UNIVERSITÀ DEGLI STUDI DI UDINE

DIPARTIMENTO DI SCIENZE ECONOMICHE E STATISTICHE

THE WINE SECTOR IN THE DIGITAL ERA: AN EMPIRICAL EVALUATION OF E-COMMERCE IN FRIULI VENEZIA GIULIA (ITALY)

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1 E-Commerce in the agribusiness sector

The explosion of e-commerce took place in the early 1990s, when the rapid spread of the Internet and the World Wide Web made conducting business on the Internet a lot cheaper and easier. The internet is now regarded as an established channel for commercial transactions. It is a world market, with hundreds of millions of buyers and sellers: a place for every type of transaction and where each type of activity is a truly powerful tool for marketing activities.

1.1 Definitions of E-Commerce

E-commerce, or Electronic commerce, is seen as a revolution in business practices. E-commerce plays an important role in the way in which small, medium and large companies conduct business either with their customers, other businesses or both (Korper and Lis, 2000). There is no universal definition of electronic commerce because the Internet marketplace and its participants are so numerous and their intricate relationships are evolving so rapidly. For this reason, different definitions of e-commerce are found in the literature. E-commerce can be defined as "the conduction of business among e-enterprises and consumers", whereas e-business is defined as "an enterprise with the possibility of an exchange of value (money, goods, services and information)" Turban et al. (2000, pp.4) has defined e-commerce as "an emerging concept that describes the process of buying and selling or exchanging products, services and information via computer networks including the Internet" (Turban, Lee, King, and Chung, 2000).

Another definition was given by Kotler et al (2005, p.135), which says, "E-commerce involves buying and selling processes supported by electronic means, primarily the Internet." E-commerce includes e-marketing and e-purchasing (Kotler et.al. 2005). In general, e-commerce is a modern business methodology that addresses the needs of organizations, merchants and consumers to reduce costs and improve the quality of goods and services, and increases the speed of service delivery (Kotler and Keller, 2005).

1.2 Types of E-commerce

The transactions in e-commerce can be classified according to the partners involved: consumers, businesses and government. Only three of the six possible combinations are currently important. These are:

- ✓ Business-to-consumer (B2C) e-commerce involves products and services for retail sale to individual buyers.
- ✓ Business-to-business (B2B) e-commerce involves the sale of goods and services between businesses.
- ✓ Consumer-to-consumer (C2C) e-commerce involves consumers selling directly to other consumers.

1.3 The E-Agribusinesses

The term "agribusiness" has shifted from referring to a large-scale farming enterprise to the mass production of agricultural goods and services through the mechanization of modern day terminology in which the agribusiness sector includes the agricultural input sector, the production sector and the processing-manufacturing sector. E-Agribusiness is simply an E-Business with a focus on food or agricultural services

An increasing number of agribusinesses are trying to use the internet as a utility management service. As a business tool, the Internet has proven to be a fascinating concept for many people and companies. The online presence is increasingly seen as a necessity for the existence of the business. The advantages that are offered by the Internet include the opportunities to draw more customers, increase public awareness of the company and its products, promote strategic or policy-related positions, and sell more products. The Internet offers considerable potential for doing business. In order to successfully grow their market shares online, companies are forced to design marketing strategies specifically for the Internet economy. For agribusiness the Internet could be at least one important marketing tool that integrates and completes the business. Within a sector, the adoption rate varies. Large companies are usually the first to use the new technology and to gain an

electronic philosophy; however, this is not an obstacle for small businesses, because the barriers to entry on the Internet are negligible.

The rapid spread of the Internet and electronic trade has imposed a transformation in this type of business, resulting in the emergence of new managerial realities as alternatives to traditional business models. More precisely, the term e-business- or e-enterprise- is conventionally used to identify a structure having a virtual presence or Web site on the Internet in order to implement the promotion or to start e-commerce. The terms of e-commerce and e-business are often confused with each other. However, there are differences. The e-commerce involves exchanges amongst customers, business partners and suppliers. E-business is composed of the same elements, but also includes operations that are handled within the business itself. Examples of such operations include the production, development of corporate infrastructure and product management (Deitel and Steinbuhler 2001). E-Marketing, E-Commerce and E-Agribusiness are subsets of E-Business.

The majority of agribusinesses in the wine sectors are Small and Medium Enterprises (SMEs)[1]. The recent growth of e-business is having a significant impact on entrepreneurs- particularly for SMEs. E-commerce is also an important option for the survival and growth of small farms (EFS) (Brooksbank et al. 2003). The rate of growth and the use of e-business varies depending on the country, industry and firm size (Baourakis et al., 2002).

Large companies use e -business faster than SMEs. Access for SMEs is often limited by several obstacles (Beynon - Davies et al., 2003), primarily because of the high initial costs and maintenance of web-based e-commerce sites. However, a growing number of studies have highlighted the potential of the Internet to help SMEs to be more competitive in the market. The main opportunities are :

i) the lack of difference in the amount of space occupied by small and large companies online and the same freedom to adopt more Internet strategies,

[1] Small and medium enterprises (SMEs) or small and medium-sized businesses (SMBs) are companies whose personnel numbers fall below certain limits. The abbreviation "SME" is used in the European Union and by international organizations such as the World Bank, the United Nations and the World Trade Organization (WTO). Small enterprises outnumber large companies by a wide margin and also employ many more people. SMEs are also said to be responsible for driving innovation and competition in many economic sectors.

ii) the low cost of marketing of goods and services at the global level,
iii) the possibility of implementing globalization strategies,
iv) the need to maintain efficient after - sales customer services at low costs,
v) networking with partners. The new risk factor for the competitiveness of SMEs is the reduction of costs for larger companies when entering (via the Internet) niche markets dominated by SMEs (Kleindl, 2000).

The Internet is a very important option for SMEs agro-food products. It allows them to market "typical" local food in the most suitable way in a global context. There is a growing interest from consumers and retail distribution chains for these goods. Furthermore, the world market is not homogeneous, but is composed of many sub-markets, each of them with special needs.

This situation is similar in the international wine market. The categories of wine have a high product differentiation, a good reputation in international trade and have to face the fierce competition of the products on the main export markets (Mueller et al, 2003; Bernet and Stricker, 2003). The consumer's perception of quality with regard to these wines is very complex. There are many different factors considered by consumers when purchasing the wines. As a result, consumers are demanding a lot of information on the characteristics of the products offered on the web, where the Internet is the best channel of communication (Deitel, Deitel, and Steinbuhler, 2001). E-Marketing, E-Commerce and E-Agribusiness are subsets of E-Business.

The most of agribusiness in the wine sectors are Small and Medium Enterprises (SMEs). The recent growth of e-commerce is having a significant impact on entrepreneurs especially for the SMEs. (Wilkinson, 2002). The e-commerce is also an important option for the survival and growth of small enterprise (Brooksbank et al. 2003). The rate of growth and the use of e-business varies depending on the country, industry and enterprise size (Baourakis et al., 2002)

Large companies use e-commerce faster than SMEs. Access for SMEs is often limited by several obstacles (Simpson and Docherty, 2004), primarily because of the high initial costs and maintenance of web-based e-commerce sites. However, a growing number of studies have highlighted the potential of the Internet to help SMEs to be more competitive in the market. The main opportunities are described by Hsieh and Lin (1998) as:

- ✓ the lack of differences between small and large companies occupied space on the web and the same freedom to adopt more Internet strategies,
- ✓ the low cost of marketing of goods and services at the global level,
- ✓ the possibility of implementing globalization strategies,
- ✓ the need to maintain efficient after -sales customer services at low costs,
- ✓ in a network with partners.

The new risk factor that makes the competitiveness of SMEs is the reduction of costs for larger companies when entering (via the Internet) niche markets dominated by SMEs (Simpson and Docherty, 2004).

Internet is a very important option for SMEs agro-food products. It allows them to market "typical" local food in the most suitable way in a global context. There is a growing interest from consumers and retail distribution chains for these goods (Simpson and Docherty, 2004). Furthermore, the world market is not homogeneous, is composed of many sub-markets, each of them with special needs.

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1.4 Advantages and disadvantages in the use of e-commerce

The economic literature presented the various benefits that e-commerce brings but also the associated disadvantages. Among the advantages are: the ability to make purchases 24 hours a day, 7 days a week from home or office, being able to get the product directly to home;

- ✓ the convenience of shopping on the Internet;

- ✓ transaction speed and choice;
- ✓ the possibility to avoid lines at the checkout, and the pressure of the sellers.

Despite this, consumers believe that buying on the internet involves (compared to purchases in stores) increased risks and uncertainties, including:

- ✓ invasion of privacy and the security of credit card fraud through the sharing of personal information with other parties, access to information by third parties, tracking of purchases and shopping habits, and finally the possibility of being contacted by the company without prior consent (Miyazaki and Fernandez, 2001);
- ✓ difficulties regarding shipping systems, the return of the faulty or unwanted goods and non- receipt of goods ordered;
- ✓ the inability to socialize while shopping and have a direct relationship with the vendor;
- ✓ the need to postpone the pleasure of consumption of the good just bought;
- ✓ The inability to test the product in order to evaluate the sensory quality before purchasing (Forsythe and Shi, 2003; Miyazaki and Fernandez, 2001).

An Italian context a study (Eurispes, 2012) has indicated that e-commerce generated revenues of €8141m in Italy in 2011, a 20% increase on those of 2010. Many factors have been identified as motivating people to adopt e-commerce: time saving (73%), wider choice of products (67%), ease of price comparison (59%), not having to queue (58%) and cheaper prices (55%). Furthermore, with regard to the type of products purchased online, books are in first place (44%), followed by clothing (36%), airline tickets (32%), electronics (27%) and hotel reservations (26%) (Eurispes, 2012).

2 Global Situation in the wine sector

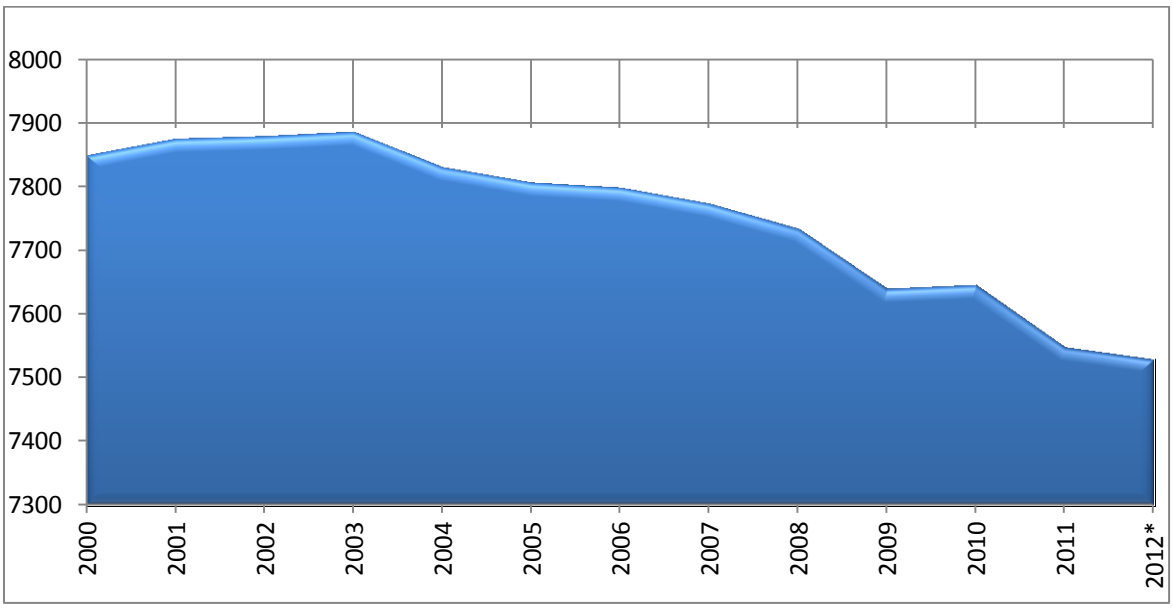
2.1 World wine surface and production

In 2012, the total world area planted was 7528 mha[2] (including areas planted with vines not yet in production or collections), a slight decrease of 1% from 2011(-20 mha), as it is shown in table 1 and figure 1. This decrease is mainly due to the reduction of European vineyards. There was a high expansion of vineyards in Asia, which accounted more than one-fifth of the total area in 2012 (22.7%). China, whose vineyards almost doubled in the past decade, owned the vast majority (+ 90%). In the United States and the Southern Hemisphere, the new vine-plant continued with a moderate increase of 0.3% compared to 2011.

Table 1. Word vineyards

Year	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**
Word Surface area	7.847	7.873	7.877	7.884	7.829	7.805	7.797
Year	**2007**	**2008**	**2009**	**2010**	**2011**	**2012***	
Word Surface area	7.772	7.732	7.639	7.645	7.547	7.528	

Figure 1. Trends 2000-2012



Source: OIV, *Forecast

[2] Thousands of hectares.

The world wine production in 2012 (excluding juice and musts) stood at 252 Mhl[3] (figure 2 and table 2). In comparison with 2011, the production is a low level, especially for Europe and its 6 % decrease due to a reduction in vineyards and bad weather conditions. Europe still accounts for almost two thirds of the world's production of wine (62.3%), even after losing ground (representing 73 % of the total in 2001) to competitors America (20% in 2012), Asia (6.9% in 2012 against 4.5 % in 2001), Oceania (5.9%) and Africa (5%) (figure 3).

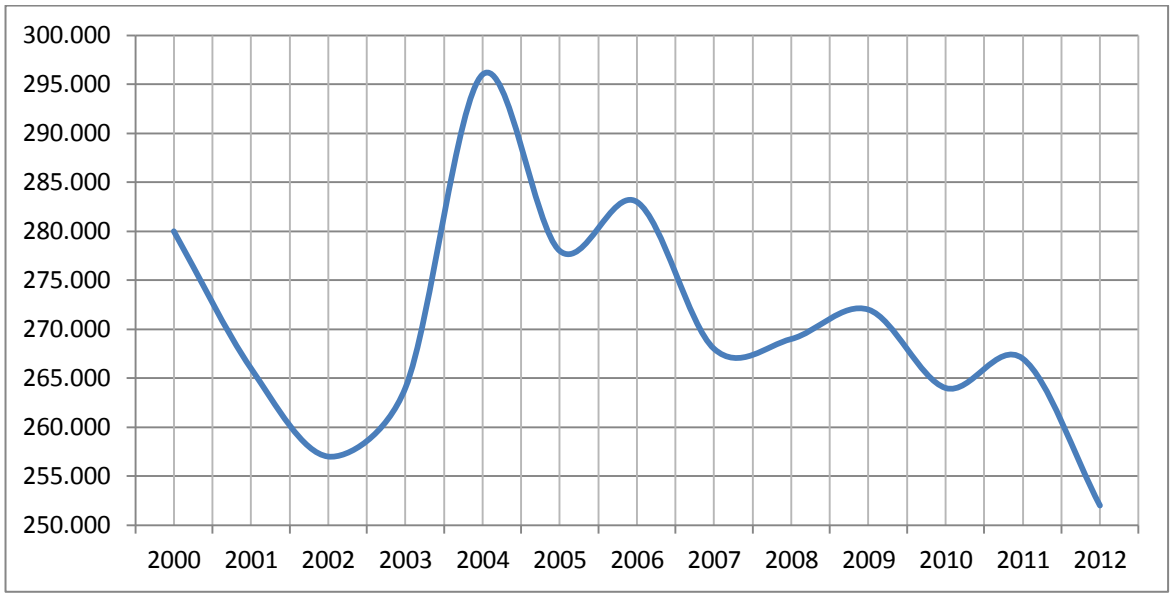
Table 2. Major wine producer

mhl	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	Change in % 2000-2012
France	57.541	53.389	50.353	46.360	57.386	52.105	52.127	45.672	42.654	46.269	44.322	50.757	41.422	-28,0%
Italy	51.620	49.865	42.507	41.807	49.935	50.566	52.036	45.981	46.970	47.314	48.525	42.772	40.060	-22,4%
Spain	41.692	30.500	33.478	41.843	42.988	36.158	38.273	36.408	35.913	36.093	35.353	33.397	30.392	-27,1%
USA	21.500	19.200	20.300	19.500	20.109	22.888	19.440	19.870	19.340	21.965	20.887	19.197	20.510	-4,6%
China	10.500	10.800	11.200	11.600	11.700	11.800	11.900	12.500	12.600	12.800	13.000	13.200	14.880	41,7%
Australia	8.064	10.731	12.168	10.835	14.679	14.301	14.263	9.620	12.448	11.784	11.420	11.180	12.660	57,0%
Chile	6.674	5.442	5.623	6.682	6.301	7.885	8.448	8.227	8.683	10.093	8.844	10.464	12.554	88,1%
Argentina	12.537	15.835	12.695	13.225	15.464	15.222	15.396	15.046	14.676	12.135	16.250	15.473	11.778	-6,1%
S. Africa	6.949	6.471	7.189	8.853	9.279	8.406	9.398	9.783	10.165	9.986	9.327	9.324	10.037	44,4%
Germany	9.852	8.891	9.885	8.191	10.007	9.153	8.916	10.261	9.991	9.228	6.906	9.132	9.012	-8,5%
Portugal	6.710	7.789	6.677	7.340	7.481	7.266	7.542	6.074	5.689	5.868	7.133	5.610	6.141	-8,5%
Romania	5.456	5.090	5.461	5.555	6.166	2.602	5.014	5.289	5.159	6.703	3.287	4.058	3.311	-39,3%
Greece	3.558	3.477	3.085	3.799	4.248	4.027	3.938	3.511	3.869	3.366	2.950	2.750	3.150	-11,5%
Brazil	3.638	2.968	3.212	2.620	3.925	3.199	2.372	3.502	3.683	2.720	2.459	3.394	2.917	-19,8%
World Total	280.000	266.000	257.000	264.000	296.000	278.000	283.000	268.000	269.000	272.000	264.000	267.000	252.000	-10,0%

Source: OIV

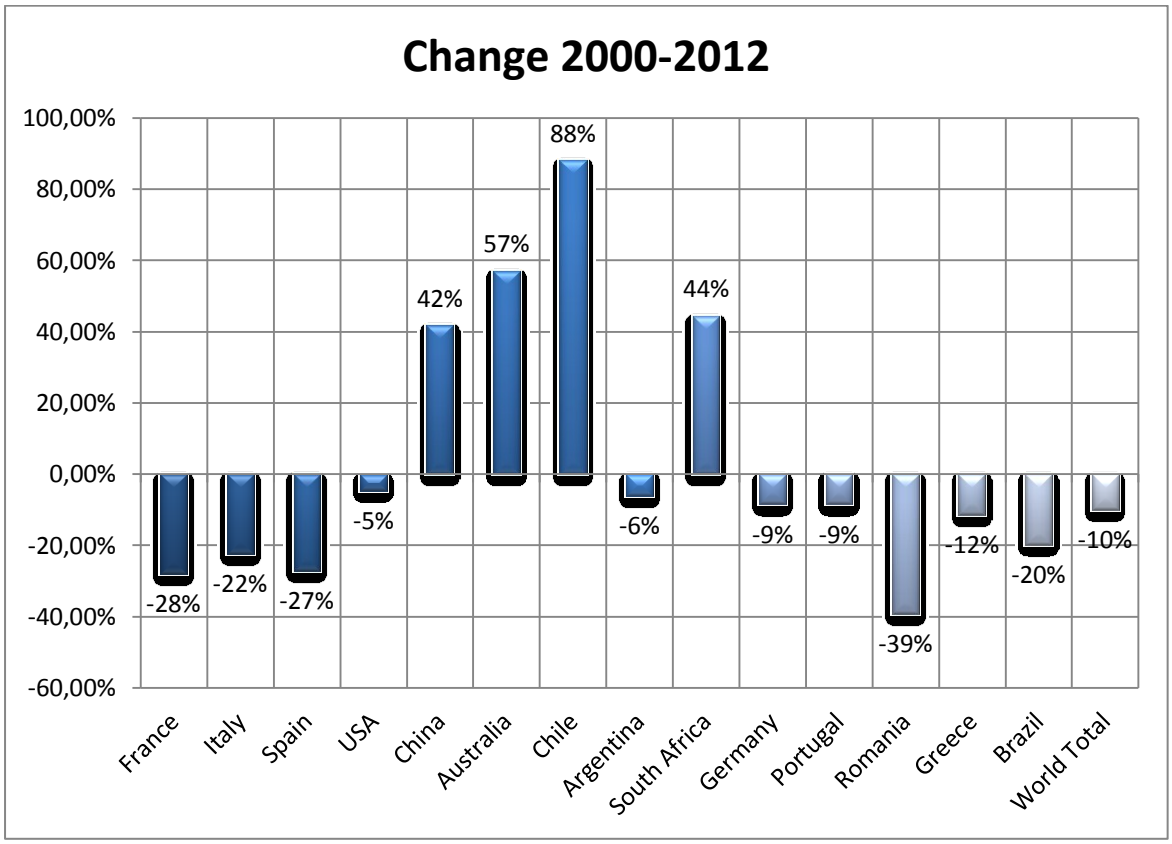
[3] Millions of hectoliters.

Figure 2. Total world wine production (mhl)



Source: OIV

Figure 3. Percentage change of the wine production 2000-2012



Source: our elaboration

2.2 consumption of wine

Data regarding wine consumption in 2012 (243 Mhl in the world) shows a slight regain of interest on the part of consumers, after a decline due to the economic crisis (table 3 and figure 4). It should be noted that the countries that are historically both large producers and consumers have reduced their level of consumption. In more than a decade, the global consumption in France decreased by 12%. In Italy and Spain the level of consumption fell respectively by 27% and 34%. The USA is becoming the largest market in the world. In terms of volume, internal consumption reached 29 Mhl in 2012 (+37% compared to 2000). Wine consumption is increasing strongly in Asia, as it has continued to increase in China (+67% compared to 2000).

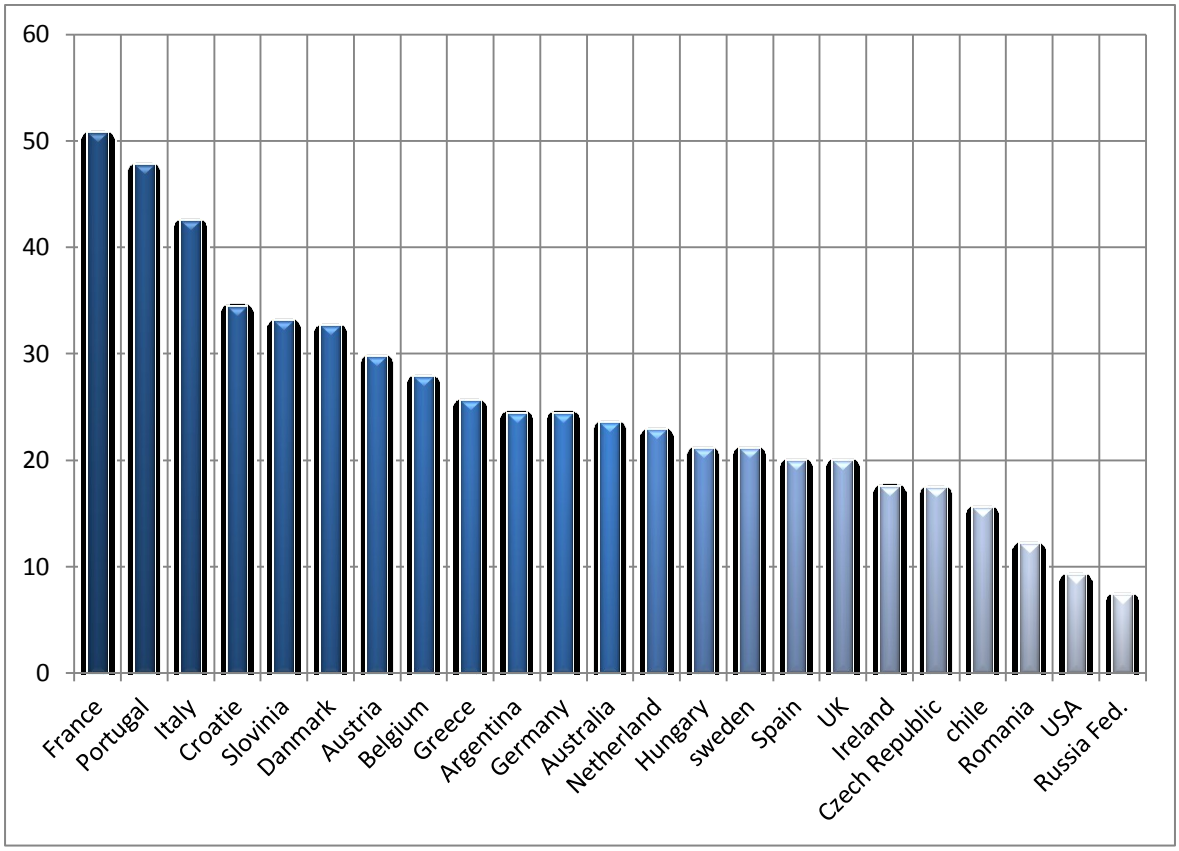
The consumption of wine in Italy continues to fall. The latest data compiled by Assoenologi says that, Italy is at 42,5 litres per person, compared to 45,3 in 2006 (*i.e.*, one third compared to the consumption of fifty years ago). However, this situation is not only the Italian one, but also that of all the European countries that produce wine (www.enotime.it).

Table 3. Major wine consumers

l per capita per year*	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	Change in % 2000-2012
France	62,1	58,2	64,0	56,7	58,3	55,6	55,2	50,6	54,6	51,6	53,5	49,8	50,7	-18,4%
Portugal	58,4	57,1	58,3	55,6	54,8	55,0	53,8	52,1	79,6	48,4	46,6	46,4	47,7	-18,3%
Italy	44,5	45,3	44,6	50,8	46,8	46,5	45,3	42,6	42,7	42,4	43,9	42,6	42,5	-4,5%
Croatia	40,2	42,3	45,6	39,2	37,0	29,4	30,1	33,7	31,5	34,1	35,4	34,5	34,4	-14,4%
Slovenia	34,4	30,2	23,2	33,0	25,4	32,0	26,8	34,1	39,6	37,1	37,5	37,3	33,1	-3,8%
Denmark	33,7	34,5	33,5	33,8	31,7	31,9	31,6	32,9	33,8	34,2	34,1	33,0	32,6	-3,3%
Austria	30,9	28,5	29,7	29,3	29,3	29,2	29,6	29,5	28,8	28,7	28,6	30,3	29,7	-3,9%
Belgium	24,4	23,5	26,6	25,4	26,5	26,8	27,7	27,5	28,2	26,7	25,8	27,1	27,8	13,9%
Greece	26,0	26,7	22,3	27,6	29,6	32,1	28,5	29,3	28,3	26,7	28,6	25,0	25,6	-1,5%
Argentina	33,8	32,3	31,8	32,5	29,0	28,4	28,5	28,4	26,9	25,8	24,1	24,1	24,4	-27,8%
Germany	24,5	24,3	24,6	23,9	24,0	24,0	24,5	25,2	25,2	24,5	24,5	24,0	24,4	-0,4%
Australia	20,3	20,5	20,4	21,1	21,7	22,2	22,0	23,2	22,9	23,4	24,0	23,6	23,5	15,8%
Netherland	19,5	20,9	20,8	22,1	20,6	21,3	21,4	22,2	22,4	22,0	23,1	22,7	22,8	16,9%
Hungary	30,9	31,4	34,0	30,8	30,5	26,2	28,7	28,1	30,2	26,1	18,1	21,9	21,1	-31,7%
Sweden	13,3	14,9	16,5	16,8	14,7	17,0	16,1	19,3	21,7	21,6	21,4	21,2	21,1	58,6%
Spain	34,9	34,9	33,7	32,8	32,5	31,5	30,7	29,4	27,0	24,7	23,6	21,3	19,9	-43,0%
UK	16,4	17,4	18,8	19,4	21,2	21,7	20,9	22,4	21,9	20,5	20,7	20,5	19,9	21,3%
Ireland	11,0	12,2	12,6	14,5	13,8	16,4	16,8	17,1	17,3	15,3	16,2	17,1	17,5	59,1%
Czech Rep.	6,6	8,8	10,6	11,5	8,0	10,8	12,7	17,2	19,0	19,2	19,1	19,0	17,4	163%
Chile	14,7	14,4	14,6	16,0	15,8	16,2	14,5	17,9	13,9	18,4	18,9	17,4	15,5	5,4%
Romania	23,5	21,3	22,6	23,0	26,0	10,9	25,6	25,5	25,0	18,7	7,6	16,4	12,1	-48,5%
USA	7,5	7,4	7,8	8,2	8,4	8,7	8,9	9,2	9,1	8,9	8,9	9,1	9,2	22,7%
Russia Fed.	3,2	4,2	4,4	6,0	6,3	6,8	7,8	8,9	8,3	7,2	8,5	7,9	7,3	128%

Source: OIV

Figure 4. Major wine consumers 2012 (l per capita per year)



Source: our elaboration on OIV

2.3 The scenario of Wine in Italy

With 44,4 million hectolitres produced in 2014- of which over 60% came from the 521 wines with denomination of origin[4] (DOC[5] 330, 73 DOCG[6] and 118 IGT[7])- Italy is one of the most important producer of wine in the world.

Today the key trends in the wine industry are the following:

- ✓ increases in the production of quality wines DOC/DOCG and decrease the production of table wines,
- ✓ increase in the production of white wine,
- ✓ decreases in the production of wine in all Italian regions.

This includes the South, where production has increased along with the need to rebalance the loss of production of wine.

[4] March 2013.
[5] DOC: Denominazione d'Origine Controllata. Controlled Designation of Origin.
[6] DOCG: Denominazione d'Origine Controllata e Garantita. Controlled and Guaranteed Designation of Origin.
[7] IGT: Identificazione Geografica Tipica. Typical Geographical Indication

Today in Italy the domestic consumption has fallen below the threshold of 40 litres per capita per year, so it is the export to hold high the turnover of the Italian vineyard. In fact, according to ISTAT[8] data relating to the first 11 months of 2012 (processed by Federvini), Italian wine on international markets has forfeited +7.5% on the same period last year- bringing the export turnover to 4.66 billion euro. The export turnover of the wine is covered by the United States (+6% in value), Canada (11%) as well as Germany (+4%) and the UK (+5%). Double-digit growth has kicked in for the Far East, where China and Japan have advanced by 15% and 28%.

2.4 Wine sector in Friuli Venezia Giulia

Friuli Venezia Giulia is a land of ancient winemaking traditions, and the area is rich in its variety of vines that make some of the best wines in Italy. The region is represented by 3 DOCG, 9 DOC and 3 IGT (this means that nearly all of the products come from protected varieties). Friuli Venezia Giulia accounts for 3.1% of the national vineyard area, amounting to nearly 20,000 hectares and 6.644 companies. In addition, 30% of companies have screw surface, and a total of 9% of SAU[9] is allocated to this crop. The area under vines has increased since 2000 by about 1,000 acres (10%), in contrast to the decrease of 46% of companies. In this sector, the effect of the concentration of land is evident, with the average size of companies at 3 hectares (doubled in ten years)- particularly in the province of Gorizia (screw surface of 5.1 hectares on average). The province with the largest share of area under vines is in fact Pordenone (40% of the regional total). Pordenone is also distinguished by the destination of the material culture of the propagation of the vine (mother vines from cuttings and rootstock), which occupies 20% of the planted area of right Tagliamento.

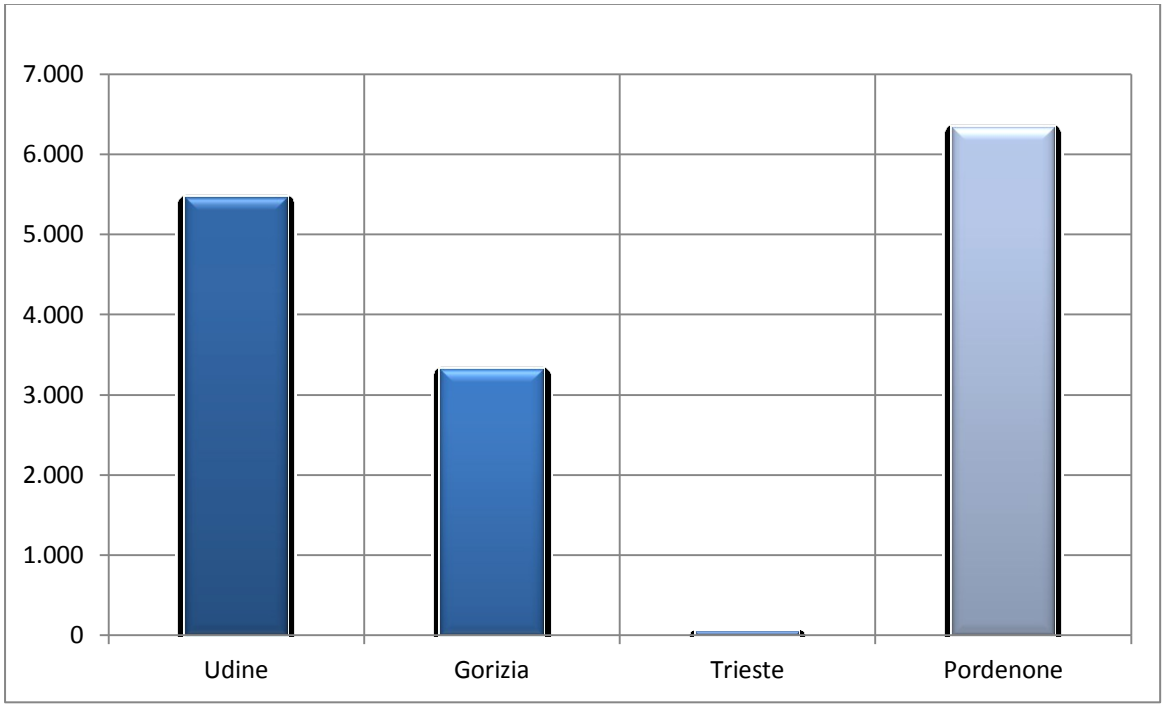
[8] ISTAT: Istituto Nazionale di Statistica. Italian National Institute of Statistics.
[9] SAU: Superficie Agricola Utile. Useful Agricultural Surface.

Table 4. Friuli Venezia Giulia Vineyard area (hectares) per Provincia. Year 2010

	Wine grapes production DOC and/or DOCG	Other wine grapes production	Grapevines for grapes (fruit)	No grafting grapevines	SUBTOTAL	rootstock	wine cutting	TOTAL
F.V.G.	15.177	4.073	82	123	19.455	1.159	891	21.505
Udine	5.462	1.824	56	17	7.358	17	30	7.405
Gorizia	3.323	741	3	2	4.070	3	2	4.075
Trieste	50	155	0	..	205	..	..	205
Pordenone	6.342	1.353	23	104	7.822	1.139	859	9.820
Nord East	116.250	52.099	380	223	168.952	1.272	1.393	171.617
Italy	320.859	304.841	37.305	1.292	664.296	1.861	2.597	668.755

Source: Istat, 6° General Census of Agriculture

Figure 5. Friuli Venezia Giulia Vineyard area (hectares) (2010)



Source: our elaboration

The territory of Friuli Venezia Giulia is completely covered by the viticulture- excluding, for obvious climatic reasons, the mountain areas. In the region are currently nine recognized DOC. In the province of Udine there are three the DOCG Ramandolo, Cialla and Rosazzo;

and the DOC: Colli Orientali del Friuli, Friuli Annia, Friuli Aquileia and Friuli Latisana. Between the provinces of Udine and Pordenone there is the DOC Friuli Grave. In the provinces of Gorizia there are the DOC Collio and Friuli Isonzo. While in the province of Trieste there is only one DOC, Carso. Within the territory of the eastern hills of Friuli are also two defined sub-areas of particular wine values called "Cialla" and "Rosazzo". Furthermore there is an interregional DOC called Lison-Pramaggiore, which is produced in the provinces of Venice and Treviso (Veneto) as well as Pordenone (Friuli Venezia Giulia. There are also two regulated Typical Geographical Indications (IGT) called "delle Venezie" and "Venezia Giulia." According to the national and EU legislations, although they are a lower level of classification, they still represent quality wine production, especially attractive for the everyday consumer as the favorable value for money.

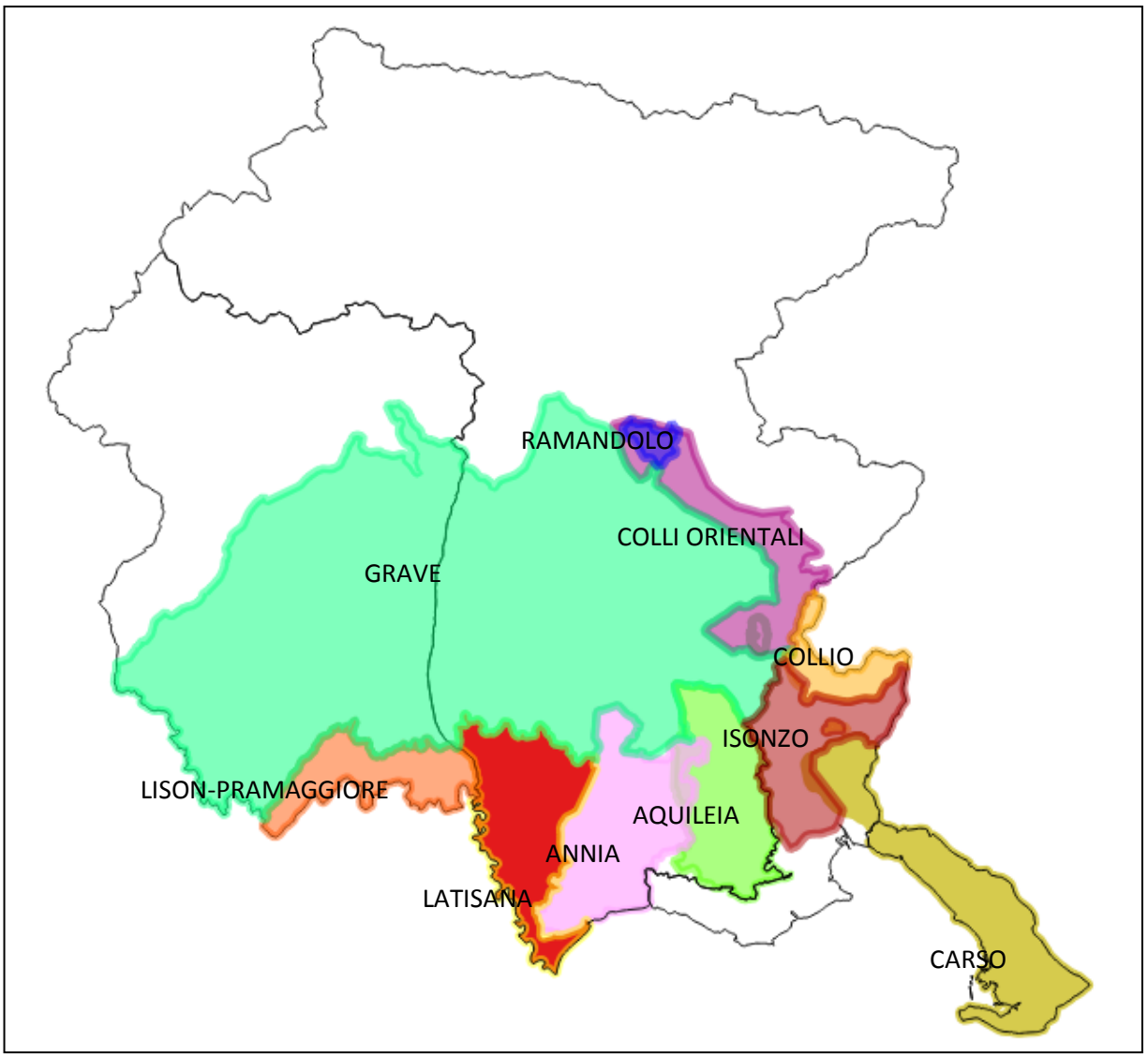
This variability in microclimates and soil composition corresponds to an equally wide range of cultivated grape varieties. Friuli Venezia Giulia has a wide variety of wines from the most prestigious to more common ones, giving the region a reputation known throughout the world.

However, the Region is almost completely absent from view online. Currently in this region there are a large number of small and medium-sized wine companies. This number shrinks dramatically when one analyses the companies that have a website, and even more so when one counts those that make use of e-commerce with their products.

2.5 Consortia for the protection of the wines

In Friuli Venezia Giulia there are currently nine protection consortia that aim to regulate, promote and support the regional wine tradition in Italy and abroad. The nine active protection consortia in Friuli Venezia Giulia are Friuli Annia, Friuli Aquileia, Carso, Collio, Colli Orientali del Friuli, Friuli Grave, Friuli Isonzo, Friuli Latisana and Ramandolo. Moreover, the interregional Lison-Pramaggiore consortium is active in the provinces of Venezia and Treviso (Veneto), as well as Pordenone (Friuli Venezia Giulia) (figure 6 and 7). These consortia represent over 2500 wine producers, accounting for over 75% of DOC wine production in the region.

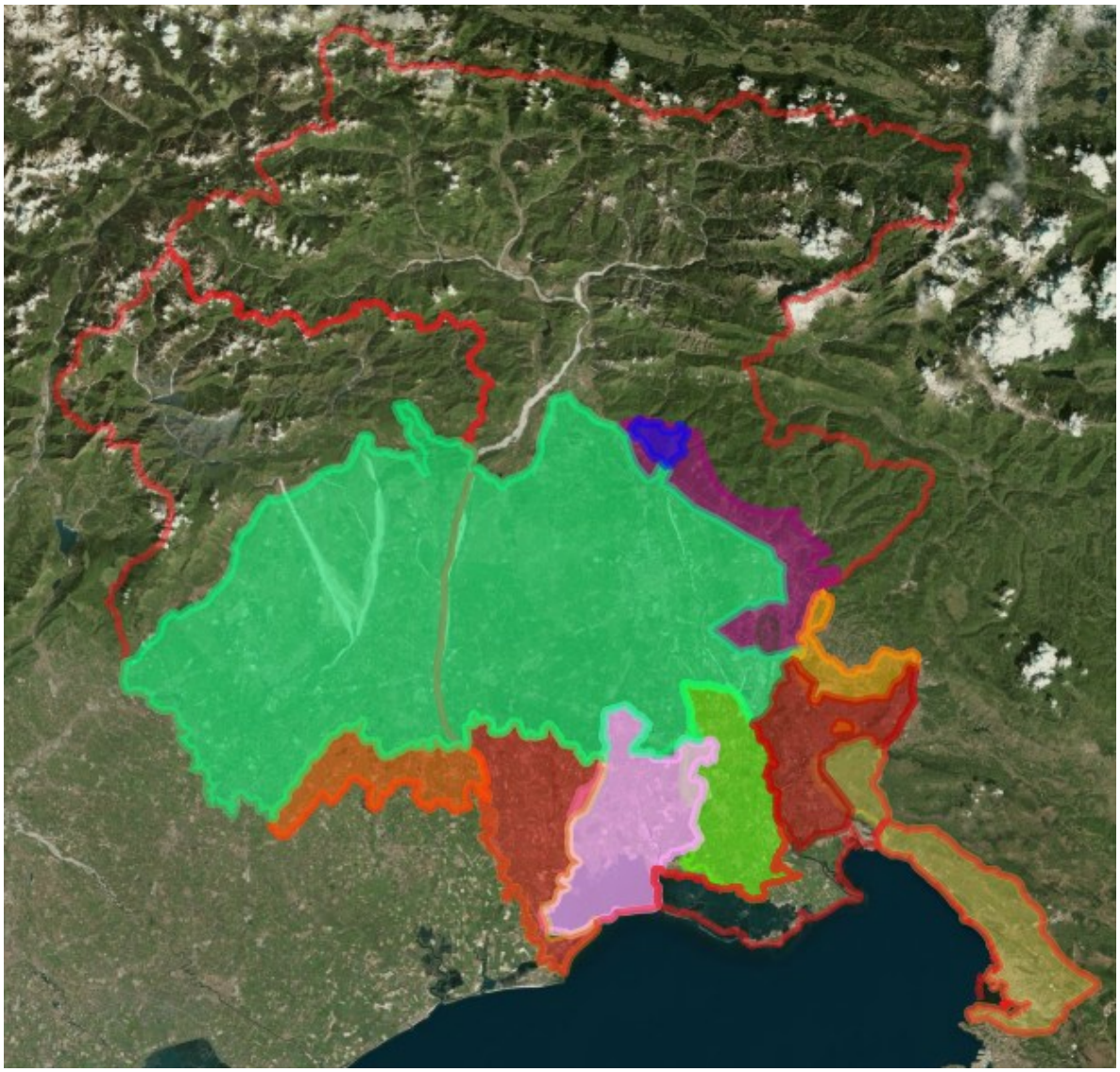
Figure 6. Map of the wine consortia in Friuli Venezia Giulia



			DOC Lison-Pramaggiore		DOCG Ramandolo
	DOC Friuli Grave		DOC Friuli Latisana		DOC Friuli Annia
	DOC Friuli Isonzo		DOC Carso		DOC Colli Orientali del Friuli
	DOC Collio		DOC Friuli Aquileia		

Source : our elaboration with QGIS 2.0

Figure 7.Physical map of the wine consortia in Friuli Venezia Giulia



			DOC Lison-Pramaggiore		DOCG Ramandolo
	DOC Friuli Grave		DOC Friuli Latisana		DOC Friuli Annia
	DOC Friuli Isonzo		DOC Carso		DOC Colli Orientali del Friuli
	DOC Collio		DOC Friuli Aquileia		

Source: our elaboration with QGIS 2.0

2.5.1 Consortium for the protection of the Friuli Annia DOC wines

The Consortium for the protection of Friuli Annia wines, which includes 16 agricultural farms with 180 hectares of vineyards, was established in 1996 with the main objectives to defend and protect the production and trade of the Friuli Annia DOC wines. This Consortium looks after the improvement of production from cultivation practices to winemaking and marketing techniques, and promote and enhance Friuli Annia wines in Italy and abroad. An area of 60 hectares, out of a total 120 hectares of vineyards, is dedicated to the production

of DOC wines. Nine of the member farms also make wine themselves, and all the farms complete at least a part of the production chain from the vineyard to bottling. The protected territory extends to the Southern plain of Friuli, delimited to the South by the Marano Lagoon, within the municipalities of Carlino, Marano Lagunare, Castions di Strada, Porpetto, San Giorgio di Nogaro, Torviscosa, Bagnaria Arsa and Muzzana del Turgnano. This area features sand and clay soil, rich in mineral salts, and a climate influenced by sea breezes.

2.5.2 Consortium for the protection of the Ramandolo DOCG wine

The Consortium for the protection of Ramandolo includes a tiny area of the eastern hills of Friuli called Colli Orientali del Friuli (Friuli Eastern Hills). The territory is characterized by vineyards that reach 380 meters above sea level. The attribution of the DOCG to the white wine from the grapes obtained from the *Verduzzo Giallo* grapes gave a very important *impulse* to the vine-growing and wine-producing business of the area.

Currently, the Consortium counts 27 companies producing Ramandolo, for a total of about 60 hectares of vineyards and about 150,000 bottles a year. After a long process, the Consortium has obtained the right to use the name Ramandolo only for Verduzzo produced in this "sub area" (*sotto zona*), repressing imitations and unfair external competition, and effectively introducing the first *cru* of Friuli Venezia Giulia. In fact, the *sotto zona* is the only place where a controlled and guaranteed denomination of origin wine can be produced, presented and marketed with a geographical area denomination instead of a vine variety denomination.

2.5.3 Consortium for the protection of the Friuli Isonzo DOC wines

At present the Consortium for the protection of the Friuli Isonzo DOC wines presently has 110 members. Among them are the first bottling companies in Friuli and the most important companies in viticulture and wine producing from the province of Gorizia. The Consortium is committed to strengthening the image and the characteristics of its products by spreading their knowledge and contributing to the improvement of quality, starting from the vineyards. Special environmental studies have been conducted to divide the territory in order to promote its enhancement. These studies have led to the individuation of two homogeneous areas, as regards to the type of soil and the climate: the area to the left of the Isonzo River that is characterized by a soil that is poor in calcium and rich in noble red clay mixed with gravel, and the area to the right of the Isonzo River that is very rich in limestone, due to the presence of gravel.

2.5.4 Consortium for the Protection of the Collio and Carso DOC Wines

The Consortium for the protection of Collio and Carso wines was established on the 1st of January, 2010, by the merging of the historic Consortium of Collio Wines and the Consortium of Carso wines. The Consortium works for the protection, enhancement and promotion of the two appellations Collio and Carso, both of which maintain their own distinct identities whilst also benefiting from the synergy of knowledge and skills typical to hillside viticulture.

2.5.5 Consortium for the protection of the Collio DOC wines

The production area of the Collio wines includes eight municipalities: Gorizia, Capriva del Friuli, Cormòns, Dolegna del Collio, Farra d'Isonzo, Mossa, San Lorenzo Isontino, and San Floriano del Collio. From the beginning, the Consortium has fought to be awarded the Denomination of Origin, an award for which only hill vineyards could boast the Collio denomination. At the same time, a technical activity referred to as the "code of vine-wine" was introduced to support weaker enterprises and to contribute to the improvement of wine quality. The Collio brand was born in this way.

Respecting the environment is another objective of the Consortium, which leads enterprises towards solutions compatible with the needs of nature and landscape.

2.5.6 Consortium for the protection of the Carso DOC wines

The Carso area of wine production includes the province of Trieste, the Carso area, and some municipalities of the Gorizia province. The landscape is extremely varied and presents different types of vegetation.

By pooling their efforts, small and medium-sized companies, participating in the Consortium, are looking to offer a high quality product.

2.5.7 Consortium for the protection of the Friuli Latisana DOC wines

The area of the Friuli Latisana DOC is located in the southern belt of the province of Udine and is mainly composed of clay soil, rich in minerals. It includes many municipalities: Varmo, Rivignano, Ronchis, Latisana, Precenicco, Palazzolo dello Stella, Pocenia, Teor, Lignano Sabbiadoro, and partially Morsano al Tagliamento, Muzzana del Turgnano, Castions di Strada). The production area of Friuli Latisana is not particularly extended: it covers about 370 acres of vineyards. The Friuli Latisana DOC Consortium employs technicians that monitor

the activity of production in all its phases and, consequently, ensure the production of a wine of superior quality to smaller farms.

2.5.8 Consortium for the protection of Friuli Grave DOC wines

The Consortium for the protection of the Friuli Grave DOC wines aims to promote knowledge of the area and the value of its wines, namely through intense communication. The DOC certification is the result of several factors: the rationality of the new facilities, modern farming techniques, the selection of the most suitable varieties grown for the environment and, above all, the vision of many manufacturers.

The Friuli Grave DOC appellation covers about 7,500 hectares on both sides of the Tagliamento River in the provinces of Pordenone and Udine in the Friuli Venezia Giulia region. The high Friuli plain, sheltered by the Alpine foothills, has a particularly original landscape marked with stony soils called Magredi (areas closer to the rivers with lots of alluvial deposits) or Grave. This large area was formed by alluvial matter that the Meduna, Cellina and Tagliamento rivers washed down from the Alps. Over thousands of years, these rivers deposited enormous quantities of calcareous-dolomitic material that had been gouged out of the mountains by violent waters and washed along the course of their riverbeds.

The entire plain is made of alluvial soils with large deposits in the northernmost segment of the DOC area becoming ever finer downriver. As well as being the source of the distinctive pebbly soil of the Grave area, the nearby mountains protect the valley from icy winds blowing from the north.

This aspect, along with the mitigating influence of the Adriatic Sea, has created a climate that is particularly suitable for viticulture.

However, there is another reason why the Grave area is able to produce wines of such high quality: the pebbles and stones that lie on the surface of the soils enhance the differences between night time and day time temperatures, reflecting light during the day and storing heat to release it at night. This enhances the ripening of the grapes and the development sugar and aromatic components. The results are intense and elegant wines. (www.docfriuligrave.com)

2.5.9 Consortium for the protection of Colli Orientali del Friuli DOC wines

The Consortium acts for promotion and protection and aims to introduce innovative systems to the agricultural sector, without giving up thousand-year traditions or setting up a technical support service for the provision of technical assistance to companies in the hills

(especially in the field of wine territories). The Consortium extends along the eastern hills of the province of Udine, near the border with Slovenia, for a total of 2,300 hectares of registered vineyards. The Consortium gathers 170 members, one hundred of which are bottlers. Their vineyards produce more than 80 thousand hectoliters of DOC wine. At least 30% of it is marketed abroad, directed mainly to European countries such as Germany and Austria. In these countries, the Consortium organizes regular group presentations and tastings that are highly appreciated by the members and the public.

2.5.10 Consortium for the protection of Friuli Aquileia DOC wines

Friuli Aquileia is a strip of land that overlooks the lagoon of Grado and extends north to Aquileia, an ancient Roman city, and to Cervignano to the historic fortress of Palmanova. The characteristics of the soil and climate of this area have proved to be particularly suitable for the cultivation of vines since ancient times. The fields consist mainly of clay, and the climate favours good development of the screw and ensures balanced conditions. These conditions are ideal for the plant to obtain high quality grapes for the benefit of the 93 member companies of the appellation, for a total of 902 hectares, with an actual production of about 7,000 tons of grapes. The Consortium is led by a team of young producers who address the quality of the product and the enormous historical, cultural and archaeological heritage present in the territory. These producers are bringing forth an effort to enhance the whole controlled designation of origin area.

2.5.11 Consortium for the protection of Lison-Pramaggiore DOC wines

Lison-Pramaggiore is an interregional DOC area between Veneto and Friuli Venezia Giulia, with 6 municipalities in the province of Pordenone. The Consortium dedicates to the observance of DOC regulations for Lison-Pramaggiore wines was founded to promote the wines and DOC in order to enforce the rules for their production. The production area Lison-Pramaggiore DOC is located in the eastern part of the province of Venice and includes the towns of Annone Veneto, surrounded by Caomaggiore, Gruaro, Fossalta di Portogruaro, Pramaggiore, Teglio Veneto and part of the area under Caorle, Concordia Sagittaria, Portogruaro, San Michele al Tagliamento and San Stino di Livenza. It also includes the municipalities of Motta di Livenza and Meduna di Livenza in the province of Treviso, and six municipalities in western Friuli belonging to the province of Pordenone, namely Chions, Cordovado, Pravisdomini and part of the area under Azzano Decimo, Morsano al Tagliamento and Sesto al Reghena.

From a climatic point of view, the DOC Lison-Pramaggiore wine area enjoys what could generally be described as a temperate climate owing to its latitude and the fact that it lies near the sea, as well as to its flatness and consequent exposure to winds.

3 Second Analysis – E-commerce

3.1 The social network analysis

A social network is a representation of the social interactions within a group of individuals. The social network analysis is a method to analyse the relationships among individuals, groups, organizations and other social units. A social network is a representation of social interactions within a group of people. The social network is most commonly viewed as a graph with individuals as nodes and relationships or contacts as the edges. There are many kinds of relations made form the "network" between nodes, such as shared ideas, social contacts, kinship, financial exchanges, joint membership in organizations and group participation in events, etc. Social network analysis gives more importance to the connections than the attributes of individuals for understanding the social structure. Social network analysis has its roots in the research of Jacob Moreno Levi. Moreno explored how a person's relations influenced their actions. In 1934, Moreno introduced sociograms to represent the relations of a group and used this representation to identify key persons in the groups. The sociogram represented persons as nodes and relations as edges between the nodes. Through his research Moreno founded the field of sociometry, or the measurement of interpersonal relations in small groups, which is a precursor to social network analysis. Kurt Lewin also studied group behaviour and argued that the structure of a group could be analysed using set theory and topology. Cartwright and Harary used the mathematical models of Lewin and the sociogram of Moreno as a basis for introducing graph theory to group behaviour. This enabled the creation of models for cohesion, social pressure, cooperation and leadership in groups.

The basic principle of social network analysis is that the greater the number of ties connected with a node, the greater the node's potential to communicate, influence or transfer resources with other nodes in the network. Social network analysis maps and measures formal and informal relationships in social networks, then uses it to understand the social structure. By this method, it is possible to obtain information about the positions of the actors in a social structure, the size and the density of the network formed by connections among these actors, and the groupings in network, etc. This information is acquired by the application of mathematical methods on the dataset representing the social network. Today,

there are some software programs providing both mathematical and visual analysis of network data. UCINET, Pajek, Gmine, NetMiner, MultiNet, STRUCTURE and STOCNET are some of these programs. In this study, UCINET (version 6.2) was used for analysing and visualization of the social network. UCINET is a social network analysis program developed by Steve Borgatti, Martin Everett and Lin Freeman. The program is distributed by Analytic Technologies. UCINET works in tandem with a program called NETDRAW for visualizing networks. The software package is used to conduct formal social network analyses and allows the user to process a large amount of data, which can be evaluated in many different ways. With UCINET, it is possible to define each individual's position within a given community's social hierarchy. Furthermore, it allows the users to determine their identities and individual profiles (cf. different network dimensions in the social network questionnaire).

3.2 Modeling and Measuring a Social Network

Networks may be modelled using dots or "nodes" to represent actors in the network, and lines between the dots to represent the relationships or "ties" between actors. Actor attributes are measures associated with the nodes, and the full set of actor attributes is the network composition (Wasserman and Faust 1994). The pattern of all the ties between actors is the network structure (Wasserman and Faust 1994).

Two actors (nodes) and the relationship (tie) between them form the simplest possible network, known as a dyad. It is possible to measure the structure of a network from the perspective of a single actor, and this perspective is called an ego network. The actor at the centre of this perspective is called the "ego", while all the actors with which he or she is connected are referred to as "alters." Ego networks may also be referred to as "personal communities" (Wellman, 1999). A subtle but important point is that while network measures of ego networks produce values that may be analysed in combination with actor attributes (for example, as found in econometric models), they have not become actor attributes. Rather, they remain descriptions, or "snapshots", of the network from the perspective of each individual actor. Moving from picturing a social network as a graph made up of nodes and lines to relational data that can be analysed using matrix algebra techniques requires the construction of an adjacency matrix. The row and column headings for an adjacency matrix are identical, listing the names of the actors involved in the network. In the simplest case, the cells of the matrix are coded with a "1" if a tie exists between the actors or "0" if no tie exists. Ties may also be "valued". Values indicate a characteristic of the relationship that the research has quantified (for example, measurements of the intensity of interaction). Ties may also be "directed". For example, the relationship "lends money to" is a directed

relationship. Graphically, this would be depicted using arrowheads on the lines connecting nodes. In matrix form, row actors "send" ties to column actors. Thus if Jill lends money to Jen, the (Jill, Jen) cell would be set to "1" while the (Jen, Jill) cell would be set to "0". Social network analyses tend to follow one of two different models of organization (Borgatti, Mehra, Brass, and Labianca, 2008) depending on the goal of the analysis. Architectural models tend to focus on the structure of the network, seeking to discern whether specific structures lead to similar outcomes, or whether actors in similar network positions behave in similar ways. Planning applications related to the social and spatial structure of "community" tend to be organized and analysed as architectural models. Flow models view the network as a system of pathways along which things flow between actors. Analysis of flow models can, for example, identify which actors in the network are more active, or which ones are more powerful. Flow models are good for evaluating processes, as will be shown in the review of public participation in the planning process.

3.3 Description of the second survey

The second survey was conducted in order to investigate how small and medium firms in Friuli Venezia Giulia use or tend to use the methodology of business e-commerce. Despite the expectations of the benefits of this tool, the adoption of electronic commerce by small and medium-sized enterprises in the agro-food sector in Italy is still not frequent, however, the understanding of the opportunities that could be created and how they can be exploited remains a important issue. This study, carried out in the region of Friuli Venezia Giulia in 2013, illustrates the results of a survey conducted at the regional level and open to all companies holding a website. In our region, from data of the Chamber of Commerce in Friuli there are two thousand companies. From our investigation on the internet, the firms that have a website are only 430 and only 32 make use of e-commerce. Our survey respondents 48 companies aimed at understanding the use of the Internet and the strategies adopted for the implementation of electronic commerce. The results show a low level of implementation of the instrument and a limited variety of strategies adopted. Agro - food actually invest very little in the area of electronic commerce focusing their efforts on the Internet as a promotional tool, and the web-based direct selling is limited to niche markets. The idea that the Internet would reverse the disadvantages of small businesses now seems unrealistic, even if attractive opportunities for further development are still present. The questionnaire was sent to four hundred thirty companies. Forty-eight questionnaires were returned (response rate 11%). The responses of the two companies were discarding.

4 Data Analysis

4.1 Descriptive Statistics

At the end of the research, more than 300 questionnaires were collected for each consortium (Table 5.) for a total of 2277 questionnaires. The collection of the questionnaires had no missing data, for the compilation of all the questions was obligatory in order to send in the questionnaire.

Table 5. Collected questionnaires for the wine Consortia

Name of Consortium	**Number of collected questionnaires**
1) Friuli-Annia Consortium	302
2) Ramandolo Consortium	304
3) Friuli Isonzo Consortium	366
4) Collio and Carso Consortium	300
5) Friuli Latisana Consortium	300
6) Friuli Grave Consortium	303
7) Colli Orientali Consortium	304
8) Friuli Aquileia Consortium	300
9) Lison Pramaggiore Consortium	303
Total Questionnaires	**2782**

Below we see the statistical sample of distribution regarding controlled variables such as gender, age and education as considered in the evaluation of the quality of web sites (Table 6).

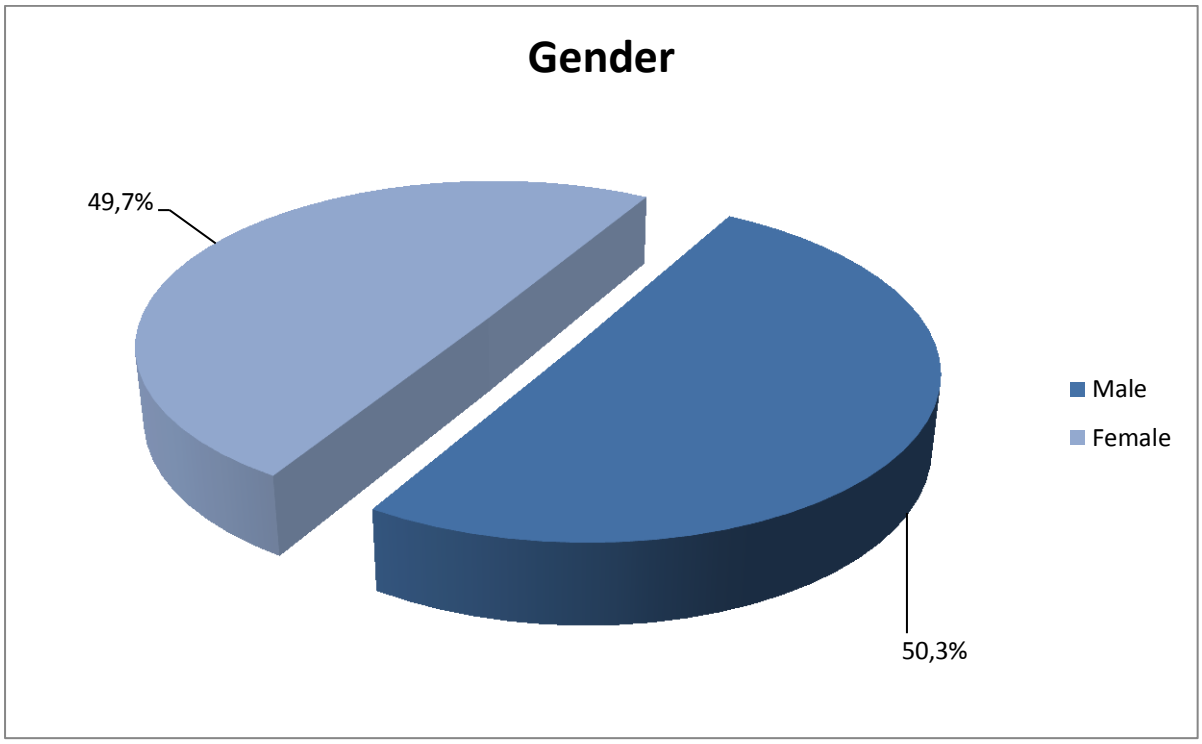
Table 6. Sample Characteristics

Variable		**Frequency**	**%**
Gender	Male	1400	50,3
	Female	1382	49,7
	Total	2782	100,0
Age	19 years and less	459	16,5
	From 19 years to 29 years	1560	56,1
	From 30 years to 39 years	317	11,4
	From 40 years to 49 years	255	9,2
	From 50 years to 65 years	159	5,7
	65 years and more	32	1,2
Education Level	Primary school	33	1,2
	Secondary school	572	20,6
	High school diploma	1219	43,8
	Bachelor	698	25,1
	Master	221	7,9

According to table 6, 50.3% of respondents are men and 49.7% of them are women. The highest frequency is related to the age group 19 to 29 and the lowest frequency is related to the age group from 65 years and more. Furthermore, 38.8% of them have B.A. degree and the lowest frequency for education is related to those with a PHD.

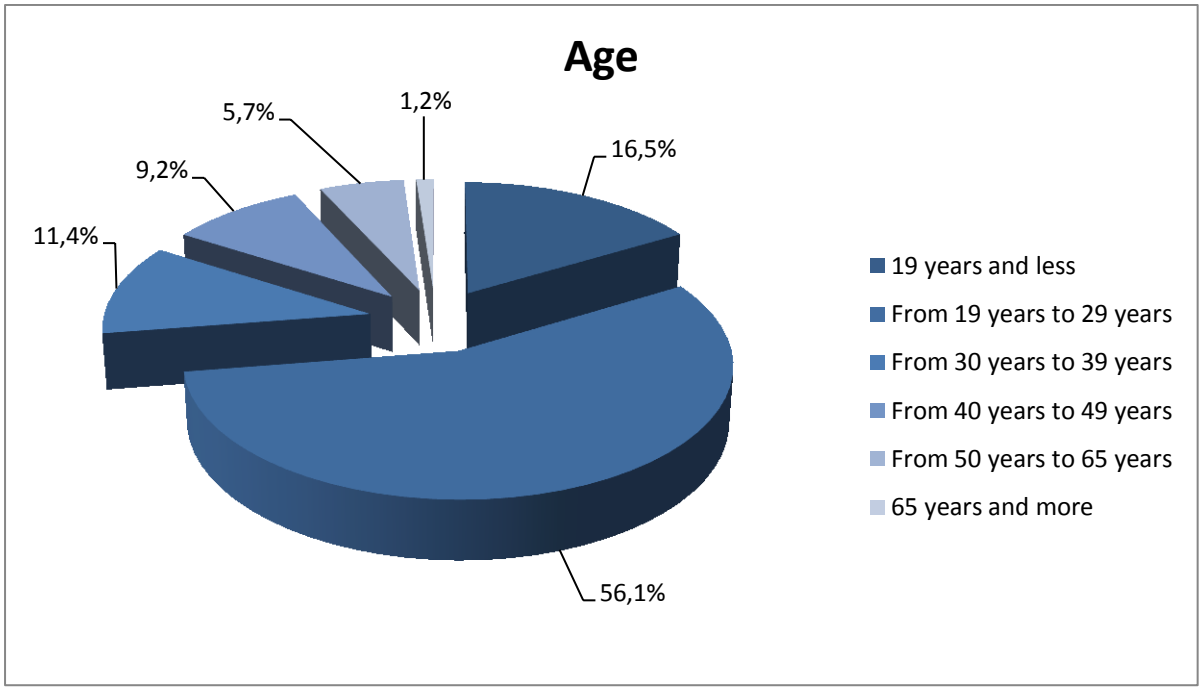
To better understand the descriptive analysis, we have created the following graphs. As we see from Figure 8, the total sample consists of 2782 questionnaires in which 50.3% of respondents are men and 49.7% of them are women.

Figure 8. The gender



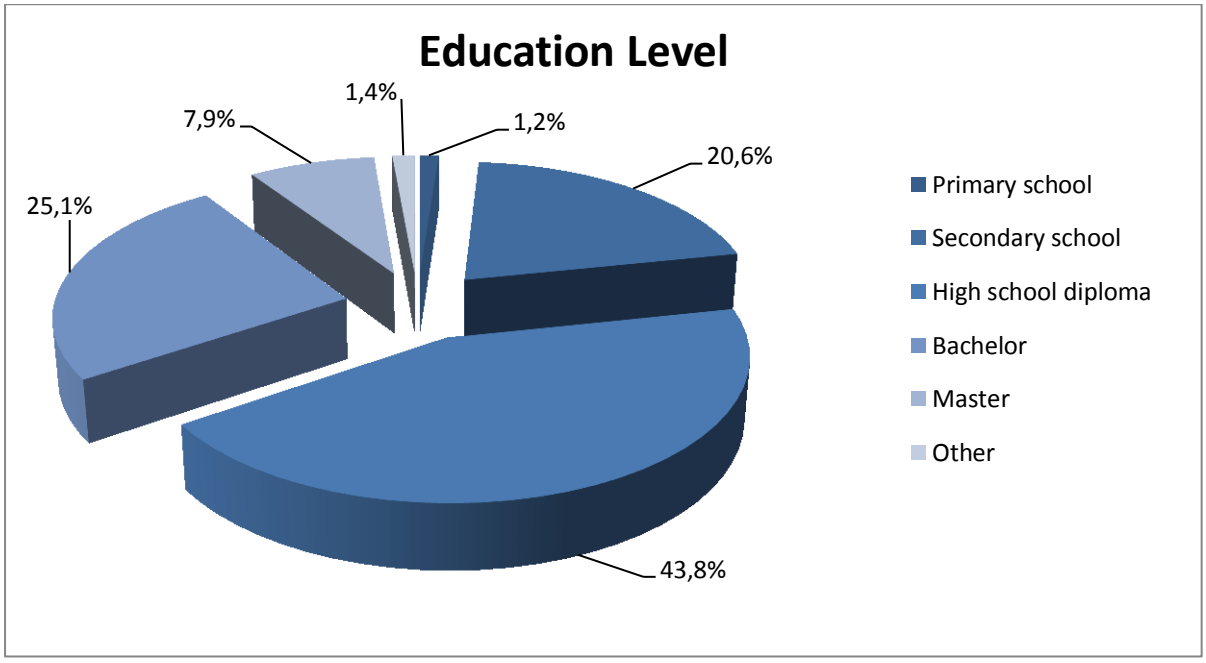
The graph in Figure 9 represents the responses of the age groups. The highest frequency is related to the age group 19 to 29 and the lowest frequencies are related to the age groups of 50 to 65 and 65 years and more. This leads us to suppose that the majority of respondents were fellow students of the same interviewers.

Figure 9. The age group



As for the educational level, the alternatives were primary school, secondary school, high school diploma, bachelor, master and other. Other refers to a higher educational level of master, such as the doctoral candidate. The responses are illustrated in the graph proposed in Figure 10.

Figure 10. The gender



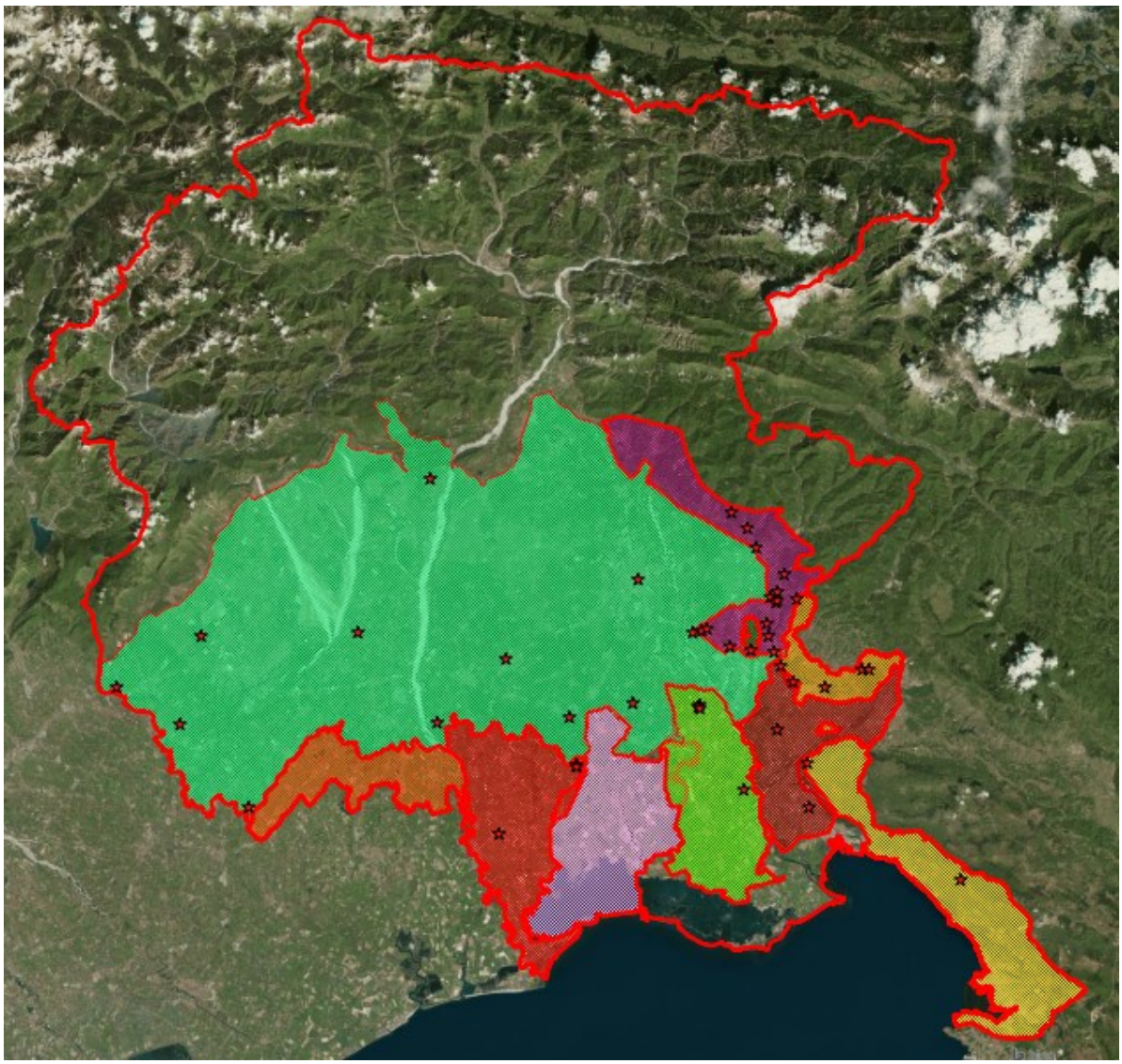
Almost half of the volunteers have a high school diploma. The second most common completed level is bachelor/first level, followed by the volunteers in the possession of a secondary school certificate. The number of people who possess a master's degree is 8%. The lowest contributions were made by the interviewers who completed elementary school and by those with the highest qualifications.

4.2 Data Analysis E-commerce

4.2.1 Measures

In the first part of the survey were required general data of the companies and the relationships that businesses present wineries in Friuli Venezia Giulia with exports, trade associations, with regional consortia, with regional and national organizations and participation in regional and international events. Subsequently, we investigated whether the agro - food uses the new technology of e-commerce, and if they do, their tendency to use it as a new marketing tool.

Figure 11: Mapping of the wineries in Friuli Venezia Giulia who responded to the survey of e-commerce (QGIS)



	DOCG Rosazzo		DOC Lison-Pramaggiore		DOCG Ramandolo
	DOC Friuli Grave		DOC Friuli Latisana		DOC Friuli Annia
	DOC Friuli Isonzo		DOC Carso		DOC Colli Orientali del Friuli
	DOC Collio		DOC Friuli Aquileia		

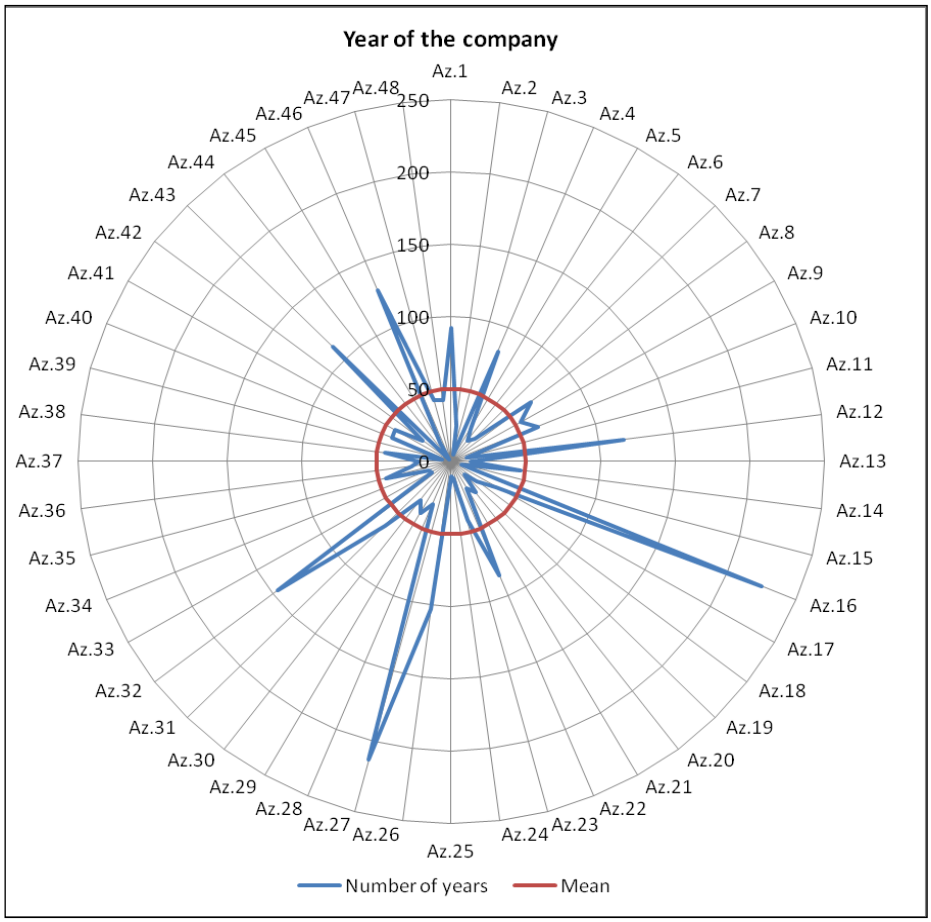
Source: our elaboration with QGIS 2.0

4.2.2 Descriptive Statistics

The year of the company establishment

In our survey we asked the year of the company establishment and then we calculated the average age of the companies.

Figure 12. The company establishment

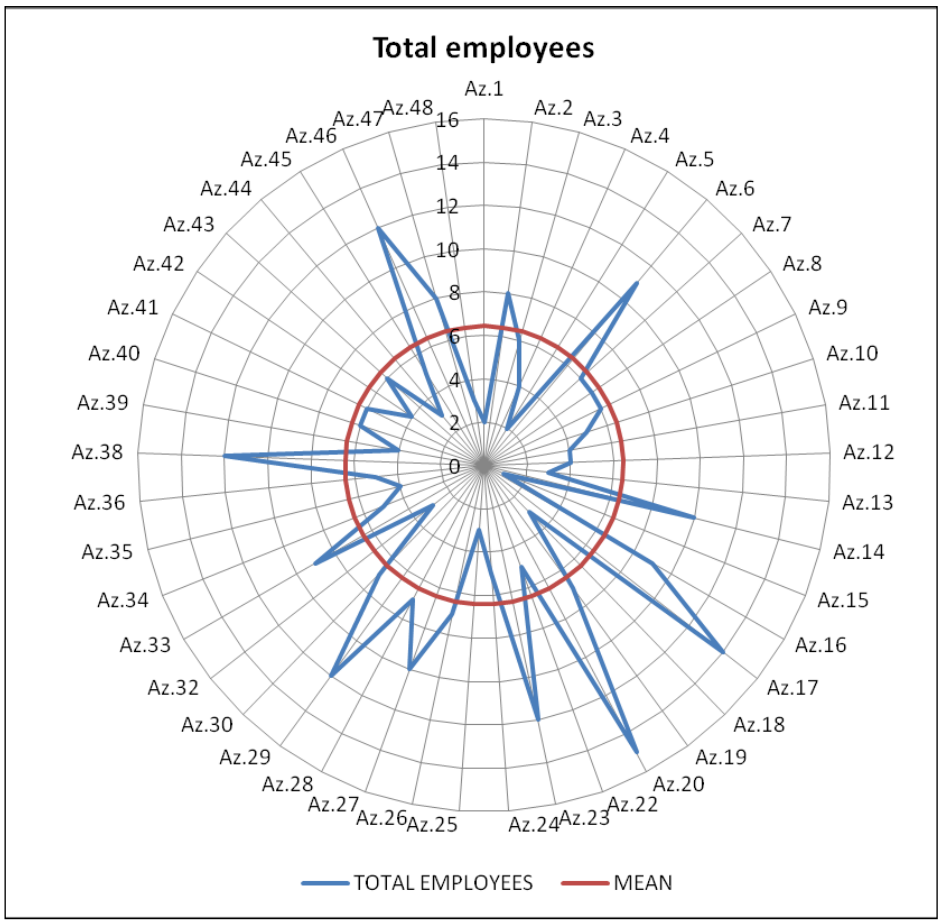


In the figure we see that the average age of companies is 50.1 years. The 17% of companies was established during nineties and eighties, the 13% in the eighties, the 15% in the seventies. Only one company was established in the seventeenth century and four companies were established in the nineteenth century.

Total number of employees

In the following chart we analysed the number of employees for each company.

Figure 13. Total number of employees

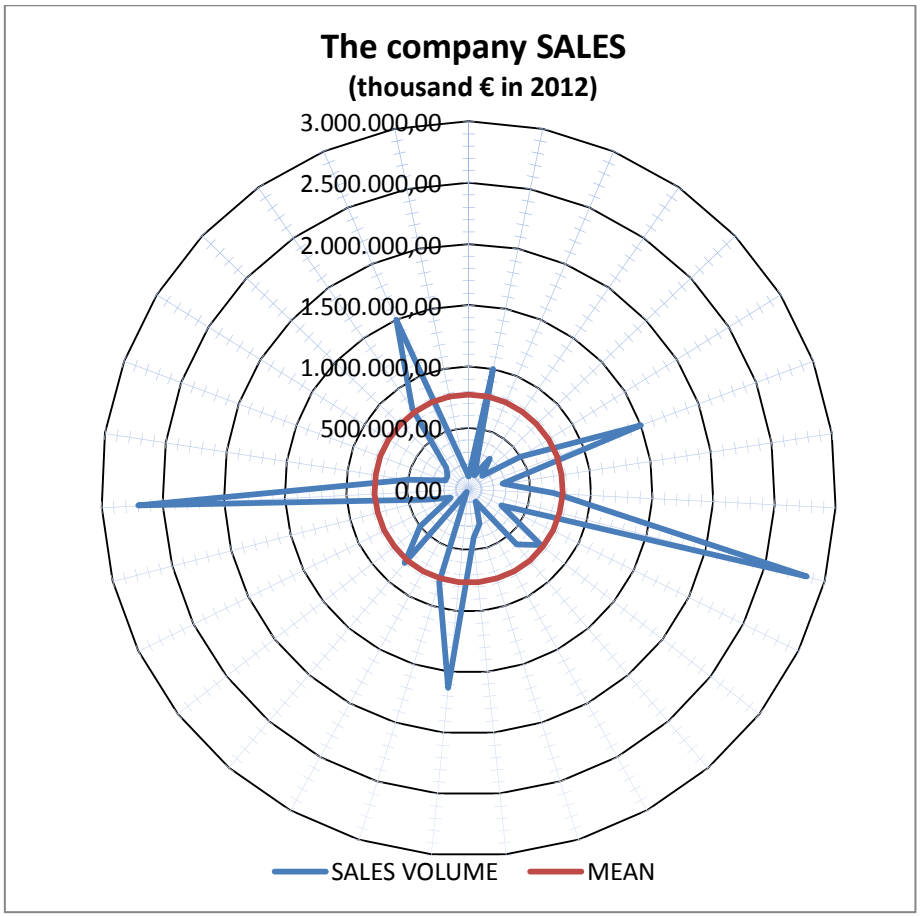


The average of the total number of employees is 6.4. As we can see from the chart in figure the 48% of companies have less than six employees, while companies which exceed the average of six employees is the 17%.

The company SALES (thousand € in 2012)

The general trend of the average sales of the sample firms in the year 2012 shows an average sales of EUR 767.000. (Figure 14). Of the 48 companies that responded only 31 companies provided the company sales.

Figure 14. The Company sales

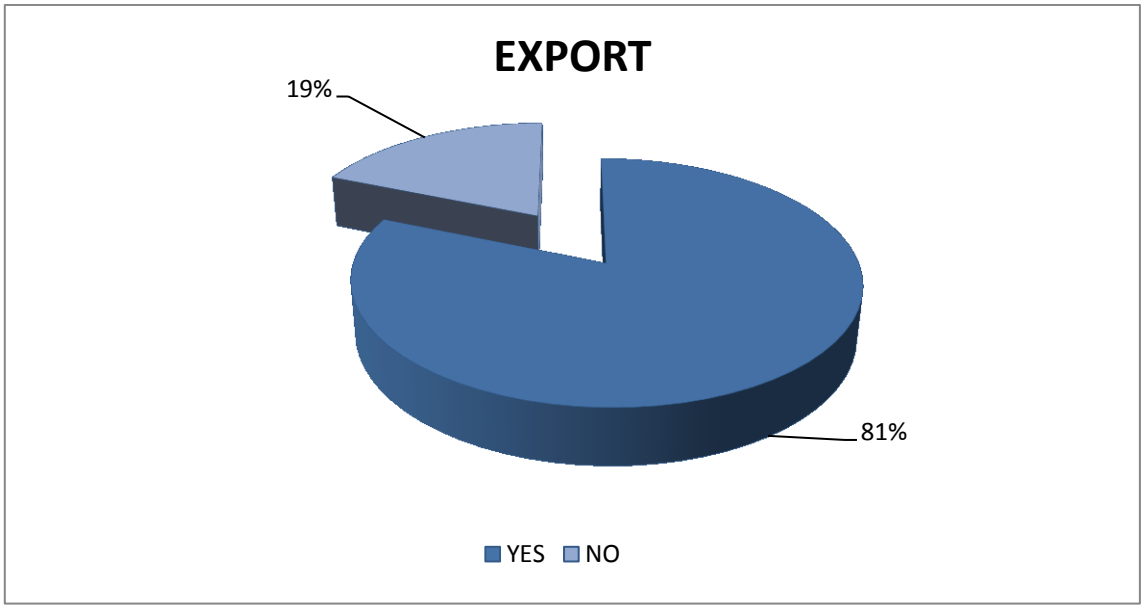


In view of the chart we see that the majority of companies have sales volume below average and so we are in presence of small-companies. Only nine companies exceed the average of the sales.

The company exports

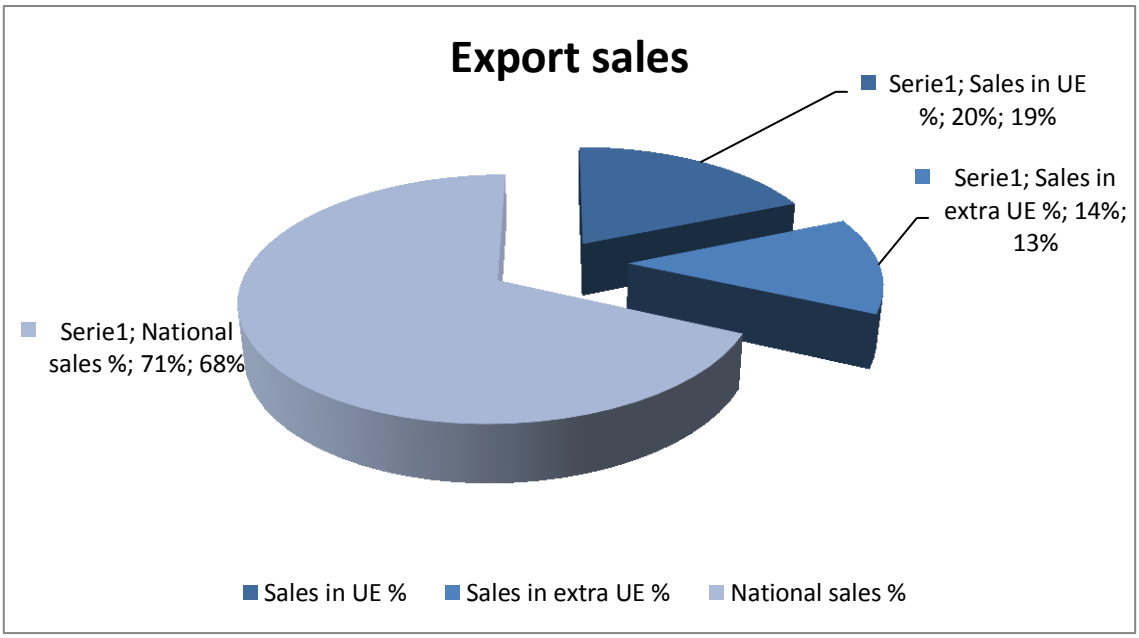
In our survey we asked the companies if they export wine abroad. The 81% of companies export while only the 19% does not sell abroad and then sales take place at regional and national levels.

Figure 15. The companies export



For companies which export we asked to indicate the incidence % of the exports sales of the company's total sale in the 2012.

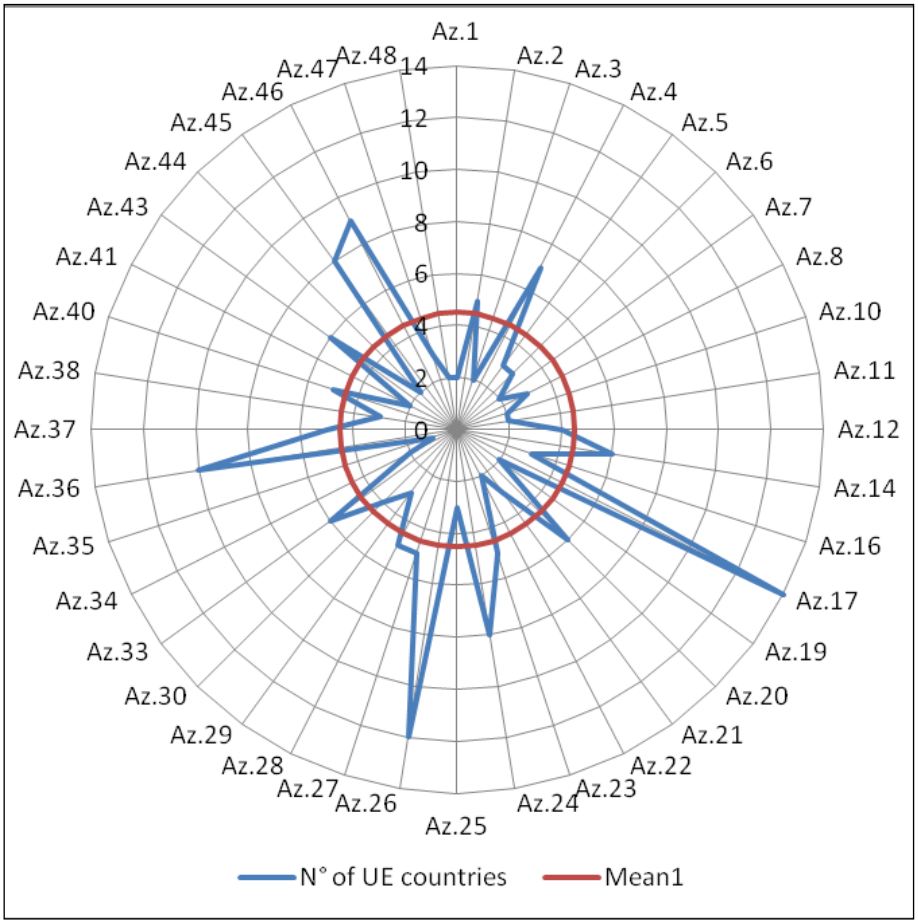
Figure 16. Exports sales



The incidence % of the EXPORTS SALES in EU covers the 20% of sales, while the exports in EXTRA EU covers only the 14% of the sales. From the chart we see that most of the sales are derived from national sales while has a low incidence to other countries.

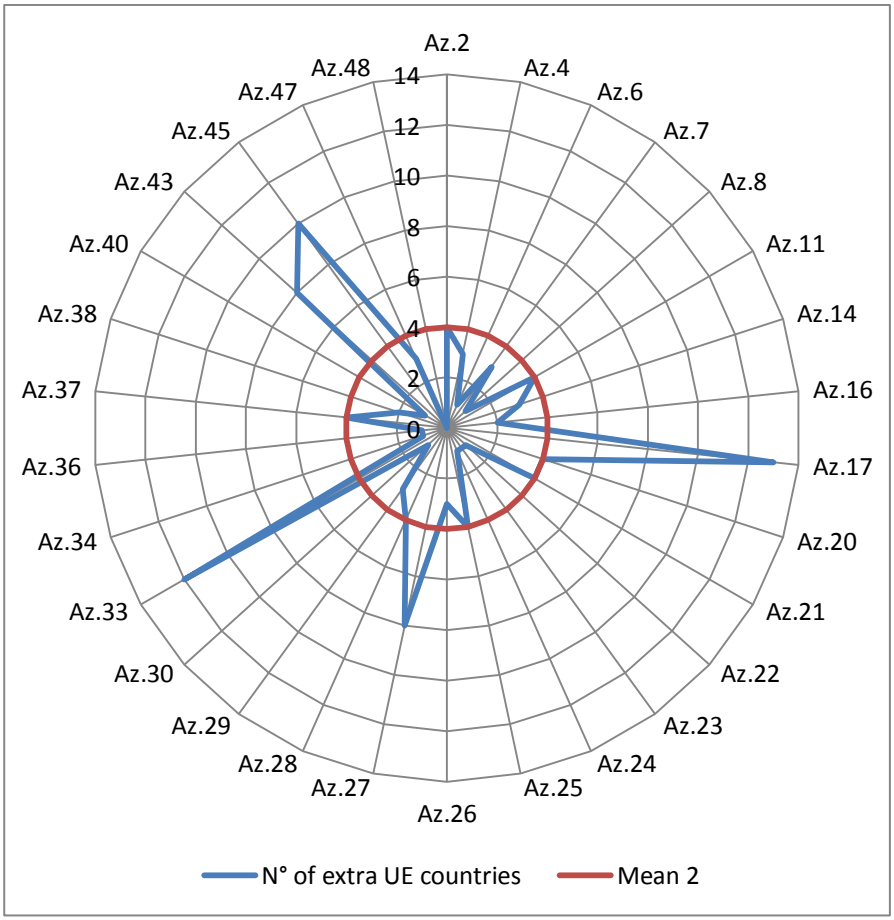
The companies were asked to indicate the number of foreign countries to which the company exports

Figure 17. Number of EU countries to which the company exports



Only 40 of the 48 companies have shown in how many EU countries they export. As we can see from the figure 17, the average is 4.5 countries. Two companies reach ten countries and only one reaches 14.

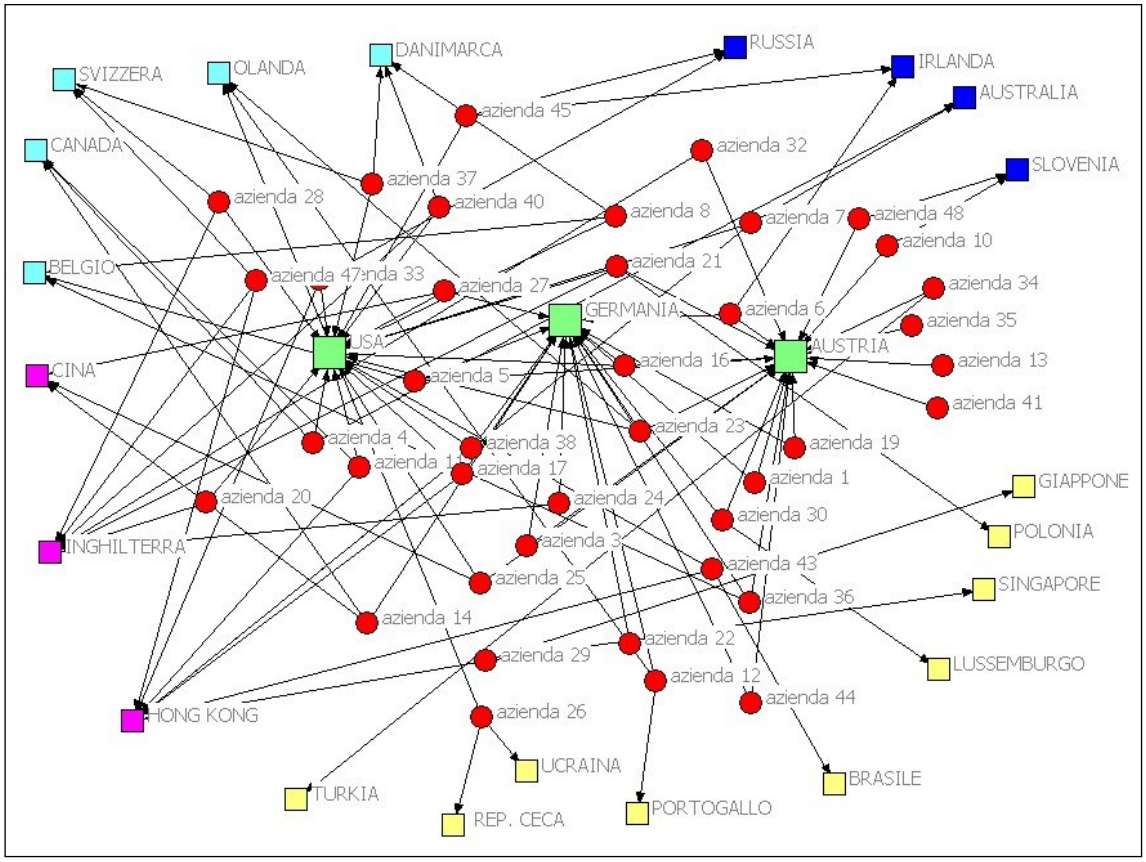
Figure 18. Number of non-EU countries to which the company exports



Thirty companies have shown in how many non-EU countries they export. In average every company exports in 4 non-EU countries. Two companies exceed 8 countries while three companies exceed 10 countries.

Through network analysis, we analysed the export of wine farms. Companies were asked to indicate which are the three largest country were they are exporting. From the figure 19 we can see the countries were wine export takes place.

Figure 19. The network analysis of the companies exports



Source: Our elaboration with "Ucinet 6"

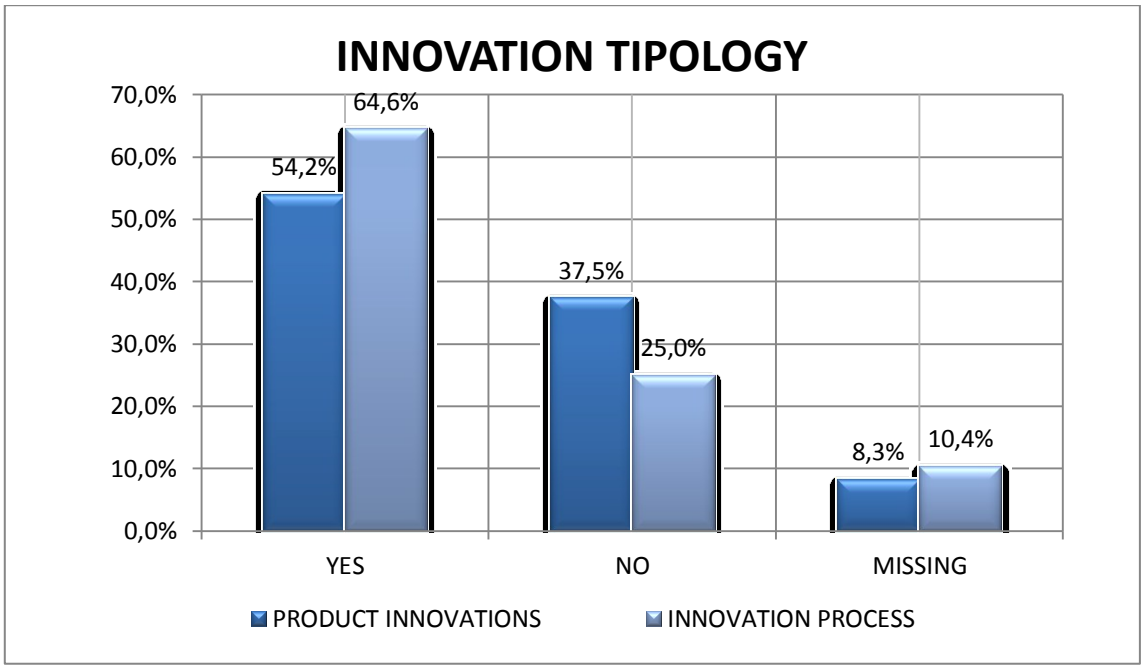
Our survey has shown that the countries in which the export takes place mostly are Austria, Germany and the United States. These are the countries in which the export almost reaches the 50%. A portion of the export takes place towards the neighbouring European countries, while it was found that the 20% of companies are exporting to the eastern countries such as China, Japan, Singapore and Hong Kong.

The "innovation typology" used in the last three years

Turning to one of the determinant factors of competitive success of companies such as innovation, in this analysis there were put in evidence the main types of innovation, i.e. product innovations and innovations in the process. Product innovation, as it is known, allows companies to protect their profit margins by introducing elements of differentiation and innovation in their bids; in this context, the surveyed companies have operated as follows: the 54% said to have introduced product innovations in the company, on average, more than two per company (minimum 1, maximum 4). Process innovations that are intended to provide improvements to the companies from the point of view of production

efficiency have involved the 65% of companies concerned in the investigation, mainly with direct investments towards new technologies.

Figure 20. The innovation typology used in the last three years



The 44% of companies have adopted a single product innovation, the 48% adopted two product innovations, while three and four product innovations were adopted only by the 4% of companies. About process innovation, only the 32% took one innovation, the 42% of companies have adopted two process innovations, the 23% adopted three process innovations, and only the 3% have adopted 4.

Figure 21. The number of innovation typology adopted in the last three years

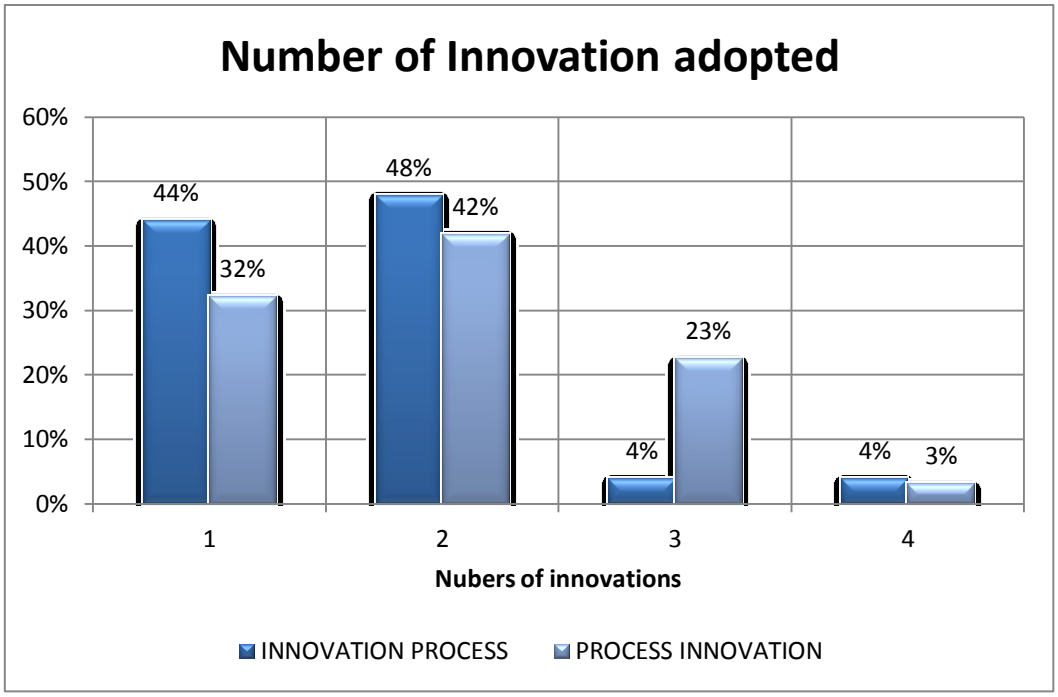
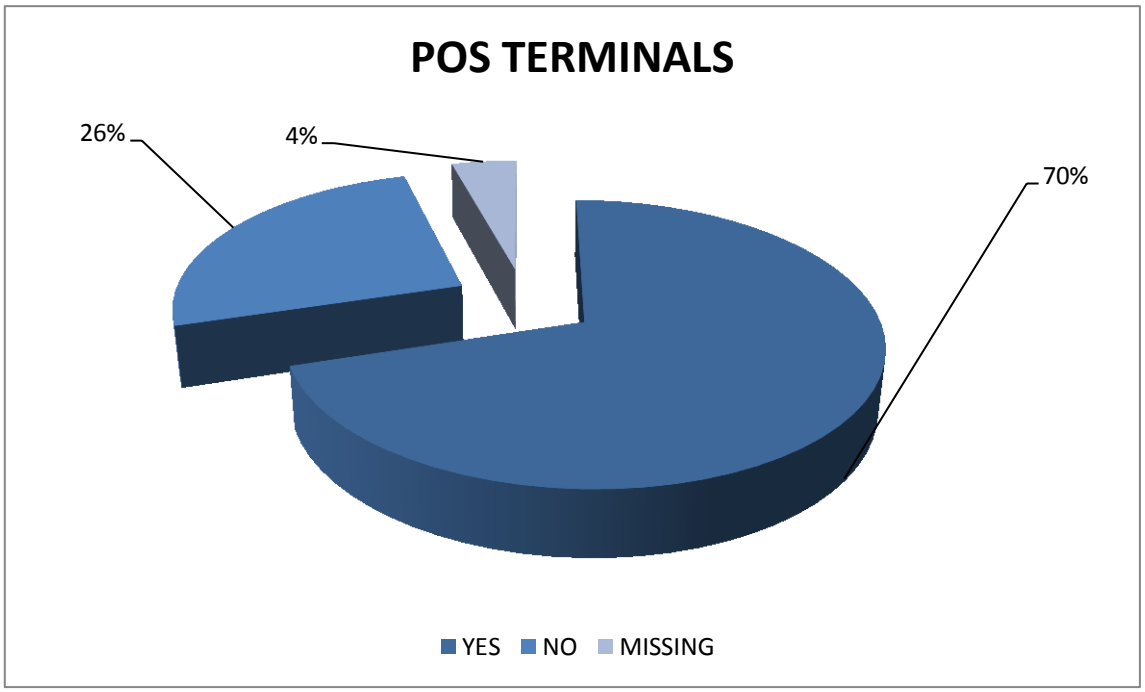
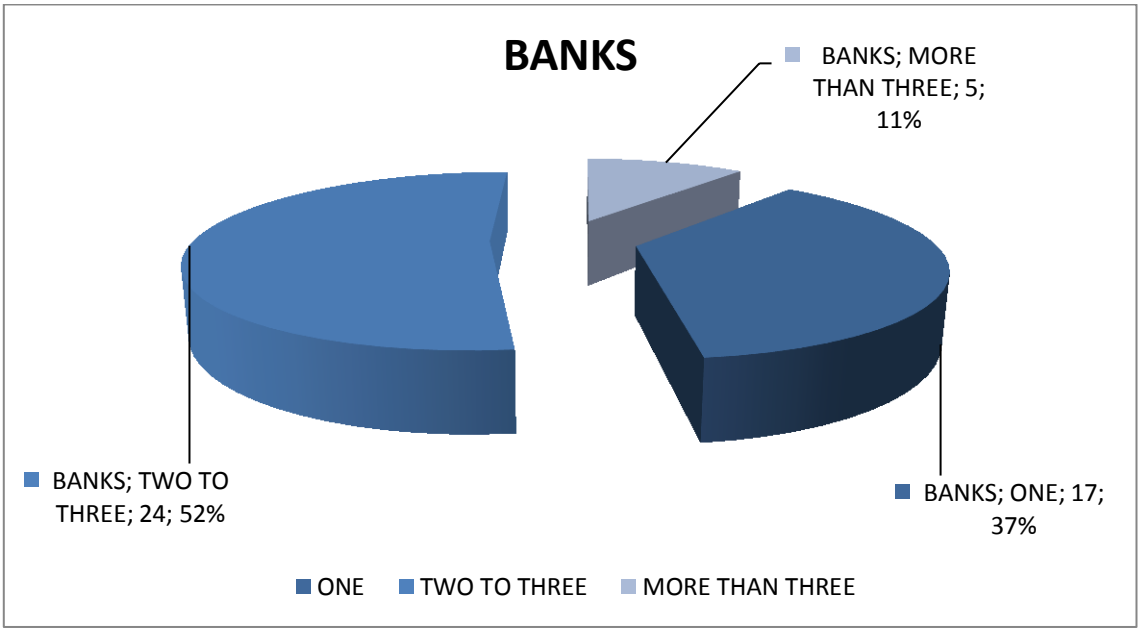


Figure 22. The POS equipment



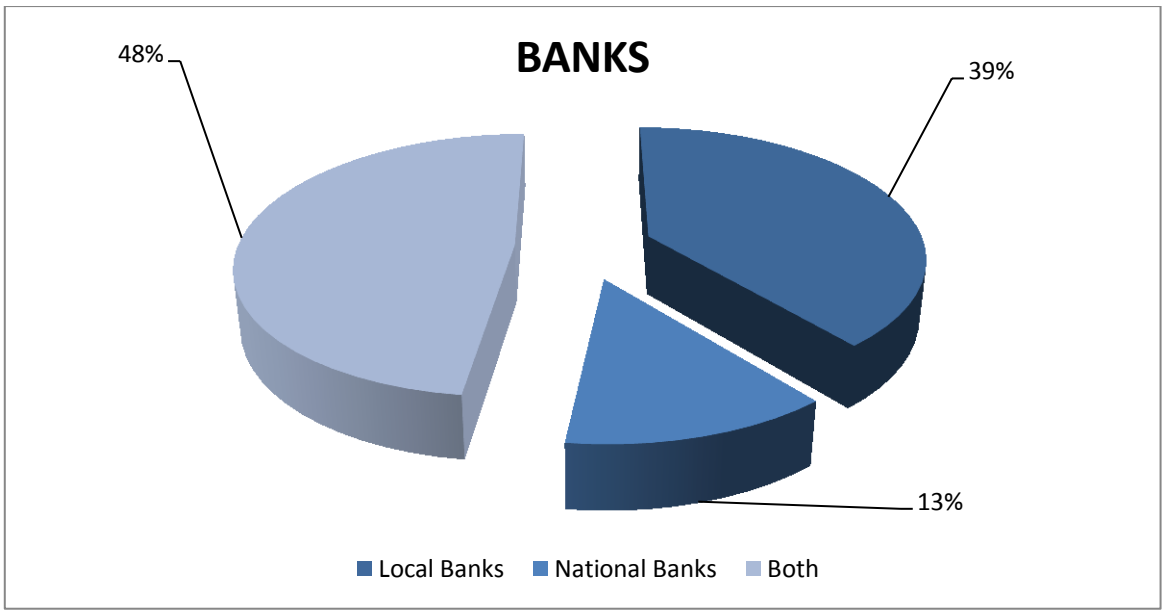
Of the 48 companies, the 70% has of POS terminals, the 26 % does not have any POS and two companies did not responded to the following question. From the chart, we see that there are many companies that give the option of paying by debit and credit cards. In addition, we also asked if companies only accept debit ATM or ATM and credit cards, but they all replied that accept debit and credit cards.

Figure 23. Numbers of partnering banks



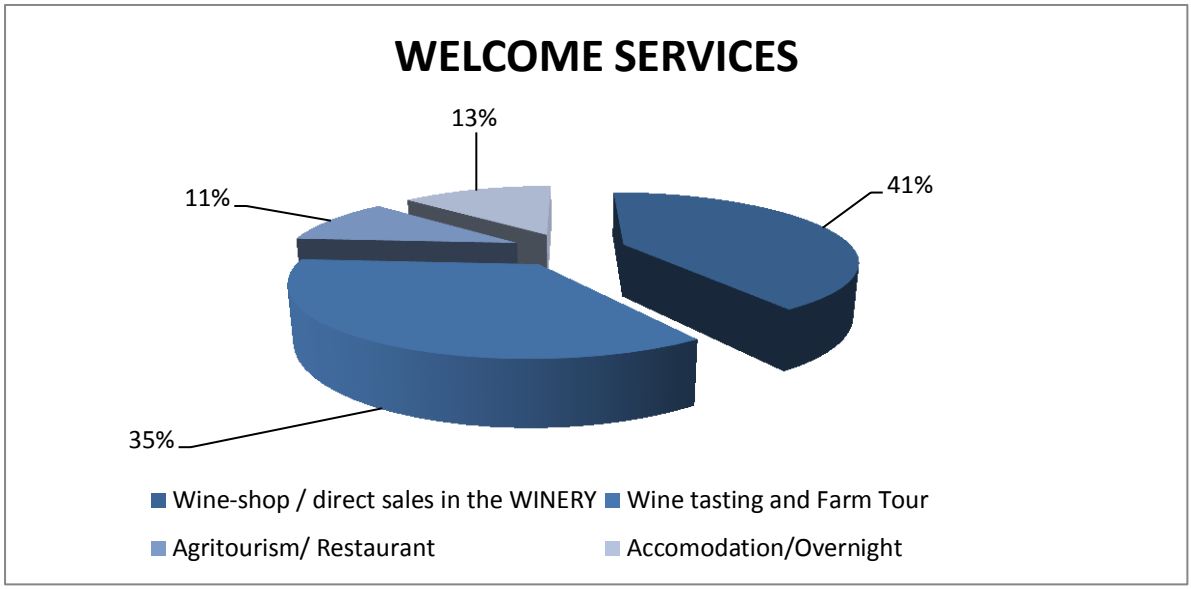
From the figure 23 we see that the 37% of companies operates with only one bank, the 52% from two to three, and only the 11% works with more than three banks. In view of the following chart we asked companies with which types of bank they work. To answer this question, we have developed the following chart.

Figure 24. Types of banks



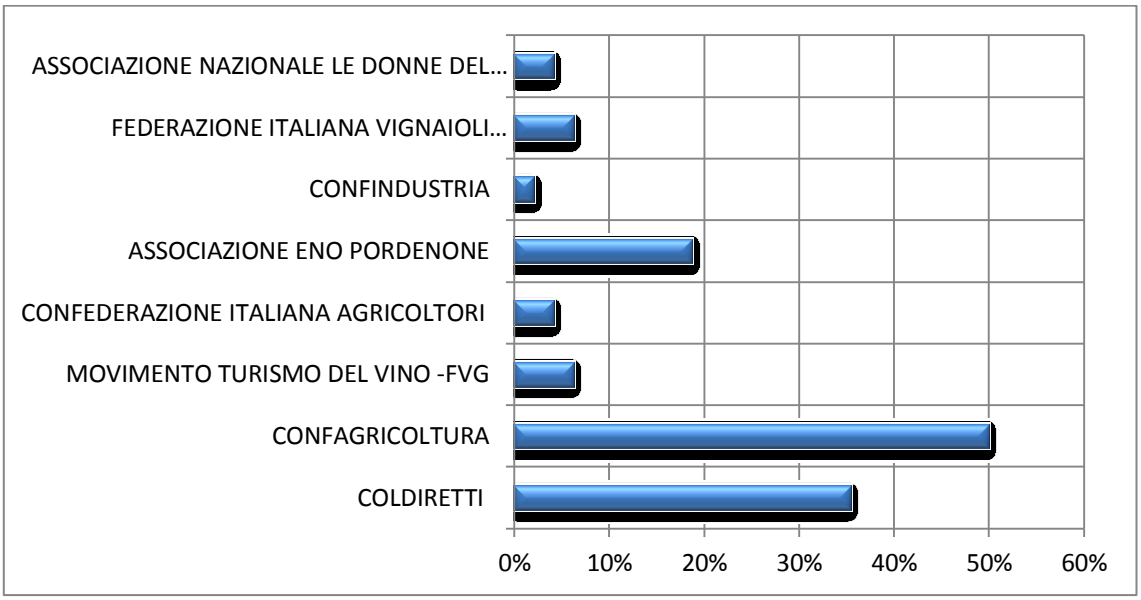
From the figure 24 we see that the 39% of companies operates with the local bank, the 13% the National banks, and the 48% works with the both of them.

Figure 25. The welcome services



The 41% of companies has a wine-shop or the direct sales in the winery. Only the 35% offers a wine tasting and farm Tour. The 13% of companies offers Accommodation/Overnight and only the 11% of companies offers a Agritourism or a Restaurant service for the customers.

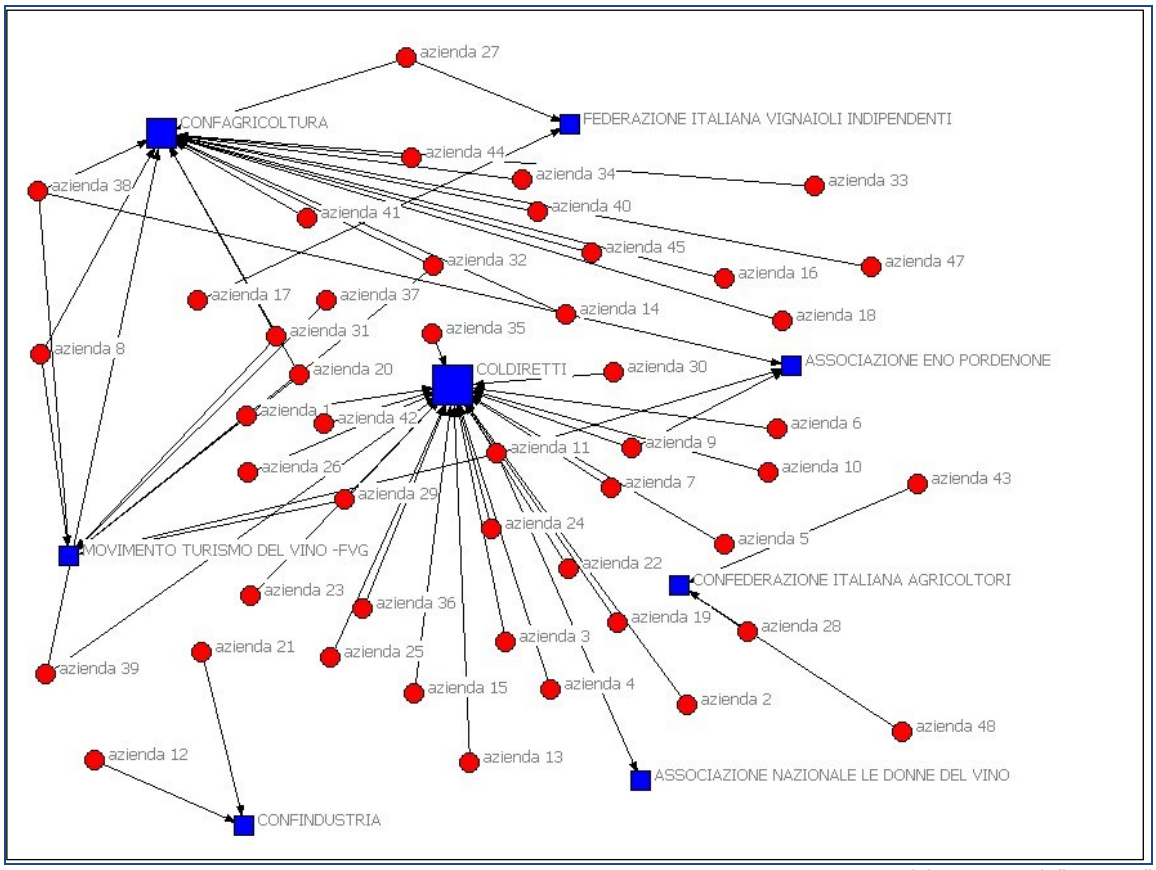
Figure 26. The category associations



Most of the companies listed an association, while others indicated more than one organization. The 51% of the companies belongs to Coldiretti, the 36% to Confagricoltura. The 19% belongs to the Movement Wine of Friuli Venezia Giulia. From the network analysis we see that these three are the most important while only a small group of companies

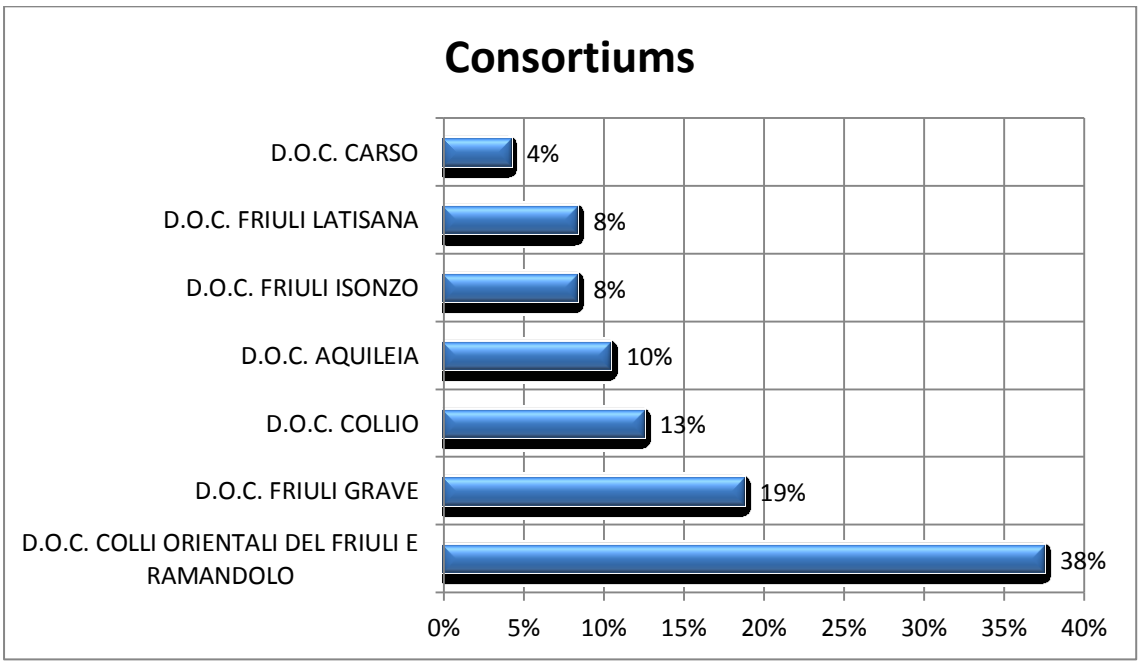
belongs to the others. From the analysis of the networks it is noted that these three are the most important while the other belong only a limited number of companies.

Figure 27. The network analysis of the category associations



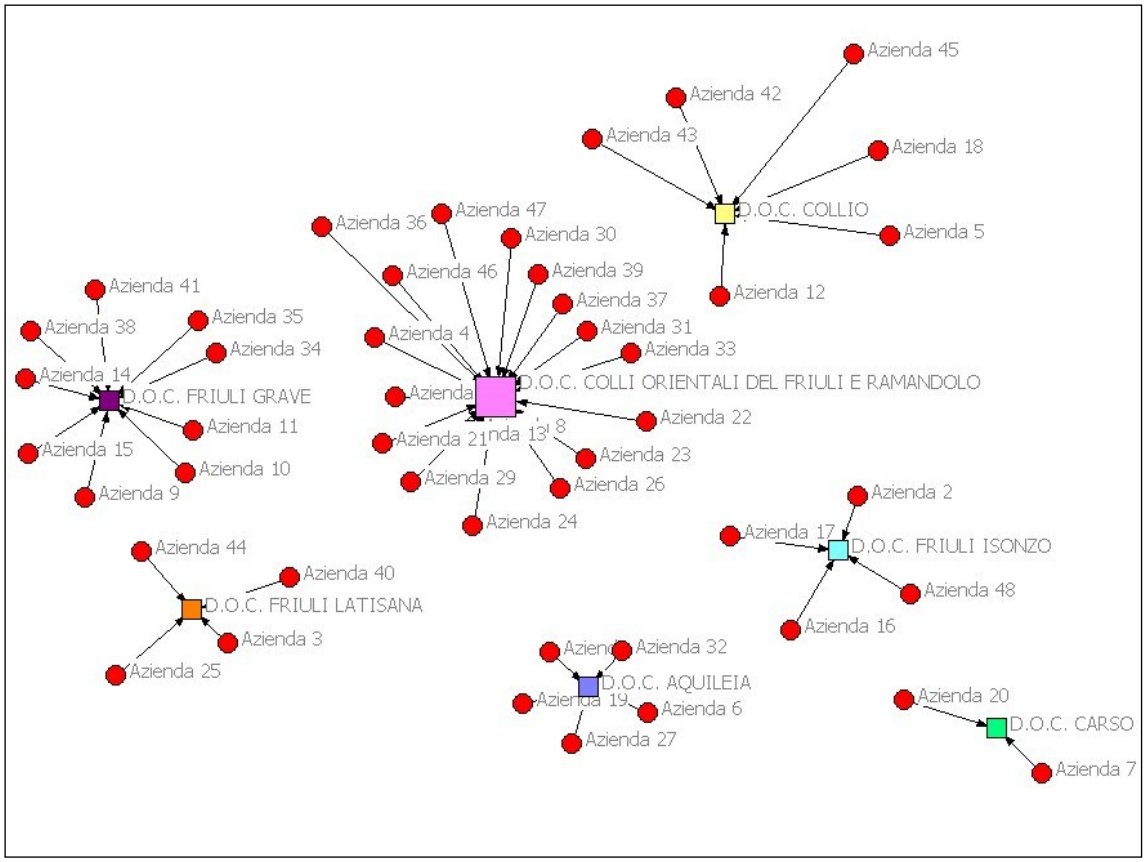
Source: Our elaboration with "Ucinet 6"

Figure 28. The Consortia for the wine protection



In our survey we asked each company to which consortium it belongs. From the 48 companies that responded to the questionnaire, the 35% belongs to the consortium Colli Orientali del Friuli and Ramandolo, the 20% of the Consortium Friuli Grave. With the 12% we find the consortium Collio while Consortium Latisana and Isonzo belong to the 8% of the companies. Finally we find the Consortium Carso that include only the 2% of the companies. The Consortium Friul Annia has not been included in the figure 28 since no company in this consortium took part in our survey. Therefore the Consortium Colli Orientali had the highest number of answers.

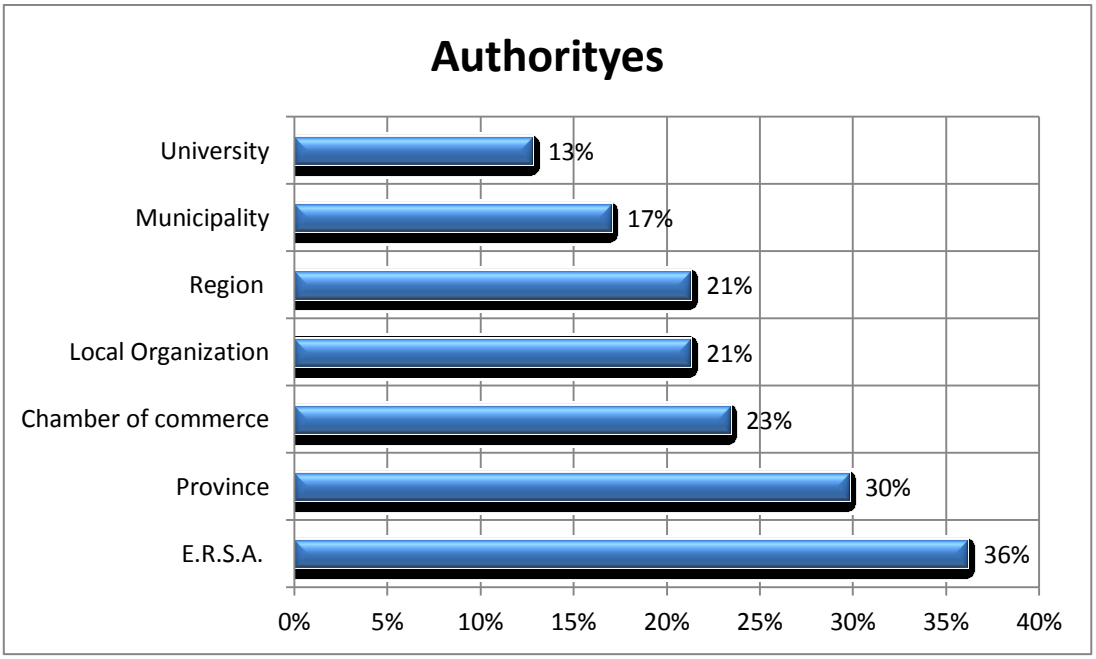
Figure 29. The Consortia in network analysis



Source: Our elaboration with "Ucinet 6"

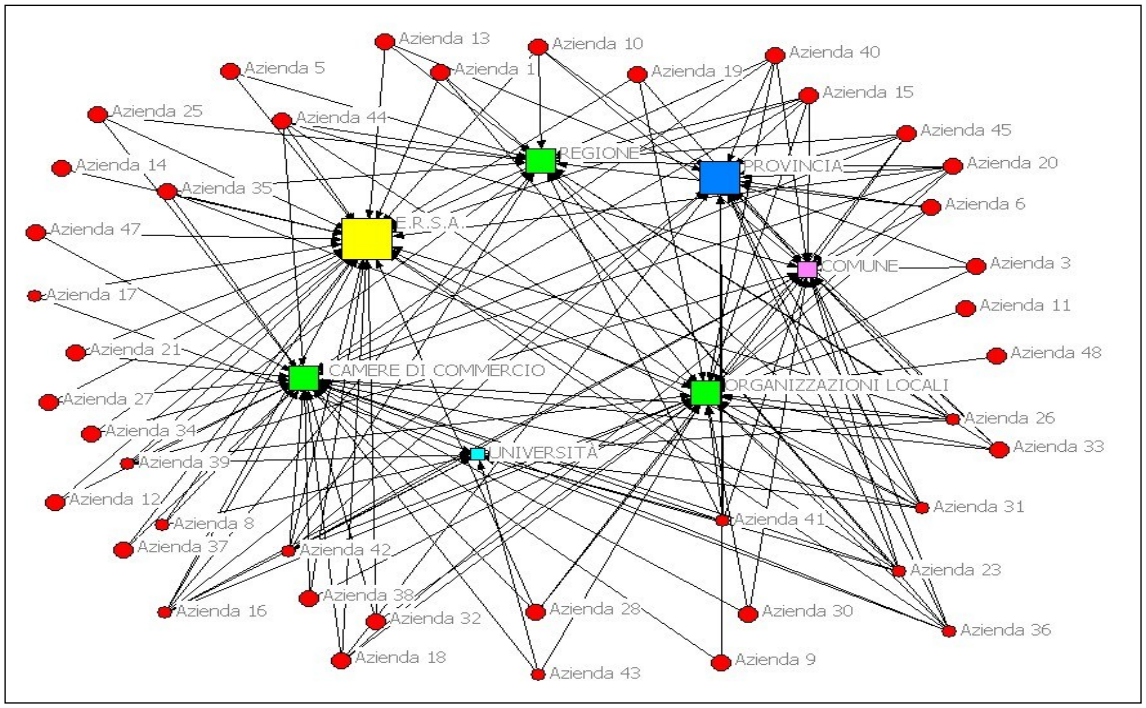
In the following figure we analysed the relationship intensity between the companies with authorities.

Figure 30.The Relationship with the Authorities



From the chart we see that the E. R.S.A. is the authority with which the companies have greater relationships. The 30% of companies have a good relationship with the province and at the 20% are chambers of commerce and the region. The institution with which companies have the lowest relationship is the University which concerns only 13% of companies.

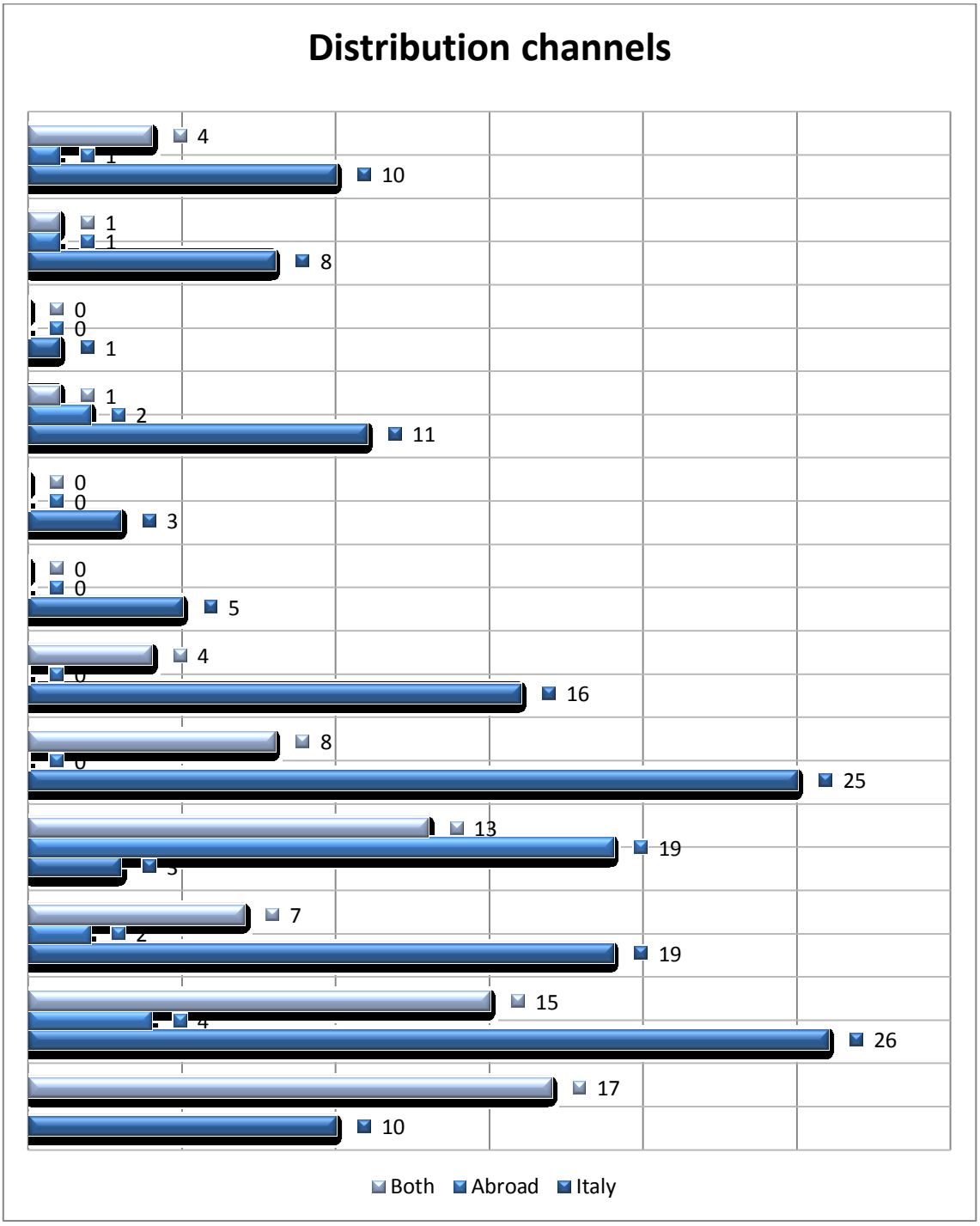
Figure 31. The Relationship with the Authorities in the network analysis



Source: Our elaboration with "Ucinet 6"

In the following chart we see the distribution channels. In Italy, the majority of businesses are using the ex-winery and the wine bar. Furthermore it is also very used the network distributions. Regarding the foreign distribution channel the most used is importers-suppliers distributions and the Channel distribution. Also from the chart we see that online distribution is used very little by companies. Businesses that use the distribution channel showed the first three eminent channel of distribution.

Figure 32. The distribution channels of the product on the market

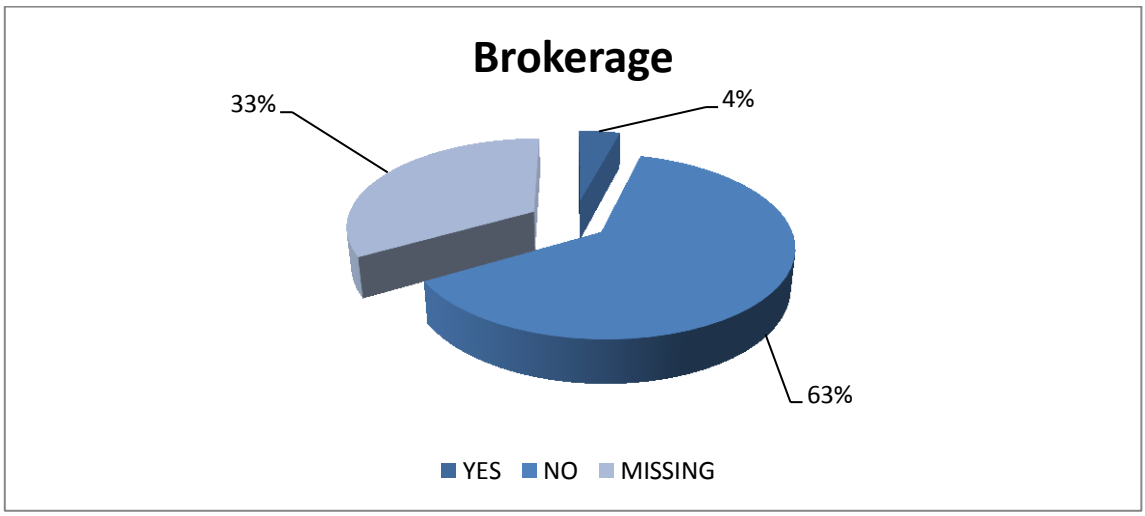


In view of the question about selling online we asked companies to indicate if they make sales online through the brokerage and the En Primeur.

The brokerage

A brokerage firm, or simply brokerage, is a financial institution that facilitates the buying and selling of financial securities between a buyer and a seller. (Wikipedia)

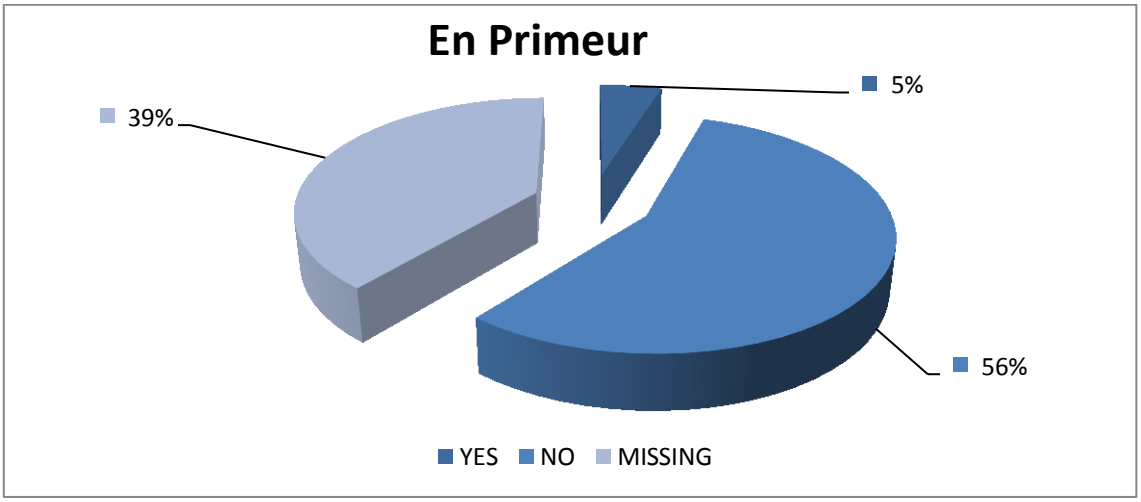
Figure 33. The brokerage



The brokerage is only used by the 33% of companies, and as many as the 63% of companies do not use this channel.

En primeur or "wine futures", is a method of purchasing wines early while a vintage is still in a barrel, offering the customer the opportunity to invest in a particular wine before it is bottled. Payment is made at an early stage, a year or 18 months prior to the official release of a vintage.

Figure 34. The EN PRIMEUR

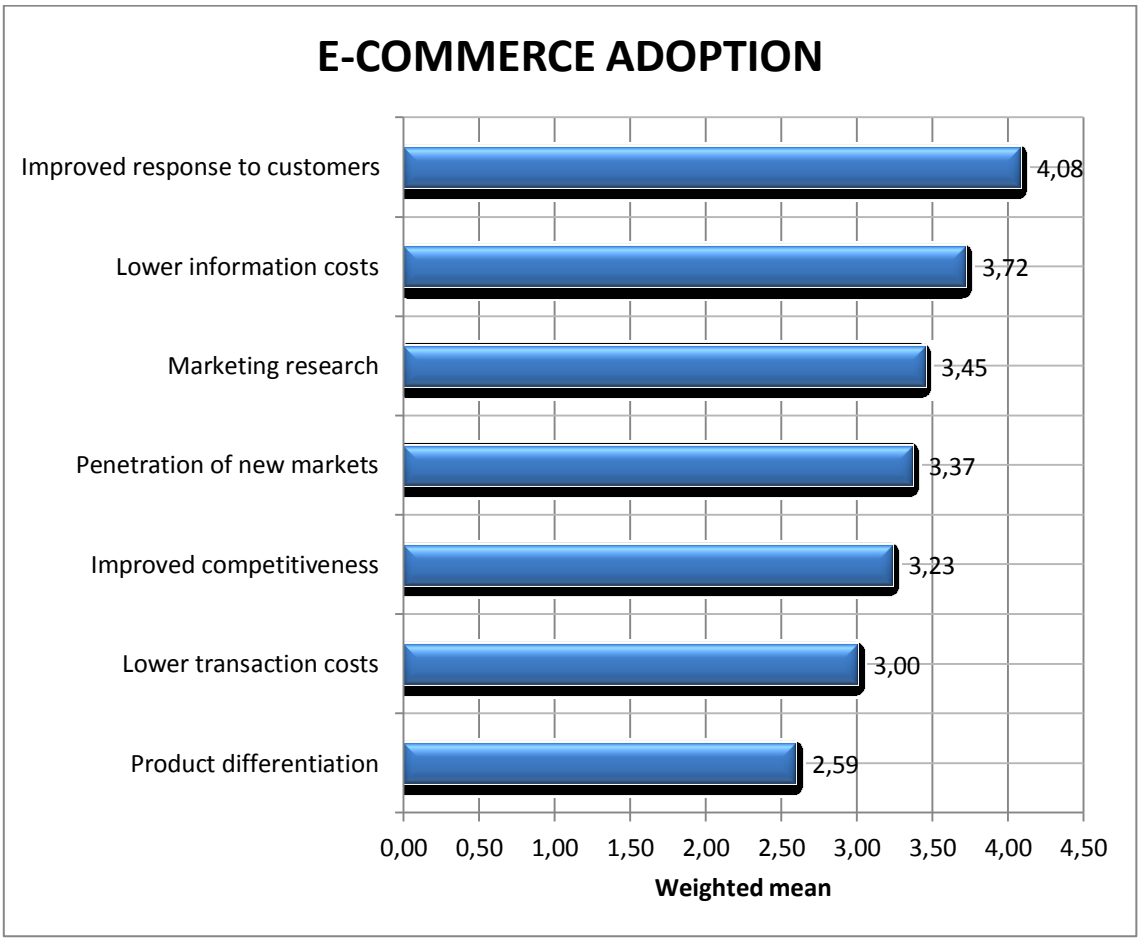


The 39% of companies did not answer to the question about en primeur, probably because they did not understand the question. L'en primeur is only used by the 5% of the businesses, and as many as the 56% of companies does not use this channel.

The importance of the following motivational factors which lead to e-commerce adoption

Judging by the results of this survey, companies consider the use of e-commerce to be relatively insignificant; however, it seems the factors which most encourage adoption of e-commerce include lower information costs and improved response to customers. The question that has received the most points is the question about improving response to consumers, even though it only has an average of 4. Least encouraging is the product differentiation.

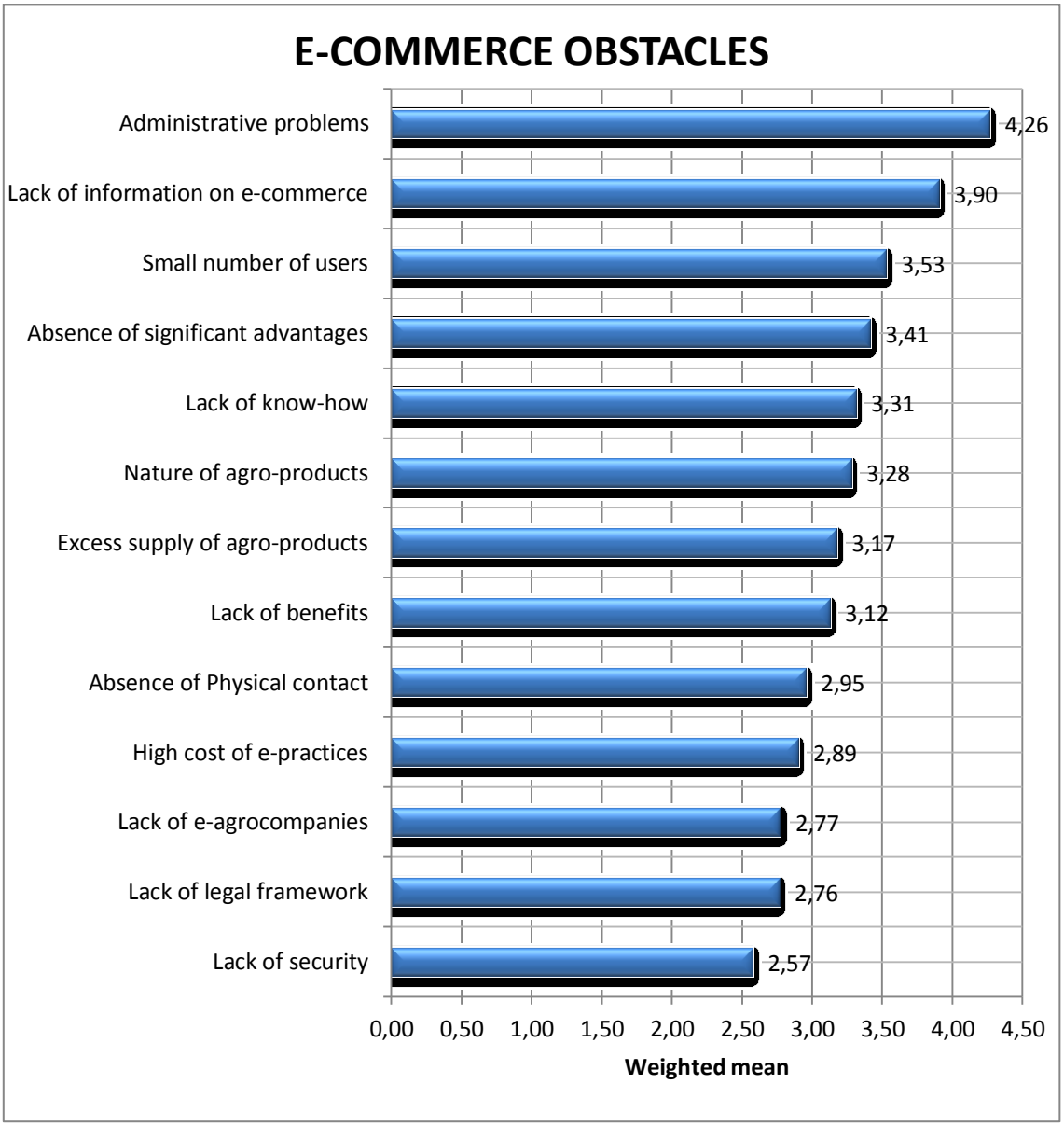
Figure 35. The e-commerce adoption



The importance given to following obstacles to e-commerce spreading

This chart demonstrates that overall, these obstacles have little impact on the spread of e-commerce. Small number of users, lack of information on e-commerce, and administrative problems are the greatest obstacles, whereas the absence of physical contact, high cost of e-practices, lack of e-agro companies, lack of legal framework, and lack of security have the least impact.

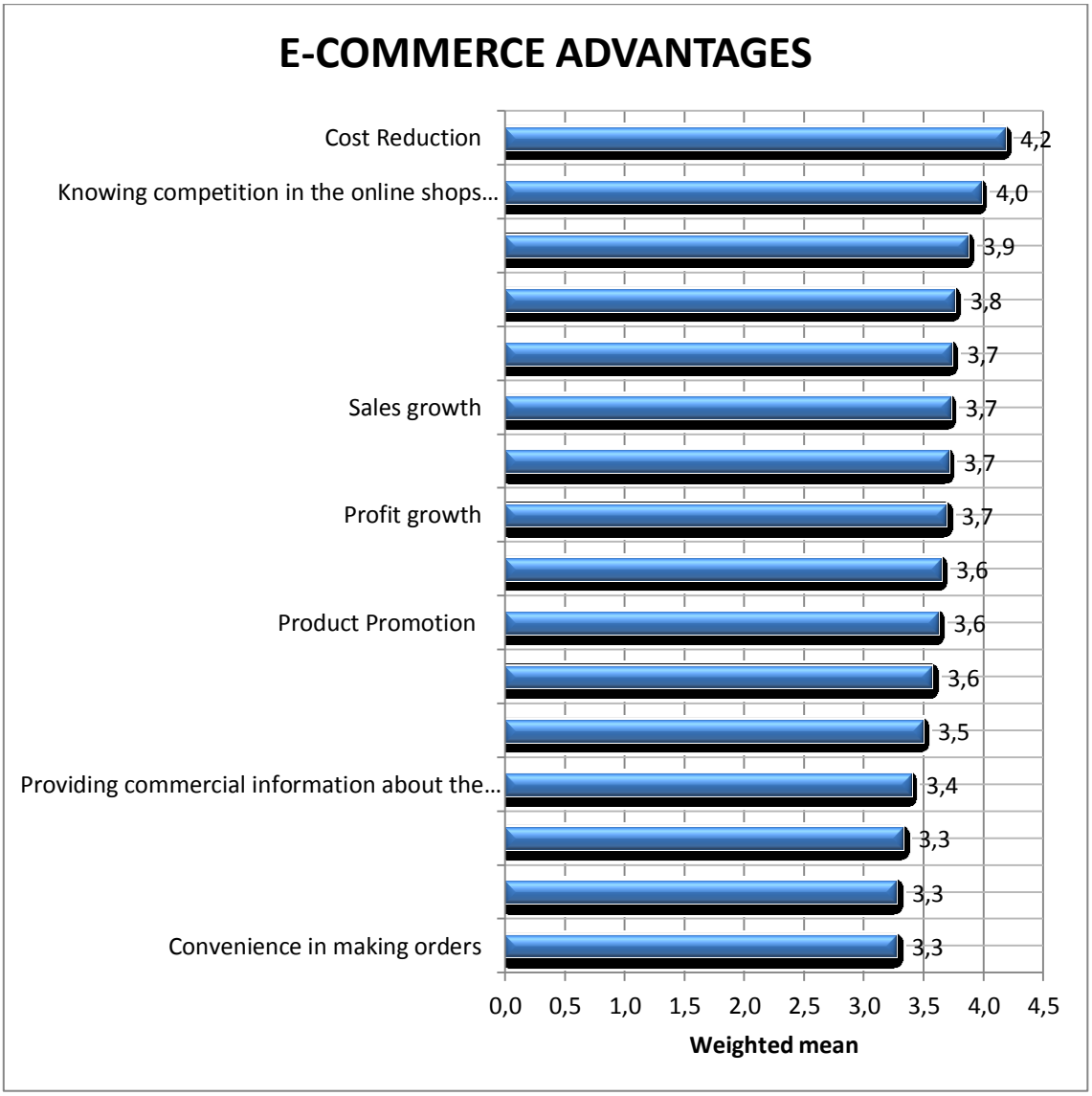
Figure 36. The e-commerce obstacles



The advantages in e-commerce use

This chart clarifies the greatest and least significant advantages to e-commerce use. According to the research, having adequate knowledge of basic computer systems, knowing competition in the online shops – business environment, and cost reduction are the most advantageous; on the other hand, convenience in making orders, reduction of any delays in shipments/deliveries of products, and understanding the market of electronic services are of little use.

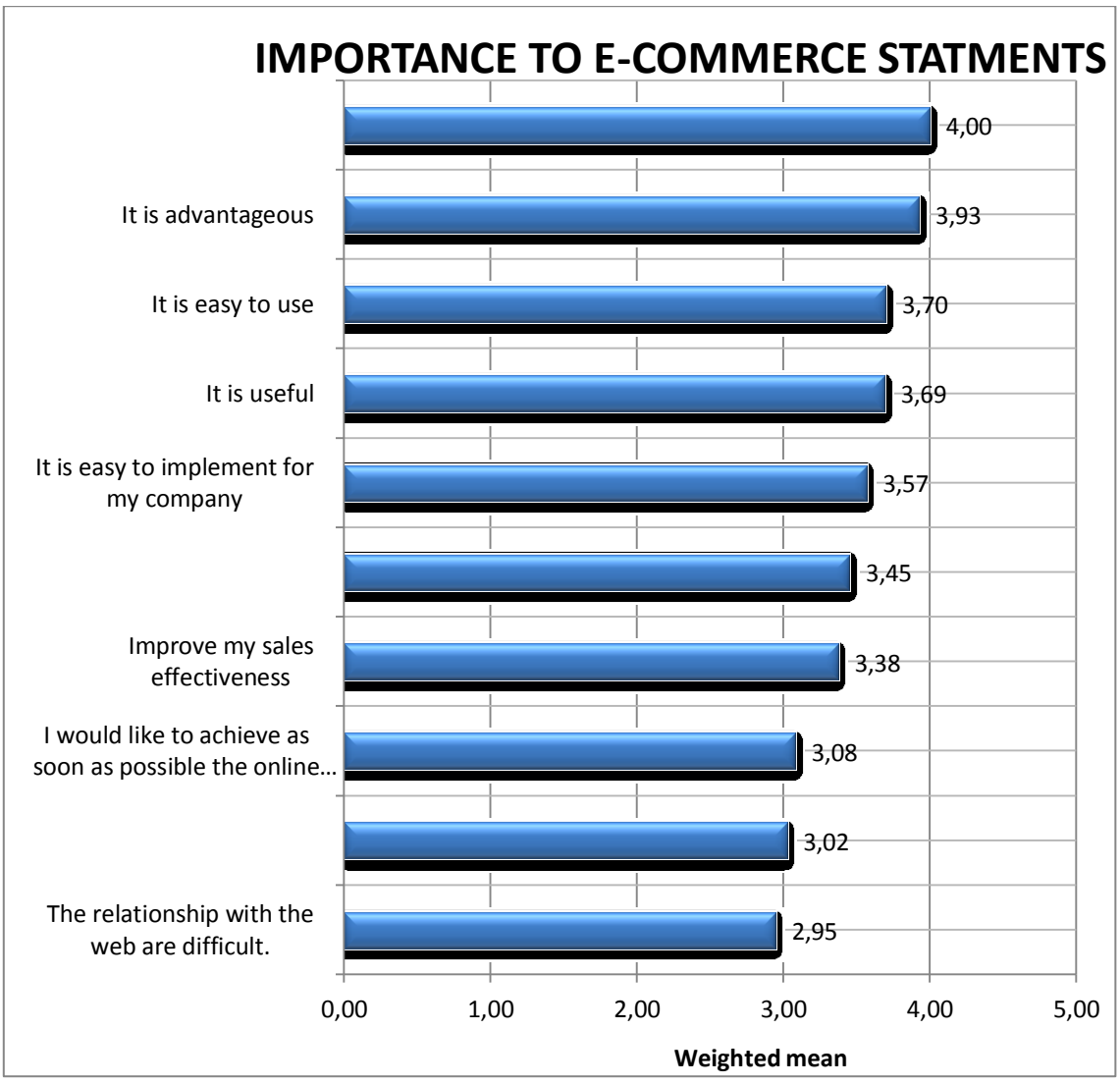
Figure 37. The e-commerce advantages



The importance given to the following e-commerce statements

This chart gauges the importance of a number of statements concerning e-commerce from the companies' perspectives. The ideas that e-commerce is both useful and easy to use, is advantageous, and that overall, the interaction with the web is clear and understandable are clearly most important to the companies. Companies don't often express that they desire to use other types of sales apart from e-commerce or that they want to achieve online sales of their products as soon as possible.

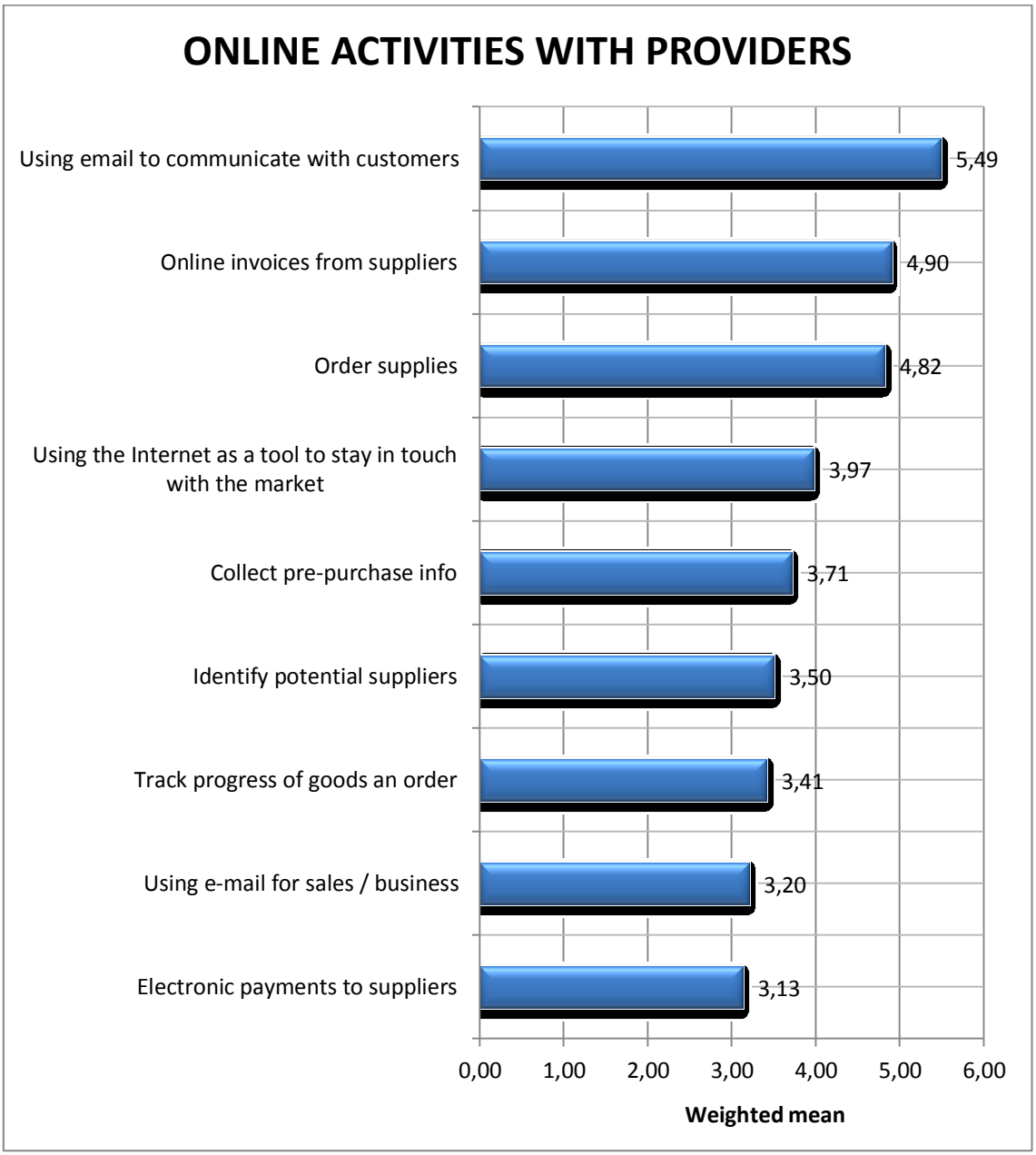
Figure 38. The importance to e-commerce statements



The degree of intensity with which the following online activities with providers

Here we see that using email to communicate with customers and online invoices from suppliers are the most intensely practiced of the companies' activities, while the use of email for business/sales and electronic payments to suppliers are the least intensely practiced. Other practices have more moderate results.

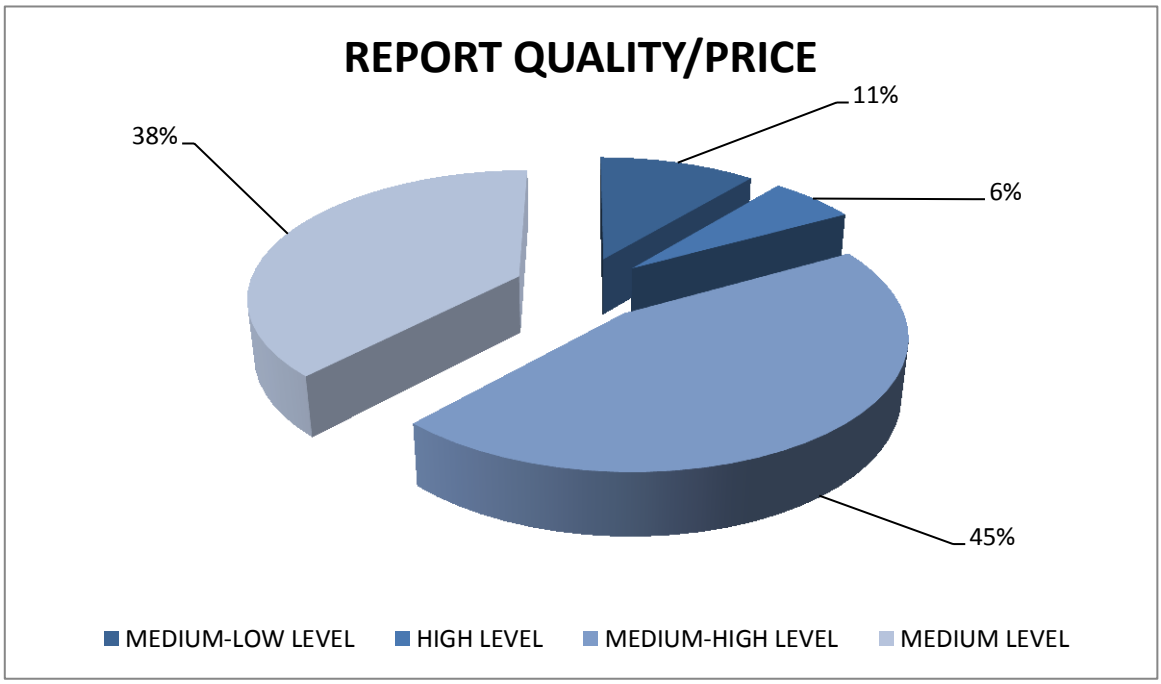
Figure 39. The online activities with providers



The report of QUALITY/PRICE in which segment are the company's products placed

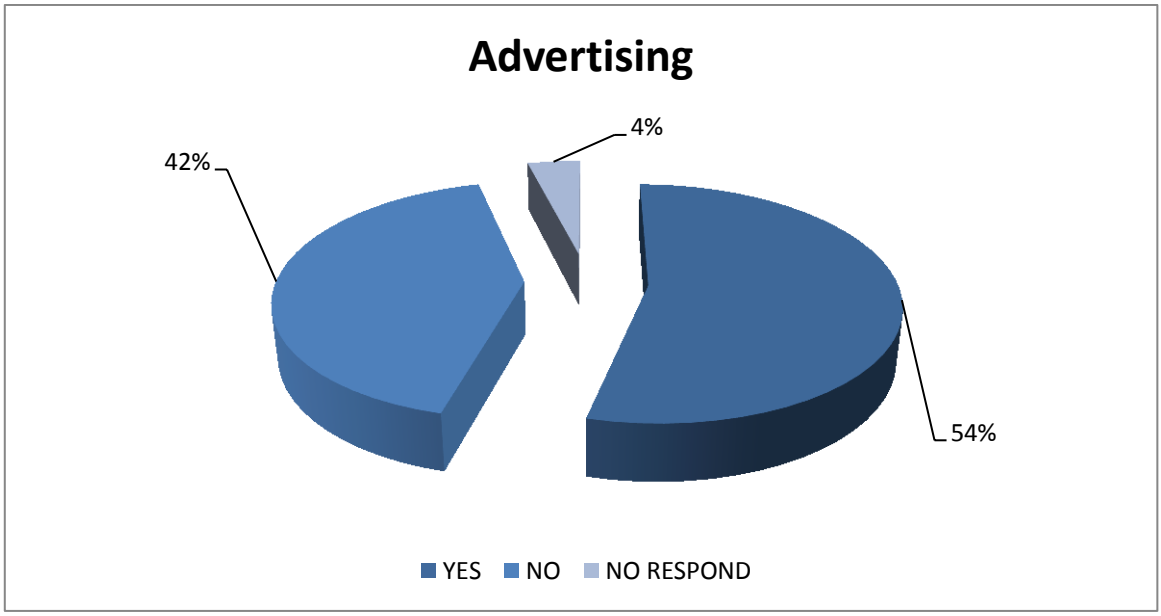
The 45% of companies has a product that is placed in the medium-high level, the 38% has Medium-low level products, only the 6% is at a high level and the 11% at a medium-high level. This tells us that most of the companies provide a high quality product.

Figure 40. The company's products



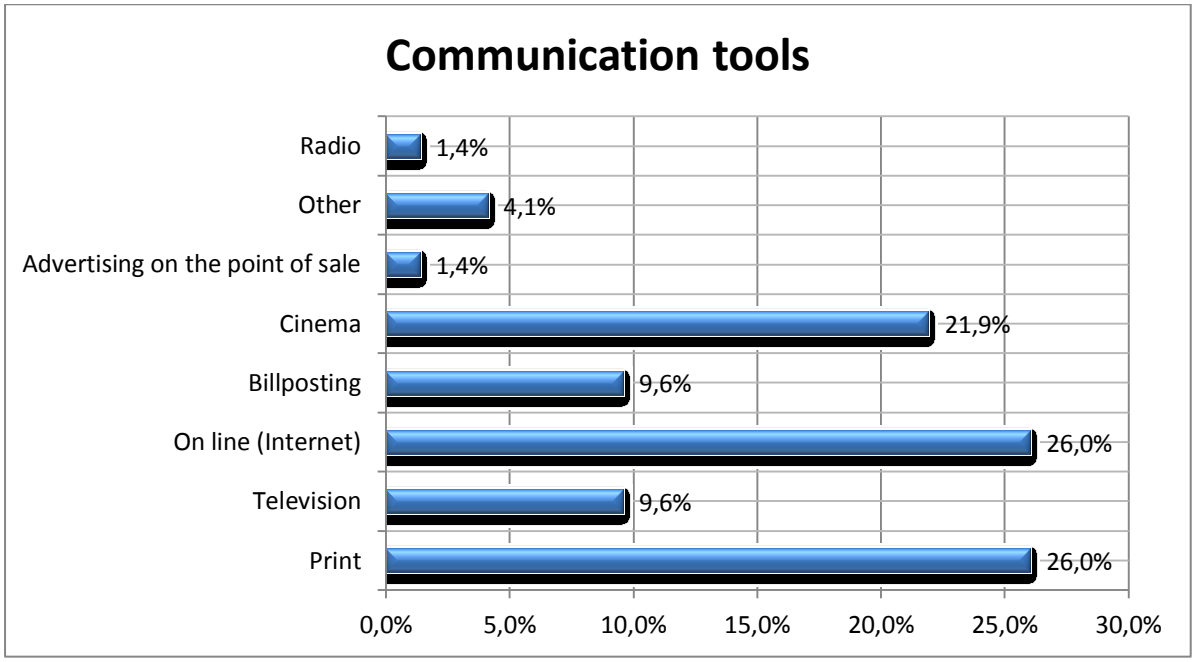
In the following chart we see that the 54% of companies uses advertising, the 42% of companies does not use any advertising.

Figure 41. Communication instruments



To better understand what types of advertising they use, we have created the following chart.

Figure 42. Communication tools

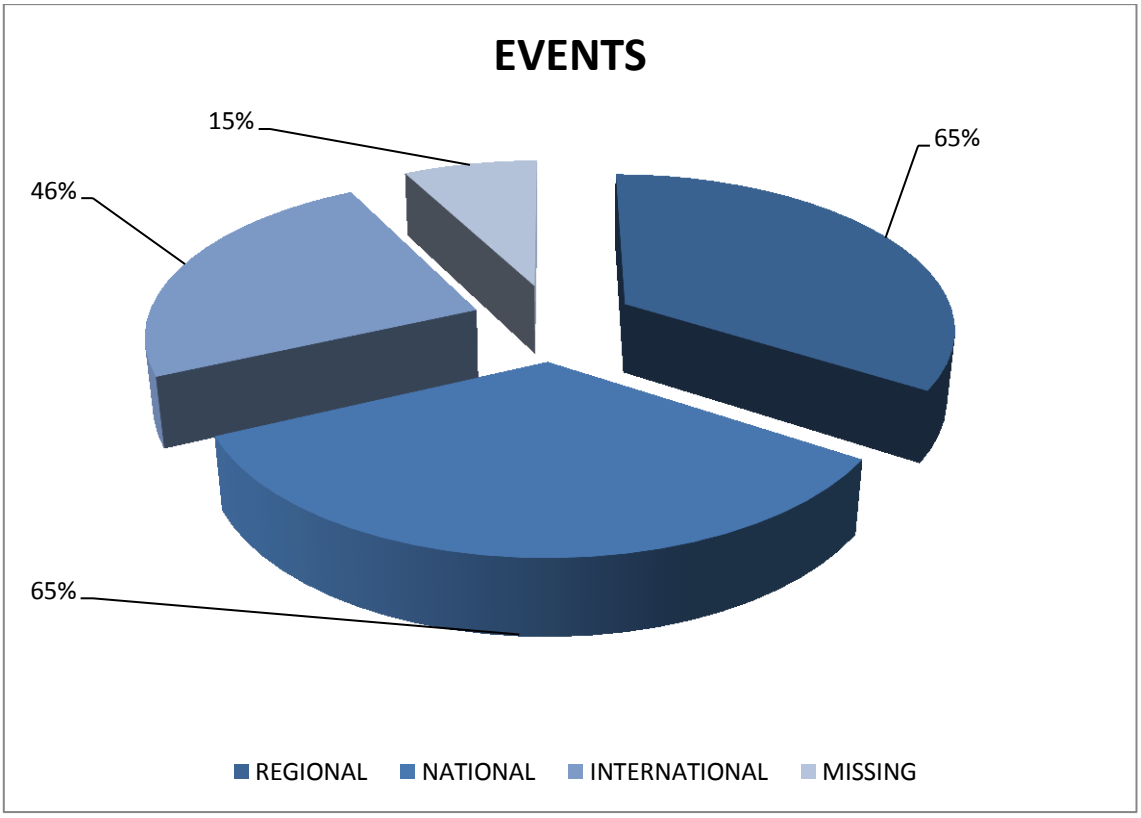


The most commonly used advertising means are the internet and the print that reach the 26% and the cinema that reach the 21%. The television and billposting has a low incidence that reaches 10% while the advertising in points of sale has a low incidence. With other the companies have indicated word of mouth among customers.

The events took part over the past three years

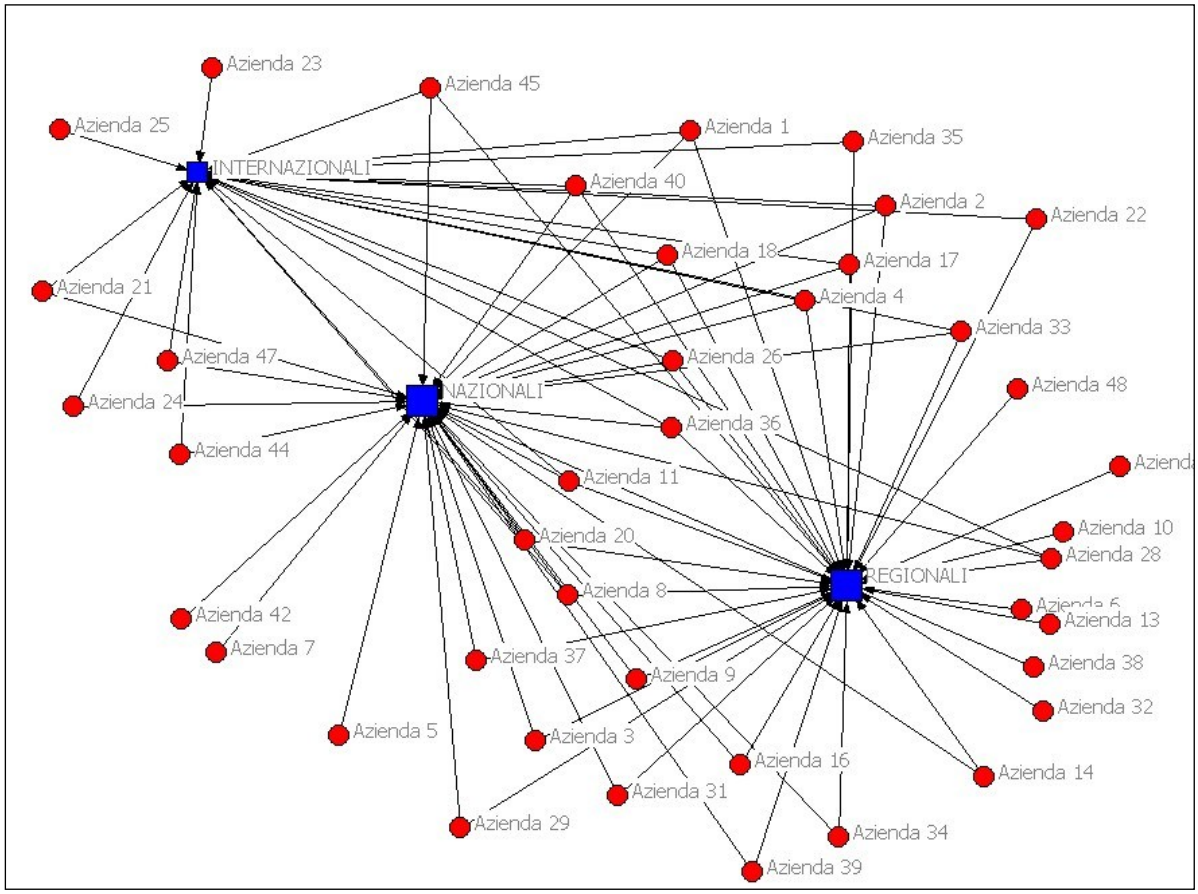
The companies get more involved in regional and national events. In both following events the 65% of the companies is involved. At international events there is a lower participation even if the 46% of the companies takes part.

Figure 43. Participation to the events



In view of the figure 44 we have created a chart with Ucinet 6 to better understand the involvement of companies to the events over the past three years

Figure 44. Participation to the events in the network analysis

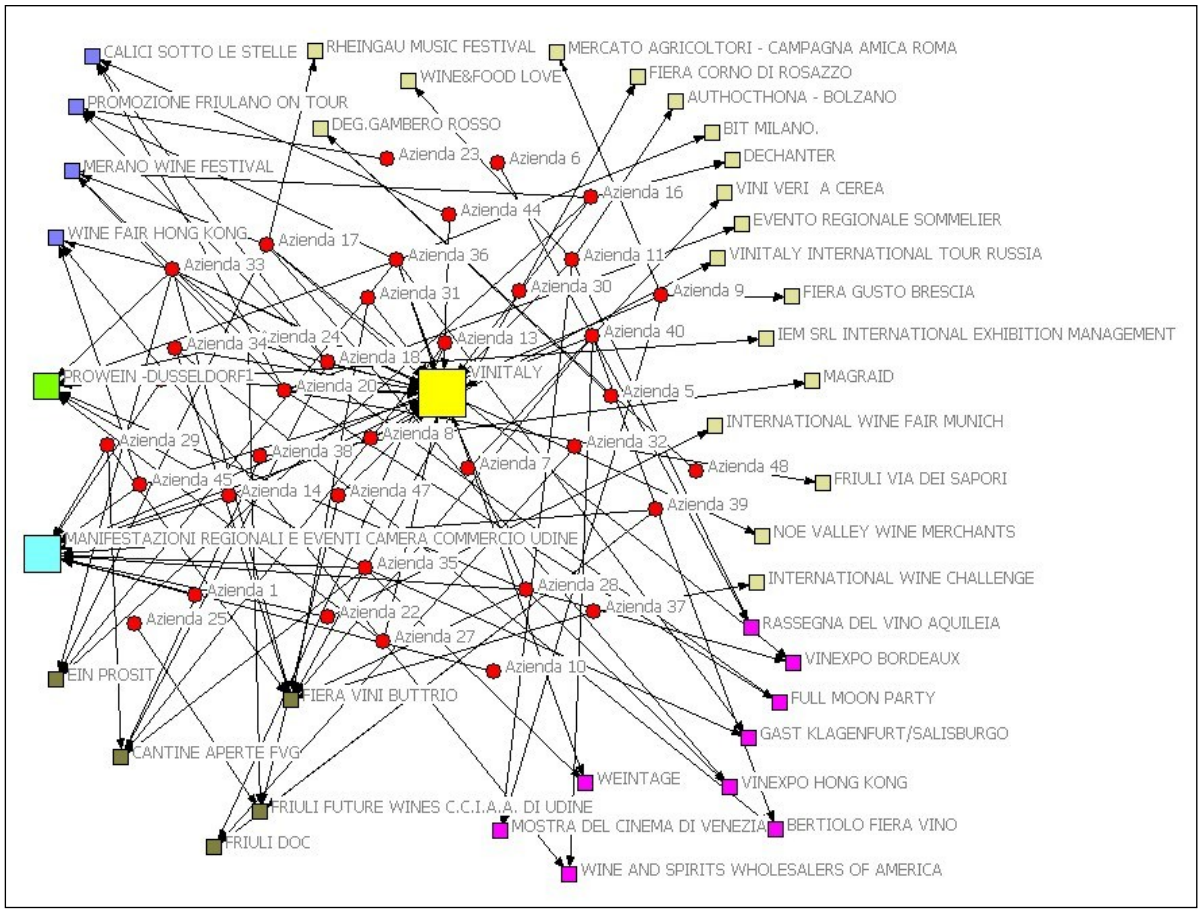


Source: Our elaboration with "Ucinet 6"

Over the last three years, companies got more involved in regional and national events since that the 65% of companies participates in these events, and to international interventions there is a smaller participation since only the 46% of companies is involved.

In view of the above chart we investigated which are events at which companies participate. Companies have indicated the names of events which were attended in the past three years.

Figure 45. Participation to the each events in the network analysis



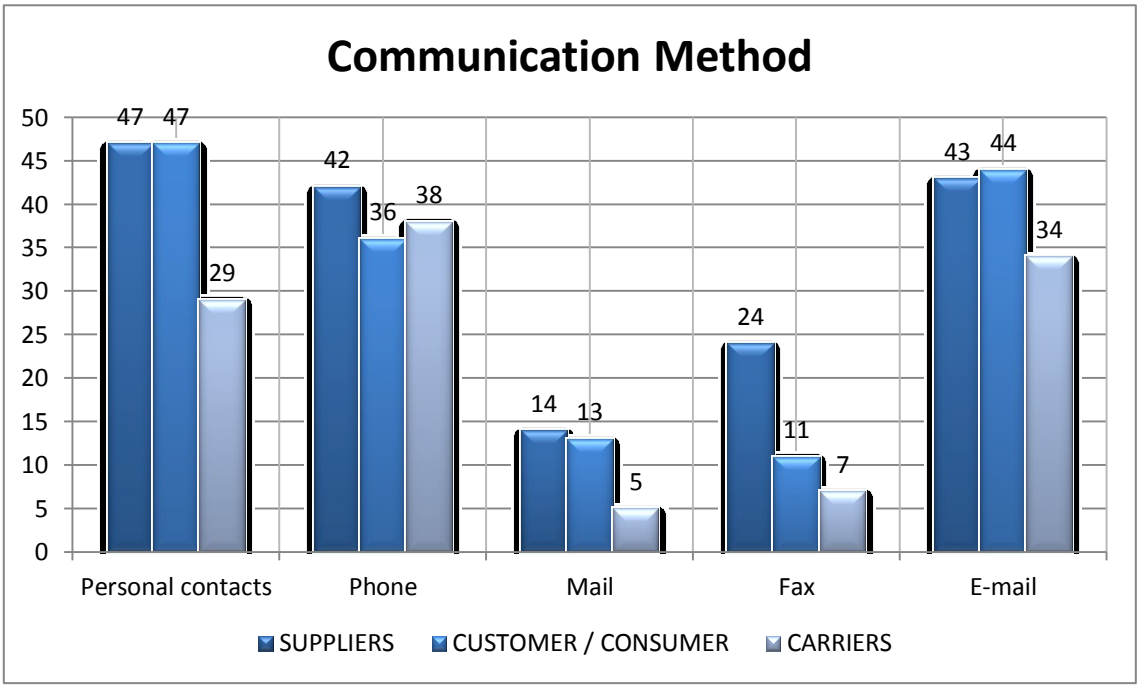
Source: Our elaboration with "Ucinet 6"

From the chart we see that there are many events to which the companies take part. The most important event at the regional level are exhibitions and events regional Chamber of Commerce Udine with the participation of the 25% of the companies. Also at the regional level many companies take part in the fair of wines in Buttrio and to open wineries. At a national level, the most important event is Vinitaly which is attended by the 40% of the surveyed companies. At an international level the event of greatest interest is Prowein in Dusseldorf in Germany with the participation of 15% of companies

Communication method preferred

The most adopted communication means by companies with suppliers are personal contacts, e-mail and telephone. With customers the best means are also personal contacts, e-mails and the phone and the same thing occurs with carriers. Mail and fax are the less used tools.

Figure 46. Communication method preferred



5 Conclusions

Internet has become an important tool for online shopping, information search and developing a knowledge-base of consumers. Researchers are attempting to find relationships between web quality and its outcomes. One of the objectives of the present research is to find direct interactions between the components of e-service quality with the loyalty intention and customer satisfaction. The results of this study provide additional insights into the relationship between perceived service quality with satisfaction and loyalty intention by analysing the moderating effects of loyalty intention and satisfaction. Our findings provide support for this notion. First, satisfaction indeed moderates the relationships between service quality and loyalty intention. Second, loyalty intention indeed moderates the relationships between service quality and satisfaction.

The results of the first part confirmed that the websites of the Friuli Venezia Giulia consortia can be considered of good e-quality and this is linked to customer satisfaction and

loyalty intention but there are many differences between consortia. Specifically taking into account all the nine consortia together we have seen that the conceptual model 1A results on the moderate regression reiterate the positive relationship between usability and loyalty intention, design and loyalty intention, contact and loyalty intention, navigability and loyalty intention and content and loyalty intention. The quality of information and loyalty intention have a negative relationship. Results also support the moderation hypotheses of satisfaction in affecting the direct relationships between usability, information quality and contact. While the results of the conceptual model 1B on the moderate regression of all the nine consortia reiterate the positive relationship among all nine quality factors and customer satisfaction. Results also support the moderation hypotheses of loyalty intention in affecting the direct connection between usability, processing speed, and quality of information. Both models show that the usability and quality of information are very important elements in the evaluation of the e-quality done by the customers.

The impact of e-commerce on the agribusiness and specifically on the wine business is important and crucial for the future. Although agricultural products do not have the same opportunities as digital products online, agribusiness should adopt e-commerce practices in order to benefit from the advantages that the new technology offers. The Internet can provide significant benefits both to B2C and B2B commerce, such as lower transaction costs and easier penetration of international markets. Internet marketing, based on the interactive nature of the medium, is also important to the agribusiness.

This research examined and identified the slow rate of e-commerce use and the small extent to which its adoption is taking place in the agro-food sector in Friuli Venezia Giulia. Although the majority of the wine firms have already started making their presence known on the Internet by developing Web sites, the administration of these firms has not yet realized the full potential of this commercial tool. The frequent confusion in the answers by the managerial staff shows incomplete knowledge about the full benefits that they could acquire.

From the network analysis carried out with the software UCINET 6 the most important data that emerge are those related to exports, mainly to Austria, Germany, UK and USA, but also to new destinations such as Hong Kong and China. With respect to the associations, the companies relate more closely with Coldiretti and, with regard to the public authorities, the network is more intense towards ERSA and the Province.

As it concerns participation in trade fair exhibitions, the network reported a strong concentration toward the Vinitaly and events organized by the Chamber of Commerce of

Udine. It should be noted, however, that a large participation by companies in many national and international events is performed by individually.

The analysis of the questionnaires showed that e-commerce business on the web, in general, does not seem to be very developed, even because of a lack of adequate incentives and motivation to activate a real business e-commerce. A lot of companies think that administrative problems, associated with exporting wine products to foreign markets, will reduce the benefits gained from engaging in e-commerce. A lack on information available made many companies not even consider e-commerce important. In Friuli Venezia Giulia there are many small enterprises which face difficulties in establishing effective e-commerce. The most important motivational factor in adopting e-commerce was indicated to be: increase in the demand from customers. Consumers are starting to adopt e-commerce as a method of purchasing wine, with sales from e-commerce estimated at around 1% of sales for many of the companies. The wine products sold by the majority of the companies are placed in the medium-high quality segment, which makes them suitable for the sale online. The main obstacle in adopting e-commerce seems to be the mentality of the producers and their reluctance to change and adopt new technologies for the sale of their products. There was a perception among many of the companies that e-commerce would lead to a reduction in terms of costs. Many companies also saw advantages in understanding the competition in online retailing of wine. It could be possible for the consortium to establish a central e-commerce market to make available the wine products of Friuli Venezia Giulia online to domestic and foreign markets. By working together with the producers, the consortium could make e-commerce easier and more economical for selling products online.

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Appendix 1

Questionnaire E-Vinum

QUESTIONNAIRE N°_____

1. **Indicate the <u>YEAR</u> the company <u>ESTABLJSHED</u>:** ☐

- **Indicate the numbers of the <u>EMPLOYEES</u> in the company**

	2012		**2012**
N° Owner/s	☐	N° Relatives employees	☐
N° Employee/s	☐	N° Total number of employees	☐

2. **Indicate the company SALES (thousand € in 2012)** ☐

- **Indicate if the company** Y☐ N☐ **<u>EXPORTS</u>:**

- **If the company exports indicate the incidence % of the <u>EXPORTS SALES</u> of the company's total sale**

	2012
Sales in UE %	☐
Sales in extra UE %	☐
National sales %	☐
Total sale %	**100 %**

3. **Indicate the number of foreign countries to which the company exports**

	2012		**2012**
N° of UE countries	☐	N° of extra UE countries	☐
Indicate the three main countries of export		1.	
		2.	
		3.	

4. **Indicate whether the company is part of a group or not** Y☐ N☐

5. **Indicate the "INNOVATION TIPOLOGY" used in the last three years**

Innovations	**SI**	**NO**	**Number**		**YES**	**NO**	**Number**
Of product	☐	☐	☐	Of process	☐	☐	☐

6. **Is the company equipped with POS?:**

Y☐ N☐

Only ATM ☐

ATM and CREDIT CARDS ☐

7. **Number of partnering banks:**

One	☐	Local banks	☐
TWO TO	☐	National banks	☐

THREE
More than three ☐

8. **Does The COMPANY offer WELCOME services?:**

Wine-shop / direct sales in the WINERY		Agritourism/ Restaurant	☐
Wine tasting and Farm Tour		Accommodation/Overnight	☐

9. **Indicate whether the company ADHERES to one of the following categories associations:**

Confagricoltura	☐	*1.1.1.1 Confederazione Italiana Agricoltori*	☐
Coldiretti	☐	Other _____	

10. **Indicate whether the company is part of the following Consortium for the wine protection:**

D.O.C. Collio	☐	D.O.C. Carso	☐
D.O.C. Friuli Grave	☐	D.O.C. Friuli Annia	☐
D.O.C. Colli Orientali del Friuli e Ramandolo	☐	D.O.C. Aquileia	☐
D.O.C. Friuli Isonzo	☐	D.O.C. Friuli Latisana	☐

11. **Indicate the RELATIONSHIP INTENSITY with the following authorities:**

1- indicates "no intensity-bound" 4- indicates "neither high nor low intensity" 7- indicates "maximum intensity"

Region
Province
E.R.S.A.
University
Chamber of commerce
Municipality
Local Organization_____
Other_____
_____

12. **Indicate the distribution channels of the product on the market:**

	ITALY	**ABROAD**
Channel Distribution	☐	☐
Ex Vinery	☐	☐
Whole sales	☐	☐
Importer-Supplier	☐	☐
Wine bar	☐	☐
Distribution network	☐	☐
Consortia and cooperatives	☐	☐
Holding company	☐	☐
Mail order shopping	☐	☐
En Primeur sales	☐	☐
Big retail channel trade	☐	☐
On – line	☐	☐
Other_____	☐	☐

_____

Indicates the top three acronyms of the Big retail channel trade:

1 _____

2 _____

If "ON-LINE" also with:

Brokerage[10] ? YES ☐ NO ☐ Italy ☐ Abroad ☐

Towards what destination?

En Primeur? YES ☐ NO ☐ Italy ☐ Abroad ☐

13. Indicate whether the company already had PREVIOUS ALLIANCE with other regional wine companies

YES ☐ NO ☐

- **If YES indicate with WHICH COMPANIES:**

_____

- **If YES indicate "Bound intensity"**

- 1 indicates "no intensity-bound" 4- indicates "neither high nor low intensity" 7- indicates "maximum intensity"

Commercials/Business
Sub-provision
Common participation to local/National events
Common participation to abroad events
Cooperation
Information Exchange
Family and friendship

14. Indicate whether the company already had PREVIOUS ALLIANCE with other extra regional wine companies

YES ☐ NO ☐

- **If YES indicate with WHICH COMPANIES:**

_____

- **If YES indicate "Bound intensity"**

- 1 indicates "no intensity-bound" 4- indicates "neither high nor low intensity" 7- indicates "maximum intensity"

Commercials/Business
Sub-provision

[10] Brokerage, is a financial institution that facilitates the buying and selling of financial securities between a buyer and a seller

Common participation to local/National events
Common participation to abroad events
Cooperation
Information Exchange
Family and friendship

15. Indicate the IMPORTANCE of the following motivational factors which lead to E-COMMERCE ADOPTION:

- 1 indicates "no importance -bound" 4- indicates "neither high nor low intensity" 7- indicates "maximum intensity"

Lower transaction costs
Lower information costs
Product differentiation
Improved competitiveness
Improved response to customers
Penetration of new markets
Marketing research

16. Indicate the IMPORTANCE given to following OBSTACLES to E-COMMERCE spreading

- 1 indicates "no importance -bound" 4- indicates "neither high nor low importance" 7- indicates "maximum importance"

Nature of agro-products (Wine)
Lack of know-how
High cost of e-practices
Lack of benefits
Lack of e-agro companies
Lack of security
Lack of legal framework
Small number of users
Absence of Physical contact
Excess supply of agro-products
Lack of information on e-commerce
Absence of significant advantages
Administrative problems (excise documentation)

17. **Quantify the following ADVANTAGES in E-COMMERCE use**

- 1 indicates "no advantages-bound" 4- indicates "neither high nor low advantages" 7- indicates "maximum advantages"

"

Product Promotion	[	[	[
Providing commercial information about the products	[	[	[
Cost Reduction	[	[	[
Convenience in making orders	[	[	[
Knowing competition in the online shops business environment	[	[	[
Understanding what the customer wants from online services	[	[	[
Understanding the market of electronic services	[	[	[
Using reliable market information on online services	[	[	[
Locating the new electronic services in relation to the needs of the market	[	[	[
Analysing information about customers who make purchases online	[	[	[

Having adequate knowledge about basic computer systems	[	[	[
Being in possession of appropriate IT skills to update web content	[	[	[
Rapidly improving shipping services and delivery of products	[	[	[
Reduce any delays in shipments and deliveries of products	[	[	[
Profit growth	[	[	[
Sales growth	[	[	[

18. Indicate the IMPORTANCE given to the following e-commerce statements

- 1 indicates "no importance-bound" 4- indicates "neither high nor low importance" 7- indicates "maximum importance"

It is useful
It is advantageous
Eases business transactions compared to traditional channels.
Improve my sales effectiveness
It is easy to use
It is easy to implement for my company
Overall, the interaction with the web is clear and understandable.
The relationship with the web are difficult.
I prefer to use other types of sales rather than e-commerce
The online sales of my products are something that I would like to achieve as soon as possible.

19. Indicate the degree of INTENSITY with which the following ONLINE ACTIVITIES WITH PROVIDERS are accomplished

- 1 indicates "no intensity-bound" 4- indicates "neither much nor few intensity" 7- indicates "maximum intensity"

Track progress an order of goods
Electronic payments to suppliers
Online invoices from suppliers
Order supplies
Collect pre-purchase info
Identify potential suppliers
Using e-mail for sales / business
Using email to communicate with customers
Using the Internet as a tool to stay in touch with the market

20. Taking into consideration the report of QUALITY/PRICE in which segment are the company's products placed?

High level	☐	Medium-low level	☐
Medium-high level	☐	Low level	☐
Medium level	☐		

21. Indicate which COMMUNICATION INSTRUMENTS are usually used by the company or have been used in the past (multiple answers are permitted)

Advertising **YES** **NO** ☐

If yes, by what means?

Print	☐	Cinema	☐
Television	☐	Advertising on the point of sale	☐
On line (Internet)	☐	Other	☐

Billposting ☐ _____

22. Indicate in which EVENTS the company took part over the past three years

List which:

Internationals _____
Nationals _____
Regionals _____

23. Indicate the COMMUNICATION methods adopted by the company (multiple answers)

Communication Mode	Supplier	Customers	Transporters
Personal Contact	☐	☐	☐
Telephone	☐	☐	☐
Post	☐	☐	☐
Fax	☐	☐	☐
E-mail	☐	☐	☐
Other_____	☐	☐	☐

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Thank you for your collaboration