also have some hectares

⁵ BioBank is one of the most important Italian website on the organic sector. Sinab is the Italian Information System on Organic Farming.

⁶ VinNatur, ViniVeri, Renaissance Italia and Triple A.

⁷ www.vinobio.com, www.viticolturabiodinamica.it

⁸ Mainly VinNatur and VinoVinoVino in Italy, Biofach in Nuremberg (Germany) and Millésime Bio in Montpellier (France).

⁹ The selection process excluded: organic/biodynamic firms not involved in wine production; conventional firms with no organic productions; wine cooperatives; entrepreneurs involved only in bottling phase.

certified as organic or in conversion phase.

Table 2 - Sample characteristics: wineries per vineyard surface in hectares (number)

	Categories of vineyard surface					Total respondents
	0	0.1-10 Ha	11-30 Ha	31-50 Ha	>50 Ha	
Organic ^a	51	83	34	8	6	182
Biodynamic	135	31	15	1	1	183
In conversion	153	21	7	2	0	183

^a One winery did not answer.

The total average wine production of the sample is around 821 hl/year, approximately 62,000 bottles of wine. However, this data change significantly if the different methods of production are considered separately (Table 3): in fact the organic wine average production of the sample stands, indeed, at about 480 hectolitres while the biodynamic one is about 110 hectolitres.

Table 3 – Sample characteristics: wineries per production volume in hectolitres/year (number)

	Categories of production volume*						Total respondents
	0 (Hl/y)	0.1-100 (Hl/y)	101-300 (Hl/y)	301-500 (Hl/y)	501-1000 (Hl/y)	>1000 (Hl/y)	
Organic	48	33	50	16	18	19	183
Biodynamic ^a	135	16	13	4	11	3	182

*Average of last three years.

^a One winery did not answer.

In relation to the number of employees per winery, the average data is quite low (4.42) and shows a reality of small companies. Nevertheless, the data are strongly influenced by some outliers within the sample: only 5% of companies claims to have more than 15 employees, while 94.54% has a lower number of employees. More specifically, less than 65 companies (35.5%) are composed just by the owner or rather, and more than two-thirds of the companies do not reach 4 permanent employees (68.3%).

Table 4 – Sample characteristics: employees per winery (number)

	N. of employees							Total respondents
	1	2-3	4-5	6-7	8-10	11-15	>15	
N. of firms ^a	65	60	22	6	8	8	11	180

^a Three wineries did not answer.

As it is easy to infer from Table 5 (question with multiple answer; respondents could choose more than one), among the reasons that have led companies to adopt organic/biodynamic production the most important are *ethical aspects* (89%). 54% of respondents pointed out the *qualitative factors*, considering both the absence of chemical residues and specific taste of wine connected with the territory. Regarding the economic reasons, product *differentiation* from competitors (23%) and *response* to consumers and market needs (13%) appear less important among the other items. *Government grants for organic farming* do not seem to be considered among the main reasons (only 7%). Finally, the *difficulty in selling a conventional product* not appears decisive (3%).

Table 5 – Main reasons for wineries to produce organic/biodynamic wine (percentage)

Ethical choice	88.5
Higher product quality	53.8
Differentiation	23.1
Demand response	12.6
European contributions/subsidies	6.6
Difficulty in selling conventional product	3.3

A five-point Likert-scale (1 = not important at all, 5 = very important) was used to measure the relative importance of the factors influencing business strategies of wineries. Table 6 shows the mean values of respondents for each factor. *Quality* seems to be the most important: 89% of respondents, indeed, tick a value of 5 and the final mean value is 4.9. even if with lower evaluations, *price*, *promotion* and *brand* are considered important, obtaining a mean value around 3.5.

Table 6 – Main factors influencing wineries' business strategies (mean)

Quality	4.86
Price	3.57
Promotion	3.53
Brand	3.52
Distribution	3.47
Packaging	2.86
Specialized guides	2.82
Certification	2.81
Certification of origin	2.45

The most used sale channels is represented by *wholesalers* and traders (33%) (Table 7). *Direct selling* also plays a key role for these wineries representing the second sale channel with 29% preferences assigned and it is considered also an important way for communication with the consumers. The other channels used are represented by *wine shops/bars* and *Ho.re.ca* which respectively reached a value of 16%.

Table 7 – Sale channels distribution weight (frequency)

Wholesalers/export agents	32.8
Direct selling	28.8
Wine shops/bars and traditional retailers	16.3
Ho.re.ca	16.2
Mass retail channel	2.7
Other firms	2.0

The most important market for all the interviewed wineries is *Italy* while *European Union* reaches a quota of 25% on the total export, followed by *North America* with 10% and by *Asia* with 5.2%. All the other countries exhibits values below 5%.

Table 8 – Wineries' sales markets for organic and biodynamic wine (percentage)

Italy	56.0
-------	------

Others EU	24.6
Other European Countries	3.6
North America	9.6
South America	0.3
Asia	5.2
Africa	0.1
Oceania	0.6

As far as different promotional tools concern Table 9 shows the frequency of their use. It emerges that almost half of the wineries (43%) stated they do not use any tools to promote their wines (but some of them participate to fairs) and even a significant 39% limits their utilization to a simple brochure. Only 12% of wineries use traditional media (television, radio, and poster) presumably at local level. Strategic is the role of the fairs, which are becoming more important among different promotion activities. In particular, Vinitaly shows the highest participation: almost half of the sample attended it. VinNatur and ViniVeri obtain surprisingly results. Significant presence was registered within two foreign exhibitions: BioFach in Nuremberg, one of most important European events dedicated to organic farming, and Millesime Bio in Montpellier, focused specifically on organic wine world.

Table 9 – Advertising channels adopted by wineries for their organic/biodynamic labels (percentage)

Fairs	57.1
No advertising	42.9
Brochure	39.0
Press	8.8
Internet	8.8
Radio	1.6
Poster	1.1
Television	0.5

Considering the modern communication tools, it has been asked if organic and biodynamic labels were promoted by a web site and/or sold by an e-commerce channel. In the first case over the half of respondents (55%) answered that they use a website to promote and enhance their wine, while the second issue was adopted only by 16.6% of them. Consequently 45% of firms of the sample does not use the internet as communication tool. Finally, 70.06% of respondents claim to propose wine tasting in order to promote their product and almost 90% (89.82%) of interviewed wineries stated to organize guided tours to their cellars and to their production areas.

4.2 Cluster Analysis

In order to perform a cluster analysis, six questions have been selected from our dataset¹⁰ (Table 10).

Table 10 - Clustering variables considered

Questions	Number of options	Variables type
<i>Q21. How important are the following aspects of your business strategy, in relation to organic and biodynamic</i>	8	Quantitative discrete

¹⁰ 19 statistical units were dropped due to missing values.

<i>production?</i>		
<i>Q24. Does your company make specific advertising for organic and biodynamic labels?</i>	4	Dichotomous
<i>Q27. Concerning organic and biodynamic labels your company...</i>	3	Dichotomous
<i>Q28. What wine exhibitions and/or fairs have you attended in the last three years?</i>	5	Dichotomous
<i>Q31. Do you organize meetings and wine tastings in order to promote organic and biodynamic wines?</i>	2	Dichotomous

To the first variable ‘*How important are the following aspects of your business strategy, in relation to organic and biodynamic production?*’ has been applied the principal component analysis to reduce the numbers of 8 options provided by the questions (see Table 6. The variable ‘specialized guides’ was excluded because it does not represent a specific marketing tool of a winery).

Three methods were used to identify an appropriate number of components: the cumulative variance explained by the autovalues (Table 11), the screeplot (Graph 1) and Kaiser criterion based on the average autovalue so that three components were chosen.

Table 11 - Cumulative percentage of variance

	Eigenvalue	Cumulative percentage of variance
comp 1	2.947	36.831
comp 2	1.340	53.581
comp 3	0.895	64.771
comp 4	0.783	74.554
comp 5	0.609	82.168
comp 6	0.581	89.431
comp 7	0.505	95.745
comp 8	0.340	100.000

Graph 1 - Scree plot

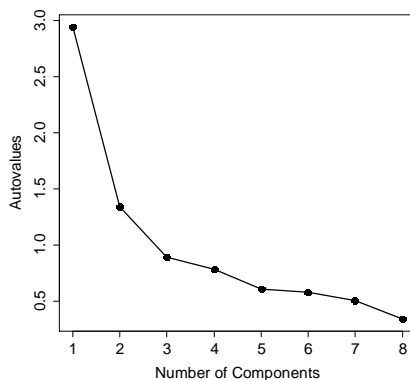


Table 12 summarizes the contribute (in percentage) of each variable defining new axes.

Table 12 – Loading percentage contributions

	Comp1 %	Comp2 %	Comp3 %
Product quality	2.510	22.938	57.198
Price	9.813	6.969	0.086
Distribution	17.613	3.079	0.023
Brand	21.452	3.876	3.885
Packaging	16.976	0.106	19.089
Communication	15.214	10.036	0.182
Certification of origin	8.939	29.466	4.950
Certifications	7.483	23.530	14.588

Thus it is possible to attribute a name to the dimensions. The first component may be called *Marketing Mix*, the second *Certification* and the last *Product characteristics*.

After principal component analysis the dimension of data matrix is 162x14 and the variables are either quantitative continue and dichotomous so we use the metric “Gower” to calculate the dissimilarity matrix and the divisive algorithm PAM for clustering.

Using the average silhouette index 4 clusters are identified (Table 13).

Table 13 – Clustering variables: descriptive statistics for each cluster

	C1	C2	C3	C4	Sample mean
strategic levers					
marketing mix	0.63	-0.17	-0.60	-0.20	0
certifications	0.17	0.06	-0.16	-0.22	0
product characteristics	0.21	-0.11	-0.11	-0.11	0
	C1	C2	C3	C4	Relative Frequency
<i>advertising</i>					
no advertising	0.18	0.19	0.86	0.97	0.48
brochure, poster, press	0.82	0.60	0.06	0.03	0.45
exhibitions/fairs	0.89	0.95	0.22	0.17	0.63
internet	0.22	0.05	0.03	0.00	0.09
<i>internet usage</i>					
promotion	0.98	0.00	0.81	0.00	0.51
selling	0.25	0.00	0.28	0.00	0.15
no usage	0.00	1.00	0.14	0.93	0.46
<i>fairs</i>					
Vinitaly	0.58	0.17	0.33	0.62	0.43
VinNatur	0.18	0.38	0.31	0.10	0.25
Viniveri/Vinovinovino	0.18	0.24	0.33	0.10	0.22
other	0.35	0.17	0.11	0.07	0.20
no fairs	0.02	0.05	0.08	0.10	0.06
<i>other type of promotion</i>					
wine tasting	0.78	0.69	0.78	0.34	0.68
visits	0.95	0.88	0.86	0.79	0.88

The first cluster is composed by 55 companies (34% of the sample). Considering the clustering variables, this group assigns to the strategic levers of *marketing mix* a higher average score compared to other clusters and to the sample mean.

The other two clustering variables, *products characteristics* and *certifications*, obtain as well a higher score preference compared to the sample mean.

Looking at the communication/promotion variables, the first cluster is characterized by companies that use traditional communication means (press, brochure and poster) as well as more modern tools linked to the internet. Deepening those aspects linked to exhibitions and fairs, companies in the first cluster take part mainly to the most important international wine fair, Vinitaly, and to other fairs as Biofach. Finally, companies of this group show to resort more than companies of the other clusters to wine tasting and guided tours considering them very important promotion means.

42 companies characterize the second cluster (C2), 26% of the sample. In this case the strategic levers obtain lower evaluations even under mean regarding the 4 *marketing mix* levers and the *product characteristics*, while the preference score for *certification* is coherent with the sample mean. In general terms it is possible to state that values assigned are close to sample mean.

The aspects linked to communication/promotion are much lower than in C1 and, in this case, they are identified in particular in the high participation to exhibitions and fairs, especially VinNatur event.

Cluster 3 (C3) is composed by 36 companies, 22% of the sample and it is characterized by very low evaluations for strategic levers of *marketing mix* compared to the values of the sample mean. Looking at the mean value assigned to item *no advertising*, 0.86, it is possible to state that the companies of this group do not consider important advertising. In this cluster, indeed, companies refer to specific fairs for organic wine (especially Viniveri) in order to promote their product.

Finally, within the last cluster (C4), 18% of the sample (29 wineries), either *marketing mix* levers or *certifications* obtain values slightly below the average of the sample. Companies belonging to this group do not use any kind of advertising or of the internet to promote their product.

Compared to the other clusters, in this case, companies that do not take part to exhibitions and fairs prevail, those companies that claim to go, and stated to prefer in particular Vinitaly.

Turning to the analysis of those variables that have not been used in the clustering process and looking to data reported in Table 14, it is possible to state that companies more market-oriented (C1) are mainly located in the central regions of Italy as it is possible to infer from Table 14. Furthermore, these companies are the biggest in dimension terms and, thus, they have at their disposal more resources from all points of view. Compared to the other clusters, companies of C1 have a broader organic production area (15 hectares), a three-year period producing average of about 760 hectolitres, which means an average annual sales volume of approximately €600,000.

In addition, firms in the first cluster show the highest number of organic labels for wine (average of 5.6). Data related to the products average price get the worst performance compared to the other clusters, the value mean of the group is indeed under 8 €/litre. With regard to distribution channels, the companies of C1 group are characterized by the use of *wholesalers/exporters* channel. Finally, by the analysis of the sales markets it can be seen that C1 presents value slightly above the average of the sample in relation to the national market.

To sum up, it possible to say that this group is characterized by better management performance than those obtained from the initial sample. This evidence confirms the hypothesis, already asserted in

several empirical studies (Lynch et al., 2012), that a market-oriented approach provides the best performance from many points of view.

In group C2, it appears evident that firms are characterized by a higher level of exports towards Asian market.

Third (C3) and fourth cluster (C4) show a common trend towards biodynamic production and a high presence of companies in the Northern Italy. The number of labels, on average lower than 2, results similar in both groups. On the other hand, the groups differ for some strategic orientations. In particular, C3 shows a higher production of biodynamic wines (135 hl), while production area, sales volume and number of employees result almost halved compared to C4. The aspect that basically differs among companies of C3 and C4 is the distribution channel: the group of companies belonging to C3, indeed, assigns a value higher than the average one for *direct selling* while in C4 companies distribute their products by wine shops/bars, traditional retailers and Ho.re.ca channels.

Finally, looking at markets, it is easy to say that C3 exports mainly to EU countries, while C4 exports also to North American market.

Table 14 - Clusters profile: descriptive statistics

	C1	C2	C3	C4	Sample Mean
<i>Distribution channels (%)</i>					
Direct selling	29.16	30.02	33.44	25.17	29.62
Wine bars, traditional retailers	12.64	19.10	15.56	19.86	16.25
Ho.re.ca	14.91	15.62	15.58	19.14	16.00
Wholesalers/exporters	36.16	30.48	31.33	34.10	33.25
<i>Markets (%)</i>					
Italy	57.84	55.43	52.33	56.03	55.67
UE	25.95	24.38	28.11	18.45	24.68
North America	9.69	7.57	10.11	13.86	9.98
Asia	3.58	7.26	4.17	5.41	4.99
Other markets	2.95	5.60	5.28	6.24	4.74
<i>Average price (€/litre)</i>	7.64	8.08	8.12	12.01	
<i>Average number of labels</i>					
Organic wine	5.57	4.33	3.38	2.55	4.20
referred to DOC/DOCG ^a	2.63	2.49	1.32	1.55	2.10
Biodynamic wine	0.73	0.56	1.50	1.38	0.98
referred to DOC/DOCG	0.33	0.18	0.91	0.59	0.47
<i>Average area (ha)</i>					
organic	15.35	7.42	5.87	6.20	9.51
biodynamic	2.12	2.19	3.09	5.69	3.00
<i>Average production (hl)</i>					
organic	757.19	383.58	237.17	181.55	439.76
biodynamic	78.44	88.57	135.47	132.93	103.65
<i>Sales volume(€)</i>	596,486	292,174	267,476	527,063	441,649.48
<i>Employees (number)</i>	4.96	2.95	3.97	6.58	4.53
<i>Foundation year of the winery</i>	1981	1987	1967	1979	
	C1	C2	C3	C4	Relative

					Frequency
<i>Italian district</i>					
North East	0.22	0.31	0.29	0.36	0.28
North West	0.06	0.12	0.21	0.2	0.13
Central Italy	0.48	0.31	0.26	0.24	0.35
South	0.15	0.19	0.15	0.2	0.16
Islands	0.09	0.07	0.09	0	0.07

^a DOC means *Denominazione di Origine Controllata* (Controlled Appellation of Origin) and DOP is *Denominazione di Origine Controllata e Garantita* (Controlled and Guaranteed Appellation of Origin). They are Italian quality labels for wine.

Conclusions

In the last decades, changes in consumer's lifestyles and choices of food products on the one hand and an increasing market globalization on the other have significantly modified the wine sector structure both in terms of production organization and of marketing and distribution aspects. At the present time the Italian demand structure and trend show a consumer's attention for food intrinsic quality, safety, sanitary, organoleptic and nutritional properties; furthermore it should be emphasized the increasing importance of purchase factors such as health care, environmental protection and rural areas specificities as items that are confirmed by the consumers' preference for organic products (Shafie and Rennie, 2012). For Italian producers organic wine could represent a new and important tool for diversification strategy on the market. It has been noted that the current literature is lacking in information concerning organic and biodynamic wine sector and the choice of an exploratory analysis is motivated by this state of affairs. This paper in particular is aimed at surveying the production system characteristics and marketing strategies adopted by Italian organic wineries.

The study results indicate a heterogeneous production system where medium- and small-sized firms represent the large part of the Italian units. The survey shows that the majority of companies (89%) adopted organic techniques because of ethical reasons. On the other hand CAP and/or governmental subsidies to organically produce, instead of conventional method, do not represent an important lever for almost any of the companies considered in the survey.

Furthermore, the organic wine quality represents the most important business strategy for Italian wineries followed by aspects as price, promotion and brand. The high importance attributed to quality probably depends on a common belief (but there is a lack of scientific results about this) that wines from organic viticulture have a lower quality than the conventional ones, both in terms of sensorial characteristics and a supposed higher content in compounds harmful for human health (Comuzzo et al., 2013).

With regard to the sales channels the most used is represented by wholesalers and export agents (33%) and this is coherent with the decision to export almost half of the production and with specific advertising channels. Currently modern retailing is not playing a primary role, indeed an important role is acted by direct selling. This is probably justified also by the low volumes produced. Moreover, this channel is preferred during the start-up phase, in order to keep selling cost low and establish a direct link with the consumers. It is interesting to highlight that the findings of this study confirm the results of previous research focused on non-conventional viticulture in Italy (Vastola and Tanyeri-Abur, 2009). As far as promotional aspects are concerned, the most surprising outcome of the study regard the scarce use of the internet as communication tool and, on the opposite, the crucial role that companies assign to fairs for promoting their wines as well as wine tasting and guided tours.

The cluster analysis revealed very different companies profiles and strategic tools adoption. The large number of the companies (C1), indeed, adopt different marketing mix strategies, from the more

1
2
3
4 1 traditional tools to the use of the internet and the participation to the most important wine and organic
5 2 wine fairs in order to promote their products. On the other hand, a group of companies composed by
6 3 22% of the sample (C3) claim to refer not to particular strategic tools except for the participation to
7 4 specific fairs on organic wine. Finally a surprising 18% of the sample (C4) asserts that they do not use
8 5 any promotional tool for boosting their wines but some of these wineries participate to fairs.
9 6 One of the sector weaknesses that emerges from this analysis is the lack of consumer knowledge. For
10 7 long time in the Italian market were used many terms which define organic or biodynamic wines such
11 8 as 'natural', 'true', 'genuine', 'traditional' which refer to quality characteristics without any
12 9 certification (Vastola and Tanyeri-Abur, 2009). The new EU Regulation about organic wine has the
13 10 advantage to improve transparency and better consumer recognition but if suitable communication,
14 11 either from a public policy or commercial perspective, and labelling/certification is not taken into
15 12 consideration, the added value of the production method might not be perceived by the final
16 13 consumers. Facing the people's low awareness of this type of product, a collective approach aimed at
17 14 communicating the organic wine distinctiveness could be strategic Maybe also a collective approach of
18 15 communication aimed at better explaining the specific organic wine characteristics could be strategic
19 16 for the industry development (Sirriex et al., 2010).
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60
61
62
63
64
65

References

- Brugarolas, M., Martinez-Carrasco, L., Bernabeu, R., Martinez-Poveda, A., 2009. A contingent valuation analysis to determine profitability of establishing local organic wine markets in Spain. *Renew. Agric. and Food Syst.* 25(1), 35–44.
- Comuzzo, P., Rauhut, D., Werner, M., Lagazio, C., Zironi, R., 2013. A survey on wines from organic viticulture from different European countries. *Food Control.* 34(2), 274–282.
- Corsi, A., Strøm, S., 2013. The Price Premium for Organic Wines: Estimating a Hedonic Farm-gate Price Equation. Memorandum n. 7, Department of Economics, University of Oslo, ISSN: 0809-8786
- Crescimanno, M., Ficani, G.B., Guccione, G., 2002. The production and marketing of organic wine in Sicily. *Br. Food J.* 104(3/4/5), 274-286.
- Delmas, M.A., Grant, L.E., 2014. Eco-Labeling Strategies and Price-Premium. *The Wine Industry Puzzle. Bus. Soc.* 53(1), 6-44.
- IFOAM, 2012. European Organic Regulations (EC) No 834/2007, 889/2008 and 1235/2008. An Evaluation of the First Three Years Looking for Further Development. IFOAM EU Group. Archived at http://www.ifoameu.org/sites/default/files/page/files/ifoameu_reg_regulation_dossier_201204_en.pdf (last access 2014/11/15)
- Iordachescu, A., Moore, A., Iordachescu, G., 2009. Consumer perceptions of organic wine. *The Annals of the University Dunarea de Jos of Galati Fascicle VI – Food Technol.* 34(1), 51-56.
- Jonis, M., Soltz, H, Schmid, O., Hofmann, U., Trioli, G., 2008. Analysis of organic wine market needs. 16th IFOAM Organic World Congress, Modena, Italy, June 16-20, 2008. Archived at <http://orgprints.org/12161/> (last access 2013/11/27)
- Lynch, J., Mason, R.J., Beresford, A.K.C., Found, P.A. 2012. An examination of the role for Business Orientation in an uncertain business environment. *Int. J. of Prod. Econ.* 137, 145-156.
- Mann, S., Ferjani, A., Reissig, L., 2012. What matters to consumers of organic wine? *Br. Food J.* 114(2), 272-284.
- Micheloni, C., Trioli, G., 2008. *Applied technology, market and production attitudes of “organic” wine producers in Europe.* In Proceedings of Organic Viticulture And Wine Conference, 16th IFOAM Organic World Congress: Cultivate the Future. Modena, Italy, June 16-20, 2008.
- National Rural Network 2007-2013, 2012. Bioreport 2012. Organic farming in Italy. Archived at www.reterurale.it (last access 2013/11/27)
- Remaud H. Mueller S., Chvyl P., Lockshin L., 2008. Do Australian Wine Consumers Value Organic wine? 4th International Conference of the Academy of Wine Business Research, Siena 17 – 19 th July 2008 Refereed paper. www.academyofwinebusiness.com (last access 2014/10/12)
- Rossetto, L., 2002. Marketing Strategies for Organic Wine Growers in the Veneto Region. Working Paper WP02-4. Archived at <http://ageconsearch.umn.edu> (last access 2013/11/27)
- Shafie, F. A., Rennie, D. 2012. Consumer Perceptions Towards Organic Food. *Procedia - Social and Behavioral Sciences*, 49(0), 360-367. doi: 10.1016/j.sbspro.2012.07.034

- 1
2
3
4 1 Sirieix L., Remaud H., 2010. Consumer perceptions of eco-friendly vs. conventional wines in
5 2 Australia. Refereed paper – 5th International Academy of Wine Business Research Conference, 8-10
6 3 Feb. 2010 Auckland (NZ). www.academyofwinebusiness.com (last access 2014/10/12)
7
8 4 Stolz, H., Schmidt, O., 2008. Consumer attitudes and expectations of organic wine. 16th IFOAM
9 5 Organic World Congress, Modena, Italy, June 16-20, 2008. Archived at <http://orgprints.org/13974/>
10 6 (last access 2013/11/27)
11
12 7 Thach L., Matz T. (2008). Wine. A global business. Ed. Miranda Press
13
14 8 Vastola, A., Tanyeri-Abur, A., 2009. Non-conventional viticulture as a viable system: a case study in
15 9 Italy. AAWE working paper n. 43 Business. Archived at www.wine-economics.org (last access
16 10 2013/11/29)
17
18 11 Willer, H., (2008). Organic Viticulture in Europe: Development and current statistics. 16th IFOAM
19 12 Organic World Congress, Modena, Italy, June 16-20, 2008.
20
21 13 Archived at <http://orgprints.org/view/projects/conference.html>
22
23 14 www.winemonitor.it (last access 2013/12/02)
24 15 www.wine-business-international.com (last access 2014/10/12)
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60
61
62
63
64
65

Table 1 – Structure of the questionnaire

Section	Sentence	Number of options	Question type
1	Q1. <i>Company activity</i>	4	Dichotomous
	Q3. <i>Presence of a certification</i>	12	
	Q5. <i>Organic/biodynamic methods adopted before certification</i>	2	
	Q8. <i>Future production expectation</i>	3	
	Q10. <i>Future number of labels expectation</i>	3	
	Q13. <i>Public subsidies</i>	2	
	Q6. <i>Annual production per method</i>	3	Multiple choice with text entry
	Q7. <i>Hectares per method</i>	5	
	Q9. <i>Number of labels</i>	3	
	Q11. <i>Grape varieties</i>	3	
	Q14. <i>Extra cost perception for non-conventional production</i>	5	
2	Q2. <i>Foundation year</i>		Open
	Q4. <i>Year of first certified bottle</i>		
	Q12. <i>Turnover</i>		
	Q18. <i>Main reasons to produce organic/biodynamic</i>	6	Dichotomous
	Q24. <i>Advertising channels for organic and biodynamic labels</i>	8	
	Q27. <i>Organic/biodynamic labels promotion</i>	2	
	Q28. <i>Fairs participation</i>	5	
	Q30. <i>Reasons for not participating in fairs</i>	6	
	Q31. <i>Meetings and wine tasting organization</i>	2	
	Q19. <i>Sale channel distribution weight</i>	6	Multiple choice with text entry
	Q20. <i>Sale markets for organic and biodynamic productions</i>	8	
	Q21. <i>Factors influencing business strategies of wineries</i>	9	5-point Likert scale
3	Q15. <i>Number of employees</i>		Open
	Q16. <i>Average age of management team</i>		
	Q17. <i>Year of last change in ownership or management</i>		
	Q22. <i>Average price for organic/biodynamic wine</i>		
	Q25. <i>Percentage investment on turnover</i>		
	Q26. <i>Investment expectation</i>		
	Q29. <i>Annual expenditure for fairs participation</i>		
3	Q23. <i>Importance of organic/biodynamic characteristics</i>	8	Rank order
	Q32. <i>Opinion on production disciplinary of organic grapes</i>	4	Dichotomous
	Q33. <i>Interest in a law regulating organic winemaking</i>	2	
	Q34. <i>Advantages of organic production</i>	6	
	Q35. <i>Main problems of organic production</i>	10	
	Q36. <i>Presence of no-certified organic production</i>	2	
4	Q37. <i>Company title</i>	7	Dichotomous
	Q38. <i>Province of company headquarters</i>		Open
	Q39. <i>Respondent qualification within the company</i>		
	Q40. <i>Contact details (optional)</i>		

Table 2 - Sample characteristics: wineries per vineyard surface in hectares (number)

	Categories of vineyard surface					Total respondents
	0	0.1-10 Ha	11-30 Ha	31-50 Ha	>50 Ha	
Organic ^a	51	83	34	8	6	182
Biodynamic	135	31	15	1	1	183
In conversion	153	21	7	2	0	183

^aOne winery did not answer.

Table 3 – Sample characteristics: wineries per production volume in hectolitres/year (number)

	Categories of production volume*						Total respondents
	0 (hl/y)	0.1-100 (hl/y)	101-300 (hl/y)	301-500 (hl/y)	501-1,000 (hl/y)	>1,000 (hl/y)	
Organic	48	33	50	16	18	19	183
Biodynamic ^a	135	16	13	4	11	3	182

*Average of last three years.

^aOne winery did not answer.

Table 4 – Sample characteristics: employees per winery (number)

	N. of employees							Total respondents
	1	2-3	4-5	6-7	8-10	11-15	>15	
N. of firms ^a	65	60	22	6	8	8	11	180

^aThree wineries did not answer.

Table 5 – Main reasons for wineries to produce organic/biodynamic wine (percentage)

Ethical choice	88.5
Higher product quality	53.8
Differentiation	23.1
Demand response	12.6
European contributions/subsidies	6.6
Difficulty in selling conventional product	3.3

Table 6 – Main factors influencing wineries' business strategies (mean)

Quality	4.86
Price	3.57
Promotion	3.53
Brand	3.52
Distribution	3.47
Packaging	2.86
Specialized guides	2.82
Certification	2.81
Certification of origin	2.45

Table 7 – Sale channels distribution weight (frequency)

Wholesalers/export agents	32.8
Direct selling	28.8
Wine shops/bars and traditional retailers	16.3
Ho.re.ca	16.2
Mass retail channel	2.7
Other firms	2.0

Table 8 – Wineries' sale markets for organic and biodynamic wine (percentage)

Italy	56.0
Others EU	24.6
Other European Countries	3.6
North America	9.6
South America	0.3
Asia	5.2
Africa	0.1
Oceania	0.6

Table 9 – Advertising channels adopted by wineries for their organic/biodynamic labels (percentage)

Fairs	57.1
No advertising	42.9
Brochure	39.0
Press	8.8
Internet	8.8
Radio	1.6
Poster	1.1
Television	0.5

Table 10 - Clustering variables considered

Questions	Number of options	Variables type
<i>Q21. How important are the following aspects of your business strategy, in relation to organic and biodynamic production?</i>	8	Quantitative discrete
<i>Q24. Does your company make specific advertising for organic and biodynamic labels?</i>	4	Dichotomous
<i>Q27. Concerning organic and biodynamic labels your company...</i>	3	Dichotomous
<i>Q28. What wine exhibitions and/or fairs have you attended in the last three years?</i>	5	Dichotomous
<i>Q31. Do you organize meetings and wine tastings in order to promote organic and biodynamic wines?</i>	2	Dichotomous

Table 11 - Cumulative percentage of variance

	Eigenvalue	Cumulative percentage of variance
comp 1	2.947	36.831
comp 2	1.340	53.581
comp 3	0.895	64.771
comp 4	0.783	74.554
comp 5	0.609	82.168
comp 6	0.581	89.431
comp 7	0.505	95.745
comp 8	0.340	100.000

Table 12 – Loading percentage contributions

	Comp1 %	Comp2 %	Comp3 %
Product quality	2.510	22.938	57.198
Price	9.813	6.969	0.086
Distribution	17.613	3.079	0.023
Brand	21.452	3.876	3.885
Packaging	16.976	0.106	19.089
Communication	15.214	10.036	0.182
Certification of origin	8.939	29.466	4.950
Certifications	7.483	23.530	14.588

Table 13 – Clustering variables: descriptive statistics for each cluster

	C1	C2	C3	C4	Sample mean
strategic levers					
marketing mix	0.63	-0.17	-0.60	-0.20	0
certifications	0.17	0.06	-0.16	-0.22	0
product characteristics	0.21	-0.11	-0.11	-0.11	0
	C1	C2	C3	C4	Relative Frequency
<i>advertising</i>					
no advertising	0.18	0.19	0.86	0.97	0.48
brochure, poster, press	0.82	0.60	0.06	0.03	0.45
exhibitions/fairs	0.89	0.95	0.22	0.17	0.63
internet	0.22	0.05	0.03	0.00	0.09
<i>internet usage</i>					
promotion	0.98	0.00	0.81	0.00	0.51
selling	0.25	0.00	0.28	0.00	0.15
no usage	0.00	1.00	0.14	0.93	0.46
<i>fairs</i>					
Vinitaly	0.58	0.17	0.33	0.62	0.43
VinNatur	0.18	0.38	0.31	0.10	0.25
Viniveri/Vinovinovino	0.18	0.24	0.33	0.10	0.22
other	0.35	0.17	0.11	0.07	0.20
no fairs	0.02	0.05	0.08	0.10	0.06
<i>other type of promotion</i>					
wine tasting	0.78	0.69	0.78	0.34	0.68
visits	0.95	0.88	0.86	0.79	0.88

Table 14 - Clusters profile: descriptive statistics

	C1	C2	C3	C4	Sample Mean
<i>Distribution channels (%)</i>					
Direct selling	29.16	30.02	33.44	25.17	29.62
Wine bars, traditional retailers	12.64	19.10	15.56	19.86	16.25
Ho.re.ca	14.91	15.62	15.58	19.14	16.00
Wholesalers/exporters	36.16	30.48	31.33	34.10	33.25
<i>Markets (%)</i>					
Italy	57.84	55.43	52.33	56.03	55.67
UE	25.95	24.38	28.11	18.45	24.68
North America	9.69	7.57	10.11	13.86	9.98
Asia	3.58	7.26	4.17	5.41	4.99
Other markets	2.95	5.60	5.28	6.24	4.74
<i>Average price (€/litre)</i>	7.64	8.08	8.12	12.01	
<i>Average number of labels</i>					
Organic wine	5.57	4.33	3.38	2.55	4.20
referred to DOC/DOCG ^a	2.63	2.49	1.32	1.55	2.10
Biodynamic wine	0.73	0.56	1.50	1.38	0.98
referred to DOC/DOCG	0.33	0.18	0.91	0.59	0.47
<i>Average area (ha)</i>					
organic	15.35	7.42	5.87	6.20	9.51
biodynamic	2.12	2.19	3.09	5.69	3.00
<i>Average production (hl)</i>					
organic	757.19	383.58	237.17	181.55	439.76
biodynamic	78.44	88.57	135.47	132.93	103.65
<i>Sales volume(€)</i>	596,486	292,174	267,476	527,063	441,649.48
<i>Employees (number)</i>	4.96	2.95	3.97	6.58	4.53
<i>Foundation year of the winery</i>	1981	1987	1967	1979	
	C1	C2	C3	C4	Relative Frequency
<i>Italian district</i>					
North East	0.22	0.31	0.29	0.36	0.28
North West	0.06	0.12	0.21	0.2	0.13
Central Italy	0.48	0.31	0.26	0.24	0.35
South	0.15	0.19	0.15	0.2	0.16
Islands	0.09	0.07	0.09	0	0.07

^a DOC means Denominazione di Origine Controllata (Controlled Appellation of Origin) and DOCG is Denominazione di Origine Controllata e Garantita (Controlled and Guaranteed Appellation of Origin). They are Italian quality labels for wine.

