# Coordination Mechanisms along the Supply Chain: a Key-Factor for Competitiveness

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**Paper prepared for presentation at the 113th EAAE Seminar "A resilient European food industry and food chain in a challenging world", Chania, Crete, Greece, date as in: September 3 - 6, 2009**

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**Abstract.** The purpose of this paper is to contribute to a better understanding of the role of relationships between stakeholders in the supply chain as a potential source of competitive advantage. In the case study, we focus on the wine industry in the Lazio Region (Italy). We observe a significant loss of competitiveness in this industry and we suggest that a higher level of communication and different coordination mechanisms among stakeholders could help in recovering a better market position. We focus on the linkages between farmers and the other food chain stakeholders through the perspective of Institutional Economics and Economics of Organization, in order to identify the key factors that determine the competitiveness of the supply chain's product.
The Lazio wine supply chain is investigated through the analysis of official data, integrated with primary data, collected through in-person interviews and questionnaires addressed to producers and experts. It emerges that the wine supply chain in the Lazio Region is characterized by a serious decline, suggested by a sharp decrease in production and sales, low reputation among experts, widespread negative consumers perception. We interpret this turn-down through the structural features of the market and through the low level of communication and coordination between the agents. This leads to the identification of potential instruments able to deal with the difficulties highlighted. We emphasize the role of public institutions in fostering communication and cooperation among firms and suggest the potential role of a web portal, in linking sellers and buyers in a common network.

**Keywords**: coordination, netchain, wine, Lazio Region (Italy).

## 1. Introduction

The paper applies the conceptual framework of the Netchain (Lazzarini et al., 2001) to the wine industry of the Lazio Region (Italy), with the specific purpose to highlight the role of relationships among stakeholders at different steps of the supply chain as a potential source of competitive advantage. The Netchain framework is an attempt to merge the Supply Chain Approach (SCA) and the Network Analysis (NA). Thus, Netchain focuses on both horizontal ties between firms of the same layer or stage, and sequential, vertical connections. It provides a tool to map the structure of inter-organizational relationships, that are used to explain gains and losses of competitiveness also in the food industry (Hofstede, 2002, Garcia Martinez, Perez , 2007, Chaddad, 2006).

The wine produced in the Lazio Region has sharply declined and faced difficulties in domestic as well as in export markets (Carbone, 2009). We link the loss of competitiveness to different causes, among which the main one is the small size of the production units; many other weaknesses, all related to inadequate availability of resources, stem out from this one. Given such a structural fragmentation, we suggest that a higher intensity of relationships as well as different coordination mechanisms among stakeholders could help in recovering a better market position.

The paper is organized as follows. Section Two describes the wine supply chain of the Lazio Region which is characterized by a a sharp decrease in production and sales, low reputation among experts, widespread negative consumers perception. The case-study is investigated through the analysis of official data integrated with primary data, collected through in-person interviews and questionnaires addressed to producers and experts. This negative performance is explained through different sets of causes. Section Three recalls the main features of the theoretical framework built up within the Netchain approach, that is then used to analyze the role that a better relational setting could play in creating value and gaining a competitive advantage. To close with, Section Four focuses on some concrete actions that, in the light of the theoretical framework depicted, could be undertaken by the wine supply chain stakeholders in order to increase their competitiveness.

# 2. The Lazio Wine Supply Chain

In the present section we analyze the steady loss of competitiveness of the Lazio wine sector, with the aid of different sources of information. Furthermore we attempt to relate the current situation of the supply chain to a set of features of the production process, common to the wine firms in the area. These features are related to the structure and organization of the production process, inside the firm's boundaries but also beyond them. We put emphasis on the relationships that the firms establish within the supply chain in the local economy.

## *2.1. Evidences of the Loss of Competitiveness*

The Lazio Region constitutes an important production area in the Italian wine market,;both in terms of land allocated to grape growing (3.4% of total Italian vineyards) and in terms of wine production (4.3% of total national production). However, in contrast with other Italian Regions, the Lazio wine supply chain is facing many difficulties. The increasing loss of competitiveness is clearly shown by the many evidences, that will be briefly analyzed.

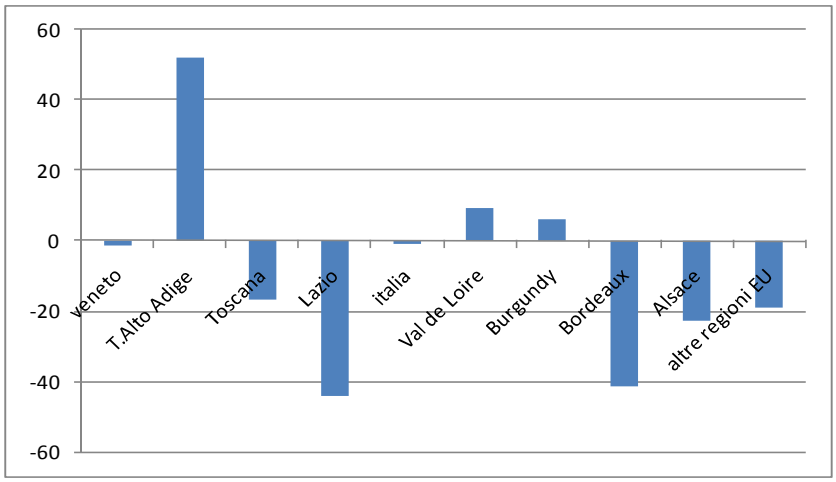
In the last 30 years the cultivation of wine grapes decreased at a rate which is approximately double the national average reduction rate (-65% versus -36%). Furthermore, while in recent years (2000-2007) this trend has almost stopped at the national level, in the Lazio Region another 17% of vineyards has been grubbed. In addition, official data show that during the nineties, specialized production units of the wine sector in Lazio Region have reduced at a rate of 8.3%, while at the national level there has been a growth of 16.6%. Moreover the number of employees have decreased at a rate of one unit out of five versus a national average of one unit out of ten. This concerns both private firms and wine cooperatives, which represent an important proportion of the sector (40-45% of wine production). Generous and repeated public support has delayed their exit from the market, but did not foster any structural improvement to re-gain competitiveness.

As a consequence of the shrink in cultivated land and in yields per hectare, (although yields remain far above national average, with more than 130 quintals per hectare), the production has strongly reduced (approximately -40%). Nevertheless this reduction wasn't sufficient to balance supply and demand, as it is shown by continuous excess of production, partially conveyed to distillation: over than 160 thousand hectoliters per year, in the last years, equivalent to 11% of final production.

High quality Lazio wines (mainly white DOC wines), once exported all around the world, especially in North European and North American markets, have now lost significant market shares in most destinations. These exports have fallen by 44% in ten years, while in the meantime the other Italian and European quality white wines have had very mixed dynamics including reductions but also increase in exported quantities (see Figure 1). Nowadays, the foreign markets account for about 15% of the Lazio wines production.

**Figure 1.**

Change (%) of Export volumes for EU VQPRD white wines (1995-2005)




**Source:** Elaboration on EU data

This situation is partially due to a series of deep changes that have involved the global wine market, like changes in the features of demand, the increasing role of fairly recent production areas and the leading roles of multinationals in the international supply chains, following mergers, acquisitions and diversification strategies (Cesaretti et al., 2006). All these changes have increased competition on the international wine market, where the presence of products coming from the "new world" is by far more strong than before. The reaction to this competitive pressure, especially in the lower segments of the market where the Lazio wine[1] is mainly targeted, was a downward leveling of prices that doesn't favor the necessary quality enhancement of production, needed to meet consumer demand.

The overall reputation of Lazio wine, with few successful exceptions, is in line with what we pointed out previously. During the above mentioned investigation, we have interviewed managers of restaurants, wine shops owners, buyers, distributors, journalists. They all judge the vast majority of wines from Lazio, as mediocre and poor, both in intrinsic and extrinsic quality and reputation.

Negative collective reputation of Lazio wines, as a whole, is negatively affecting the marketing opportunities for each single label, even when they would deserve a better consideration. Among the opinions of the experts: "Lazio wines obtained from international vines, lack personality and are not at all noticeable", moreover "wines with strong territorial connotation often lack elegance and fineness", while referring to Frascati's recent efforts to reach a better quality, in the best cases it is recognized as of "a pleasant and clean flavor".

A wider and more objective ground to assess Lazio wines reputation is represented by the judgment of major Italian wine guides[2]. First of all it is worth noting that around 40% of Lazio labels has not been taken into account by any of the guides considered. Furthermore, on a scale ranging from 0 to 18 scores, 37% of the labels has obtained a score between 1 and 4, while the average score of the (evaluated) labels was 4.4. Considering that a score of 6 correspond to a minimum score given by all guides, data clearly shows that the judgment of experts on Lazio wines is very poor.

For these wines retail prices have also been analyzed. Results confirm what has already been said since around 30% of bottles is sold at a price which is not higher than 4 Euros, while the price of 26,5% is between 4 and 6 Euros. Overall, approximately 80% of these products don't have a final sale price higher than 8 Euros.

[1] With just 1,7 Euros per liter, as unitary value of exports between 2005-2006, Lazio wines are at the bottom of the italian and european exports of high quality white wines, that obtain much higher average values.

[2] Three hundred Lazio wines' labels presented in 2007 at Vinitaly ,the most important international exhibition annually held in Italy have been checked. For further details see Carbone (2009).

**Table 1.** Loss of competitiveness of the Lazio wine chain: main evidences

| | | Lazio | Italy |
|---|---|---|---|
| Decrease of the production base | cultivated land | -17.0% | -1.8% |
| | No. processing firms | -8.3% | +16.6% |
| | No. of employees | -18.2% | -12.5% |
| Reduction of production | Wine produced | -48.9% | -18.2% |
| | Distillation | 11.6% | +13.9% |
| Decrease in exports | Reduction in exports | -44% | -1.1% |
| | Unitary value | 1.76 €/Lt. | n.a. |
| Weak reputation | Interviews | Mostly unknown<br>Poor assessment | |
| | Wine guides'scores (out of 18) | 4.4 | n.a. |

**Source:** our elaboration.

The data observed so far (summarized in Table 1) clearly show that the Lazio wine is losing competitiveness, it seems to be qualitatively inadequate, it is not attractive in terms of quality/price ratio and it suffers from low reputation.

## 2.2. Main causes of weaknesses of the productive system

In the present subsection we attempt to interpret the situation that we have so far depicted. We discuss the main critical factors one by one, even though we must bear in mind that they are all tightly connected and overlapped at some point. We refer to the conceptual scheme shown in Figure 2, in which several aspects are organized with the aim to put in evidence a growing level of importance of relational aspects and inter-organizational links.

The first level of the chart refers to structural characteristics. In our analysis structural characteristics, and especially small size of units of the wine industry, are considered as exogenous and rigid constraints. Furthermore, we look at links among producers as a way of bypassing dimensional constraints and inefficiencies. This is in line with many contributions in the literature(Peggy et al., 1993; Eisenmann, 2002); with the words of Porter: "Clusters affect competition by increasing the productivity of companies based in an area (...) A cluster allows each member to benefit as if it had a greater scale or as if it had joined with others formally without requiring to sacrifice its flexibility (Porter, 1998; pp.80)."

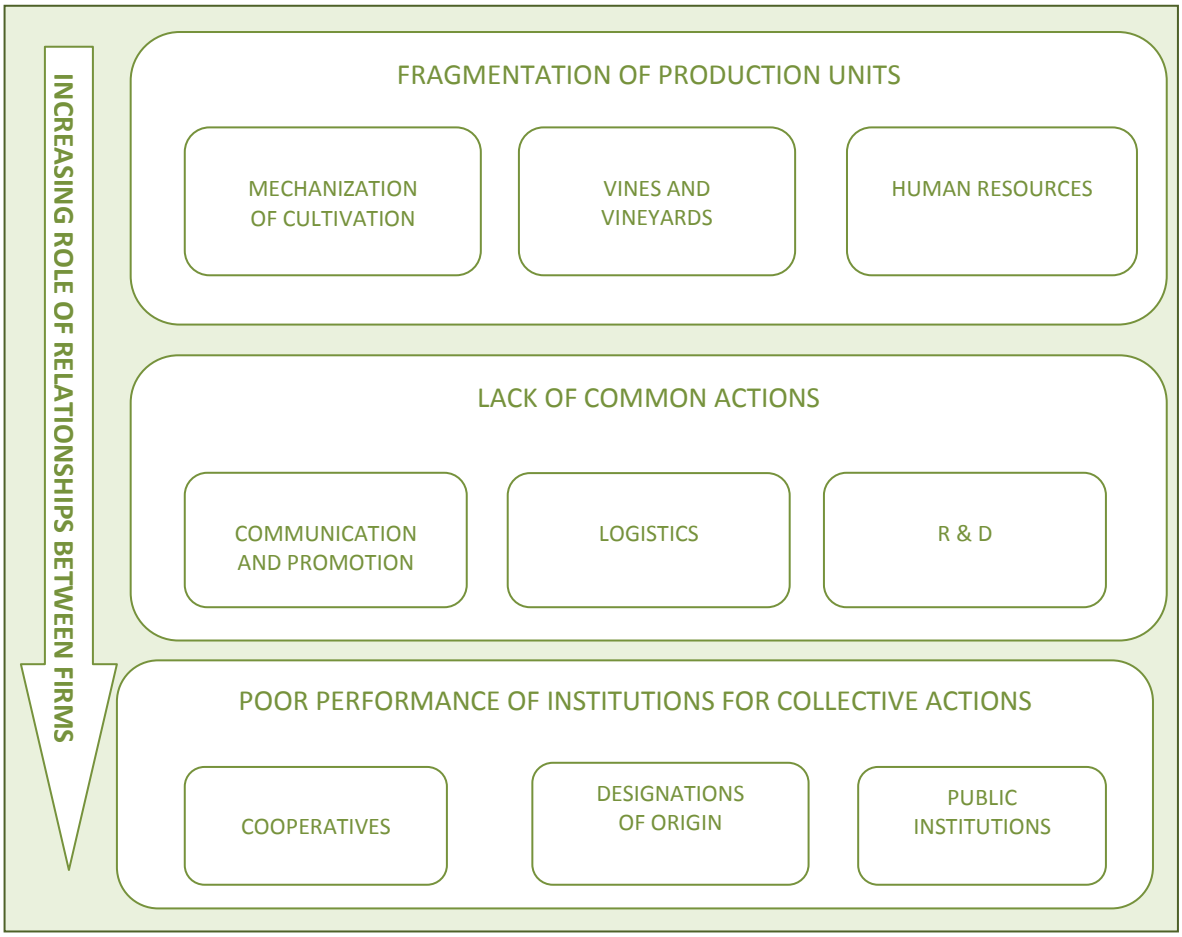
*Fragmentation of the productive structure.* The main feature of the productive structure is the extremely small dimension of farms and firms, which impacts on the supply chain organization and on the product placement on the market. Vineyards measure on average about 3000 square meters, and more than 90% of them do not reach one hectare. Wine production usually doesn't exceed few thousands of hectoliters, while only very few cooperatives and private wine processing firms outperform 100 thousand hectoliters (Tab. 2).This structural constraint has consequences in terms of efficiency and production costs and it also implies a weak bargaining power and low visibility of the product on the market.

The features listed below belong to the upper section of the chart and can be interpreted as direct consequences of the above mentioned fragmentation.

*Inadequate mechanization.* The use of equipment to manage foliage and grape harvest is extremely limited in the Region, even in areas where slopes and other land characteristics would allow their use. The experience so far collected within the sector shows that mechanization would reduce costs of pruning and harvesting, and it would also affect the quality of final product as well as the organization of the production process, that would be simplified and shortened.

*Vine varieties, and vineyards shapes*. The selection of varieties and clones is not always the right one to achieve acceptable quality standards. There is an excess of low quality, old fashioned, white berry vines, like Malvasia di Candia (30%) and Trebbiano Toscano (34%), both not appreciated in the market. Moreover plants have grown old, with 60% of vineyards with more than 20 years of age (half of these are more than 30 years old), and with prevalence of vineyard shapes (55%), that hinders mechanization and produce high yields to the detriment of quality.

**Figure 2.** Chart of the weaknesses of the Lazio wine production




In such a structural situation, which would call for investments, there is a very low use of CAP funding facililities for the structural adjustment of the wine industry. Out of 25 million Euros allocated to the benefit of structural changes in Lazio Region, in the period 2002-2007, only 10 million have actually utilized to renew 1500 hectares of vineyards.

*Deficiency in human capital.* Human capital lacks adequate skills and expertise with reference to the production process management, either in the cultivation of grapes and in the wine production (few firms refer to agronomists, enologists, consultants and technical advisors). Also in the marketing and sales area there is a need for qualified audit in many areas, such as legal contract definition, organization of orders and deliveries, information technology management and customer relationship management. This regards both small family firms and cooperatives.

The second level of the chart, (Figure 2), refers to strategic functions that firms carry out internally, whenever the economic size allows for them, or that can also be performed through collective actions. In the specific case, the structural constraints of the industry call for collective actions in order to manage such activities in a more efficient manner. The critical factors occurring at this level of the scheme require the capability to build a network of relationships and strategic alliances among firms operating at different levels of the supply chain.

**Table 2.** Wine production from cooperatives in Lazio (2007)

| | Hectoliters | % | % Cumulative |
|---|---|---|---|
| Coprovi | 275000 | 12 | 12 |
| Gotto d'Oro | 170000 | 7.4 | 19.3 |
| Cerveteri | 150000 | 6.5 | 25.9 |
| Fontana di Papa | 150000 | 6.5 | 32.4 |
| Montefiascone | 60000 | 2.6 | 35 |
| Cincinnato | 60000 | 2.6 | 37.6 |
| Vignanello | 40000 | 1.7 | 39.3 |
| Santa Maria | 20000 | 0.9 | 40.2 |
| Monteporzio C. | 13500 | 0.6 | 40.8 |
| Vicosa | 12000 | 0.5 | 41.3 |
| Olevano Romano | 10000 | 0.4 | 41.8 |
| Cesanese P. | 6000 | 0.3 | 42 |
| Gradoli | 5000 | 0.2 | 42.2 |
| Genezzano | 5000 | 0.2 | 42.5 |
| Colli Cimini | - | - | 42.5 |
| Tot. Coop. Lazio | 976500 | 42.5 | 42.5 |
| Tot. Lazio | 2300000 | 100 | 100 |

**Source:** elaboration on Arsial and Istat data

*Absence of a strategy for communication and promotion.* Communication and promotion activities are quite complex in the wine sector, because they imply different levels of action, not only targeted to the final consumers, but also addressed to the opinion makers, the buyers, the retailers, and others. These are central elements for big competitors that make relevant investments, in order to differentiate themselves, gain visibility and establish their reputation. A the opposite small firms are constrained by low visibility, small volumes of product and limited investment capacity.

Wine quality and reputation are deeply linked to production area. Therefore communication is a complex task referred to many aspects, including vines, region characteristics, country's cultures and traditions, other products from the area. In other words there is a strict need for a collective level of action that adds, develops further and goes beyond the effort of the single farm.

*Poor supply chain management and logistics.* Limited dimension of farms in the wine supply chain makes , this key function to guarantee access on the market more complicated and expensive. The nearby market of Rome offers great opportunities to sale. First, because of the market dimension (with 3 million inhabitants and more that 1 million tourists and business man coming into town every day), second, because it can especially value the wine quality linked to the close geographical origin. Nevertheless, the commercial relationships with the Lazio wine producers and the Roman wine retailers are weak and unstable. This, paradoxically, happens due to geographical proximity that induces producers to "personalize" relationships with customers (restaurant owners and specialized shops) in the hope to build stable purchasing behavior . Though, this logistic management turns to be counterproductive, because of the constraints in time and skills of small family firms in arranging frequent deliveries for small quantities. Consequently, uncertain and irregular supplies make relationships very unstable and fragmented with high transaction costs.

*Research and Development.* R&D activities in this sector pertain different areas spanning from the creation of new varieties and rediscovery of traditional one; cultivation and wine production new techniques, the switch to processes with low environmental impact , innovative packaging solutions, and more. These activities all develop in the long term and show several complementarities, necessary to gain the related advantages. It is not need saying that firms producing a few thousands of hectoliters, cannot efficiently develop such functions. Especially as in the wine market, product innovation is playing an increasing role and being unable to carry it out reduces firms competitiveness.

As already stated, the common feature of the critical points, placed on the second level of the scheme is that, by their nature, these functions require a collective action. The poor working of the interdependences can be caused by different factors, like institutional framework, conventions and norms, social network, historical and cultural environment.

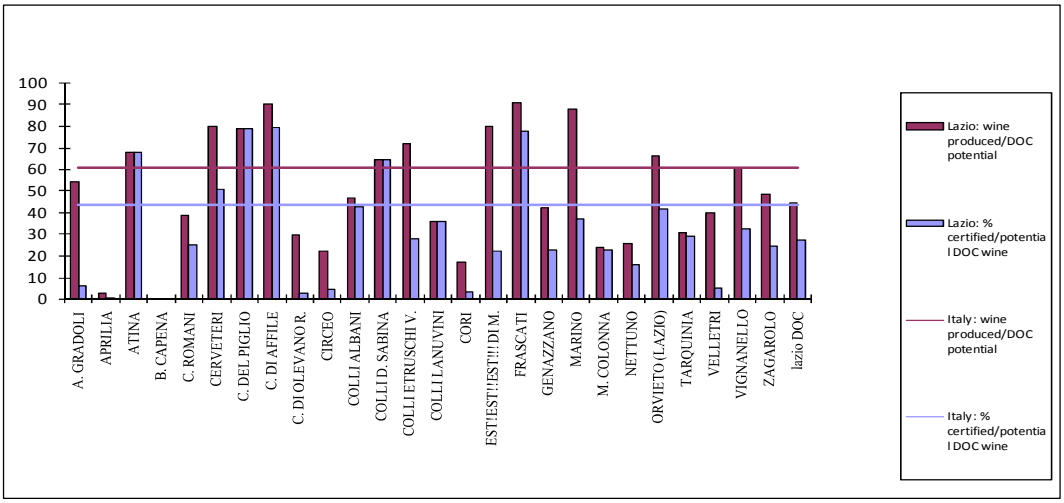
Coming to the third level of the diagram in Figure 2, it shows a last group of weaknesses of the Lazio wine sector, which are different from the previous two levels because they refer to collective/public institutions and governance schemes models. A set of norms regulate the actions of the different operators, who are embedded in a variety of relationships. If this system of rules doesn't work effectively, it becomes a weakness of the system itself. The reasons why this may happen are many and diverse: i) low level of consensus and attendance; ii) different origins of the rules that lead to contradictory or disjoint regulations; iii) low enforcement of individual and collective rights; iv) moral hazard and adverse selection issues, and so on.

*Role of cooperation*. Currently 15 cooperatives operate in the Lazio region, with 5 bigger ones and others producing extremely small quantities. Unlike other Italian and European regions (i.e. in France), in Lazio the entire production process (from grape reception to bottling) is carried out within each single cooperative, while there is a low propensity to manage the processing and packaging on a common basis. As a consequence there is a huge proliferation of very small scale structures with an excessive productive capacity with respect to the potential of each area. Furthermore, these cooperatives offer to their members only few extension services such as aggregation of inputs purchase, common management of machineries and plants, and so on.

Cooperatives are widely sustained through public funds, which implies a strong political influence on the choice of management and on the cooperatives' strategies. Two main consequences occurr: 1)low professional profile and poor sense of responsibility of the actors in charge of the management of the cooperative and production processes (they don't act following economic criteria but also pursue political goals); 2) absence of effective mechanism for the selection of grape delivered by the members to the coop. It happens that producers maximize production, because they know that they will sell it anyway to the coop, getting a guarantee price, (and this obviously creates a trade off with quality). In addition, instead of handing in the entire production (which is also a legal prescription) they bring to the cooperative only the least valuable quota, while they try to sell finest grapes on the market at a higher price.

*Designation of Origins (DOC) management.* DOC wines represents approximately one third of the regional production. There are 27 different Indications of Origin, very much varied by dimension of the production area, number of producers, hectares involved, cultural and historical heritage and propensity to export. On average, producers are not even theoretically interested in certifying their production for more than one half of it and only about 25% of the potentially eligible production actually reaches the market with the certification of the origin, while the national average ratios are respectively, about 60% and 50% (red and blue in Fig. No.3).

**Figure 3.** Rate of use of DOC certification




**Source:** Elaboration on Arsial, CCIAA, Nomisma data

Moreover, some of the biggest and most popular Designations of Origin fit the lowest market segments, where the relevant variable for competition is price. This. Of course, affect negatively market returns and reputation for regional wines( even a few labels that would deserve a better fortune). The data from Ismea on wholesale agricultural prices, show that Lazio DOC wines are sold at very low prices compared to other Italian regions' DOC wines: on average they are far less than 0,5 Euro per liter. Frascati is the only important exception, with 0,69 E/l.

One more hint of the weakness of Lazio wines with appellations of origin is related to their productive scale and the recent production trends. Out of 27 existing DOC, seventeen operate only few thousands hectoliters and can be defined small/tiny mainly oriented to market niches. Furthermore, thirteen DOC experienced in the recent years a production drop following a poor response of the market. Only 4 DOC with a relatively bigger dimensions have recently experienced an increase of their production.

Finally it has to be noted that only three DOC are managed through a consortium: Orvieto wine (Orvieto Wine Consortium), Colli Lanuvini (Colli Lanuvini Wine Consortium) and Frascati (Frascati Wine Consortium). The other DOC have never found an agreement to create such an organism, as prescribed by law.

*Institutional network/coordination of activities in the public sector.* Public institutions, especially at the local level, can play an important role in addressing all the weaknesses that we have previously presented. They can intervene to correct market failures such as: lack of competition at some level of the supply chain, several entry and exit barriers, externalities and public goods related to innovation. One important condition for an effective intervention by public institutions is the coordination among the several public actors involved in the regional wine industry (i.e. Universities, other public applied research institutions, Regional Administration, Province Administration etc…)

In the Lazio region, different public institutions active in the wine field, operate in an isolated and uncoordinated manner, unrelated to the production firms. This leads to miss potential synergies and complementarities that could lead to innovations in the entire production process, including in a final product that meets demand. Lack of communication channels between institutions and the system of firms, makes their activity not adequately finalized to foster intention to innovate or apply existing innovation.

# 3. Sources of value and rent generating processes

The case-study presented in the previous section clearly gives the image of a complex supply chain which involves several actors of very uneven nature, because of their different role in the production process, dimension or other structural characteristics, ownership, incentives and relevant constraints. These actors are (or should be) related to each other in different ways and through linkages of different intensity: in some cases solid and stable, in others weak and occasional..

The least common denominator for all the agents involved in the wine industry is the location in the same region. This common feature leads to a series of important consequences: i) spatial proximity implies at least similar natural conditions for production and potentially low transportation costs; ii) shared history, cultural heritage and traditions; iii) partially shared reputation, linked to a common place of origin; iv) dependency on a common legal and regulatory framework, as well as common institutional stakeholders; v) same meso-economic context.

This industry produces a range of wines that is, as a whole, sharply loosing competitiveness. The objective of this section is to bring together some theoretical arguments provided by the economic literature, in order to show how a system of stable relationships among stakeholders along the supply chain, could help small units in the wine sector in gaining competitive advantages.

Economic literature refers to clusters to define geographic concentrations of interconnected companies and institutions in a particular field, including industries but also suppliers of specialized inputs, services and skills (Porter, 1998; Sellitto 2005). Compared with market transactions among dispersed and random buyers and sellers, the proximity of companies and institutions in one location and the repeated exchanges among them (may) foster better coordination and trust. However it is important to point out that the mere location of companies, suppliers and institutions creates the potential for economic value but it does not necessarily ensure its full achievement. This is the case of the wine industry described in the previous paragraph where the interdependencies among stakeholders are mainly pooled and, hence, sparse and indirect and there is a lack of a network able to support the industry competitiveness.

In such a framework the Netchain perspective seems to provide effective insights to analyse the key issues needed to foster coordination. The Netchain concept is an attempt to merge the Supply Chain Approach (SCA) and the Network Analysis (NA). SCA refers to (vertically organized) transactions that involve firms at sequential stages of the value creation; while the focus of NA is more on horizontal relationships between firms operating within the same segment of the supply chain. Thus, Netchain integrates the two previous, focusing on multiple networks, made of horizontal ties between firms of the same layer or stage, sequentially organized and vertically connected. The Netchain provides a tool to map the structure of inter-organizational relationships, or "ties", and can be used to explain gains and losses of competitiveness also in the food industry[3] (Hofstede, 2002, Perez and Martinez, 2006, Chaddad, 2006).

The inter-organizational dependencies that arise between agents have been analyzed by Lazzarini et al. (2001). They rely on the classification made by Thompson (1967) that distinguishes between pooled, reciprocal and sequential interdependencies:

- Pooled interdependence depicts the case of weak, indirect and sparse ties. Agents are not directly dependent upon each other, but are individually dependent upon a pool of resources.
- Sequential interdependences occur when agents are directly connected in a serial fashion with the input of an agent that is the output of the other.
- Reciprocal interdependence involves mutual links and, hence, is the most complex of the three. It relies on simultaneous exchanges where each agent is dependent from the counterpart and vice versa. Ties are highly specific and require the ability to have a two-way communication and intense interaction as the task proceeds.

These different types of interdependencies can occur simultaneously, in different combinations and can foster competitive advantages through different ways, in analogy to what stated in other contributions, as, for example, in the concept of inter-organizational competitive advantage (Porter, 1998; Dyer and Singh, 1998; Perez and Martinez, 2006), or in external economies of the industrial districts (Marshall, 1920; Becattini, 1991; Carbone, 1992) [4]. The latter is relevant for the case study on which the paper focuses, because of the relevance of the spatial dimension in the wine industry, where firm's proximity plays a role in the production process and where the geographical origin of the product matters.

It is of special interest here to show the main sources of value that stem out from firms' interdependencies. This is again done following the classification of Lazzarini et al. (2001). The different benefits of collaboration are reviewed together with the critical actions and conditions that potentially generate competitive advantage. As it will be clear, these benefits can all be summarized in three main overall effects: gains in efficiency, value creation, value appropriation. Hereafter a brief, schematic description is given of the different sources of values. While going through the list it is important to keep in mind that many of these effects (generated by underling actions) are much interlinked each other.

1)*Optimization of production and operations:* it is mainly the outcome of establishing sequential interdependencies aimed at coordinating different steps of the production process. It encompasses all activities associated with the flow and transportation of goods from the raw materials stage through the end user, including information, financial flows and timing of interconnected operations. Optimization of production and operations makes the flow of goods and services more efficient, more effective in terms of product quality and differentiation, with fewer defects and faster product cycles.

2)*Reduction of transaction costs*: pooled and sequential interdependencies are mainly linked with this source of value, though, also the reciprocal mode could be involved. Transaction costs are due to searching counterparts, contracting with them and monitoring the ongoing relationship (Williamson 1996, Hobbs 1996; Banterle, et al. 2006). They may be caused by divergent interests and information asymmetries or difficulties in measurement of quantity/quality of the good subject of transaction. The reduction of transaction costs by definition increases efficiency; but could also, indirectly, lead to a better specification of product quality and to a better definition of property rights.

[3] It is important to specify that, so far, the Netchain analysis is developed giving for granted a given setting, (i.e. taking firm boundaries as exogenous). In other words, within this framework, increasing firms' scale is not a viable strategy as a source of competitive advantage.

4 In the definition of Lazzarini et al. sources of values play the role of strategic variables yielding economic rents. Dyer and Singh define the relational rent as the "supernormal profit jointly generated in an exchange relationship that cannot be generated by either firm in isolation and can only be created through the joint idiosyncratic contributions of the specific alliance partners" (Dyer and Singh, 1998;p. 662).

3)*Appropriation of property rights:* concerns the degree to which firms are able to capture the rents generated by product differentiation and/or innovation. The supply chain integration, through the establishment of sequential and reciprocal interdependencies, may be a way to capture and distribute the value generated by investments in differentiation and innovation especially when there are significant complementarities which occur when technology adoption and/or differentiation strategies depend on assets owned by other firms.

4)*Enhancing learning and knowledge:* all kinds of interdependencies play a role in the opportunities of sharing knowledge and of learning from each other. Knowledge sharing generally develops locally and spreads from a particular stage of the chain to the rest of the net chain, through knowledge/learning spillovers. Higher levels of knowledge foster efficiency as well as value creation and appropriation and gives more opportunities for generating innovation.

5) *Generating network externalities*: they mainly occur with pooled interdependences when the benefits to undertake a certain action or strategy (i.e. technology or contract) increase with the expected number of adopters. There can be direct externalities, meaning that agents connecting each other increase their own business opportunities. Indirect network externalities occur in case of complementarities among different technologies and exchange modes. Spatial/density externalities, can be somehow included in this category as they consist in the benefits deriving from the presence, in the same area, of a wide range of firms interconnected in various ways (Becattini 1975; O'Sullivan 1984, Camagni, Cappello and Nijkamp 1998). As in the previous point, the competitive advantage stems from higher efficiency but also from value creation.

6) *Embeddedness in the social structure*: it consist of interpersonal relationships among people/firms/agents and individual relative position in a social network (Granovetter, 1985). Social relationships may be a source of value in different ways: helping to build trust and to prevent opportunistic behaviors that easily destroy agents' reputation built within the network; creating routines that easy transactions and relations; fostering a cooperative attitude and reducing competition (i.e. market power of cartels and trade associations); helping circulation of information and creation of knowledge (although, in case of tight and fixed relationships a lock in effect may occur, reducing diversity and innovation).

The next section is devoted to show some examples of concrete actions that we could expect to generate the above described sources of values in the Lazio wine case-study.

# 4. Suggested actions and concluding remarks

In this last paragraph the focus switches on some proposed actions that, in the light of the indications of the previous section, are expected to help the wine industry of the Lazio Region in developing a competitive advantage. The list is not at all intended to be complete, whereas its purpose is to make some detailed examples that can give some tangible ideas of the kind of actions that could be undertaken and their expected impact in terms of value creation. Actually each one of these concrete actions reflects a combination of the three broad categories of sources of relational rents (along with the underlying strategic actions that allow for them) indicated by Dyer and Singh in their Relational view approach (1998). The three general categories are briefly described below.

*Relation/transaction specific investments.* Specificity of investments may concern site/location of plants and productive structures: it reduces inventory and transportation costs and may improve quality of production and human resources.

*Interorganizational learning.* Knowledge sharing routines may be developed by planning a regular pattern of firm interactions to transfer, recombine and specialize knowledge. It is commonly judged to be a critical factor particularly in terms of innovation and performance-enhancing technologies.

*Recognition of the potential and joint use of complementary resources*. Strategic alliances allow to procure assets, competencies and capabilities not readily available in competitive factor markets, for example intangible assets such as reputation (Oliver 1990).

The actions that in our view could help in gaining competitiveness are listed hereafter:

*Shared investments in machineries.* As regards the need to use more machineries especially in the vineyards, this is a typical example of a specific shared investment that allows for reduction of unitary costs, both directly related with the use of the machinery but also involving other aspects of the

production process (i.e. labor cost, energy cost, etc.). Furthermore, the possibility to use machines for cultivation also helps in improving process's organization and product quality.
Producers' cooperatives, other kinds of producers' associations, or even the constitution of specialized firms that offer the machines and services, could represent different alternatives for investment sharing.
It is worth noticing that the possibility to acquire machinery and use it in the vineyards is also linked to the incentives to renew plantations which, in turn, it is also linked to investments in R&D and many of the other actions listed below.

*Improvement of labor skills and know-how*. As seen in section 2, firms lack in adequate skills both on a technical ground as well as in the commercial managerial areas of competence. An improvement can be achieved both with specific relation investments and inter-organizational learning. Again, a number of producers can group together to hire a professional advisors or can develop an R&D section that they jointly finance and use. They can also organize collective courses to update their knowledge in specific innovative fields. Just like in the previous case, cooperatives or consortium could play a role in reaching this task.

*Development of logistic.* One more weak point highlighted in section 2 concerns logistics and especially the possibility for the small wineries to deliver directly with the optimal frequency their wine to the retailers in order to fulfill clients' needs and hence to establish long-lasting relationships. Again a common action is possible in carrying out specific investments to pool the product and deliver it to the clients, sharing the transports services and other logistic facilities. A key factor in this case is the capability to build/exploit organizational complementarities to access benefits of strategic resources complementarities.

*Common initiatives in R&D.* At the moment, in the Lazio Region, mainly public institutions are devoted to this task with respect to the wine industry. Several institutions are involved in this task but they lack of inter-organizational communication amongst them as well as with the agents engaged in the supply chain. A better coordination among organizations could help in many ways. First of all, it would allow to enhance innovation complementarities. Secondly it could avoid overlapping activities (and resources wastes). Thirdly, a more straightforward connection with producers would help in: i) orienting research developments where it better meets producers' (even latent) needs; ii) help the spillover and innovation adoption process. Investments in learning and high skills professionals involvement is also required in order to foster an effective adoption process of R&D results, along the entire supply chain.

*Common actions for communication and advertising.* There is much room for gaining advantages from common actions in communicating and advertising. First of all, these actions are too much costly for small firms and require highly specialized skills. Secondly, there is a need to gather production in order to reach market visibility. Thirdly, since the area of production creates a shared reputation, this means that a communication strategy should be coordinated to be effective and that there is a need to avoid moral hazard and free riding behaviors that could damage the shared reputation.

Communication ad advertising comprise many complex actions including, among others: monitoring demand; definition of strategies to access new markets; elaborating a price strategy; establishing relationship with the press; planning marketing campaign for specific channels; organizing wine tasting events to shared consumers as well as to journalists and experts; promoting farms and wine firms visits; enotourism; and a lot more.

Beyond efforts to built a good reputation for single wines, there is a need to invest on a sound regional reputation, as an area naturally gifted for wine that can give birth to good products. At the same time there is a need to show that there are ongoing collective efforts to improve intrinsic and extrinsic quality.

It is worthwhile underlying that there is a strong interdependence between human resources, R&D and Communication and Advertising. These should be all in one, as cogs of the same machine, fitting one with each other to have the whole working properly. Indeed, investments in R&D can create an innovative environment appealing for new and authoritative competences in processing and communicating new wines. At the same time in order to develop innovative products, oenologists and researchers have to be in touch with the retailers and the specialized media. Such a relationships make the industry able to match the recent trends in consumers demand on the prevailing targeted markets.

*Cooperatives.* As already mentioned, these institutions are by their nature collective and, hence, they are expected to play an important role in the setting of inter-organizational relationships and undertaking of common actions.

The scopes of the cooperatives are mainly two: i) to gather raw material or produce and perform one or more steps of the production process at a larger and more efficient way (i.e. scale economies); ii) to help farmers/producers to concentrate supply/demand to face the market in a better position (i.e. market power) both with respect to the produce supply side and with respect to the inputs demand side. So that, for example, in the case of the grapes and wine industry, cooperatives could play a role under many regards that span from extension services, to facilities and organization for the use of shared machinery, to aggregate demand for inputs to gain better buying conditions, up to wine production from associate grapes, bottling, marketing and all functions related to the product selling.

One more example is that one ofthe Consortium involved in a DOC wine that is the body in charge to define product shared characteristics and communicate them to the target chain partners and to the consumers. It is meant to establish and enforce a set of rules that need to be fulfilled in order to reach the target quality. The Consortium could also play a role in the marketing area, offering services in the commercial area to the producers, helping them in gathering their wines for delivering them to the clients and in general for what concerns the logistic.

Nevertheless, the poor performance shown by these institutions in the study area, makes clear that the sets of rules and incentives in place are sub-optimal and need to be changed. The direction to follow is also suggested by the experience of other areas both within the country and abroad (mainly in France, where many wine cooperatives and consortium are doing very well).

In the case of cooperatives there is a strong need to use more market incentives. This implies two major changes: i) letting members choose the management of the cooperative with criteria of professional skills and experience. This involves the possibility to change non performing management and to link incentives to the results obtained; ii) Adopting effective criteria for the selection of the grapes that members bring to the cooperative. This can be done both with a price premium linked to identified quality indicators, and with a quality threshold under which grape is refused. This sort of incentives is meant to prevent free riding behaviors that damage the quality of wine and the coop's reputation.

Also in the case of DOC consortia there is a need to strongly foster their action. As seen they are are very limited in number and almost not functioning at all. This is, in our opinion, due to a lack of knowledge on how the market for DOC products works. The certified name is mainly seen as a club good that once put into existence, each and every entitled producer can use without any sort of linkages or consequences to the other producers. A strong action to show the linkages in reputation established by the common name and its deep consequences on the functioning of the market, both on the supply and demand side, should be done at the beginning of a DOC's institution, to help producers understanding the strategic importance that a consortium does play for a DOC (Morrison and Rabellotti, 2007).

*Building a Web Portal.* Last but not least, a Web Portal could be an effective tool that can help to remove some constraints that prevents common action and the settings of inter-organizational relationships. Information technologies (IT), by their nature, ease information exchanges and, by this mean, they facilitate other kinds of exchanges. IT mainly shorten time needs and lower costs. Of course, this is not to be regarded as a magic wound that creates by its own relationships where there is no habit nor will to do so (Sellitto and Burges, 2005, pp. 26). Nevertheless, it can play a decisive role in making relations more easy, less expensive and more effective; in changing the pattern of incentives to boost the network of links and to make it more stable (Sellitto and Burges, 2005).

The necessary condition for a web portal to be actually working and effective is to be the result of a strong, common determination and well defined shared strategy. To this concern, cooperatives, consortium and public institutions could be the major players.

It is worthwhile to shortly describe what a web portal for the wine of a region could do. Two broad areas can be distinguished: i) functions related with communicating and dealing with the public and ii) functions connected to intra-chain relationships.

The web portal used as a front window to gain visibility into the wider market can be used to achieve many goals: communication of the territory, the history, the natural resources and the traditions linked to the local wine industry; presentation of the local wines and producers; Support for all the agents to find what and where to buy, providing the necessary conditions to make secure and diversified purchases. Furthermore, the web portal can give information on wine routes, on producers' opening days and other events for the public (like wine tastings, fairs, competitions, exhibitions, and so on); it can also have a press room targeted to wine professionals, distributors, journalists, and other industry operators. It should also host forums, newsletters and blogs.

The intranet area, reserved to the local operators, could help implementing connections under different respect. It can host a service of news on the wine market trends, studies on potential new country markets, on the evolution of the different countries legislation. It can give information on weather forecasts and input markets. It can help sellers and buyers of intermediate produce in their search, it can help the organization of logistic, distribution and so on. Everything being more easy, quick and less expensive but just under the condition that operators recognize the importance of these functions and agree upon the convenience to have them on a shared basis. A web portal could also make it easier to share results of researches and to create common innovative projects that have complementarities; it can be used by the extension service; for e-learing projects connecting in a continuous twofold relationship schools, university and firms, as well as other private and public intitutions involved in the local wine chain.

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